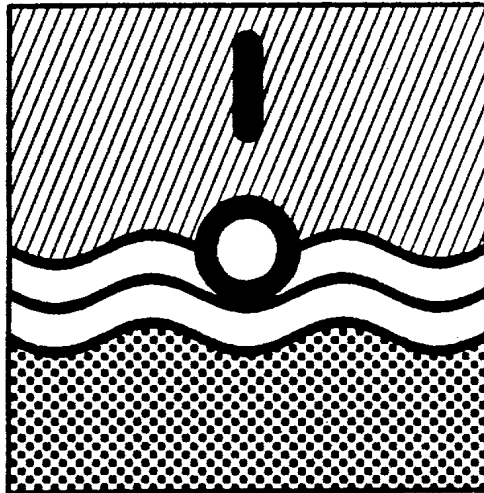


DEVELOPMENT OF A NATIONAL DATA BANK
OF HYDROLOGICAL AND METEOROLOGICAL
INFORMATION



REVISED PROPOSAL FOR THE PROGRAMME STRIDE HELLAS 1991 - 1993
Science and Technology for Regional Innovation and Development

ATHENS - JANUARY 10, 1992

STRIDE HELLAS 1991 - 1993

Science and Technology for Regional Innovation and Development
The Greek Programme

All applications should be send by recommended mail or deposited before 10/6/1991 to:

Γενική Γραμματεία Έρευνας και Τεχνολογίας
Πρόγραμμα STRIDE
Μεσογείων 14 -18, Τ.Θ. 14 631
Αθήνα 115 10

1. PROJECT TITLE:
DEVELOPMENT OF A NATIONAL DATABANK OF HYDROLOGICAL AND METEOROLOGICAL INFORMATION

2. IMPLEMENTING INSTITUTION (s):

2.1. MAIN INSTITUTION (name and address):
NATIONAL TECHNICAL UNIVERSITY OF ATHENS, DIVISION OF WATER RESOURCES, HYDRAULIC AND MARITIME ENGINEERING, Iroon Polytechniou 5, 157 00 Zografou

2.2. PARTNERS (names):
UNIVERSITIES

1. *National Technical University of Athens, Division of Water Resources, Hydraulic and Maritime Engineering (NTUA/DWRHME)*
2. *School of Technology, Aristotle University of Thessaloniki, Division of Hydraulic and Environmental Engineering (STAUT/DHEE)*
3. *University of Athens, Division of Applied Physics, (UA/DAP)*
4. *School of Technology, Aristotle University of Thessaloniki, Division of Energy (STAUT/DE)*

DATABANK MANAGERS

5. *National Meteorological Service, Division of Agricultural Meteorology and Hydrology (NMS/DAMH)*
6. *Ministry of Industry, Energy and Technology, Division of Water and Natural Resources (MIET/DWNR)*
7. *Ministry of Agriculture, General Division of Land Reclamation Works and Agricultural Structures (MA/GDLRWAS)*
8. *Ministry of the Environment, Planning and Public Works, General Secretariat of Public Works (MEPPW/GSPW)*
9. *National Observatory of Athens, Institute of Meteorology and Physics of the Atmospheric Environment (NOA/IMPAE)*

USERS

10. *Centre for Renewable Energy Sources (CRES)*
11. *Water Supply and Sewage Corporation of Athens (WSSCA)*
12. *National Centre for Scientific Research "Demokritos" (NCSR"D")*
13. *Hellenic Agency for Local Development and Local Government (HALDLG)*

2.3. TELEPHONE(s) for contact: +301-7772924
 TELEFAX: +301-7798902

3. HEAD(s) OF THE INSTITUTION(s) (names, titles, affiliation, signatures):

<u>ORGANIZATION</u>	<u>NAME</u>	<u>TITLE</u>	<u>AFFILIATION</u>	<u>SIGNATURE</u>
1. NTUA/DWRHME	G.Noutsopoulos	Professor	Rector	
2. SATUT/DHEE	G.Balafoutas	Asoc.Prof.	Director	
3. UA/DAP	G.Filokiprou	Professor	Vice Rector	
4. STAUT/DE	V.Sotiropoulos	Professor	Director DE	
5. NMS/DAMH	D.Arsenis	Brigadier	Director NMS	
6. MIET/DWNR	A.Mavrodimou		Director	
7. MA/GDLRWAS	J Andzeadis		Director	
8. MEPPW/GSPW	G.Thomopoulos	Civil Eng.	Director Δ7	
9. NOA/IMPAE	G. Kontopoulos	Professor	Director	
10. CRES	S.Kiritsis	Professor	Gen. Manager	
11. WSSCA	N.Damalitis		Gen. Manager	
12. "D" NRCR "D"	I.Papazoglou	Div of Research	Director INTR	
13. HALDLG	P.Maistros		Man. Counsel	

3-6-94

4. PROJECT LEADER (names, titles, affiliation, address, signature):
 LEADERS OF THE COOPERATING TEAMS (names, titles, signatures):

- A. **Project Leader:** D.Tolikas, Professor STAUT, Hydraulics Laboratory, 540 06 Thessaloniki
- Associate Project Leader:** D.Koutsoyiannis, Lecturer NTUA, DWRHME, Iroon Polytechniou 5, 157 00 Zografou, Athens
- Consultant:** Th.Xanthopoulos, Professor NTUA, DWRHME, Iroon Polytechniou 5, 157 00 Zografou, Athens

B. Leaders of the Coordinating Teams

<u>ORGANIZATION</u>	<u>NAME</u>	<u>TITLE</u>	<u>AFFILIATION</u>	<u>SIGNATURE</u>
1. NTUA/DWRHME	D.Koutsoyiannis	Lecturer		
2. STAUT/DHEE	P.Latinopoulos	Professor		
3. UA/DAP	G.Kallos	Assoc. Prof.		
4. STAUT/DE	N.Mousiopoulos	Professor		
5. NMS	G.Barbounakis	Meteorologist	Director DAMH	
6. MIET/DWNR	P.Tsoumanis	Hydr. Eng.		
7. MA/GDLRWAS	M.Kilakou	Geologist	Head of Section	
8. MEPPW/GSPW	E.Tiligadas	Dr. Eng.		
9. NOA/IMPAE	M.Petrakis	Res. Associate		
10. CRES	V.Stergiopoulos	Dr. Eng.		
11. WSSCA	M.Stratis	Civil Eng.		
12. "D" NRC	G.Amanatidis	Res. Associate		
13. HALDLG	L.Pirgiotis	Chem. Eng.		

5. PUT IN THE APPROPRIATE PLACE THE TOTAL BUDGET REQUIRED FROM EACH MEASURE FOR THE IMPLEMENTATION OF THE PROJECT

N.B.: For more details on the content of the measures and on the eligibility of expenditures, please look at the full programme description

In brackets: the available budget by measure

All figures in MECU


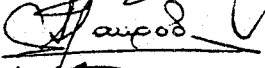
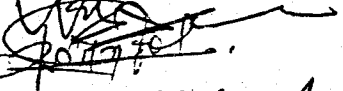
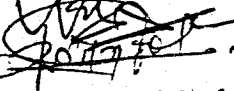




1.1	Support to the participation in the Community programmes, diffusion of information etc (3):	-----
1.3	Employment of expatriate nationals and foreign experts (2):	-----
1.4	Consulting and advisory services for technology transfer (2):	-----
2.1	Organisations linking research - industry (2):	-----
2.2	Databanks, networks for data transmission (2.5):	0.905
2.4	Units diffusing the research results (1):	-----
3.2	RTD infrastructure in information technology (20):	-----
3.3	RTD infrastructure in materials, chemical engineering (5):	-----
3.4	RTD infrastructure in agriculture, aquaculture (9):	-----
3.5	RTD infrastructure in energy (3):	-----
3.6	RTD infrastructure in environment (6):	3.629
3.7	RTD infrastructure in health (8):	-----
3.8	RTD infrastructure in leisure, culture (3):	-----
3.9	RTD infrastructure in least favoured regions (7.5):	-----
4.1	Diffusion of S & T Technology (4):	-----
4.2	Training in RTD management (1):	-----
4.3	Employment of students, researchers in industry and of industrial employees in research institutions (3):	-----
5.	Studies for S & T policy making (2):	-----
TOTAL BUDGET of the project proposed		4.534
from which		
	Regional Fund	-----
	Social Fund	-----

Greek sources (specify by organization and type of budget line)

<i>NMS</i>	0.296
<i>MIET</i>	0.178
<i>MA</i>	0.356
<i>MEPPW</i>	0.241
<i>NOA</i>	0.085
<i>WSSCA</i>	0.089
<i>CRES</i>	0.068
<i>NCSR" D"</i>	0.049

Non Greek sources (specify by organization)

6. THE BUDGET ALLOCATIONS BY GREEK ORGANIZATIONS TO THE PROJECT HAVE TO BE AUTHORIZED BY THE COMPETENT AUTHORITY OF EACH FUNDING ORGANIZATION (name, title, signature): It is reminded that for public organizations the structural funds may cover up to 70% of the budget and for private organizations up to 50% of the budget. Depreciation of existing equipment is not eligible as Greek contribution.

<u>ORGANIZATION</u>	<u>FUNDING AUTHORITY</u>	<u>NAME</u>	<u>TITLE</u>	<u>SIGNATURE</u>
1. NMS	Deputy Director	P.Kiriakos	Brigadier	
2. MIET	Director	A.Mavrodimou authorized by:		
	Secretary General	G. E.Apostolakis		
3. MA	Secretary General	N.Psillakis		
4. MEPPW	Director Δ7	G.Thomopoulos authorized by:		
	Deputy Minister	A.Karamanlis		
5. NOA	Director	G. Entopoulos	Professor	
6. WSSCA	Gen. Manager	N.Damalitis		
7. CRES	Gen. Manager	S.Kiritis	Professor	
8. B.N.R.O. N.C.S.R.D.	Director	I.Siotis	Dr./Researcher	

7. FULL DATA OF THE PARTICIPATING ORGANIZATION(s)

(Names, addresses, telephone, fax. For business firms and private organizations it is necessary to attach the balance sheets of the last 3 years and any other relevant information on size, exports, R&D experience etc. If no balance sheets are published a financial statement is necessary)

<u>ORGANIZATION</u>	<u>ADDRESS</u>	<u>TELEPHONE</u>	<u>TELEFAX</u>
1. NTUA/DWRHME	Iroon Polytechniou 5 157 00 Zografou, Athens	7772924	7798902
2. STAUT/DHEE	Hydraulics Laboratory STAUT 540 06 Thessaloniki	031-992704 031-992683	031-992697
3. UA/DAP	Ippokratous 33, 106 80 Athens	3610006	3233846
4. STAUT/DE	Heat Flow Laboratory Box 483, 540 06 Thessaloniki	031-991562	031-215800
5. NMS/DAMH	P.O.B. 73502 166 03 Helliniko, Athens	9629316/213	9628952
6. MIET/DWNR	Michalakopoulou 80 101 92 Athens	7776282	7772485
7. MA/GDLRWAS	Chalkokondili 46, 104 32 Athens	5243455	5243828
8. MEPPW/GSPW	Fanarioton 9, 101 78 Athens	6445068	6427520
9. NOA/IMPAE	P.O.B. 20048 Thission 118 10 Athens	3456257	3421019
10. CRES	Frati 6, Koropi	6626460-1	6626462
11. WSSCA	Oropou 156, 111 46 Galatsi	2465360	2463577
12. HALDLG	Omiron 19, 106 72 Athens	3604461	3608889 3602445
13. D* NRC	153 10 Ag. Paraskevi Attikis	6525004	6533341

8. GOALS

8.1 PROJECT OBJECTIVE(s):

Aim of the proposed project is the organisation and upgrading of the country's hydrological, hydrogeological and meteorological information system, by utilising the capabilities offered by the latest techniques and methods of informatics and communications.

The establishment of the National Hydrological and Meteorological Data Bank (NHMDB) will succeed in the collection, organisation and recording of long-time registers kept by the relevant Greek organisations. Thus, a further utilisation of data will become possible. The clear knowledge of parameters and potential of water resources and of the country's meteorological information will contribute decisively to two parallel pursuits: (a) The reliable design and rational management of water resources works including the effective confrontation of extreme phenomena such as drought and water shortage and (b) the operational use of meteorological data for the study of climate and of meteorological phenomena. More specifically, the project will include:

- *Equipment acquisition of the participating organisations along with the suitable hardware.*
- *Development of software appropriate for the operation of the data bank.*
- *Training of personnel in the bank's operation.*
- *Input into the data bank and processing of a very significant proportion (approximately 25%, corresponding to selected water districts of the country) of the available information.*

The research project does not presuppose nor does it call for any administrative reformation or restructuring of the organisations responsible for hydrological data management. On the contrary, the project's philosophy is based upon retaining the existing multi-centered scheme of the cooperating organisations, along with the aim to achieve a better coordination, exchange of information and experience among organisations.

Particular weight will be given to raw hydrological and meteorological data (direct measurements, chart digitisation, etc), but in parallel the project will deal with the validation and processing of data.

8.2 RESULTS AND DELIVERABLES (end of project):

The proposed research project aims at covering the country's need for infrastructure, in material equipment, technical knowledge, software and know-how with the parallel application of specific technical objectives of national interest. Finally, as a synthesis and result at the end of the project, a data bank at a national scale for hydrological, hydrogeological meteorological information will have been organised and set into operation. The characteristics of the data bank will be the following:

1. **Distributed:** *In contrast to the classical centralised system of a central computer with terminals, a decentralised and coordinated network of equivalent workstations is planned. It is estimated that, at the first stage there will be one station for every participating organisation with size and power corresponding to the number and magnitude of data records, as well as the demand for their use. This distributed model respects the autonomy of the record keeping organisations and does not interfere with the existing administrative structure. In addition it includes the option of communication and access to and from every workstation on the network following appropriate authorisation.*

2. **Multilevel:** *There will be multiple levels of file management and data utilisation, extending from raw data to fully processed time series, statistical characteristics and second-level variables and parameters. This multi-levelled structure enables each participating organisation to select the suitable level of analysis, as dictated by engineering judgement related to particular projects and/or applications.*

3. **Extensible:** *The whole system will be capable of expanding both in hardware and software. In addi-*

tion, workstations allocated to more administrative districts, will be capable of joining the network. It will be possible for these new stations to operate on the same level as the existing ones, or they will only serve as data access stations.

Besides the establishment of the material infrastructure necessary for the operation of the proposed data bank, specific tasks will also be undertaken, such as the collection, evaluation and processing of large numbers of hydrological and meteorological data. These data remain to a great extent unexploited in the record archives of the participating organisations and are to be entered to the data bank. Finally, as part of the proposed project and in order to implement the data bank system, the introduction is planned of a significant proportion of the above mentioned preprocessed data. These data will originate from the districts of Attica, Macedonia (Eastern, Central, Western), Thrace and Aegean Islands (for details see Appendix C). At a later follow-up stage, data from the rest of the country will materialise the nation-wide perspective of the data bank.

In summary, the results and deliverables of the project will be the equipping of the participating organisations with the appropriate computational systems, the development of communication software, the setup of a nation-wide network, the development of the software needed for the operation and implementation of the data bank, the training of personnel, as well as the commencement of the bank's implementation with the introduction of a significant proportion of the country's appropriately evaluated hydrological and meteorological data.

9. DETAILED TECHNICAL DESCRIPTION OF THE WORK:

Organization and stages of the project, methodology, actions to be undertaken, milestones, eventual difficulties, deliverables by phase, contribution of the individual implementing organizations of the project teams etc. In the cases of training, information is required concerning the curricula, the teaching methods, the trainers to be used, the foreign cooperations, external experts etc.

9.1. STAGES OF THE PROJECT

1. Initial screening process

During this stage all the participating organisations will contribute toward the formulation of the system's specifications, the development of alternative solutions and the selection of initial paths of action.

To this end, all the record keeping services and organisations will undertake the effort to locate and bring together all available data in order to estimate their magnitude, form, condition, as well as their classification with respect to their reliability. Obviously, many decisions will be based on the results of this phase.

Another phase of this stage will involve the informing of the working groups as to the state of the art in setting up, organising and operating comparable data banks. This experience will be realised through exchange visits of participating experts, as well as related literature searches. An evaluation of the existing supporting software is also planned.

2. Conceptual design of the Bank

During this stage the main operating specifications will be determined. Basic decisions will be made regarding the data base structure as a whole and according to specific data categories. Physical quantities and relational dependencies will be specified and the implementation scheme of the data base and its support network will be decided upon. NTUA will be responsible for surface hydrology, STAUT will undertake the part related to subsurface hydrology and finally, the part concerning meteorology will fall under the responsibility of UA, STAUT/DE, with NMS and NOA consulting.

3. Purchase of technical equipment

At this stage the technical specifications will become formulated and an auction will be adminis-

tered for the purchase of the bank's computational units. This will again be conducted by the scientific personnel of the Universities. A broad picture of the technical characteristics of the equipment and of the system in general is given below:

- Modern, fast workstations and servers of RISC technology, installed at the central offices of each participating organisation. The choice of this category of systems is justified by their advantages, i.e. high performance, easy integration into the proposed distributed scheme (high capacity for network setup), decentralisation of computational power, fault tolerance, incorporation of latest technology, low (continually diminishing) cost of purchase and maintenance, high performance/cost ratio, small space demands, availability of windows and graphics.
- Fast local hard disks of high capacity and standard communication mode (e.g. SCSI) for the main storage. Also, magneto-optical disks, WORM, CD-ROM optical disks for auxiliary data storage and for back-up. In addition, other sophisticated peripherals (e.g. scanners, plotters, laser printers).
- Graphics terminals, X-terminals, PC'S with suitable high-resolution graphics cards.
- Data base implementation will be based on a distributed, decentralised scheme. The system will be supported by a Wide Area Network (WAN) realised by using ordinary dial-up or/and leased lines, and packet switching networks. The final goal is a high throughput and communication speed, as well as the lowest possible cost. To implement the network the purchase of a set of high speed modems incorporating error correction and data compression algorithms (e.g.. MNP, PEP) is required, to further increase communication speed. With respect to the network design, high speed (at least 9600 bps) leased lines will be used wherever small inter-connecting distances are involved (e.g.. within Athens basin); a packet switching network will be used for longer distances. The network connection graph will be fault tolerant and redundant, in such a way that a single node's, or even a group of nodes failure will not affect the whole system. The communication protocol that will be used can be for example TCP/IP (by means of SLIP (Serial Line IP), X25, NFS etc.
- Distribution of the system's magnitude and power according to the volume of locally (per organisation) stored data and the demand for use.
- Personal computer systems for data entry to the local (participating organisation) workstation data bank via its Local Area Network (LAN).

4. Acquisition of supporting software

The necessary technical specifications will be formulated and the acquisition of the supporting software will be realised. A general outline of specifications follows:

- UNIX operating system (normally included in the price of workstations) with the following advantages: multi-user, multitasking, high level of standardisation, compatibility, portability of source code, hardware independence, availability of sophisticated tools, programming aids and technologically advanced applications, high capacity for network formation and communication, minimisation of bugs.
- X-windows graphical environment providing hardware independence, high availability and high capacity for network operation, along with its establishment as the prototype for graphics applications under UNIX.
- Relational data base system with the following advantages: state of the art technology, high quality, potential for applications development (using super high level (4GL) languages), extensibility, portability, compatibility and standardisation (data handling language ANSI SQL),

strong capacity for distributed operation and support for a client-server model with possible optimisation of the data base operation taking into account the cost of communication and local processing, availability of high technology products with low cost, interfaces with high level languages (C, Pascal), data safety, many programming aids and development tools, connection with other systems (e.g. GIS, spreadsheets, etc).

5. Installation of communication network

This stage refers to the installation of a communication network among the individual workstations according to typical communication protocols. The necessary telephone lines will be secured through the Greek Telecommunications Organisation (OTE). The two Engineering Schools (NTUA - STAUT) will be responsible for this stage.

6. Application software development

This stage constitutes the main research work to be conducted by the qualified scientists of the participating Universities. It concerns the development of application software compatible with and as an extension of the substructure software. The application software will satisfy the following general specifications:

- *Development of programmes for raw data entry and processing. The raw data may be available either in magnetic tapes (in this case input should be more direct) or as records of instrument measurements (in this case they are input through a keyboard or read in through a digitizer). Development of suitable data input and validation programmes.*
- *Control of access to the data base and accounting for potential data sales. Software for printouts in publishable form.*
- *Programmes for second-level data processing and analysis (statistical analyses, graphics, etc).*
- *Friendly environment (e.g. windows) for all user categories. Greek language support.*
- *Interface with other systems (HYDATA, HYMOS, G06/HOMS, HYDRA/PC) including systems supported by the National Meteorological Service, as well as general purpose application software (e.g. LOTUS 1-2-3).*
- *Coverage of operational and research needs.*

Concerning the application software, NTUA will be responsible for surface hydrology, STAUT/DHEE will undertake the part related to subsurface hydrology and finally the part concerning meteorology will fall under the responsibility of UA and STAUT/DE with NMS consulting.

7. Development of criteria and methodologies of data evaluation and processing

In parallel with application software development and following the initial screening of stage 1, criteria and methodologies will be developed for a second-level screening, of the data prior to their entry. In this stage the responsible organisations are the NMS, NOA, MEPPW, MA and MIET.

8. Training of personnel

At this stage the personnel of the participating organisations will be trained in the operation and use of the data bank.

9. Collection, classification, evaluation and preprocessing of data

This stage is carried out in parallel with stage 6 of software development and it includes the collection, classification and initial processing of data, as a preparation for input into the bank. A significant part of this stage is the digitisation of the autographic instrument charts.

10. Data input

This stage concerns data input to the bank and will be realised by experienced personnel of the participating organisations or by other personnel hired for this purpose.

11. Data processing

Through the data bank every participating organisation will be able to process reliable raw data according to its experience and the will of its users. It is expected that each organisation will participate in this stage at a different desired level.

12. Drafting of the continuation programme

After the completion of the above mentioned stages, evaluation of the undertaken work will take place. In the sequel, the planning for a next and final phase will be laid out and possible evolutions of the data bank will be considered. The possibility of connecting the bank with a Geographic Information System (GIS) will be discussed, as well as possible extensions to water quality data information.

9.2. MAIN DIFFICULTIES

It is expected that two main difficulties will arise in the process of the project:

- a. *The coexistence and cooperation of many different organisations with varying administrative structures, areas of technical interest and objectives.*
- b. *The existence of huge volumes of data of varying forms, many of which have not been validated and are of a lesser reliability.*

9.3. PROJECT ORGANISATION - CONTRIBUTION OF GROUPS

The management of the above problems necessitates a strict but flexible organisational scheme. Thus, a central kernel programme is planned, which will undertake the general coordination of the work (scientific, technical, administrative and financial) and the purchase of equipment. This programme will be managed by the NTUA, which will be responsible to the General Secretariat of Research and Technology. There will also be branches and subprogrammes with well-defined objectives. The branches will be managed by the kernel programme while the subprogrammes will retain administrative autonomy. In particular the following subprogrammes and branches will be formed

NTUA branch

This branch will be responsible for the selection of equipment, the general design and software development for surface hydrology, also for personnel training. In addition it will participate in the general system analysis, in the development of the general software and of the criteria for the evaluation of surface hydrology data and in the implementation of the MA and MEPPW data bases.

STAUT/DHEE subprogramme

This subprogramme will be responsible for the general analysis of the system, the general design and the software development for subsurface hydrology and hydrogeology. It will also be responsible for the development of criteria for the evaluation of subsurface hydrology data. Finally it will participate in personnel training.

UA/DAP subprogramme

This will be responsible for the development of meteorological software and will participate in the general analysis of the system, the selection of equipment, the general meteorological design, the development of criteria for the evaluation of meteorological data, personnel training and in the implementation of the NMS and NOA data bases.

STAUT/DE subprogramme

This will be responsible for the general meteorological design and will participate in the general system

analysis and the development of software and criteria for the evaluation of meteorological data and in the implementation of the NMS data base.

NOA/IMPAE subprogramme

This will be responsible for the implementation of its own data base and will participate in the general system analysis, in the general meteorological design and the development of criteria for the evaluation of meteorological data.

CRES subprogramme

This will be responsible for the development of the general software and will participate in the general system analysis and the selection of equipment.

NCSR"D" subprogramme

This will participate in the general system analysis, the selection of equipment, the development of general and meteorological software, the development of criteria for the evaluation of meteorological data and in personnel training.

NMS branch

This will be responsible for the implementation of its own data base and the development of criteria and methodologies for the evaluation of meteorological data. In addition, it will participate in the general system analysis, the general design and development of meteorological software and the selection of equipment.

MIET branch

This will be responsible for the development of criteria and methodologies for the evaluation of surface hydrology data. In addition, it will participate in the general system analysis, the general surface hydrology design and the implementation of the MA data base.

MA branch

This will be responsible for the implementation of its own data base and will participate in the general system analysis and the development of criteria for the evaluation of surface and subsurface hydrology data.

MEPPW branch

This will be responsible for the implementation of its own data base and will participate in the general system analysis and the development of criteria for the evaluation of surface hydrology data.

WSSCA branch

This will participate in the general system analysis, the development of general and surface hydrology software and also in the implementation of the MEPPW data base.

The HALDLG group which will not be responsible for a particular branch or subprogramme will participate in the NTUA branch.

Public Power Corporation, Division of Development of Hydroelectric Works (PPC/DDHW) will be following the whole project as an observer. According to its letter 772/30.4.91 PPC is willing to appoint an experienced staff member who could consult and also observe the progress of the programme, so that PPC could participate in a secondary phase where the completion of the data bank is forseen.

In addition, the Division of Hydrogeology of the Institute of Geological and Mining Research (IGMR) will be following the project as an observer in the area of subsurface hydrology and hydrogeology (letter of 31-5-91).

The following table depicts the contributions of individual organisations.

STAGE No	T A S K	KERNEL	NTUA BRANCH	STAUT SUBPRO	UA SUBPRO	DE SUBPRO	NMS BRANCH
1-12	COORDINATION	R					
1	GENERAL ANALYSIS		P	R	P	P	P
1	FOREIGN EXPERTS	R					
2	SURFACE HYDROLOGY GENERAL DESIGN		R				
2	SUBSURFACE HYDROLOGY & HYDROGEOLOGY GENERAL DESIGN			R			
2	GENERAL METEOROLOGICAL DESIGN				P	R	P
1,4	SELECTION OF EQUIPMENT		R		P		P
3,4	PURCHASE OF EQUIPMENT	R					
5	TELECOMMUNICATIONS	R					
6	GENERAL SOFTWARE		P				
6	SURFACE HYDROLOGY SOFTWARE		R				
6	SUBSURFACE HYDROLOGY & HYDROGEOLOGY SOFTWARE			R			
6	METEOROLOGICAL SOFTWARE				R	P	P
7	CRITERIA FOR SURFACE HYDROLOGY		P				
7	CRITERIA FOR SUBSURFACE HYDROLOGY & HYDROGEOLOGY			R			
7	CRITERIA FOR METEOROLOGY				P	P	R
8	TRAINING OF PERSONNEL		R	P	P		
9,10,11	IMPLEMENTATION OF NMS DATA BASE				P	P	R
9,10,11	IMPLEMENTATION OF MA DATA BASE		P				
9,10,11	IMPLEMENTATION OF MEPPW DATA BASE		P				
9,10,11	IMPLEMENTATION OF NOA DATA BASE				P		
12	CONTINUATION PROGRAMME	R					

R (responsible)

P (participant)

STAGE No	T A S K	MIET BRANCH	MA BRANCH	MEPPW BRANCH	NOA SUBPRO	CRES SUBPRO	WSSCA BRANCH	NCSR"D' SUBPRO
1-12	COORDINATION							
1	GENERAL ANALYSIS	P	P	P	P	P	P	P
1	FOREIGN EXPERTS							
2	SURFACE HYDROLOGY GENERAL DESIGN	P						
2	SUBSURFACE HYDROLOGY & HYDROGEOLOGY GENERAL DESIGN							
2	GENERAL METEOROLOGICAL DESIGN				P			
1,4	SELECTION OF EQUIPMENT					P		P
3,4	PURCHASE OF EQUIPMENT							
5	TELECOMMUNICATIONS							
6	GENERAL SOFTWARE					R	P	P
6	SURFACE HYDROLOGY SOFTWARE						P	
6	SUBSURFACE HYDROLOGY & HYDROGEOLOGY SOFTWARE							
6	METEOROLOGICAL SOFTWARE							P
7	CRITERIA FOR SURFACE HYDROLOGY	R	P	P				
7	CRITERIA FOR SUBSURFACE HYDROLOGY & HYDROGEOLOGY		P					
7	CRITERIA FOR METEOROLOGY				P			P
8	TRAINING OF PERSONNEL							P
9,10,11	IMPLEMENTATION OF NMS DATA BASE							
9,10,11	IMPLEMENTATION OF MA DATA BASE	P	R					
9,10,11	IMPLEMENTATION OF MEPPW DATA BASE			R			P	
9,10,11	IMPLEMENTATION OF NOA DATA BASE				R			
12	CONTINUATION PROGRAMME							

R (responsible)

P (participant)

10. LOCATION(s) of the implementation of the project:
The headquarters of the programme is located at the National Technical University of Athens, Zografou Campus, Hydraulics Laboratory. The work done under each branch or subprogramme will be executed at the location of each individual cooperating organisation.
11. DATE TO START THE PROJECT (not before 1 January 1991): *October 1, 1991*
12. DURATION (in months): 27
13. EXPECTED BENEFITS:
 (Analytical presentation of the improvement of the infrastructure, the potential for new projects, processes, services, the cost/benefit ratio, the contribution to the transfer and dissemination of technology, the modernisation of the productive capacity, the creation of human research and technical resources, the establishment of linkages with foreign laboratories and firms)
1. *The establishment of the National Hydrological and Meteorological Data Bank (NHMDB), the incorporation of the available relevant data, its continuous expansion the appropriate treatment and presentation of data in usable form and the dissemination of information and experience constitute an infrastructure work of great national significance.*

2. *The development of a unified network for cooperation and exchange of information and experience among all the organisations, with activities related to various components of the hydrological cycle, will induce the following beneficial effects: their activities will be coordinated, unobstructed technology transfer will take place, productivity will increase and a mitigation will be brought about of the technological lag existing among participants, as well as between the country as a whole and the rest of the European Community.*
3. *The intended collaboration between Universities, research centres, ministries and public organisations should be emphasized. Mutual benefits will follow from this cooperation within the framework of the proposed project.*
4. *This collaboration network will constitute a pilot mechanism that will serve as a prototype for the creation of similar networks.*
5. *The collection, classification and systematic processing, as well as the publication of hydrological and meteorological data and the consequent recovery of unexploited information will secure its lasting protection and its continual renewal and updating.*
6. *The successful completion of the project will contribute to a better organisation of the existing hydrometeorological networks and to the standardisation of their operational procedures.*
7. *The NHMDB will serve short and long term needs of basic and applied hydrological and meteorological research. The bank is a basic prerequisite for the validation and reliable application of complex mathematical models.*
8. *The development, dissemination and application of technology in the areas of water sciences will contribute to a more rational water resources management with a positive impact to the general planning, the evaluation and execution of related public works.*
9. *The NHMDB will constitute a reliable information system for the engineering community of the country as well as for the decision makers. At the same time it will form the basis for the design of reliable development scenarios related to the rational exploitation of water resources and to the formulation of realistic water, energy, agricultural and environmental policies.*
10. *The activation of the human potential existing in the various organisations, which on many occasions is not properly motivated, will result in an increase of productivity.*
11. *The completion of the proposed project, along with its publicity will contribute to the awareness of the public in problems of protection and rational use of the country's water resources.*
12. *The use of the meteorological data will contribute to the study of climate and climatic changes due to human intervention, as well as to the study of air pollution in urban or industrial areas.*
13. *This project will result in the formation of a large body consisting of experienced, and also young scientists, who will have the opportunity to work together towards the development of a modern data base system, and in a future phase towards the applied research and technology.*
14. *The existence of the NHMDB is the prerequisite for the synthesis of a National Climatologic and Hydrological Atlas. These atlases will depict in a concise and readable form the hydrological and climatologic parameters that are necessary in all productive sectors of the country and for the optimal regional and environmental planning and for the formulation of rational anti-pollution strategies.*
15. *Direct benefits will follow from the alignment of the country to the specifications of EEC, WMO, OECD and other international organisations, concerning the establishment of hydrological and*

meteorological data banks and networks. This is in agreement with the international trends for an easier access to reliable hydrological data.

16. The NHMDB and the network of the participating organisations will contribute to the scientific and technical development of the country and to the solution of related critical problems. The upgrading of the Greek research infrastructure will secure a higher degree of participation in technological competitive programmes of the European Community and a higher level of absorption of Community funds. The latter is considered to be of great national interest.

17. The wide publicity and distribution of processed hydrological data within the Greek Engineering Community (either through network extension or CD-ROM disk circulation) will enhance the role of the scientist and engineer in the production process and will improve his working conditions and the quality of his output.

18. Significant revenues will be obtained by the cooperating organisations from the sale of processed hydrological and meteorological information to third parties. This will contribute to the National Economy.

19. The development of the NHMDB and of the network for cooperation and exchange of experience is a necessary work of national infrastructure and an investment of secured techno-economical viability. The adoption of a single static techno-economical coefficient such as a cost/benefit ratio is not at all representative of the multi-dimensional benefits and contribution of the whole project.

14. ADMINISTRATIVE SUPPORT AVAILABLE FOR THE IMPLEMENTATION OF THE PROJECT:

The research committee of NTUA, which is the central administrative institution for the project, is very experienced in the administrative support of research projects. It is offering this kind of service since 1982, and in the last two years (1989, 1990) it has supported research projects with a total budget of more than 1 billion GDR. About 40% of this budget comes from EEC sources, while the rest 60% comes from national (Greek) sources. The operation of the NTUA research committee is governed by Decree ΠΔ 432/1981, together with ΔΕ 4400/Δ/1983. It also follows the NTUA research regulation by-laws.

Similar research committees exist in every university (STAUT, UA), participating in the research project. These committees will support the pertinent parts of the total project.

NCSR"D" has its own Special Accounts Service, which will support the pertinent part of the project.

CRES is an independent research institution, under the surveillance of the MIET/GSRT. It has already undertaken 8 VALOREN projects, 2 Regional Development Projects (ΣΠΑ), 2 VALUE projects, 8 EEC/DG XVII projects and 11 JOULE projects. Moreover CRES has been appointed as FOCAL POINT/OPET by EEC.

All other project participants will be supported administratively by NTUA.

The plan of the administrative structure of this project is described extensively in Appendix B of our proposal. In short, the scheme includes 3 collective management committees (Steering Committee, Executive Committee and Scientific Secretariat) and 4 coordinating working groups (for Surface Hydrology, Subsurface Hydrology - Hydrogeology, Meteorology and Informatics). The 3 collective management committees have already worked together in order to prepare this research proposal. The Scientific Secretariat, consisting temporarily of three members (from NTUA, NMS and MA), worked at NTUA under the surveillance of the Steering Committee. The Executive Committee held many sessions, in order to determine research priorities and resolve specific coordination problems among participating institutions.

15. TASK FORCE (names, titles, affiliations):
 - Project leader
 - Scientific and technical team/training group
 - Main administrative staff

a) *Project Leader*

<i>D. Tolikas, Professor STAUT</i>	<i>Project Leader</i>
<i>D. Koutsoyiannis, Lecturer NTUA</i>	<i>Associate Project Leader</i>
<i>Th. Xanthopoulos, Professor NTUA</i>	<i>Consultant</i>

b) *Scientific and technical team - Main staff*

<u>ORGANISATION</u>	<u>NAME</u>	<u>TITLE</u>
NTUA/DWRHME	<i>Th.Xanthopoulos</i>	<i>Professor</i>
	<i>E.Aftias</i>	<i>Lecturer</i>
	<i>D.Koutsoyiannis</i>	<i>Lecturer</i>
	<i>L.Vamvakeridou-Lyoudia</i>	<i>Lecturer</i>
	<i>I.Nalbadis</i>	<i>Dr. Eng. Hydr., Researcher</i>
	<i>G.Papapanagiotakis</i>	<i>Dr. Eng. Inform., Researcher</i>
	<i>S. Roti</i>	<i>M. Sc. (Hydrology)</i>
	<i>G. Delis</i>	<i>M. Sc. (Informatics)</i>
	<i>K. Tsolakidis</i>	<i>Ph. D. Candidate (Hydrology), M.S.E.</i>
	<i>N. Mamassis</i>	<i>Ph. D. Candidate (Hydrology)</i>
	<i>C. Zoukos</i>	<i>Ph. D. Candidate (Informatics)</i>
	<i>A. Papakostas</i>	<i>Ph. D. Candidate (Informatics)</i>
	<i>Ch. Anyfanti</i>	<i>Civil Engineer</i>
STAUT/DHEE	<i>D. Tolikas</i>	<i>Professor</i>
	<i>P. Latinopoulos</i>	<i>Professor</i>
	<i>I. Mylopoulos</i>	<i>Lecturer</i>
	<i>P. Machairas</i>	<i>Professor</i>
	<i>P. Tolikas</i>	<i>Assoc. Professor</i>
	<i>E. Sidiropoulos</i>	<i>Assoc. Professor</i>
	<i>K. Katsifarakis</i>	<i>Assist. Professor</i>
	<i>M. Vafiadis</i>	<i>Research Associate</i>
	<i>P. Anastassiadis</i>	<i>Civil Engineer</i>
	<i>N. Milopoulos</i>	<i>Civil Engineer</i>
	<i>N. Theodossiou</i>	<i>Civil Engineer</i>
	<i>A. Tsomou</i>	<i>Rural-Surv. Engineer</i>
	<i>S. Ladas</i>	<i>Inf. Mathematician</i>
<i>L. Pantekis</i>	<i>Civil Engineer</i>	
UA/DAP	<i>D. Assimakopoulos</i>	<i>Professor</i>
	<i>G. Kallos</i>	<i>Assist. Professor</i>
STAUT/DE	<i>N. Moussiopoulos</i>	<i>Professor</i>
	<i>P. Pistikopoulos</i>	<i>Dr. Chem., Research Associate</i>
NMS	<i>G. Barbounakis</i>	<i>Director DAMH</i>
	<i>N. Prezerakos</i>	<i>Ph. D. (Met.)</i>
	<i>D. Katsimardos</i>	<i>Meteorologist</i>
	<i>I. Papageorgiou</i>	<i>Ph. D. (Met.)</i>
	<i>E. Anadranistakis</i>	<i>Meteorologist</i>
	<i>Ch. Giannakos</i>	<i>Meteorologist</i>
<i>A. Lalos</i>	<i>Meteorologist</i>	

	Th. Kolidas N. Karatarakis A. Marinaki	Meteorologist Meteorologist Meteorologist
MIET/DWNR	A. Mavrodimou G. Siatos M. Gini P. Tsoumanis S. Tsimpidis	Director Section Head, Geologist Eng. Hydrologist Eng. Hydrologist Civil Engineer
MA/DHG	I. Andreadis M. Kilakou P. Megremis S. Beloukas E. Drossos E. Lianos A. Logothetou G. Kostopoulou S. Nikolopoulou S. Tzima	Director DHG Section Head Section Head M. Sc. (Hydrogeology) Physical Scientist Hydrogeologist Agriculturist Agriculturist Foreman Hydrology Tech. Staff
MEPPW	S. Tzovaridis E. Tiligadas P. Tzoukas	Rural Surv. Engineer Ph. D. (Eng.) Tech. Staff
NOA/IMPAE	M. Petrakis	Research Assoc.
CRES	V. Stergiopoulos S. Kostikoglou K. Perrakis	Ph. D. (Civil Engineer) Research Associate Elec. Eng., M.Sc. (Informatics)
NCSR"D'	I. Bartzis N. Katsaros G. Amanatidis	Research Associate Research Associate Research Associate
WSSCA	M. Stratis K. Konstantinidou Al. Zafirakos M. Kottidi M. Chambakis	Head, EEC Services Civil Engineer, M. Sc. Civil Engineer Economist Electrical/Computer Eng.
HALDLG	D. Likourias L. Pirgiotis	Associate Computer Div. Consultant Chem. Eng.
c)	Main administrative staff	
<u>ORGANISATION</u> NTUA/DWRHME	<u>NAME</u> P. Alamanou M. Grigoriou A. Babali	<u>TITLE</u> Sec. Res. Commission Sec. DWRHME Staff DWRHME
STAUT/DHEE	C. Besta O. Kazatzoglou-Sortikou	Sec. Res. Commission Sec. DHEE

UA/DAP STAUT/DE	P. Fotopoulos A. Demertzi	Sec. Res. Commission Sec. DE
NOA/IMPAE	M. Vernardos	Administrative Secretary
CRES	P. Gavriilidis A. Kokossioulis	Head Finance Services Director Finance Services
NCSR"D"	G. Farmaki	Adm. staff

16. PREVIOUS EXPERIENCE OF THE INSTITUTION(S) INVOLVED IN THE PROJECT (in similar activities):
Not valid for universities and public research centres

17. PREVIOUS EXPERIENCE OF THE PROJECT LEADER AND THE MAIN PERSONNEL TO BE INVOLVED IN THE PROJECT:

Attach detailed curriculum vitae with relevant information

The research team of the division of Water Resources, Hydraulic and Maritime Engineering (DWRHME) of the NTUA is very experienced in conducting research projects, as can be seen from the corresponding curricula vitae (Appendix D). More specifically it should be mentioned that Associate Project Leader D. Koutsyiannis and the staff of the NTUA team have produced a software package (HYDRA/PC) for recording and processing of hydrological data on personal computers. In this package difficulties concerning data handling have been successfully dealt with and algorithms for second-level processing of data have been provided. This package has been used in the research projects concerning the basins of Mornos, Evinos, Iliki, Arachtos and Louros.

The same team of NTUA/DWRHME is currently developing software for a relational data base for the management and processing of hydrometric information, as part of the relevant research project granted by Greek General Secretariat of Research and Technology (GSRT) in the ΠΕΝΕΔ/1989 framework (Project No. 89ΕΔ177).

The research team of the division of Hydraulics and Environmental Engineering of STAUT is experienced in the field of Subsurface Hydrology. It has been also engaged in data base development. More specifically, the members of the team who participated in the applied research project "Environmental impact of the new sewage works on the gulf of Thessalonik" have been engaged in the acquisition, encoding and input to a constructed data base of oceanographic measurements in the Thermaikos gulf. Moreover, the team is collaborating with specialists in informatics and data base construction and management currently working in the private sector.

G. Kallos, head of the UA research team, has participated in many research projects on subjects similar to this proposal. More specifically he has been engaged with the analysis and filing of climatological data in the USA (projects of NASA and NCAR, Colorado) and in Greece.

The head of STAUT/ET research team is experienced in the acquisition and processing of climatological data. More specifically he participates in the international climatological project REKLIP (France, Germany, Switzerland), which aims to construct the climatologic Atlas of Upper Rhein basin.

NMS has established and operates a data base, which includes part of the meteorological data of its own stations. Moreover it has recorded separate time series of rainfall data, solar radiation and soil temperatures. NMS has access to foreign data bases.

MIET has filed and processed hydrometeorological data of the Epirus water district, by means

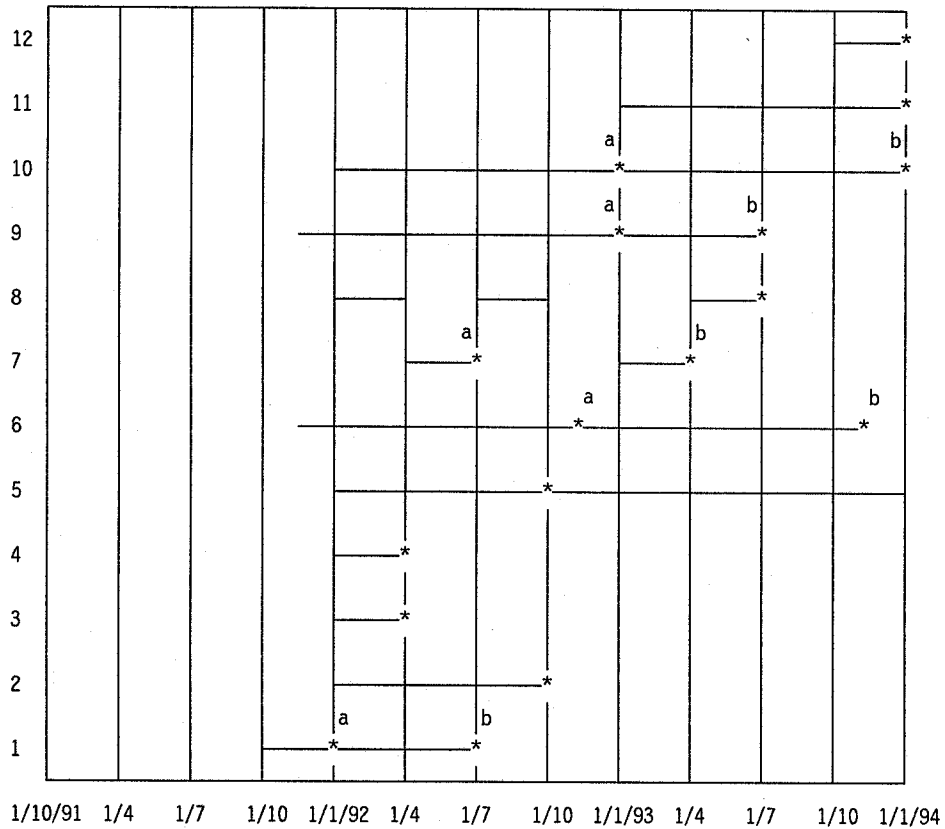
of software developed by Delft Hydraulics Institute of Holland.

The CRES research team is experienced in constructing and operating data base systems and it has already undertaken two projects of this kind, which are funded by EEC (VALOREN 61205 for energy data and information, CRES data base in the framework of a Regional Development Project (ΣΠΑ)). CRES has also developed software for library organization. Moreover it has direct access to EEC data bases.

The NCSR"D" research team is experienced in analysing and evaluating extended series of meteorological data. It is also responsible for the operation and data analysis of the meteorological mast of NCSR"D" (of a height equal to 84 m).

The MA, MEPPW, NOA and WSSCA have developed classical computational methods of data processing to meet the needs of a number of engineering applications.

18. TIME SCHEDULE
 PHASE (related to the technical description)



DELIVERABLES BY PHASE (to be notified on the diagramme by a *):

1. a. Specifications for selection of equipment
 b. Technical report
2. Technical Report
3. Receipt and installation of work stations
4. Receipt and installation of application software
5. Connection of organisations through network
6. a. Intermediate report and programmes
 b. Final report and programmes
7. a. Report of data analysis criteria
 b. Report of data processing criteria
8. Evaluation report on personnel training
9. a. Intermediate report
 b. Final report
10. a. Intermediate report
 b. Final report
11. Final report
12. Final project report and continuation proposal

N.B.: The project leader has to submit quarterly progress reports to the STRIDE Monitoring Committee.

19. FINANCIAL TABLES

19.1 ALLOCATION BY MEASURE AND YEAR:

amounts in KECU (thousands ECU)

year	1991	1992	1993	TOTAL	Remarks
Measure code					
1.1					
1.3					
1.4					
TOTAL SubPr. 1					
2.1					
2.2	-	873	32	905	see 19.2
2.4					
TOTAL SubPr. 2	-	873	32	905	
3.2					
3.3					
3.4					
3.5					
3.6	216	1617	1796	3629	see 19.2
3.7					
3.8					
3.9					
TOTAL SubPr. 3	216	1617	1796	3629	
4.1					
4.2					
4.3					
TOTAL SubPr. 4					
5					
TOTAL	216	2490	1828	4534	

19.2 ALLOCATION BY TYPE OF EXPENDITURE:

amounts in KECU (thousands ECU)

Year/ /Type of expenditure	1991	1992	1993	TOTAL	Remarks
1. Improvement of buildings and other basic infrastructure					
2. Acquisition of S&T equipment	-	689	25	714	
3. Acquisition of knowhow (licences, foreign consultants, etc)	-	25	-	25	
4. Personnel					
4.1 Researchers	105	893	1038	2036	
4.2 Technicians	12	205	205	422	
4.3 Trainers	-	56	28	84	
4.5 Supporting personnel	4	150	147	301	(247+54)
5. Consumable materials	12	65	65	142	(4%*(3582-25))
6. Travel costs					
6.1 Domestic	11	30	30	71	(2%*(3582-25))
6.2 International	40	16	15	71	(2%*(3582-25))
7. Training costs					
8. Other costs (specify)					
8.1 Unforeseen costs	4	36	37	77	(2%*3866)
8.2					
8.3					
9. Overheads (not to exceed 15% of the total budget)	28	325	238	591	(15%*3943)
10. TOTAL	216	2490	1828	4534	

19.3 JUSTIFICATION OF THE BUDGET:

(for each type of expenditure describe the mode of calculation of the amount required)

Detailed description of the volume of work and evaluation of pertinent costs are presented in Appendix C, based on a detailed appraisal of the existing inventory of hydrometeorological data. Specifically, in this appendix, the following two cases are analysed:

- 1) Complete development of the data bank with input and processing of all data from all Greek organisations and services which have installed measuring networks (phases A and B of data bank development).
- 2) Partial development of the data base, including the input and processing of data from selected water districts of the country (phase A of data bank development).

This proposal only deals with phase A of the data bank development. Hence the budget refers to the partial development of the data bank.

The main costs are described extensively in parts of Appendix C (in KECU) and are summarised in paragraph 19.2 of the main proposal as follows

C1	Acquisition of S&T equipment	(code 2 sec.19.2)
C2	Programme coordination	(code 4.1 sec.19.2)
C3	Analysis, general design, foreign experts	(code 3 & 4.1 sec.19.2)
C4	Development of application software	(code 4.1 sec.19.2)
C5	Telecommunications software	(code 2 sec.19.2)
C6	Development of criteria and methodologies of data evaluation and processing - personnel training	(code 4.1 & 4.3 sec.19.2)
C7	Databank implementation & management	(code 4.1,4.2,4.5 sec.19.2)

For all other types of expenditure of sec. 19.2 the following assumptions were made:

Consumable materials	4% of categories 2 & 4 of sec. 19.2
Overseas travel	2% of categories 2 & 4 of sec. 19.2
Domestic travel	2% of categories 2 & 4 of sec. 19.2
Unforeseen costs	2% of categories 2,3,4,5,6
Overhead	15% of the total

As far as all other types of expenditure of sec. 19.2 are concerned, the following assumptions were made:

Foreign consultant	50.000 ECU
Professor*	28.000 ECU
Associate Professor*	24.000 ECU
Assistant Professor*	21.000 ECU
Lecturer*	18.000 ECU
Ph.D.	16.000 ECU
University Graduate	12.000 ECU
Technical Assistant	8.000 ECU
Operator	8.000 ECU

* These values were rounded and updated for 1991 with regard to NTUA's letter of 23/7/1990 to EC DG XIII

The expenses necessary for the completion of the data bank (phases A and B) are hereby presented as a summary of the computations listed in Appendix C (in KECUs):

Rank	Task	Data bank Completion	Phase A (Present Proposal)	Phase B (Future Proposal)
1.	Acquisition of S&T equipment	863	664	199
2.	Programme coordination	572	245	327
3.	Analysis, general design, foreign experts	298	298	0
4.	Development of application software	689	530	159
5.	Telecommunications equipment	100	50	50
6.	Development of criteria and methodologies of data evaluation and processing - personnel training	203	156	47
7.	Databank implementation and management	10.979	1.639	9.340
8.	Consumable materials	547	142	405
9.	Travel	547	142	405
10.	Unforeseen costs	296	77	219
11.	Overhead	2.264	591	1.673
	TOTAL	17.358	4.534	12.824

APPENDIX A

OFFICIAL LETTERS OF CORRESPONDENCE
OF PARTICIPATING ORGANISATIONS (IN GREEK)
AND UNOFFICIAL TRANSLATIONS IN ENGLISH

ΠΡΟΣ : Εθνικό Μετσόβιο
Πολυτεχνείο
Τμήμα Πολιτικών Μηχανικών
Τομέας Υδατικών Πόρων,
Υδραυλικών και Θαλάσ-
σιων Έργων
Ηρώων Πολυτεχνείου 5
157 73 Αθήνα

ΓΕΝΙΚΟ ΕΠΙΤΕΛΕΙΟ ΑΕΡΟΠΟΡΙΑΣ
ΕΘΝΙΚΗ ΜΕΤΕΩΡΟΛΟΓΙΚΗ ΥΠΗΡΕΣΙΑ
ΔΙΕΥΘΥΝΣΗ IV
Τηλέφ. (Εσωτ.) 223
Φ.979/4838
Σ. 1453
Αθήνα 3 Ιουνίου 1991

ΚΟΙΝ : ΔΝΣΕΙΣ I, II, III, IV, V, VI
Επιθεώρηση, ΕΜΚ

ΘΕΜΑ : Δημιουργία Εθνικής Τράπεζας Υδρολογικής
και Μετεωρολογικής Πληροφορίας.

ΣΧΕΤ : Έγγραφο σας 181/15-4-1991

Αναφερόμενοι στο έγγραφο σας του παραπάνω σχετικού
σας γνωρίζουμε τα εξής:

1. η Εθνική Μετεωρολογική Υπηρεσία αποδέχεται κατ'αρχήν
το πρόγραμμα για τη δημιουργία Εθνικής Τράπεζας Υδρολογικής
και Μετεωρολογικής Πληροφορίας όπως αυτό καθορίζεται σε γενι-
κές γραμμές στο προσχέδιο που μας δώσατε στη σύσκεψη της
31-5-91 στο Πολυτεχνείο. Οι απόψεις μας σε ειδικότερα θέματα
για την υλοποίηση του έργου θα συζητηθούν κατά την εξέλιξη
του προγράμματος.

2. Η ΕΜΥ δέχεται να καλύψει το ποσό που της αναλογεί,
που σύμφωνα με το παραπάνω σχετικό ανέρχεται σε 296.400 ECU
κατά τα έτη 1992 και 1993.

3. Εξουσιοδοτείται ο Υποδιοικητής της ΕΜΥ Ταχχος κ. Π.Κυ-
ριάκος για την υπογραφή των τελικών εγγράφων της πρότασης και
τους περαιτέρω χειρισμούς.

Ταξίαρχος Ιπτάμενος Δ.Αρσένης

Διοικητής ΕΜΥ



Αθήνα, 3 Ιουνίου 1991

Φ. Κουλιούρη

Θυρό Γραμματέας ΕΜΥ

A.M.

To
National Technical University of Athens
Division of Water Resources, Hydraulic
and Maritime Engineering
Iroon Polytechniou 5
157 00 Athens

General Air Staff
National Meteorological Science
Division IV
Tel. (ext) 223
979/4383
Σ. 1453

Athens, June 3, 1991

NOTIFICATION: DIVISIONS I, II, III, IV, V, VI
Div. Inspectors, Nat. Meteorological Centre

Subject: Development of a National Data Bank of Hydrological and Meteorological Information

Re: Your letter 181/15-4-1991

Referring to your above referenced letter we inform you on the following:

1. The National Meteorological Service initially approves the research programme for the development of a National Data bank of Hydrological and Meteorological Information in its general form as presented in the draft proposal distributed in our meeting of 31-5-1991 at the NTUA. Our view on specific topics on the development of the programme will be discussed in the process of the programme.
2. The NMS accepts to cover its designated contributing share which, according to your above mentioned letter is totalling 296.400 ECU for 1992 and 1993.
3. Brigadier P. Kiriakos, Deputy Director of the National Meteorological Service is hereby authorized for the signing of the final proposal and further handling of the matter.

Brigadier (FI), D. Arsenis

Director NMS

Αθήνα, 29 Μαΐου, 1991

Α.Π. Δ11/037/ 15832

Γ Ε Ν Ι Κ Η ΔΙΕΥΘΥΝΣΗ ΦΥΣΙΚΟΥ ΠΛΟΥΤΟΥ
Δ/ΝΣΗ ΥΔΑΤ. ΔΥΝΑΜΙΚΟΥ & ΦΥΣΙΚΩΝ ΠΟΡΩΝ

Α. Μαυροβήμου
τηλ. 77.71.589

Μιχαλακοπούλου 80
101 92 ΑΘΗΝΑ

Προς το
Εθνικό Μετσόβιο Πολυτεχνείο
Επιμέλεια Πολιτικών Μηχανικών
Τομέα Υδατικών Πόρων
Ηρώων Πολυτεχνείου 5
157 73 ΑΘΗΝΑ

ΘΕΜΑ: Δημιουργία Τράπεζας Υδρολογικών Πληροφοριών

ΣΧΕΤ: Έγγραφο σας με αριθ. πρωτ. 131/15.4.91

Μετά το σχετικό έγγραφο σας, σας πληροφορούμε τα ακόλουθα:

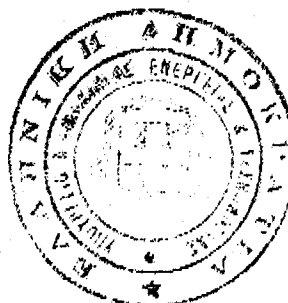
1. Το Υπουργείο Βιομηχανίας, Ενέργειας και Τεχνολογίας αποδέχεται το ερευνητικό πρόγραμμα για την δημιουργία Τράπεζας Υδρολογικών Πληροφοριών της οποίας η ανάγκη δημιουργίας απορρέει από τον Ν.1739/87.
2. Η Διεύθυνση Υδατικού Δυναμικού και Φυσικών Πόρων του Υπουργείου Βιομηχανίας, Ενέργειας και Τεχνολογίας έχει ήδη εντάξει σχετικό έργο στο Π.Δ.Ε. 1991, στην ΣΑΜ 061 με αριθμό 0961701, με την ονομασία "Τράπεζα Υδρολογικών Πληροφοριών" προϋπολογισμού 40 εκατομμυρίων δραχ. και με διάθεση πιστώσεων για το έτος 1991 ποσού 4 εκατομμυρίων δραχ.
3. Η Προϊσταμένη της Διεύθυνσης Υδατικού Δυναμικού και Φυσικών Πόρων του Υπουργείου Βιομηχανίας, Ενέργειας και Τεχνολογίας κ. Α. Μαυροβήμου εξουσιοδοτείται για την υπογραφή των τελικών εγγράφων και τους περαιτέρω χειρισμούς για το όλο θέμα.

Ο Γενικός Γραμματέας

ΕΣΩΤΕΡΙΚΗ ΔΙΑΝΟΜΗ

1. Γραφείο κ. Γενικού Γραμματέα
2. Γραφείο κ. Γενικού Διευθυντού Φυσικού Πλούτου

Γεώργιος Εμμ. Αποστολάκης



ΑΚΡΙΒΕΣ ΑΝΤΙΓΡΑΦΟ
Ο ΠΡΟΪΣΤΑΜΕΝΟΣ ΓΡΑΜΜΑΤΕΙΑΣ

ΕΥΓΑ. ΚΑΣΚΑΜΠΑΝΙΩΤΗΣ

HELLENIC REPUBLIC
MINISTRY OF INDUSTRY, ENERGY AND TECHNOLOGY
GENERAL DIRECTORATE OF NATURAL RESOURCES
WATER AND NATURAL RESOURCES DIRECTORATE

Athens, May 29, 1991

Our Ref: Δ11/Φ37/15832

Information:

A. Mavrodimou
Tel. 777 15 89
Michalakopoulou 80
101 92 Athens

To:

National Technical University of Athens
Dept. of Civil Engineering
Division of Water Resources, Hydraulic
and Maritime Engineering
Iroon Polytechniou 5
157 73 Athens

Subject: Development of a National Hydrological Databank

Re: Your letter, ref. 181/15.4.91

In reply to your letter, we inform you on the following:

1. The Ministry of Industry, Energy and Technology approves the research programme for the development of a National Databank of Hydrological Information. The need for such databank stems from Legal Decree 1739/87.
2. The Water and Natural Resources Directorate of the Ministry of Industry, Energy and Technology has already placed a relevant project in the P.D.E. 1991 and the SAM 061 no. 8961701, titled "Databank of Hydrological Information" with a budget of 40 million GDR and available credit for 1991, 4 million GDR.
3. The Head of the Water and Natural Resources Directorate of the Ministry of Industry, Energy and Technology Mrs A. Mavrodimou is authorized for the signing of final documents and further handing of the above matter.

The Secretary General

George E. Apostolakis

Μ.Μ.

ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΥΠΟΥΡΓΕΙΟ ΓΕΩΡΓΙΑΣ
ΓΕΝΙΚΗ Δ/ΝΣΗ ΕΓΓΕΙΟΒΕΛΤΙΩΤΙΚΩΝ
ΕΡΓΩΝ & ΓΕΩΡΓΙΚΩΝ ΔΙΑΦΘΩΣΕΩΝ

Αθήνα 9 Μαΐου 1991
Αριθμ. Πρωτ. 127715

1) Δ/ΝΣΗ ΣΧΕΔΙΑΣΜΟΥ ΕΓΓΕΙΟΒΕΛΤΙΩΤΙΚΩΝ
ΕΡΓΩΝ ΚΑΙ ΑΞΙΟΠΟΙΗΣΗΣ
ΕΔΑΦΟΥΔΑΤΙΚΩΝ ΠΟΡΩΝ

ΤΜΗΜΑ Ε'

2) Δ/ΝΣΗ ΓΕΩΛΟΓΙΑΣ-ΥΔΡΟΛΟΓΙΑΣ
ΤΜΗΜΑ ΥΔΡΟΛΟΓΙΑΣ

✓ ΠΡΟΣ: Εθνικό Μετσόβιο Πολυτεχνείο
Τμήμα Πολιτικών Μηχανικών
Τομέας Υδατικών Πόρων, Υδραυλικών
και Θαλάσσιων Έργων.

Ηρώων Πολυτεχνείου 5

157.73 - Ζωγράφου

TELEFAX

01 - 7798902

Ταχ. Δ/νση : Χαλκιοκονδύλη 46

Ταχ. Κώδ. : 104.32 - Αθήνα

Πληροφορίες: Μ. Κοιλιάκου - Π. Μεγρέμης

Τηλέφωνο : 5243-455

TELEFAX : 52.43.828

ΘΕΜΑ: Δημιουργία Εθνικής Τράπεζας
Υδρολογικής και Μετεωρολογικής
Πληροφορίας.

Σε απάντηση του 181/15.4.91 εγγράφου σας, σχετικά με το παραπάνω θέμα και για καλλίτερη προώθηση εκ μέρους σας της τελικής πρότασής σας προς την Γ.Γ.Ε.Τ. σας γνωρίζουμε τα εξής:

- 1.- Η Υπηρεσία μας θεωρεί την δημιουργία Εθνικής Τράπεζας Υδρολογικής και Μετεωρολογικής Πληροφορίας, έργο υποδομής απαραίτητο ώστε να γίνει δυνατή η επεξεργασία και αξιοποίηση, για γεωργική και άλλες χρήσεις, των υδρολογικών και μετεωρολογικών δεδομένων που διαθέτουν οι αρμόδιοι φορείς της χώρας μας.
Για τον λόγο αυτό αποδέχεται κατ' αρχήν το σχετικό ερευνητικό έργο, που προωθείται στα πλαίσια του προγράμματος STRIDE της ΕΟΚ, όπως αυτό καθορίζεται σε γενικές γραμμές στο σχέδιο που μας στείλατε με το 139/11.12.81 έγγραφό σας και σε ειδικό για το Υπουργείο μας υποπρόγραμμα που περιγράφεται στο 124559/1.3.91 έγγραφό μας.
- 2.- Αποδεχόμαστε το ύψος της καθοριζόμενης κατ' αρχήν συμμετοχής μας για την εκτέλεση των εργασιών που αφορούν το Υπουργείο μας, όπως αυτό περιλαμβάνεται στο 181/15.4.91 έγγραφό σας (περίπου 250 εκατ. δρχ. κατ' έτος για μία τριετία) και θα καταβάλουμε κάθε δυνατή προσπάθεια για την κάλυ-

φή του, μέσα στα πλαίσια των διατιθεμένων στο Υπουργείο Γεωργίας Πιστώσεων Δ.Ε.

Ήδη προαθούμε την εγγραφή σχετικού ερευνητικού έργου στη ΣΑΜ τρέχοντος έτους με ύψος προϋπολογισμού 80 εκατ. και πιστώσεις για το τρέχον έτος 5 εκατ. δρχ.

Έπειτα από τα παραπάνω σας παρακαλούμε για την ενημέρωσή μας για τις περαιτέρω ενέργειές σας, τις σχετικές με την προώθηση του θέματος.

Ο ΓΕΝΙΚΟΣ ΓΡΑΜΜΑΤΕΑΣ

ΝΙΚ. ΨΥΛΛΑΚΗΣ



ΑΚΡΙΒΕΣ ΑΝΤΙΓΡΑΦΟ
Η ΠΡΟΪΣΤΑΜΕΝΗ
ΥΠΟΥΡΓΕΙΟΥ ΓΡΑΜΜΑΤΕΙΑΣ

HELLENIC REPUBLIC
MINISTRY OF AGRICULTURE
GENERAL DIVISION OF LAND RECLAMATION WORKS AND AGRICULTURAL STRUCTURES
1) DIRECTORATE OF PLANNING LAND RECLAMATION WORKS AND EXPLOITATION
OF SOIL AND WATER RESOURCES
2) DIRECTORATE OF GEOLOGY-HYDROLOGY

Chalkokondili 46
104 32 Athens
Info: M. Koilakou - P. Megremis
Tel. 524 34 55
Fax: 524 38 28

Athens, May 9, 1991
Our. ref: 127715

To:
National Technical University of Athens
Department of Civil Engineering
Division of Water Resources, Hydraulic
and Maritime Engineering
Iroon Polytechniou 5
157 73 Zografou
Fax: 779 89 02

Subject: Development of National Databank of Hydrological and Meteorological Information

In reply to your letter 181/15.4.91 regarding the above mentioned subject and in order to further proceed the the drafting of the final proposal, we inform you on the following:

1. Our Directorate recognizes that the Development of the National Databank of Hydrological and Meteorological Information is indeed a necessary infrastructure project through which, the analysis and utilization of hydrological and meteorological data from various sources will become feasible. For the above reason our Directorate initially approves the relevant research project proposed in the STRIDE framework, as described in your draft letter 139/11.12.81 and also in the special sub-programme descriptive draft 124559/1.3.91 for our Ministry.
2. We accept the initially established level of our Ministry's participation for the implementation of related to our Ministry work, as described in your 181/15.4.91 letter (approximately 25000000 GDR per year, for three years). We will make any effort necessary to meet our requested contribution in the framework of the available to the Ministry of Agriculture State funds.

We are already proceeding to the registration of a relevant research programme to this year's SAM with a budget of 80 million GDR and available credit for 1991, 5 million GDR.

Having stated the above we would be grateful if you could inform us on your further actions regarding the drafting of the final proposal.

The Secretary General

N. Psilakis

Β.Χ.
ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΥΠΟΥΡΓΕΙΟ ΠΕΡ. ΧΩΡ. ΚΑΙ ΔΗΜ. ΕΡΓΩΝ
ΓΕΝΙΚΗ ΓΡΑΜΜΑΤΕΙΑ ΔΗΜΟΣΙΩΝ ΕΡΓΩΝ
Δ/ΝΣΕΙΣ (Δ7) + (Δ11)
ΤΜΗΜΑΤΑ (Δ7δ) + (Δ11α)

Αθήνα, 7 Μαΐου 1991
Αρ. Πρωτ. Δ7/11135

Π ρ ο ς

Ταχ. Δ/ση : Φαναριωτών 9
Ταχ.Κώδικας : 101 78 - ΑΘΗΝΑ
Πληροφορίες : Ε. Τηλιγάδας
Τηλέφωνο : 64.45.068

Το Ε.Μ.Π.
Τμήμα Πολιτικών Μηχανικών
Τομέας Υδατικών Πόρων,
Υδραυλ. & Θαλασσίων Έργων
Ηρώων Πολυτεχνείου 5
157 73 ΖΩΓΡΑΦΟΥ

ΘΕΜΑ: Δημιουργία Εθνικής Τράπεζας Υδρολογικής και Μετεωρολογικής
πληροφορίας.

ΣΧΕΤ.: Το αρ. Πρωτ. 181/15-4-1991 έγγραφό σας.

Απαντώντας στο από 15-4-1991 έγγραφό σας, σας
γνωστοποιούμε τα παρακάτω:

- 1.- Το Υ.ΠΕ.ΧΩ.Δ.Ε./Γ.Γ.Δ.Ε. αποδέχεται το ερευνητικό έργο
στην ουσία του και θα καλύψει το ποσό της ελληνικής
συμμετοχής που του αναλογεί.
- 2.- Το Υπουργείο θα προωθήσει τις απαιτούμενες διαδικασίες
ούτως ώστε να διατεθεί η ανάλογη πίστωση για το τρέχον
έτος και μέχρι πέρας του ερευνητικού έργου.
- 3.- Εξουσιοδοτείται ο Προϊστάμενος της Διεύθυνση
Εγγελοβελτιωτικών Έργων (Δ7) της Γ.Γ.Δ.Ε. του Υ.ΠΕ.ΧΩ.Δ.Ε
για την υπογραφή των τελικών εγγράφων της πρότασης.-

ΕΣΩΤΕΡΙΚΗ ΔΙΑΝΟΜΗ

Ο ΑΝΑΠΛ. ΥΠΟΥΡΓΟΣ

- 1) Τμήμα Δ7/δ
- 2) Δ/ση Δ11/α
- 3) κ. Ε. Τηλιγάδα
- 4) κ. Ζ. Αγγελούση
- 5) Χρον. Αρχείο Δ7/δ

ΑΧ. ΚΑΡΑΜΑΝΛΗΣ

Ακριβές Αντίγραφο
Η Προϊσταμένη Γραμματείας



ΜΠΑΚΑΛΕΣ

HELLENIC REPUBLIC
MINISTRY OF THE ENVIRONMENT, PLANNING AND PUBLIC WORKS
GENERAL DIRECTORATE OF PUBLIC WORKS
DIRECTORATES (Δ7) + (Δ11)
DEPARTMENTS (Δ7δ) + (Δ11α)

Athens, May 7, 1991
Our Ref. Δ7/11135

Fanarioton 9
101 78 Athens
Information: E. Tyligadas
Tel. 644 50 68

To:
National Technical University of Athens
Dept. of Civil Engineering
Division of Water Resources, Hydraulic
and Maritime Engineering
Iroon Polytechniou 5
157 73 Zografou

Subject: Development of National Databank of Hydrological and Meteorological Information

Re: Your 181/15-4-91 letter

In reply to your letter of 15-4-91 we inform you on the following:

1. The General Directorate of Public Works of the Ministry of the Environment, Planning and Public Works approves the relevant research programme in its essence and will cover its share of the Greek participation.
2. The Ministry will push forward the necessary procedures for receiving the relevant funds for the current year and until the end of the research programme.
3. The Head of the Division of Land Reclamation Works (Δ7) of the General Directorate of Public Works, of the M.E.P.P.W. is authorized for signing the final proposal.

The Deputy Minister

A. Karamanlis



ΕΘΝΙΚΟ ΑΣΤΕΡΟΣΚΟΠΕΙΟ ΑΘΗΝΩΝ
ΙΝΣΤΙΤΟΥΤΟ ΜΕΤΕΩΡΟΛΟΓΙΑΣ ΚΑΙ ΦΥΣΙΚΗΣ
ΤΟΥ ΑΤΜΟΣΦΑΙΡΙΚΟΥ ΠΕΡΙΒΑΛΛΟΝΤΟΣ
Τ. Θ 20048
118 10 ΑΘΗΝΑ

Αθήνα 198

Αθήνα 24/4/91

Πρός: Θ. Ξανθόπουλο
Καθηγητή Ε.Μ.Π.

ΘΕΜΑ: Δημιουργία Τράπεζας Υδρολογικής & Μετεωρολογικής Πληροφορίας

Κατόπιν των συσκέψεων με Θέμα την Πρόταση μέσα στο Πλαίσιο του Κοινοτικού Προγράμματος STRIDE για "Δημιουργία Εθνικής Τράπεζας Υδρολογικής και Μετεωρολογικής Πληροφορίας" το Ινστιτούτο Μετεωρολογίας και Φυσικής του Ατμοσφαιρικού Περιβάλλοντος με Διευθυντή τον Καθηγητή Δημοσθένη Ασημακόπουλο αποδέχεται το ερευνητικό έργο όπως υποβλήθηκε στο προσχέδιο της πρότασης και είναι σύμφωνο για την κάλυψη του ποσού συμμετοχής που αντιστοιχεί με την ταυτόχρονη προώθηση των διαδικασιών για την διάθεση της ανάλογης πίστωσης.

Μετα τιμής


Καθ. Δημοσθένης Ασημακόπουλος

Διευθυντής Ι.Μ.Φ.Α.Π.

NATIONAL OBSERVATORY OF ATHENS
INSTITUTE OF METEOROLOGY AND PHYSICS OF THE ATMOSPHERIC ENVIRONMENT
P.O.B. 20048
118 10 ATHENS

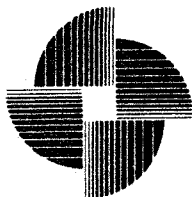
Athens, 24/4/91

To:
Professor Th. Xanthopoulos
National Technical University of Athens

The Institute of Meteorology and Physics of the Atmospheric Environment, Directed by Prof. D. Assimakopoulos, having conferred on the subject of the proposal in the STRIDE framework "Development of a National Databank of Hydrological and Meteorological Information", approves the research programme as presented in the preliminary draft and agrees to cover its corresponding financial contribution with the initiation of the procedures for obtaining the corresponding credit.

Yours faithfully

Prof. D. Assimakopoulos
Director I.M.P.A.E.



Κ.Α.Π.Ε.
Κέντρο Ανανεώσιμων Πηγών Ενέργειας

Φράτι 6, Φούσια, 194 00 Κορωπί
Τηλ. 662 64 60 - 662 64 61
Fax 662 64 62

Προς το Εθνικό Μετσόβιο Πολυτεχνείο
Τμήμα Πολιτικών Μηχανικών
Τομέας Υδατικών Πόρων,
Υδραυλικών και Θαλάσσιων Έργων

Υπόψη Καθ. Θ. Ξανθόπουλου

Κορωπί, 24 Μαΐου 1991

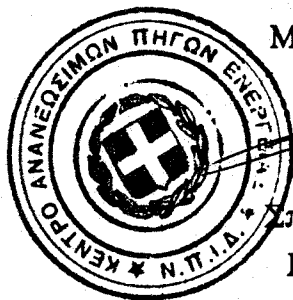
Αρ. Πρωτ.: doc 3993/Σ-Τ

Θέμα: Δημιουργία Εθνικής Τράπεζας Υδρολογικής & Μετεωρολογικής Πληροφορίας

Αγαπητέ κύριε Ξανθόπουλε,

Σε απάντηση των εγγράφων σας σχετικά με το παραπάνω θέμα, έχω την τιμή να σας γνωρίσω τα ακόλουθα:

1. Το ΚΑΠΕ αποδέχεται το ερευνητικό έργο "Δημιουργία Εθνικής Τράπεζας Υδρολογικής & Μετεωρολογικής Πληροφορίας" στην ουσία του.
2. Το αναλογούν στο ΚΑΠΕ συνολικό ποσό είναι 46 εκατ. δρχ. Το Κέντρο θα καλύψει το αντίστοιχο ποσό της ελληνικής συμμετοχής που του αναλογεί.
3. Το ανωτέρω ποσό θα το διαχειρίζεται απ'ευθείας το ΚΑΠΕ, χωρίς καμμία παρακράτηση από το ΕΜΠ το οποίο θα λειτουργεί στην περίπτωση μας ως ενδιάμεσος οργανισμός χρηματοδοτικού transit.
4. Κατά το τρέχον έτος το ΚΑΠΕ δεσμεύεται να προωθήσει τις σχετικές διαδικασίες, ώστε να διατεθεί η ανάλογη πίστωση.
5. Η υπογραφή των τελικών εγγράφων της πρότασης και οι περαιτέρω χειρισμοί θα γίνουν από τον Γενικό Διευθυντή του ΚΑΠΕ.



Με εκτίμηση,

Σπ. Κυρίτσης
Καθηγητής
Γενικός Διευθυντής

C.R.E.S.
CENTRE FOR RENEWABLE ENERGY SOURCES
Fрати 6, Fousia, 194 00 Koropi
Tel. 662 64 60, 662 64 61
Fax 662 64 62

Koropi, May 24, 1991
Our Ref. doc 3993/Σ-T

To:
National Technical University of Athens
Dept. of Civil Engineering
Division of Water Resources, Hydraulic
and Maritime Engineering
Attn. Prof. Th. Xanthopoulos

Subject: Development of National Databank of Hydrological and Meteorological Information

Dear Mr. Xanthopoulos,

In reply to your relevant to the abovementioned subject letters, I take the honor to inform you on the following:

1. The C.R.E.S. approves the research programme "Development of National Databank of Hydrological and Meteorological Information" in its essence.
2. The total amount pertaining to C.R.E.S.'s involvement is 46 million GDR. The Centre will cover its corresponding share of the Greek contribution.
3. The above amount will be directly managed by C.R.E.S. without any deductions from the N.T.U.A. which will act in our case as intermediate transit institution.
4. For the current year, the C.R.E.S. pledges to push forward the procedures for obtaining the pertaining credit.
5. The signing of the final proposal and further handling of the matter will be done by the General Manager of the C.R.E.S.

Yours faithfully

Prof. S. Kiritsis
General Manager

ΕΤΑΙΡΕΙΑ ΥΔΡΕΥΣΗΣ ΚΑΙ ΑΠΟΧΕΤΕΥΣΗΣ ΠΡΩΤΕΥΟΥΣΑΣ

ΟΔΟΣ ΩΡΩΠΟΥ 156 ΓΑΛΑΤΣΙ - ΑΘΗΝΑ 11146

ΤΗΛΕΓΡΑΦΙΚΗ ΔΙΕΥΘΥΝΣΗ: Ε.Υ.Δ.Α.Π. - ΓΑΛΑΤΣΙ

ΤΗΛΕΦΩΝΙΚΟ ΚΕΝΤΡΟ: 25 30 359 (8 ΓΡΑΜΜΕΣ)

Προς

ΤΗΛΕΤΥΠΟ: 21-9353

Εθνικό Μετσόβιο Πολυτεχνείο

Τμήμα Πολιτικών Μηχανικών

Τομέας Υδατικών Πόρων Υδραυλικών

και Θαλασσίων Έργων

Ηρώων Πολυτεχνείου 5 - Ζωγράφου

157 73 ΑΘΗΝΑ

(Αριθμ. Πρωτ. Σανθόπουλου.)

ΣΧΕΤ. ΗΜ.

ΣΧΕΤ. ΥΜ.

ΠΑΡΑΚΑΛΟΥΜΕ

ΝΑ ΑΠΑΝΤΗΣΕΤΕ

Υπηνρ. Προδιαγραφών

και Σχέσεων με ΕΟΚ

Αρμ. : Μ. Στρατής

Τηλ. : 77 53 977

166327

ΑΘΗΝΑ:

29 ΜΑΙ. 1991

Θέμα : Δημιουργία Εθνικής Τράπεζας Υδρολογικής
και Μετεωρολογικής Πληροφορίας.

Σχετ.: α) Εγγραφο σας 181/15.4.91
β) Εγγραφο ΕΥΔΑΠ 165030/1.3.91

Απαντώντας στο έγγραφό σας με αριθμό 181/15.4.91 και σε συνέχεια του υπ' αριθ. 165030/1.3.91 εγγράφου μας σας πληροφορούμε, ότι η ΕΥΔΑΠ αποδέχεται το ερευνητικό έργο στην ουσία του, όπως αυτό έχει περιγραφεί στο προσχέδιο της πρότασης που μας έχετε αποστείλει.

Η ΕΥΔΑΠ δέχεται να καλύψει το ποσοστό συμμετοχής της (30%) προϋπολογισμού περίπου 70 εκατ. δρχ. δηλαδή ποσό περίπου 20 εκατ. δρχ. υπό την προϋπόθεση ότι θα εγκριθεί και υλοποιηθεί η κοινοτική συμμετοχή του υπολοίπου 70%.


Κατά το τρέχον έτος η ΕΥΔΑΠ θα προωθήσει τις σχετικές διαδικασίες, ώστε να διατεθεί η ανάλογη πίστωση.

Η ΕΥΔΑΠ εκπροσωπείται από τον Γενικό Διευθυντή για την Υπογραφή των τελικών εγγράφων της πρότασης και τους περαιτέρω χειρισμούς.

Ο Γενικός Διευθυντής

Νικ. Δαμαλίτης

Ακριβές Αντίγραφο
Η Προϊσταμένη Γεν. Γραμματείας



Αναστ. Πεσματζόγλου

WATER SUPPLY AND SEWAGE CORPORATION OF ATHENS
Oropou 156, Galatsi - 111 46 Athens
Telegraph Address: E.Y.D.A.P. GALATSI
Telephone centre: 253 03 59 (8 lines)
Telex: 219353

DEPARTMENT OF SPECIFICATIONS AND RELATIONS WITH THE E.E.C.
Information: M. Stratis
Tel: 775 39 77

Athens, May 29, 1991

To:
National Technical University of Athens
Dept. of Civil Engineering
Division of Water Resources, Hydraulic
and Maritime Engineering
Iron Polytechniou 5, Zografou
157 73 Athens
Attn. Mr. Xanthopoulos

Subject: Development of National Databank of Hydrological and Meteorological Information

References: a) Your letter 181/15.4.1991
b) Our letter 165030/1.3.91

In response to your letter 181/15.4.91 and in continuation of our letter 165030/1.3.91 we inform you that the W.S.S.C.A. approves the research programme in its essence as it has been described in the preliminary draft proposal you have sent us.

The W.S.S.C.A. agrees to cover its contribution (30%) of a budget of about 70 million GDR, which is about 20 million GDR, with the provision that the Community participation of the remaining 70% will be approved and materialized.

For the current year the W.S.S.C.A. will push forward the procedures for obtaining the pertaining credit.

The W.S.S.C.A. is represented by its General Manager for the signing of the final proposal and for further handling of the matter.

The General Manager

N. Damalitis



ΕΘΝΙΚΟ ΚΕΝΤΡΟ ΕΡΕΥΝΑΣ ΦΥΣΙΚΩΝ ΕΠΙΣΤΗΜΩΝ «ΔΗΜΟΚΡΙΤΟΣ»

153 10 ΑΓ. ΠΑΡΑΣΚΕΥΗ ΑΤΤΙΚΗΣ Τ.Θ. 60228 ΤΗΛ. 6513111-9 6518911-9 ΤΛΧ. 216199 ΑΤΟΜ

ΙΝΣΤΙΤΟΥΤΟ ΠΥΡΗΝΙΚΗΣ ΤΕΧΝΟΛΟΓΙΑΣ & ΑΚΤΙΝΟΠΡΟΣΤΑΣΙΑΣ

Αγία Παρασκευή 15.5.1991
Αριθμ.Πρωτ. 260/1/275

Προς:
Καθ. Θ. Ξανθόπουλο
Γενικό Διευθυντή ΔΕΗ

Θέμα: Δημιουργία Εθνικής Τράπεζας Υδρολογικής και Μετεωρολογικής Πληροφορίας

Σε απάντηση της με αριθμ.πρωτ.181/15.4.1991 επιστολής σας το ΕΚΕΦΕ "Δημόκριτος" εκτιμώντας τη μεγάλη χρησιμότητα του προτεινόμενου έργου αποδέχεται αυτό όπως περιγράφεται στο προσχέδιο πρότασης και έχει συμφωνηθεί στην τελευταία σύσκεψη που έγινε στο ΕΜΠ στις 19.3.1991.

Το ΕΚΕΦΕ "Δημόκριτος" είναι διατεθειμένο να ανταποκριθεί στις προβλεπόμενες οικονομικές απαιτήσεις.

Ο Διευθυντής



[Handwritten Signature]
Ι. ΣΙΩΤΗΣ

NATIONAL CENTRE FOR SCIENTIFIC RESEARCH "DEMOKRITOS"
153 10 AG. PARASKEVI ATTIKIS, P.O.B. 60228
Tel. 651 31 11 - 9, 651 89 11 - 9
Telex: 216199 ATOM
INSTITUTE OF NUCLEAR TECHNOLOGY AND RADIOPROTECTION

Ag. Paraskevi, 15.5.1991
Our. Ref.: 260/1/275

To:
Prof. Th. Xanthopoulos

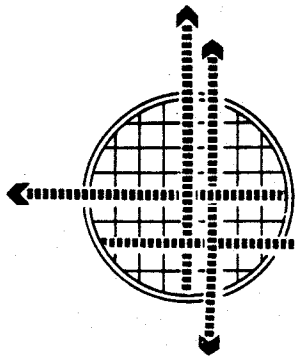
Subject: Development of National Databank of Hydrological and Meteorological Information

In response to your 181/15.4.1991 letter, the National Centre for Scientific Research "Demokritos" having appraised the significant merit of the suggested project, approves its content as described in the preliminary proposal which has been also agreed upon in the last meeting at the N.T.U.A. on 19.3.1991.

The NCSR"D" is willing to respond favorably to the foreseen financial requirements.

The Manager

I. Siotis



**ΕΛΛΗΝΙΚΗ ΕΤΑΙΡΙΑ
ΤΟΠΙΚΗΣ ΑΝΑΠΤΥΞΗΣ
ΚΑΙ ΑΥΤΟΔΙΟΙΚΗΣΗΣ Α.Ε.**

Ε.Ε.Τ.Α.Α.

ΟΜΗΡΟΥ 19 & ΑΚΑΔΗΜΙΑΣ ΤΗΛ. 01 3604461 - 3608889 - ΑΘΗΝΑ - 106 72 - ΤΛΧ. 226572 ΕΤΑΑ GR

Αθήνα, 20 Μαΐου 1991

Αρ.Πρωτ.: 242

Κο. Θ. Ξανθόπουλο
Καθηγητή Ε.Μ.Π.

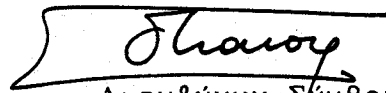
Κύριε Καθηγητά,

Σε απάντηση της από 15/4/91 επιστολής σας, σας γνωρίζουμε ότι η Ελληνική Εταιρία Τοπικής Ανάπτυξης και Αυτοδιοίκησης (Ε.Ε.Τ.Α.Α.) αποδέχεται τη συμμετοχή της στη δημιουργία Εθνικής Τράπεζας Υδρολογικών και Μετεωρολογικών Πληροφοριών.

Το θέμα της οικονομικής συμμετοχής της με το ποσό που της αναλογεί σύμφωνα με τον χρηματοδοτικό πίνακα που έχουν αποδεχθεί όλοι οι εμπλεκόμενοι φορείς, θα έρθει για έγκριση στην επόμενη συνεδρίαση του Δ.Σ. της Ε.Ε.Τ.Α.Α.

Ο κ. Λ. Πυργιώτης, χημικός μηχανικός και ο κ. Δ. Λυκουριάς, μαθηματικός/ηλεκτρολόγος μηχανικός θα συμμετέχουν από πλευράς Ε.Ε.Τ.Α.Α. στην ομάδα εργασίας που θα εξειδικεύσει και θα υλοποιήσει το έργο.

Με εκτίμηση
Πάνος Μαϊστros


Διευθύνων Σύμβουλος
της Ε.Ε.Τ.Α.Α.

Συνημμένα :

Σχετικά βιογραφικά σημειώματα

HELLENIC AGENCY FOR LOCAL DEVELOPMENT AND LOCAL GOVERNMENT
Omirou 10, Athens 106 72
Tel. 01/360 44 61, 360 88 89
Tlx. 226572 ETAA GR

Athens, May 20, 1991
Our Ref. 242

To:
Prof. Th. Xanthopoulos
National Technical University of Athens

Dear Professor,

In response to your letter of 15-4-1991 we inform you that the Hellenic Agency for Local Development and Local Government (H.A.L.D.L.G.) approves of its participation in the development of a National Databank of Hydrological and Meteorological Information.

The subject of H.A.L.D.L.G.'s pertaining financial participation according to the table of financing that all institutions involved have accepted, will be brought for final approval in the next session of the H.A.L.D.L.G. Board of Directors.

Mr. L. Pirgiotis, Chemical Engineer and Mr. D. Likourias, Mathematician/Electrical Engineer will be participating from H.A.L.D.L.G. in the working group that will elaborate and materialize the programme.

Yours faithfully

P. Maistros
Managing Counsel

ΣΕ ΑΝΤΙΚΑΤΑΣΤΑΣΗ ΤΑΥΤΑΡΙΘΜΟΥ

30 ΑΠΡ 1991

ΔΗΜΟΣΙΑ ΕΠΙΧΕΙΡΗΣΗ ΗΛΕΚΤΡΙΣΜΟΥ
ΔΙΕΥΘΥΝΣΗ ΑΝΑΠΤΥΞΗΣ ΥΗ ΕΡΓΩΝ
ΚΟΡΑΗ 4
ΑΘΗΝΑ ΤΚ. 10564

Βαθμός Ασφαλείας :
Βαθμός Προτεραιότητας :

ΗΜΕΡΟΜΗΝΙΑ: № - 772
ΑΡΙΘΜΟΣ :

Πληροφορίες : Μ. Μιμίκου
Τηλέφωνο : 3232750

ΠΡΟΣ :
Καθ. Β. Ξανθόπουλο
ΕΜΠ / ΤΥΠΥΘΕ
Ηρώων Πολυτεχνείου 5
Ζωγράφου ΤΚ. 15773

ΘΕΜΑ : Ερευνητικό έργο "Όημιουργία Τράπεζας Υδρολογικής και Μετεωρολογικής Πληροφορίας" του ΕΜΠ

ΣΧΕΤΙΚΑ: (α) 159/11-2-91/ έγγραφο ΤΥΠΥΘΕ
(β) 173/12-3-91/ έγγραφο ΤΥΠΥΘΕ
(γ) 181/15-4-91/ έγγραφο ΤΥΠΥΘΕ

Αναφερόμενοι στην πρότασή σας που μας κοινοποιήθηκε με τα σχετικά (α), (β) και (γ) για συμμετοχή της ΔΕΗ στο ερευνητικό έργο με τίτλο "Όημιουργία Εθνικής Τράπεζας Υδρολογικής Πληροφορίας" επιθυμούμε να σας κάνουμε γνωστά τα εξής:

1. Η πρότασή σας έτυχε ενδελεχούς μελέτης από τον αρμόδιο Τομέα Υδρολογίας της Επιχείρησης (ΤΣΜΥΣ/ΔΑΥΕ) ο οποίος διατύπωσε απόψεις ως προς τη συμμετοχή της ΔΕΗ, που έγιναν δεκτές από όλη την ιεραρχία.
2. Οι απόψεις μας για τη συμμετοχή της ΔΕΗ σχετίζονται τόσο με τη στενότητα προσωπικού του αρμόδιου Τομέα και την υπερφόρτωσή του με το πολύ μεγάλο πρόγραμμα των μεγάλων και μικρών ΥΗΕ, όσο και με την ουσία της προτάσεώς σας σε σχέση με την κατάσταση των αρχείων των συναρμοδίων φορέων. Ας σημειωθεί επί πλέον, ότι η απαιτούμενη δαπάνη συμμετοχής της ΔΕΗ με αντίστοιχο όφελος τη μηχανοργάνωση απροσδιόριστου μέρους των υδρομετεωρολογικών της αρχείων είναι περίπου ίση με το κόστος πλήρους μηχανοργάνωσης που έχει προγραμματίσει ο ΤΣΜΥΣ και θα αρχίσει σύντομα.
3. Για τους παραπάνω λόγους η ΔΕΗ δεν θα μετάσχει σ' αυτή τη φάση του προγράμματος. Εκτιμώντας όμως τη συνάφεια του αρμόδιου Τομέα Υδρολογίας με το προτεινόμενο ερευνητικό έργο, η ΔΕΗ προτίθεται, εφόσον εγκριθεί το πρόγραμμα, να ορίσει έμπειρο στέλεχος που να μπορεί, εφόσον του ζητηθεί, να δίνει και συμβουλές σε ορισμένα θέματα και παράλληλα να παρακολουθεί την εξέλιξη του προγράμματος, έτσι ώστε όταν αυτό υλοποιηθεί

και κριθεί επωφελής η συμμετοχή της ΔΕΗ, να μπορέσει να συμμετάσχει σε μία δεύτερη φάση που θα προβλέπεται η ολοκλήρωση της Τράπεζας.

4. Ο καθορισμός του προαναφερομένου στελέχους θα γίνει μετά την έγκριση του προγράμματος.

Με εκτίμηση

Ε. Κολώνιας
Δ/ντής ΔΑΥΕ

α 2
/ Δ ΕΥ 1

PUBLIC POWER CORPORATION
DIVISION OF DEVELOPMENT OF HYDROELECTRIC WORKS
Korai 4, 105 64 Athens

Date: April 30, 1991
Number: 772

Information: M. Mimikou
Tel. 3233750

To: Prof. Th. Xanthopoulos
NTUA/DWRHME
Iroon Polytechniou 5
Zografou, 157 73 Athens

Subject: Research Programme: "Development of a National Databank of Hydrological and Meteorological Information" of the NTUA

Re: (a) 159/11-2-91/letter of DWRHME
(b) 173/12-3-91/letter of DWRHME
(c) 181/15-4-91/letter of DWRHME

Referring to your proposal communicated to us through the abovementioned references regarding PPC's participation in the research programme titled "Development of a National Databank of Hydrological Information" we would like to inform you on the following:

1. Your proposal was investigated by the division of Hydrology of the PPC whose suggestions regarding PPC's participation were accepted by the hierarchy.
2. Our views regarding PPC's participation were influenced by considerations such as the limited staff availability in the related Division and also with the essence of your proposal in relation to the condition of the archives of the participating institutions. It should be also noted that the required amount of PPC's financial participation with the expected benefit of computer data entry of undefined amount of hydrometeorological data, is about equal to the computerization costs already planned by our division.
3. For the above reasons PPC will not participate in this phase of the programme. However, having appraised the relativity of the proposed research programme with the activities of the Hydrology Division, if the program is accepted, the PPC is willing to designate an experienced staff member who could consult and also observe the progress of the programme, so that PPC could participate in a secondary phase where the completion of the databank is foreseen.
4. The designation of the abovementioned staff member will be made after the acceptance of the programme.

Yours faithfully

E. Kolonias
Manager DDHW



ΙΝΣΤΙΤΟΥΤΟ ΓΕΩΛΟΓΙΚΩΝ ΚΑΙ ΜΕΤΑΛΛΕΥΤΙΚΩΝ ΕΡΕΥΝΩΝ

ΜΕΣΟΓΕΙΩΝ 70 - ΑΘΗΝΑ Τ.Κ. 115 27 - ΤΗΛ. 77.98.412 - ΤΕΛΕΞ : 216357 IGME GR - FAX : 77.52.211

ΙΓΜΕ
Γραφ. Γεν. Δ/ντού
Πληρ.: Α. Μόρφης
Τηλ.: 7773 994

Αθήνα 31-5-91
Α.Π. 6448
ΠΡΟΣ

Ε.Μ.Π.
Τομέας Υδατικών Πόρων
Ηρώων Πολυτεχνείου 5
Τ.Κ. 157 00
Ζωγράφου

(υπόψη κ. Δ.Κουτσογιάννη)

ΘΕΜΑ: Δημιουργία Εθνικής Τράπεζας Υδρολογικής και
Μετεωρολογικής Πληροφορίας. Πρόγραμμα STRIDE.

Όπως ήδη σας έχουμε ενημερώσει η Δ/ση Υδρογεωλογίας του ΙΓΜΕ, υπεύθυνος φορέας με πολυετή πείρα στην εφαρμοσμένη και βασική υδρογεωλογική έρευνα, έχει ήδη προωθήσει σε ικανοποιητικό σημείο μέσω των προγραμμάτων της, τη δημιουργία Τράπεζας υδρολογικής - υδρογεωλογικής και υδροχημικής πληροφορίας και συνεχίζει τις προσπάθειές της για την ολοκλήρωσή της.

Παράλληλα, ιδιαίτερα την περίοδο αυτή οι οικονομικές υποχρεώσεις του ΙΓΜΕ, τόσο στο Πρόγραμμα Δημοσίων Επενδύσεων, όσο και για τη συμμετοχή στα Κοινοτικά Προγράμματα δημιουργούν χρηματοδοτικά προβλήματα λόγω του περιορισμού των πιστώσεων 1991.

Εν όψει των ανωτέρω δεν είναι δυστυχώς εφικτό, στη φάση αυτή, να μετάσχει το ΙΓΜΕ στο ανωτέρω έργο ενεργά, ιδιαίτερα όπως εμφανίζεται στην τελική του διαμόρφωση.

Είναι δυνατόν όμως να συμμετέχομε ως παρατηρητές, εάν τούτο βεβαίως είναι εφικτό.

Ο ΓΕΝΙΚΟΣ ΔΙΕΥΘΥΝΤΗΣ

Β. ΑΝΔΡΟΝΟΠΟΥΛΟΣ

INSTITUTE OF GEOLOGICAL AND MINING RESEARCH
Mesogion 70, Athens 116 27 - Tel. 7788412 - Telex 216357 IGME GR - Fax 7752211

IGMR
Office of the General Manager
Information: A. Morfis
Tel. 7773994

Athens, 31-5-1991

Our Ref. 6448

To: National Technical University of Athens
Division of Water Resources, Hydraulic
and Maritime Engineering
Iron Polytechniou 5
157 00 Athens

(Attn. Mr. D. Koutsoyiannis)

Subject: Development of a National Bank of Hydrological and Meteorological Information.
STRIDE Programme.

As we have informed you, the Division of Hydrogeology of the IGMR which is the responsible institution with significant experience in applied and basic hydrogeological research has already initiated through its programmes the development at a data bank of hydrological - hydrogeological and hydrochemical information and continues its efforts for its completion. In parallel, especially during this period, the financial obligations of IGMR to the State Public Investment Programme as well as to Community Programmes have become problematic because of credit limitations for 1991.

In the light of the above, it is unfortunately impossible in this phase for IGMR to actively participate as it appears in the suggested proposal.

However, it is possible for us to participate as observers if this is feasible.

The General Manager

A. Andronopoulos

APPENDIX B

ORGANISATIONAL STRUCTURE OF THE PROGRAMME

For the purpose of effectively overcoming difficult problems that may arise in the progress of the project, it is essential to follow a strict but flexible organisational structure. It is therefore projected that a kernel programme - core should exist, which will be responsible for the general coordination of the project (scientific, technical, administrative and financial). This project will be administratively serviced by the National Technical University of Athens. The NTUA will be responsible to the General Secretariat of Research and Technology (GCRT). In addition, a number of branches and subprogrammes will exist with a fully defined task description. Branches will be administratively serviced by the kernel programme while subprogrammes will retain administrative autonomy.

Subprogrammes will be formed by the following organisations: STAUT/DHEE, UA/DAP, STAUT/DE, NOA/IMPAE, CRES and NCSR"D". Branches will be initiated by the following organisations: NTUA/DWRHME, NMS/DAMH, MIET/DWNR, MA/GDLRWAS MEPPW/GSPW and WSSCA.

The following bodies are expected to work for the purpose of directing and coordinating the project:

1. Steering Committee (SC - 3 members) constituted of:
 - D. Tolikas, Professor STAUT, Project Leader
 - D. Koutsoyiannis, Lecturer NTUA, Associate Project Leader
 - Th. Xanthopoulos, Professor NTUA, Consultant

The Project Leader and in the case of his absence the Associate Project Leader is responsible for directing and coordinating the project.

2. Executive Committee (EC - 14 members) composed of a representative of each participating organisation or service. Each representative is also the head of the working group of his organisation or service (13 representatives). EC is presided by the Project Leader or in the case of his absence by the Associate Project Leader. This body will be meeting regularly in frequent time intervals (e.g. once a month) or more often if this is necessary. This body will be dealing with important organisational and administrative subjects emerging in the progress of the project. It will also be transferring the acquired experience to-and-from the participating organisations. The EC will be operating under a set of by-laws drafted and agreed upon by its members during the first month of the commencement of the project. The acceptance of the by-laws should be postulated by all members of the EC.

3. Scientific Secretariat (SS - 3 members) made up of full time specialised scientists and specifically by a hydrologist or meteorologist or hydrogeologist, an informatics engineer and an administration scientist. The SS operates under the kernel programme - core and is located at the NTUA. Its members are selected by the SC. The tasks of the SS are: the drafting of the progress reports of the main program, the collection of progress reports of the branches and subprogrammes, the alignment of work of branches and subprogrammes with the project's timetable and finally the follow up of the flow of funds. SS presents reports to the SC or the EC. Two full time secretaries assist the SS in its tasks.

4. Four Coordinating Working Groups (CWG) covering the following subjects:
 - a) Surface Hydrology (SH) (rainfall - surface runoff)
 - b) Subsurface Hydrology and Hydrogeology (SHH)
 - c) Meteorology (M)
 - d) Informatics (I)

The aim of the CWGs is to coordinate the work done in the branches and subprogrammes in the respective areas.

The members of the above CWGs are:

a) CWG - SH

President: E. Aftias; Members: I. Nalbantis, M. Vafiadis, P. Tsoumanis, V. Stergiopoulos, S. Tzovaridis, K. Konstantinidou, PPC Representative

b) CWG - SHH

President: P. Latinopoulos; Members: P. Tolikas, I. Milopoulos, E. Tiligadas, S. Beloukas, Representative IGMR

c) CWG - M

President: D. Assimakopoulos; Members: N. Moussiopoulos, P. Machairas, G. Kallos, M. Petrakis, G. Amanatidis, J. Papageorgiou

d) CWG - I

Members: L. Vamvakeridou-Lyroudia, E. Sidiropoulos, M. Petrakis, M. Chabakis, K. Per-rakis, D. Likourias.

APPENDIX C

VOLUME OF WORK AND COST ESTIMATION

General

In this Appendix a detailed description of the volume of work and evaluation of pertinent costs are presented, based on a detailed appraisal of the existing inventory of hydrometeorological data. Specifically, in this appendix, the following two cases are analysed:

- 1) Complete development of the data bank with input and processing of all data from all Greek organisations and services which have installed measuring networks (phases A and B of data bank development).
- 2) Partial development of the data base, including the input and processing of data from selected water districts of the country (phase A of data bank development).

This proposal only deals with phase A of the data bank development. Hence the budget refers to the partial development of the data bank.

The main costs are described extensively in parts of Appendix C (in KECU) and are summarised in paragraph 19.2 of the main proposal as follows

C1	Acquisition of S&T equipment	(code 2 sec.19.2 of proposal's body)
C2	Programme coordination	(code 4.1 sec.19.2 of proposal's body)
C3	Analysis, general design, foreign experts	(code 3 & 4.1 sec.19.2 of proposal's body)
C4	Development of application software	(code 4.1 sec.19.2 of proposal's body)
C5	Telecommunications software	(code 2 sec.19.2 of proposal's body)
C6	Development of criteria and methodologies of data evaluation and processing - personnel training	(code 4.1,4.3 sec.19.2 of proposal's body)
C7	Databank implementation and management	(code 4.1,4.2,4.5 sec.19.2 of proposal's body)

For all other types of expenditure of sec. 19.2 the following assumptions were made:

Consumable materials	4% of categories 2 & 4 of sec. 19.2
Overseas travel	2% of categories 2 & 4 of sec. 19.2
Domestic travel	2% of categories 2 & 4 of sec. 19.2
Unforeseen costs	2% of categories 2,3,4,5,6
Overhead	15% of the total

As far as all other types of expenditure of sec. 19.2 are concerned, the following assumptions were made:

Foreign consultant	50.000 ECU
Professor*	28.000 ECU
Associate Professor*	24.000 ECU
Assistant Professor*	21.000 ECU
Lecturer*	18.000 ECU
Ph.D.	16.000 ECU
University Graduate	12.000 ECU
Technical Assistant	8.000 ECU
Operator	8.000 ECU

* These values were rounded and updated for 1991 with regard to NTUA's letter of 23/7/1990 to EC DG XIII

The expenses necessary for the completion of the data bank (phases A and B) are hereby presented as a summary of the computations listed in Appendix C (in KECUs):

Rank	Task	Data bank Completion	Phase A (Present Proposal)	Phase B (Future Proposal)
1.	Acquisition of S&T equipment	863	664	199
2.	Programme coordination	572	245	327
3.	Analysis, general design, foreign experts	298	298	0
4.	Development of application software	689	530	159
5.	Telecommunications equipment	100	50	50
6.	Development of criteria and methodologies of data evaluation and processing - personnel training	203	156	47
7.	Databank implementation and management	10.979	1.639	9.340
8.	Consumable materials	547	142	405
9.	Travel	547	142	405
10.	Unforeseen costs	296	77	219
11.	Overhead	2.264	591	1.673
TOTAL		17.358	4.534	12.824

SECTION C1: ACQUISITION OF EQUIPMENT - SOFTWARE INFRASTRUCTURE

A) For the partial development of the data bank (duration 2,25 years)

EQUIPMENT

- 1) 12 Workstations: Risc technology
Central memory of at least 16MB
Cache memory
Speed: 20MIPS (minimum)
Hard disk 300MB (minimum)
At least 2 serial ports
Network interface (e.g. ethernet)
High resolution monitor
UNIX operating system, TCP/IP, NFS,
X-Windows
Expansion capabilities

Average price: 30.000 ECU
Total: 360.000 ECU
 - 2) 44 Personal computers: Category: PC/XT or PC/AT
Hard disk 20MB (minimum)
Network interface

Average price: 1.500 ECU
Total: 66.000 ECU
 - 3) 8 Optical disk units

Average price: 3.500 ECU
Total: 28.000 ECU
 - 4) 15 High speed modems

Average price: 2.000 ECU
Total: 30.000 ECU
 - 5) Various peripherals
(Plotters, Digitizers, Printers)

Total: 20.000 ECU
- Subtotal 1: 504.000 ECU

SOFTWARE INFRASTRUCTURE

1) Operating systems (UNIX - DOS): Included in the equipment retail price

2) Relational Data Base Management System (RDBMS)
Software programming environment and development tools
(12 copies)

Average price: 10.000 ECU
Total: 120.000 ECU

3) Various (digitizing programmes, hydrological,
statistical and graphics packages)

Total: 40.000 ECU

Subtotal 2: 160.000 ECU

T O T A L: 664.000 ECU

B) For the complete development of the data bank (duration 5,25 years), a 30% increase is estimated:

$$1.30 * 664.000 \text{ ECU} = 863.200 \text{ ECU}$$

SECTION C2: PROGRAMME COORDINATION

A) For the partial development of the data bank (duration 2,25 years)

1. Steering Committee

2 persons (Professor level) and 1 (Lecturer level) with 50% participation

$2 * 2,25 \text{ years} * 28.000 \text{ ECU} * 50\% = 63.000 \text{ ECU}$

$1 * 2,25 \text{ years} * 18.600 \text{ ECU} * 50\% = 20.250 \text{ ECU}$

Subtotal = 83.250 ECU

2. Scientific Committee

3 persons (Ph.D level) and 3 secretaries with a 100% participation

$3 * 2,25 \text{ years} * 16.000 \text{ ECU} = 108.000 \text{ ECU}$

$3 * 2,25 \text{ years} * 8.000 \text{ ECU} = 54.000 \text{ ECU}$

Subtotal = 162.000 ECU

Total = 245.250 ECU

B) For the complete development of the data bank (duration 5,25 years)

$(5,25/2,25) \text{ years} * 245.250 \text{ ECU} = 572.250 \text{ ECU}$

SECTION C3: ANALYSIS - GENERAL DESIGN - FOREIGN EXPERTS

A) For the partial development of the data bank (duration 2,25 years)

1. General analysis of the system (time for completion: 0,75 years)
1 person (Professor level) and 2 persons (Associate Professor level) with a 25% participation, 2 persons (Lecturer level) and 6 persons (Ph.D. level) with a 100% participation
 $1 * 0,75 \text{ years} * 28.000 \text{ ECU} * 25\% = 5.250 \text{ ECU}$
 $2 * 0,75 \text{ years} * 24.000 \text{ ECU} * 25\% = 9.000 \text{ ECU}$
 $2 * 0,75 \text{ years} * 18.000 \text{ ECU} * 100\% = 27.000 \text{ ECU}$
 $6 * 0,75 \text{ years} * 16.000 \text{ ECU} * 100\% = 72.000 \text{ ECU}$
Subtotal = 113.250 ECU
 2. General surface hydrology planning (time for completion 0,75 years)
1 person (Associate Professor level) with a 25% participation, 1 person (Lecturer level), 1 person (Ph.D. level) and 2 Engineers with 100% participation
 $1 * 0,75 \text{ years} * 24.000 \text{ ECU} * 25\% = 4.500 \text{ ECU}$
 $1 * 0,75 \text{ years} * 18.000 \text{ ECU} * 100\% = 13.500 \text{ ECU}$
 $1 * 0,75 \text{ years} * 16.000 \text{ ECU} * 100\% = 12.000 \text{ ECU}$
 $2 * 0,75 \text{ years} * 12.000 \text{ ECU} * 100\% = 18.000 \text{ ECU}$
Subtotal = 48.000 ECU
 3. General meteorological planning (time for completion 0,75 years)
 $1 * 0,75 \text{ years} * 24.000 \text{ ECU} * 25\% = 4.500 \text{ ECU}$
 $1 * 0,75 \text{ years} * 18.000 \text{ ECU} * 100\% = 13.500 \text{ ECU}$
 $1 * 0,75 \text{ years} * 16.000 \text{ ECU} * 100\% = 12.000 \text{ ECU}$
 $2 * 0,75 \text{ years} * 12.000 \text{ ECU} * 100\% = 18.000 \text{ ECU}$
Subtotal = 48.000 ECU
 4. General subsurface hydrology and hydrogeology planning (time for completion 0,75 years)
 $1 * 0,75 \text{ years} * 24.000 \text{ ECU} * 25\% = 4.500 \text{ ECU}$
 $1 * 0,75 \text{ years} * 18.000 \text{ ECU} * 100\% = 13.500 \text{ ECU}$
 $1 * 0,75 \text{ years} * 16.000 \text{ ECU} * 100\% = 12.000 \text{ ECU}$
 $2 * 0,75 \text{ years} * 12.000 \text{ ECU} * 100\% = 18.000 \text{ ECU}$
Subtotal = 48.000 ECU
 5. Selection of equipment - infrastructure software - telecommunications equipment (time for completion 0,25 years)
4 persons (Ph.D. level) for 0,25 years with 100% participation
 $4 * 0,25 * 16.000 \text{ ECU} * 100\% = 16.000 \text{ ECU}$
Subtotal = 16.000 ECU
 6. Foreign expert (time for completion 0,50 years)
1 foreign expert for 0,5 years with 100% participation
 $1 * 0,5 \text{ years} * 50.000 \text{ ECU} * 100\% = 25.000 \text{ ECU}$
Subtotal = 25.000 ECU
- Total = 298.250 ECU

SECTION C4: DEVELOPMENT OF APPLICATION SOFTWARE

A) For the partial development of the data bank (duration 2,25 years)

1. General software development (time for completion 2 years)
1 person (Assistant Professor level) with 25% participation and 1 person (Lecturer level) with 50% participation, 1 person (PH.D. level) and 3 Engineers with 100% participation

1 * 2 years * 21.000 ECU * 25%	=	10.500 ECU
1 * 2 years * 18.000 ECU * 50%	=	18.000 ECU
1 * 2 years * 16.000 ECU * 100%	=	32.000 ECU
3 * 2 years * 12.000 ECU * 100%	=	72.000 ECU
Subtotal	=	132.500 ECU

2. Development of surface hydrology software (time for completion 2 years)
1 person (Associate Professor level) with 25% participation and 1 person (Lecturer level) with 50% participation, 1 person (Ph.D. level) and 3 Engineers with 100% participation

1 * 2 years * 21.000 ECU * 25%	=	10.500 ECU
1 * 2 years * 18.000 ECU * 50%	=	18.000 ECU
1 * 2 years * 16.000 ECU * 100%	=	32.000 ECU
3 * 2 years * 12.000 ECU * 100%	=	72.000 ECU
Subtotal	=	132.500 ECU

3. Development of meteorology software (time for completion 2 years)
1 person (Associate Professor level) with 25% participation and 1 person (Lecturer level) with 50% participation, 1 person (Ph.D. level) and 3 Engineers with 100% participation

1 * 2 years * 21.000 ECU * 25%	=	10.500 ECU
1 * 2 years * 18.000 ECU * 50%	=	18.000 ECU
1 * 2 years * 16.000 ECU * 100%	=	32.000 ECU
3 * 2 years * 12.000 ECU * 100%	=	72.000 ECU
Subtotal	=	132.500 ECU

4. Development of subsurface hydrology and hydrogeology software (time for completion 2 years)
1 person (Associate Professor level) with 25% participation and 1 person (Lecturer level) with 50% participation, 1 person (Ph.D. level) and 3 Engineers with 100% participation

1 * 2 years * 21.000 ECU * 25%	=	10.500 ECU
1 * 2 years * 18.000 ECU * 50%	=	18.000 ECU
1 * 2 years * 16.000 ECU * 100%	=	32.000 ECU
3 * 2 years * 12.000 ECU * 100%	=	72.000 ECU
Subtotal	=	132.500 ECU

Total = 530.000 ECU

B) For the complete development of the data bank (duration 5,25 years)

It is assumed that the additional work load will reach 30% of the value estimated above

$$1,30 * 530.000 \text{ ECU} = 689.000 \text{ ECU}$$

SECTION C5: TELECOMMUNICATIONS EQUIPMENT

- 1) 15 leased lines,
2 packet transfer network connections

A) For the partial development of
the programme, duration 2,25
years

Total 50.000 ECU

B) For the complete development
of the programme, duration
5,25 years

Total 100.000 ECU

SECTION C6: DEVELOPMENT OF CRITERIA AND METHODOLOGIES FOR DATA EVALUATION AND PROCESSING - PERSONNEL TRAINING

A) For the partial development of the data bank (duration 2,25 years)

1. Development of criteria and methodologies for the evaluation of surface hydrology data (time for completion 0,5 years)
1 person (Ph.D. level) with 50% participation and 3 Engineers with 100% participation
 $1 * 0.5 \text{ years} * 16.000 \text{ ECU} * 50\% = 4.000 \text{ ECU}$
 $3 * 0.5 \text{ years} * 12.000 \text{ ECU} * 100\% = 18.000 \text{ ECU}$
Subtotal = 22.000 ECU
 2. Development of criteria and methodologies for the evaluation of subsurface hydrology and hydrogeology data (time for completion 0,5 years)
1 person (Ph.D. level) with 50% participation and 3 Engineers with 100% participation
 $1 * 0.5 \text{ years} * 16.000 \text{ ECU} * 50\% = 4.000 \text{ ECU}$
 $3 * 0.5 \text{ years} * 12.000 \text{ ECU} * 100\% = 18.000 \text{ ECU}$
Subtotal = 22.000 ECU
 3. Development of criteria and methodologies for the evaluation of meteorological data (time for completion 0,5 years)
1 person (Ph.D. level) with 50% participation and 4 Engineers with 100% participation
 $1 * 0.5 \text{ years} * 16.000 \text{ ECU} * 50\% = 4.000 \text{ ECU}$
 $4 * 0.5 \text{ years} * 12.000 \text{ ECU} * 100\% = 24.000 \text{ ECU}$
Subtotal = 28.000 ECU
 4. Personnel training (time for completion 0,5 years)
1 person (Ph.D. level) and 8 Engineers with 100% participation
 $1 * 0,75 \text{ years} * 16.000 \text{ ECU} * 100\% = 12.000 \text{ ECU}$
 $8 * 0,75 \text{ years} * 12.000 \text{ ECU} * 100\% = 72.000 \text{ ECU}$
Subtotal = 84.000 ECU
- Total = 156.000 ECU

B) For the complete development of the data bank (duration 5,25 years)

It is assumed that the additional work load will reach 30% of the value estimated above

$$1,30 * 156.000 = 202.800 \text{ ECU}$$

SECTION C7: DATA BANK IMPLEMENTATION AND MANAGEMENT

1. General

The hydrometeorological information included in the data base consists of every type of hydrological, meteorological and hydrogeological data as well as any information regarding the measuring stations. The first three categories of data exist in the form of time series of hydrometeorological variables e.g. rainfall, temperature and discharge. The fourth category is a series of information about the location of the measuring station, the instruments, the period of operation, the organisation operating the station and a series of other technical information (e.g. the characteristics of a well). The information about the geographical and hydrogeological characteristics of the runoff areas will not be included in the data base. This kind of information might be included in a geographical information system (GIS) in the future.

2. The choice of the archiving time - interval

The measurements of hydrometeorological variable are made in continuous (with autographic instruments) or in discrete time intervals by an observer. In the second case the measurements are made either in regular time intervals (e.g. once a day) or in irregular.

The archiving time interval of the recorded data directly defines the amount of the information to be archived. For the cases with discrete time intervals, this time interval is the same with the archiving one. For the cases with continuous recording it is necessary to digitize the records of the instruments with a preselected time interval. The selection of this time interval has a lower limit depending on the accuracy of the recording instrument. For example, in a weekly paper record the decoding might be done every hour while in a daily paper record the decoding might be done every 5 minutes.

The intermittent nature of certain physical processes (such as rainfall or snowfall) yields the same value (which is zero or constant) for a significant number of days. Some other time series such as sunshine, consist of series of logical values (YES or NO) which indicate the occurrence or not of the event.

The abovementioned records are considered very important in the estimation of the amount of decoding and archiving work of the hydrometeorological observations.

In Table C7.1 almost all the different types of hydrological observations recorded in Greece and the instruments used are shown. The third column shows the kind of recording (continuous, discrete or irregular). For the discrete kind of observations, the time interval is shown in column four while for the continuous records the length of the record is shown. In column five, the proposed time interval is shown according to the scientific needs, the accuracy of the recording instrument and the amount of information. Finally, the measuring units are shown in column six.

3. Estimation of the amount of work required for archiving the hydrometeorological observations.

In Greece the public services and organisations operating hydrometeorological stations are: NMS, PPC, MEPPW, MA, IGMR and NOA. These public services and organisations operate a significant number of stations in different places all over the country, for several decades and record observations of their particular interest, while some observations such as rainfall are being recorded by all.

The largest amount of the recorded information is stored in recording charts or in paper sheets completed by local observers. A smaller amount of information has been processed and archived in a systematic manner. The estimation of the amount of information which will be archived was made for each organisation or service according to the amount of information they possess. Despite the fact that each organisation or service has different ways of storing the necessary information up until now, the estimation was made according to the type of storage medium (paper sheets, charts etc) used during the period of operation of each station, the kind of observations and the time interval of observations.

In this way, the amount of computer records was estimated making the following assumptions:

- a) In a period of one year there are on an average 70 days of rain (for raingauge records)
- b) In a period of one year there are on an average 70 floods (for river stage observations).
- c) In a period of one year there are on an average 30 days with snowfall (for snow observations)
- d) In every flow measuring station there exist 2 staff gauges on an average.

The archiving of all these data includes the decoding (digitizing) of the recording tapes (from autographic instruments), first level evaluation and checking of the data, data entry, printing and comparison to original data. Any other kind of verification (comparing with similar data) will be included in the process of the meteorological data.

For the estimation of the amount of the archiving information the tasks of digitizing, data entry, checking and verification were taken into account. The amount of time required for retrieving the data and preparing a catalogue of stations was also estimated. The estimation was made in man-years for four salary and skill levels: computer operator, technical assistant, University Graduate and Ph.D. For the estimated man-years a multiplication coefficient was employed in order to compute the time required for data processing. This coefficient is different for each organisation or service and depends on the level of processing of the already collected data. Finally, some time is added for the operation and use of the created data base. All these calculations are summarised in Tables C7.2 - C7.7. At the end of each table the total cost in ECUs is given.

For a better understanding of the figures provided in these tables, the following were taken into account:

- a) One man-year has 200 man-days.
- b) Based on the existing experience in one man-day the amount of 2.250 records will be decoded for the raw records (recorded charts) in one man-day, 6.500 records are entered and verified into the computer and 3.500 records are checked and evaluated.
- c) One man-year is needed for the creation of 400 station registers, 6 man-years for finding the raw data in each organisation and 9 man-years for the operation of the data base.
- d) The distribution of the estimated work for the four salary levels was made according to the following table:

TASKS	SKILL LEVEL			
	OPERATOR	TECH. ASSISTANT	UNIV. GRAD.	Ph.D.
DIGITIZING		90%	10%	
DATA ENTRY	100%			
DATA EVALUATION	30%	30%	40%	
STATION REGISTERS	30%	30%	40%	
FINDING OF DATA		50%	50%	
DATA PROCESSING		20%	50%	30%
OPERATION OF DATA BASE				100%

4. Summary of estimations

The following summary of estimations is hereby presented, based on the analytical estimations found in the following pages:

	<u>TOTAL</u>	<u>DISTRIBUTION</u>		
		Researchers (Dr.-B.Sc.)	Technicians	Supporting staff (Computer Operators)
a) For the integrated data base				
Data from PPC	748.612 ECU	458144	195747	94721
Data from NMS	3.646.202 ECU	1550637	1333592	761973
Data from MEPPW	1.329.155 ECU	931502	281920	115733
Data from MA	1.717.411 ECU	1189394	366252	161765
Data from IGMR	1.195.173 ECU	779555	239800	175818
Data from NOA	774.075 ECU	432891	102881	238303
Total	9.410.628 ECU	5342123	2520192	1548313
Additional data 5-year period (5 years/30)	1.568.438 ECU	890873	420342	257223
Total	10.979.066 ECU	6326109	2942390	1800567

(Continued)

	<u>TOTAL</u>	<u>DISTRIBUTION</u>		
		Researchers (Dr.-B.Sc.)	Technicians	Supporting Staff (Computer Operator)
b) For the partial development of the data base				
Data from PPC	0	0	0	0
Data from NMS	550.000 ECU	231000	203500	115500
Data from MEPPW	389.000 ECU	272000	82000	35000
Data from MA	577.000 ECU	398000	121000	58000
Data from IGMR	0	0	0	0
Data from NOA	123.000 ECU	69000	16000	38000
Total	1.639.000 ECU	970000	422500	246500

TABLE C7.1
HYDROMETEOROLOGICAL VARIABLES

VARIABLE	INSTRUMENT	TYPE OF MEASUREMENT	DURATION OF MEASUREMENT	DURATION OF STORING	UNITS
RIVER STAGE	Stage recorder	Continuous	Weekly/daily charts	Hour *	cm
	Staff gauge	Periodic	Day	Day	cm
BOREHOLE STAGE	Stage recorder	Continuous	Weekly charts	Hour *	cm
	Staff gauge	Irregular	≈ 1 measur./month	The existing measur.	cm
RIVER DISCHARGE	Various instr.	Irregular	≈ 2 measur./month	The existing measur.	m ³ /sec
SPRING DISCHARGE	Various instr.	Irregular	≈ 1 measur./month	The existing measur.	m ³ /sec
SEDIMENT DISCHARGE	Various instr.	Irregular	≈ 2 measur./month	The existing measur.	kg/m ³
PUMPING TEST DISCHARGE	Various instr.	Irregular	≈ 3 measur./year	The existing measur.	m ³ /sec
RAINFALL	Rain recorder	Continuous	Weekly/daily charts	Hour *	mm
	Rain gauge	Periodic	Day	Day	mm
	Total.rain gauge	Irregular	≈ 1 measur./month	The existing measur.	mm
SNOWFALL	Snow table Rain snow gauge	Periodic	Day	Day	cm
	Rainsnow gauge r	Continuous	Daily charts	Hour	mm
DEW	Dew recorder	Continuous	Weekly charts	Hour	gr
	Dew gauge	Periodic	Day	Day	gr
HAIL, MIST, FROST, DEW	Observation	Irregular	Day	Day	Y/N **
AIR TEMPERATURE	Thermograph	Continuous	Daily charts	Hour	°C
	Thermometer	Periodic	3 measur./day	3 measur./day	°C
	Min-Max temperat	Periodic	2 measur./day	Day	°C
SOIL TEMPERATURE AT DEPTH: 0, 2, 5, 20, 50, 100 m	Thermometer	Periodic	3 measur./day	3 measur./day	°C
RELATIVE HUMIDITY	Hygrograph	Continuous	Daily/weekly charts	Hour	%
	Hygrometer	Periodic	Per 3 hours	Per 3 hours	%
EVAPORATION	Class-A-Pan	Periodic	Day	Day	mm
	PICHE	Periodic	Day	Day	mm
	Evaporagraph	Continuous	Weekly charts	Hour	mm

TABLE C7.1(Continued)
HYDROMETEOROLOGICAL VARIABLES

VARIABLE	INSTRUMENT	TYPE OF MEASUREMENT	DURATION OF MEASUREMENT	DURATION OF STORING	UNITS
WIND (DIRECTION, SPEED)	Anemograph	Continuous	Monthly charts	Hour	Degrees, m/sec
	Anemometer	Periodic	Day	Day	Degrees, m/sec
SUNSHINE	Heliograph	Continuous	Daily charts	Hour	Y/N **
SOLAR RADIATION	Actinograph	Periodic	Day	Day	cal/cm ²
PRESSURE (M.S.L)	Barograph	Continuous	4-day charts	Hour	mb
	Barometer	Periodic	per 3 hours	per 3 hours	mb
CLOUDINESS	Observation	Periodic	42 measur./day	42 measur./day	Octas
PRESSURE FROM SFC TO TROPOPAUSE IN 50 mb INCREMENT	Radiosonde	Periodic	per 12hr or 8hr	per 12hr or 8hr	mb
TEMPERATURE FROM SFC TO TROPOPAUSE IN 50 mb I INCREMENT	Radiosonde	Periodic	per 12hr or 8hr	per 12hr or 8hr	°C
HUMIDITY FROM SFC TO TROPOPAUSE IN 50 mb INCREMENT	Radiosonde	Periodic	per 12hr or 8hr	per 12hr or 8hr	%
DIRECTION AND SPEED OF WIND FORM FSC TO TROPOPAUSE IN 50 mb INCREMENT	Radiosonde	Periodic	per 12hr or 8hr	per 12hr or 8hr	Degrees, m/sec

* The measurement charts of autographic instruments will be only decoded in the presence of variable variation.

** Logical variable with values YES/NO.

TABLE C7.2
VOLUME OF DATA AND COST EVALUATION OF HYDROMETEOROLOGICAL DATA OF
THE PUBLIC POWER CORPORATION

COST EVALUATION

TYPE OF INSTRUMENT OR OBSERVATION	NUMBER OF INSTRUMENTS	TOTAL NUMBER OF YEARS OF OBSERVATIONS	ANNUAL NUMBER OF DAYS OF MEASUREMENTS	TOTAL NUMBER OF MEASUREMENTS	ENTRIES PER MEASUR.	TOTAL NUMBER OF ENTRIES
A. MEASURING INSTRUMENTS						
RAIN GAUGE	186	3.795	70	265.650	1	265.650
STAFF GAUGE	259	3.691	365	1.347.215	1	1.347.215
SNOW GAUGE	172	3.823	30	114.690	1	
EVAPOROMETER	24	498	365	181.770	1	181.770
THERMOMETER	58	1.255	365	458.075	1	458.075
HYGROMETER	30	592	365	216.080	1	216.080
ANEMOMETER	19	438	365	159.870	2	319.740
SOLAR RADIATION	6	82	365	29.930	1	29.930
TOTALIZING RAIN GAUGE	8	142	30	4.260	1	4.260
BAROMETER	1	13	365	4.745	1	4.745
TOTAL 1	763	14.329		2.782.285		2.942.155
B. AUTOGRAPHIC INSTRUMENTS						
RAIN GAUGE RECORD	76	1.246	70	87.220	24	2.093.280
STAGE RECORDER	80	1.477	70	103.390	24	2.481.360
ANEMOGRAPH	7	106	365	38.690	2*24	1.857.120
HELIOGRAPH	5	69	365	25.185	12	302.220
TOTAL 2	168	2.898		254.485		6.733.980
TOTAL	931	17.227		3.036.770		9.676.135

TABLE C7.2 (Continued)
VOLUME OF DATA AND COST EVALUATION OF HYDROMETEOROLOGICAL DATA OF
THE PUBLIC POWER CORPORATION

COST EVALUATION

TASKS	NUMBER OF ENTRIES	MAN-YEARS				
		TOTAL	COMPUTER OPERATOR	TECHNICIAN	B.Sc.	Ph. D.
DIGITIZING	6.733.980	15.0		13.5	1.5	
DATA ENTRY	9.676.135	7.4	7.4			
EVALUATION AND CONTROL	9.676.135	13.8	4.1	4.1	5.5	
STATION REGISTER	500	1.3	0.4	0.4	0.5	
FINDING OF DATA		6.0		3.0	3.0	
SUBTOTAL		43.5	12.0	21.0	10.5	
DATA PROCESS (WEIGHT FACTOR 0.4 OF SUBTOTAL)		17.4		3.5	8.7	5.2
DATA BASE MANAGEMENT		9.0				9.0
TOTAL (MAN-YEARS)		69.9	12.0	24.5	19.2	14.2
ANNUAL SALARY (ECU)			8000	8000	12000	16000
TOTAL OF SALARIES (ECU)		748612	94721	195747	230661	227483

TABLE C7.3
VOLUME OF DATA AND COST EVALUATION OF HYDROMETEOROLOGICAL DATA OF
THE NATIONAL METEOROLOGICAL SERVICE

VOLUME OF DATA EVALUATION

TYPE OF INSTRUMENT OR OBSERVATION	NUMBER OF INSTRUMENTS	TOTAL NUMBER OF YEARS OF OBSERVATIONS	ANNUAL NUMBER OF DAYS OF MEASUREMENTS	TOTAL NUMBER OF MEASUREMENTS	ENTRIES PER MEASUREMENT	TOTAL NUMBER OF ENTRIES
A. MEASURING INSTRUMENTS						
ANEMOMETER	128	11.554	365	4.217.210	2	8.434.420
THERMOMETER	128	11.554	365	4.217.210	1	4.217.210
BAROMETER	58	5.891	365	2.150.215	1	2.150.215
HYGROMETER	128	11.554	365	4.217.210	1	4.217.210
EVAPOROMETER	31	2.842	365	1.037.330	1	1.037.330
SNOW GAUGE	102	5.929	30	177.870	1	177.870
RAIN GAUGE	128	11.554	70	808.780	1	808.780
TOTAL 1	703	60.878		16.825.825		21.043.035
B. AUTOGRAPHIC INSTRUMENTS						
ANEMOGRAPH	62	1.488	365	543.120	2*24	26.069.760
THERMOGRAPH	66	1.584	365	578.160	24	13.875.840
BAROGRAPH	64	1.536	365	560.640	24	13.455.360
HYGROGRAPH	17	408	365	148.920	24	3.574.080
RAIN GAUGE RECOR.	57	570	70	39.900	24	957.600
STORED DATA OF RAIN GAUGE	57	1.140	70	79.800	24	383.040*
TOTAL 2	323	6.726		1.950.540		58.668.720
TOTAL	1026	67.604		18.776.365		79.711.755

* The already stored data have been taken into account with weight factor 20% in order to include the tasks of control and validation of these data.

TABLE C7.3 (Continued)
VOLUME OF DATA AND COST EVALUATION OF HYDROMETEOROLOGICAL DATA OF
THE NAT. METEOROLOGICAL SERVICE

COST EVALUATION

TASKS	NUMBER OF ENTRIES	MAN-YEARS				
		TOTAL	COMPUTER OPERATOR	TECHNICIAN	B.Sc.	Ph. D.
DIGITIZING	58.668.720	130.4		117.3	13.0	
DATA ENTRY	79.711.755	61.3	61.3			
EVALUATION AND CONTROL	78.945.675	112.8	33.8	33.8	45.1	
STATION REGISTER	128	0.3	0.1	0.1	0.1	
FINDING OF DATA		6.0		3.0	3.0	
SUBTOTAL		310.8	95.2	154.3	61.3	
DATA PROCESS (WEIGHT FACTOR 0.2 OF SUBTOTAL)		62.5		12.4	31.1	18.6
DATA BASE MANAGEMENT		9.0				9.0
TOTAL (MAN-YEARS)		381.9	95.2	166.7	92.4	27.6
ANNUAL SALARY (ECU)			8000	8000	12000	16000
TOTAL OF SALARIES (ECU)		3646202	761973	1333592	1108277	442360

TABLE C7.4
VOLUME OF DATA AND COST EVALUATION OF HYDROMETEOROLOGICAL DATA OF
THE MINISTRY OF ENVIRONMENT, PLANNING AND PUBLIC WORKS

VOLUME OF DATA EVALUATION

TYPE OF INSTRUMENT OR OBSERVATION	NUMBER OF INSTRUMENTS	TOTAL NUMBER OF YEARS OF OBSERVATIONS	ANNUAL NUMBER OF DAYS OF MEASUREMENTS	TOTAL NUMBER OF MEASUREMENTS	ENTRIES PER MEASUREMENT	TOTAL NUMBER OF ENTRIES
A. MEASURING INSTRUMENTS						
RAIN GAUGE	321	9.820	70	687.000	1	687.000
STAFF GAUGE	124*2	5.952	365	2.172.000	1	2.172.000
OTHER INSTRUMENTS		3.894	365	1.421.000	1	1.421.000
TOTAL 1	569	19.666		4.280.000		4.280.000
B. AUTOGRAPHIC INSTRUMENTS						
RAIN GAUGE RECORD	95	2.887	70	202.000	24	4.850.000
STAGE RECORDER	36	764	70	53.500	24	1.284.000
OTHER INSTRUMENTS		147	365	53.600	24	1.288.000
TOTAL 2	131	3.798		309.100		7.422.000
TOTAL	700	23.464		4.589.100		11.702.000

TABLE C7.4 (Continueds)
VOLUME OF DATA AND COST EVALUATION OF HYDROMETEOROLOGICAL DATA OF
THE MINISTRY OF ENVIRONMENT, PLANNING AND PUBLIC WORKS

COST EVALUATION

TASKS	NUMBER OF ENTRIES	MAN-YEARS				
		TOTAL	COMPUTER OPERATOR	TECHNICIAN	B. Sc.	Ph. D.
DIGITIZING	7422000	16.5		14.8	1.6	
DATA ENTRY	11702000	9.0	9.0			
EVALUATION AND CONTROL	11702000	16.7	5.0	5.0	6.7	
STATION REGISTER	600	1.5	0.5	0.5	0.6	
FINDING OF DATA		6.0		3.0	3.0	
SUBTOTAL		49.7	14.5	23.3	11.9	
DATA PROCESS (WEIGHT FACTOR 1.2 OF SUBTOTAL)		59.7		11.9	29.8	17.9
DATA BASE MANAGEMENT		9.0				9.0
TOTAL (MAN-YEARS)		118.4	14.5	35.2	41.8	26.9
ANNUAL SALARY (ECU)			8000	8000	12000	16000
TOTAL OF SALARIES (ECU)		1329155	115733	281920	501161	430341

TABLE C7.5
VOLUME OF DATA AND COST EVALUATION OF HYDROMETEOROLOGICAL DATA OF
THE MINISTRY OF AGRICULTURE

VOLUME OF DATA EVALUATION

TYPE OF INSTRUMENT OR OBSERVATION	NUMBER OF INSTRUMENTS	TOTAL NUMBER OF YEARS OF OBSERVATIONS	ANNUAL NUMBER OF DAYS OF MEASUREMENTS	TOTAL NUMBER OF MEASUREMENTS	ENTRIES PER MEASUREMENT	TOTAL NUMBER OF ENTRIES
A. MEASURING INSTRUMENTS						
RAIN GAUGE		6.020	70	421.000	1	421.000
THERMOMETER		2.343	365	855.000	2	1.710.000
EVAPOROMETER		1.431	365	522.000	1	522.000
ANEMOMETER		332	365	121.000	2	242.000
SNOW GAUGE		362	30	11.000	1	11.000
HYGROMETER		550	365	200.750	1	201.000
PIEZOMETER				136.000	2	272.000
STAFF GAUGE	312*2	3.774	365	1.378.000	1	2.756.000
RIVER DISCHARGE	659			35.000	5	175.000
BOREHOLE STAFF	350	5.250	12	63.000	1	63.000
TOTAL 1	1633	20.062		3.742.750		6.373.000
B. AUTOGRAPHIC INSTRUMENTS						
RAIN GAUGE RECOR.		1.980	70	138.600	24	3.326.000
THERMOHYGROGRAPH		126	365	45.990	2*24	2.208.000
RAINSNOW GAUGE RECORDER		156	30	4.680	24	112.000
HELIOGRAPH		204	365	74.460	12	893.000
ANEMOGRAPH		54	365	19.710	2*24	946.000
STAGE RECORDER		1.109	70	77.630	24	1.863.000
STAGE RECORDER WITH PIEZOMETER		400	10	4.000	24	96.000
TOTAL 2		4.029		365.070		9.444.000
TOTAL	1633	24.091		4.107.820		15.817.000

TABLE C7.5 (Continued)
VOLUME OF DATA AND COST EVALUATION OF HYDROMETEOROLOGICAL DATA OF
THE MINISTRY OF AGRICULTURE

COST EVALUATION

TASKS	NUMBER OF ENTRIES	MAN-YEARS				
		TOTAL	COMPUTER OPERATOR	TECHNICIAN	B.Sc.	Ph. D.
DIGITIZING	9444000	21.0		18.9	2.1	
DATA ENTRY	15817000	12.2	12.2			
EVALUATION AND CONTROL	15817000	22.6	6.8	6.8	9.0	
STATION REGISTER	128	0.3	0.1	0.1	0.1	
GEOLOGIC. SECTIONS	1700	4.3	1.3	1.3	1.7	
FINDING OF DATA		6.0		3.0	3.0	
SUBTOTAL		66.0	20.2	29.9	15.8	
DATA PROCESS (WEIGHT FACTOR 1.2 OF SUBTOTAL)		79.2		15.8	39.6	23.8
DATA BASE MANA- GEMENT		9.0				9.0
TOTAL (MAN-YEARS)		154.2	20.2	45.8	55.4	32.8
ANNUAL SALARY (ECU)			8000	8000	12000	16000
TOTAL OF SALARIES (ECU)		1717411	161765	366252	665238	524156

TABLE C7.6
VOLUME OF DATA AND COST EVALUATION OF HYDROMETEOROLOGICAL DATA OF
THE INSTITUTE OF GEOLOGICAL AND MINING RESEARCH

VOLUME OF DATA EVALUATION

TYPE OF INSTRUMENT OR OBSERVATION	NUMBER OF INSTRUMENTS	TOTAL NUMBER OF YEARS OF OBSERVATIONS	ANNUAL NUMBER OF DAYS OF MEASUREMENTS	TOTAL NUMBER OF MEASUREMENTS	ENTRIES PER MEASUREMENT	TOTAL NUMBER OF ENTRIES
A. MEASURING INSTRUMENTS						
BOREHOLE STAGE	10.000	100.000	4	400.000	1	400.000
OTHER INSTRUMENTS	90.000	900.000	4	3.600.000	1	3.600.000
TOTAL 1	100.000	1.000.000		4.000.000		4.000.000
B. AUTOGRAPHIC INSTRUMENTS						
STAGE RECORDER	500	5.000	365	1.825.000	1	1.825.000
TOTAL 2	500	5.000		1.825.000		1.825.000
TOTAL	100.500	1.005.000		5.825.000		5.825.000

COST EVALUATION

TASKS	NUMBER OF ENTRIES	MAN-YEARS				
		TOTAL	COMPUTER OPERATOR	TECHNICIAN	B.Sc.	Ph. D.
DIGITIZING	1825000	4.1		3.7	0.4	
DATA ENTRY	5825000	4.5	4.5			
EVALUATION AND CONTROL	5825000	8.3	2.5	2.5	3.3	
STATION REGISTER						
GEOLOG. SECTIONS	20000	50.0	15.0	15.0	20.0	
FINDING OF DATA		6.0		3.0	3.0	
SUBTOTAL		72.9	22.0	24.1	26.7	
DATA PROCESS (WEIGHT FACTOR 0.4 OF SUBTOTAL)		29.1		5.8	14.6	8.7
DATA BASE MANAGEMENT		9.0				9.0
TOTAL (MAN-YEARS)		111.0	22.0	30.0	41.3	17.7
ANNUAL SALARY (ECU)			8000	8000	12000	16000
TOTAL OF SALARIES (ECU)		1195173	175818	239800	495668	283887

TABLE C7.7
VOLUME OF DATA AND COST EVALUATION OF HYDROMETEOROLOGICAL DATA OF
THE NATIONAL OBSERVATORY OF ATHENS

VOLUME OF DATA EVALUATION

TYPE OF INSTRUMENT OR OBSERVATION	NUMBER OF INSTRUMENTS	TOTAL NUMBER OF YEARS OF OBSERVATIONS	ANNUAL NUMBER OF DAYS OF MEASUREMENTS	TOTAL NUMBER OF MEASUREMENTS	ENTRIES PER MEASUREMENT	TOTAL NUMBER OF ENTRIES
A. MEASURING INSTRUMENTS						
RAIN GAUGE				20.000	1	2.000
THERMOMETER	31	555	365	4.860.000	1	860.000
ANEMOMETER	31	555	365	4.860.000	2	9.720.000
HYGROMETER	31	555	365	4.860.000	1	4.860.000
BAROMETER	31	555	365	4.860.000	1	4.860.000
HELIOGRAPH				20.000	1	20.000
CLOUDINESS				10.000	1	10.000
ACTINOMETER				50.000	1	500.000
TOTAL				19.540.000		24.850.000

COST EVALUATION

TASKS	NUMBER OF ENTRIES	MAN-YEARS				
		TOTAL	COMPUTER OPERATOR	TECHNICIAN	B.Sc.	Ph. D.
DIGITIZING	0	0.0		0.0	0.0	
DATA ENTRY	24850000	19.1	19.1			
EVALUATION AND CONTROL	24850000	35.5	10.7	10.7	14.2	
STATION REGISTER	30	0.1	0.0	0.0	0.0	
FINDING OF DATA		0.0		0.0	0.0	
SUBTOTAL		54.7	29.8	10.7	14.2	
DATA PROCESS (WEIGHT FACTOR 0.4 OF SUBTOTAL)		10.9		2.2	5.5	3.3
DATA BASE MANAGEMENT		9.0				9.0
TOTAL (MAN-YEARS)		74.6	29.8	12.9	19.7	12.3
ANNUAL SALARY (ECU)			8000	8000	12000	16000
TOTAL OF SALARIES (ECU)		774075	238303	102881	236388	196503

TABLE C7.8
DISTRIBUTION OF HYDROMETEOROLOGICAL DATA PER WATER DISTRICT

SERVICE: NATIONAL METEOROLOGICAL SERVICE (NMS)

DISTRICT	MEASURING INSTRUMENT ENTRIES	AUTOGRAPHIC INSTRUMENT ENTRIES	TOTAL ENTRIES	COST (ECU)	PERCENTAGE OF THE TOTAL
ATTICA (06)	1.631.467	5.886.720	7.518.187	423.129	9.8%
CEN. MACEDONIA (10)	426.870	2.312.640	2.739.510	169.982	3.9%
EAST MACEDONIA (11)	1.143.180	1.471.680	2.614.860	141.180	3.3%
THRACE (12)	1.799.523	1.681.920	3.481.443	174.086	4.0%
AEGEAN ISLANDS (14)	6.396.881	9.460.800	15.857.681	785.839	18.2%
TOTAL	11.397.921	20.813.760	32.211.681	1.694.216	39.2%

SERVICE: MINISTRY OF THE ENVIRONMENT, PLANNING AND PUBLIC WORKS (MEPPW)

DISTRICT	MEASURING INSTRUMENT ENTRIES	AUTOGRAPHIC INSTRUMENT ENTRIES	TOTAL ENTRIES	COST (ECU)	PERCENTAGE OF THE TOTAL
WEST STEREA HELLAS	675.190	549.360	1.224.550	116.368	8.7%
ATTICA (06)	35.000	240.000	275.000	50.445	3.4%
EAST STEREA HELLAS	252.000	700.500	952.500	109.885	7.5%
WEST MACEDONIA (9)	261.875	540.960	802.835	93.763	7.0%
CEN. MACEDONIA (10)	385.230	748.000	1.133.230	121.843	9.2%
EAST MACEDONIA (11)	266.000	205.000	471.000	58.938	4.4%
THRACE (12)	468.560	561.120	1.029.680	106.726	8.0%
AEGEAN ISLANDS(14)	2.450	-	2.450	23.700	1.8%
TOTAL	2.346.305	3.544.940	5.891.245	614.849	50%

SERVICE: MINISTRY OF AGRICULTURE (MA)

DISTRICT	MEASURING INSTRUMENT ENTRIES	AUTOGRAPHIC INSTRUMENT ENTRIES	TOTAL ENTRIES	COST (ECU)	PERCENTAGE OF THE TOTAL
WEST STEREA HELLAS	31.325	63.840	95.165	36.686	2.1%
ATTICA (06)	75.800	99.120	174.920	42.704	2.5%
EAST STEREA HELLAS	16.860	-	16.860	29.266	1.7%
WEST MACEDONIA (9)	486.520	1.351.680	1.838.200	194.939	11.3%
CEN. MACEDONIA (10)	513.655	586.080	1.099.735	116.515	6.8%
EAST MACEDONIA (11)	306.760	216.720	523.480	67.117	3.9%
THRACE (12)	353.48	367.920	721.400	85.339	5.0%
AEGEAN ISLANDS (14)	125.285	292.200	417.485	65.444	3.8%
TOTAL	1.909.685	2.977.560	4.887.245	638.010	37.1%

TABLE C7.8 (Continued)

SERVICE: NATIONAL OBSERVATORY OF ATHENS (NOA)

DISTRICT	MEASURING INSTRUMENT ENTRIES	AUTOGRAPHIC INSTRUMENT ENTRIES	TOTAL ENTRIES	COST (ECU)	PERCENTAGE OF THE TOTAL
ATTICA (06)	4.850.000	-	4.850.000	122.826	15.9%
TOTAL	4.850.000	-	4.850.000	122.826	15.9%

TABLE C7.9
COST ANALYSIS OF DATA BASE DEVELOPMENT

SERVICE/DISTRICT	NMS	MEPPW	MA	NOA
ATTICA (06)	100%	100%	100%	100%
WEST MACEDONIA (9)		100%	100%	
CEN. MACEDONIA (10)	75%	100%	100%	
EAST MACEDONIA (11)		100%	100%	
THRACE (12)		100%	100%	
AEGEAN ISLANDS (14)		100%	100%	
TOTAL (ECU)	550	389	577	123

APPENDIX D

CURRICULA VITAE OF PARTICIPATING SCIENTISTS

CURRICULUM VITAE

1. **Name** Themistoklis Xanthopoulos

2. **Date of birth** 1936 **Place of birth** Athens

3. **Home address:**

Street name and number	8, Kefallinias str.		
Postal Code	145 63	City	Kifisia, Athens
Country	Greece	Phone	8082483/8084773

4. **Organization of primary employment: Title**
National Technical University of Athens

Street name and number	5, Iroon Polytechniou str.		
Postal Code	157 00	City	Zografou, Athens
Phone	7772924	Telex	
		Country	Greece
		FAX	7798902

5. **Title of primary employment:**
Professor, Dept. of Civil Engineering

6. **Titles of first degrees, organization and year:**
Dipl. Civil Engineering, National Technical University of Athens

7. **Postgraduate titles, organizations, year and scientific area:**
Dipl. Hydraulic Engineer E.N.S.E.E.I.H Toulouse Polytechnic, France 1962
3 Postgraduate Degrees Toulouse Polytechnic, France 1963
Ph.D in Engineering, Toulouse Polytechnic, France 1964

8. **Foreign languages:** French, English

9. **Fields of scientific and professional activities:**
Professor, National Technical University of Athens
Visiting Professor, University of ORSAY, France
Consulting Engineer, European Economic Community
General Manager, Public Power Corporation of Greece
Hydrology, Water Resources Management, Hydraulic Works

10. **Published work (attach complete list):**

Number of publications in journals	50	
Number of publications in conference proceedings		68
Number of books, dissertations, etc.	9	

Other published work
Number of patents

11. **Related professional experience:**
Contribution in research projects
Scientific Responsible in 18 research programmes
Consulting Engineer, European Economic Community
Scientific Responsible in Research & Development Programmes and Supervisions in Greece and Overseas

Other professional work
Underwriter/Scientific consultant in 35 projects for the Greek State

Date: 13/5/91

CURRICULUM VITAE

1. **Name** Manolis Aftias
2. **Date of birth** 1942 **Place of birth** Samos
3. **Home address:**
Street name and number Pindou 56
Postal Code **City** Vrilissia, Athens
Country Greece **Phone** 8041820
4. **Organization of primary employment: Title**
National Technical University of Athens

Street name and number Iroon Polytechniou 5
Postal Code 157 00 **City** Zografou, Athens **Country** Greece
Phone 7772924 **Telex** **FAX** 7798902
5. **Title of primary employment:**
Lecturer
6. **Titles of first degrees, organization and year:**
Dipl. Civil Engineering, N.T.U.A., 1966
7. **Postgraduate titles, organizations, year and scientific area:**
DEA Mecanique de Fluides, 1968
Ph. D. Toulouse Polytechnic, 1969
8. **Foreign languages:** English, French, German
9. **Fields of scientific and professional activities:**
Hydraulic works
Hydrology
10. **Published work (attach complete list):**

Number of publications in journals	2
Number of publications in conference proceedings	-
Number of books, dissertations, etc.	1
Other published work	-
Number of patents	-
11. **Related professional experience:**
Contribution in research projects
Irrigation studies (\approx 150.000 hect ?)
Drinking water and sewage network studies
Sewage network research projects
Mornos research project

Other professional work

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Demetris Koutsoyiannis
2. **Date of birth** _____ **Place of birth** Mesounta, Arta
3. **Home address:**

Street name and number	70, Venizelou str.		
Postal Code	185 34	City	Piraeus
Country	Greece	Phone	4136817
4. **Organization of primary employment: Title**
National Technical University of Athens

Street name and number	Iroon Polytechniou 5		
Postal Code	157 00	City	Zografou, Athens
Phone	7772924	Telex	
		Country	Greece
		FAX	7798902
5. **Title of primary employment:**
Lecturer
6. **Titles of first degrees, organization and year:**
Dipl. Civil Engineering, N.T.U.A., 1978
7. **Postgraduate titles, organizations, year and scientific area:**
Ph. D., Dept. of Civil Engineering, N.T.U.A., 1988
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Hydrology, Water Resources Management, Hydraulic Works, Software Applications
10. **Published work (attach complete list):**

Number of publications in journals	5
Number of publications in conference proceedings	6
Number of books, dissertations, etc.	2
Other published work	17
Number of patents	-
11. **Related professional experience:**
Contribution in research projects
Main researcher in 6 research projects in the area of water resources
Participation in 4 research projects in the area of water resources

Other professional work
15 Hydrological studies for the design of reservoirs, sewage and irrigation networks
9 Hydrological studies, statics and surveying studies

Date: 13/5/91

CURRICULUM VITAE

1. **Name** Lydia Vamvakeridou-Lyroudia
2. **Date of birth** 1957 **Place of birth** Athens
3. **Home address:**
Street name and number 10, Sirou str.
Postal Code 112 57 **City** Athens
Country Greece **Phone** 8233887
4. **Organization of primary employment: Title**
National Technical University of Athens

Street name and number 5, Iroon Polytechniou str.
Postal Code 157 00 **City** Zografou, Athens **Country** Greece
Phone 7772924 **Telex** **FAX** 7798902
5. **Title of primary employment:**
Lecturer
6. **Titles of first degrees, organization and year:**
Dipl. in Civil Engineering, National Technical University of Athens, 1980
7. **Postgraduate titles, organizations, year and scientific area:**
Ph.D in Engineering, National Technical University of Athens, 1989, Water Resources (Drinking water-Irrigation Networks)
8. **Foreign languages:** English, French, German
9. **Fields of scientific and professional activities:**
Drinking Water-Irrigation-Sewage Networks
Water Resources
Optimization Models
Software programming
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings 9
Number of books, dissertations, etc. 3
Other published work 2
Number of patents
11. **Related professional experience:**
Contribution in research projects
Research Responsible in 1 research program, 1988-89
Participation in 1 research program, 1983-84

Other professional work
Hydraulic works studies
Partner-E&L. Lyroudias S.A (Software development)

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Ioannis Nalbadis
2. **Date of birth** 1959 **Place of birth** Athens
3. **Home address:**
Street name and number I. Drossopoulou 26
Postal Code 112 57 **City** Athens
Country Greece **Phone** 8234206
4. **Organization of primary employment: Title**
National Technical University of Athens

Street name and number Iroon Polytechniou 5
Postal Code 157 00 **City** Athens **Country** Greece
Phone 7772924 **Telex** **FAX** 7798902
5. **Title of primary employment:**
Researcher
6. **Titles of first degrees, organization and year:**
Dipl. Civil Engineering, N.T.U.A., 1983
7. **Postgraduate titles, organizations, year and scientific area:**
DEA, University of Grenoble I, 1984
Ph. D. Grenoble Polytechnic, 1987
8. **Foreign languages:** French, English
9. **Fields of scientific and professional activities:**
Hydrology, Water Resources Management, Informatics (Applications)
10. **Published work (attach complete list):**

Number of publications in journals	3
Number of publications in conference proceedings	3
Number of books, dissertations, etc.	-
Other published work	-
Number of patents	-
11. **Related professional experience:**
Contribution in research projects
Participation in research projects in the area of Water Resources

Other professional work
Hydrological and Water Resources management Studies

Date: 14/5/91

CURRICULUM VITAE

1. **Name** Nikolaos Mamassis
2. **Date of birth** 1960 **Place of birth** Athens

3. **Home address:**
Street name and number 125, El. Venizelou
Postal Code 176 72 **City** Kallithea, Athens
Country Greece **Phone** 9510479

4. **Organization of primary employment: Title**
National Technical University of Athens

Street name and number Iroon Polytechniou 5
Postal Code 157 00 **City** Zografou, Athens **Country** Greece
Phone 7772924 **Telex** **FAX** 7798902

5. **Title of primary employment:**
Ph. D. Candidate

6. **Titles of first degrees, organization and year:**
Dipl. Rural & Surveying Engineering, N.T.U.A., 1985

7. **Postgraduate titles, organizations, year and scientific area:**

8. **Foreign languages:** English, Spanish

9. **Fields of scientific and professional activities:**
Hydrology, Water Resources Management, Software applications

10. **Published work (attach complete list):**
- | | |
|---|---|
| Number of publications in journals | - |
| Number of publications in conference proceedings | 2 |
| Number of books, dissertations, etc. | - |
| Other published work | - |
| Number of patents | - |

11. **Related professional experience:**
Contribution in research projects
Main researcher in 2 NTUA research projects in the area of water resources

Other professional work
Hydrological and Surveying studies

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Athanassios Papakostas
2. **Date of birth** 1968 **Place of birth** Athens
3. **Home address:**
Street name and number 10, Eptapirghiou str.
Postal Code 113 63 **City** Athens
Country Greece **Phone** 8237920
4. **Organization of primary employment: Title**
AMBIT LTD Information Technologies

Street name and number 5, Polemiston, Agiroupolis
Postal Code 164 52 **City** Athens **Country** Greece
Phone 9950152 **Telex** **FAX** 9912673
5. **Title of primary employment:**
Research & Development Manager-Systems Division
6. **Titles of first degrees, organization and year:**
Computer Science Engineer, NTUA, 1990
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:** English, French, German
9. **Fields of scientific and professional activities:**
Informatics: Operating Systems, Databases
Ph.D Candidate, NTUA
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 6/6/91

CURRICULUM VITAE

1. **Name** Xariclia Anifanti
 2. **Date of birth** 1962 **Place of birth** Athens
 3. **Home address:**
Street name and number 9, Ag. Georgiou str.
Postal Code 157 00 **City** Zografou
Country Greece **Phone** 7706321
 4. **Organization of primary employment: Title**
National Technical University of Athens

Street name and number 5, Iroon Polytechniou str.
Postal Code 157 00 **City** Athens **Country** Greece
Phone 7772924 **Telex** **FAX** 7798902
 5. **Title of primary employment:**
 6. **Titles of first degrees, organization and year:**
Civil Engineer of the NTUA, 1986
 7. **Postgraduate titles, organizations, year and scientific area:**
 8. **Foreign languages:** English, French
 9. **Fields of scientific and professional activities:**
Hydrology
 10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
 11. **Related professional experience:**
Contribution in research projects
Appraisal of existing potential for improving the water supply of Greater Athens
Louros & Arachtos pilot study
Hydrological investigation of Thessaly
- Other professional work**

Date: 31/5/91

CURRICULUM VITAE

1. **Name** Vassilis Zoukos
2. **Date of birth** 1955 **Place of birth** Kerassea Doridos Fokidos
3. **Home address:**
Street name and number 1340 Regent Road, Apt 3, Town Mount Royal
Postal Code **City** Quebec H3P, 247
Country Canada **Phone** (514) 7358967
4. **Organization of primary employment: Title**
Concordia University, Montreal, Canada

Street name and number
Postal Code **City** **Country**
Phone **Telex** **FAX**
5. **Title of primary employment:**
Ph. D. Candidate
6. **Titles of first degrees, organization and year:**
Dipl. Electrical - Mechanical Engineering, N.T.U.A., 1979
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Computer Networks and Communication Protocols
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Participation in research project on the development of Industrial research as communications programmer

Other professional work
Studies in the area of telephone networks
Systems programmer
Developer of ORACLE (relational database) application software

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Sophia Roti
2. **Date of birth** 1957 **Place of birth** Athens
3. **Home address:**
Street name and number 15, Alkmanos str.
Postal Code 115 28 **City** Athens
Country Greece **Phone** 7245859/7223957
4. **Organization of primary employment: Title**
Public Power Corporation of Greece, Hydroelectrical Development Department, Section of Hydrodynamic and Predesign

Street name and number 4, Corai str.
Postal Code 105 64 **City** Athens **Country** Greece
Phone 3239500-9 **Telex** **FAX** 3238067
5. **Title of primary employment:**
Civil Engineer P.P.C
6. **Titles of first degrees, organization and year:**
Diploma of Civil Engineer of the National Technical University of Athens, 1981
7. **Postgraduate titles, organizations, year and scientific area:**
DIC, M.Sc Imperial College of Science and Technology of the University of London, 1986
Engineering Hydrology
8. **Foreign languages:** English, French, German
9. **Fields of scientific and professional activities:**
Water Resources-Hydrology-Hydropower-Sewage-Pipe Network
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings 2
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Contribution in 2 research projects and 15 studies of Public Works

Other professional work

Date: 6/6/91

CURRICULUM VITAE

1. **Name** Geogre Papapanagiotakis
2. **Date of birth** 1959 **Place of birth** Athens

3. **Home address:**
Street name and number 4, Gr. Afxendiou str.
Postal Code 157 71 **City** Zografou, Athens
Country Greece **Phone** 7770976

4. **Organization of primary employment: Title**

Street name and number			
Postal Code	City	Country	
Phone	Telex	FAX	

5. **Title of primary employment:**
Project Manager in Software Enginnering

6. **Titles of first degrees, organization and year:**
Electrical Engineer, NTUA, 1983

7. **Postgraduate titles, organizations, year and scientific area:**
DEA Informatique, Universite de Toulouse, 1984
Docteur Ingin., Informatique, Universite de Toulouse, 1987

8. **Foreign languages:** French, English

9. **Fields of scientific and professional activities:**
Informatics
Electrical Engineer

10. **Published work (attach complete list):**
Number of publications in journals 6
Number of publications in conference proceedings 4
Number of books, dissertations, etc.
Other published work
Number of patents

11. **Related professional experience:**
Contribution in research projects
Computer Networks
Automated Control Systems
Data Bases

Other professional work

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Ioannis Delis
2. **Date of birth** 1959 **Place of birth** Athens

3. **Home address:**
Street name and number 56, Ag. Barbaras str.
Postal Code 152 31 **City** Chalandri, Athens
Country Greece **Phone** 6717488

4. **Organization of primary employment: Title**

Street name and number			
Postal Code	City	Country	
Phone	Telex	FAX	

5. **Title of primary employment:**
Employer - Researcher

6. **Titles of first degrees, organization and year:**
Electrical Engineer, NTUA, 1983

7. **Postgraduate titles, organizations, year and scientific area:**
M.Sc. in Computer Engineering, University of California, 1984
M.Sc. in Computer Science, University of California, 1986

8. **Foreign languages:** English, German

9. **Fields of scientific and professional activities:**
Informatics
Electrical Engineer

10. **Published work (attach complete list):**
Number of publications in journals 3
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents

11. **Related professional experience:**
Contribution in research projects
Data Bases
Architecture of Computer Systems

Other professional work

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Kostas Tsolakidis
2. **Date of birth** 1964 **Place of birth** Athens
3. **Home address:**
Street name and number 16, Alkionis str.
Postal Code 175 61 **City** P. Faliro, Athens
Country Greece **Phone** 9381637
4. **Organization of primary employment: Title**
National Technical University of Athens (N.T.U.A.), Division of Water Resources,
Hydraulic & Maritime Engineering

Street name and number 5, Iroon Polytechniou str.
Postal Code 157 00 **City** Zografou, Athens **Country** Greece
Phone 7772924 **Telex** **FAX** 7798902
5. **Title of primary employment:**
Ph. D. Candidate
6. **Titles of first degrees, organization and year:**
Bachelor of Science (Civil & Environmental Engineering), Michigan State University, 1987
7. **Postgraduate titles, organizations, year and scientific area:**
Master of Scienc in Engineering (Environmental Engineering), The University of Michigan, 1989
8. **Foreign languages:** English, French
9. **Fields of scientific and professional activities:**
Water resources management
Environmental Engineering
10. **Published work (attach complete list):**
Number of publications in journals -
Number of publications in conference proceedings 3
Number of books, dissertations, etc. -
Other published work -
Number of patents -
11. **Related professional experience:**
Contribution in research projects
Main researcher in 2 N.T.U.A research projects in the area of water resources

Other professional work
Teaching of Ecology - Environmental Science courses

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Dimitrios Tolikas
2. **Date of birth** 1944 **Place of birth** Thessaloniki
3. **Home address:**
Street name and number 12, Natalias Mela str.
Postal Code 546 46 **City** Thessaloniki
Country Greece **Phone** 031-422600
4. **Organization of primary employment: Title**
Division of Hydraulics and Environmental Engineering, Department of Civil Engineering, Aristotle University of Thessaloniki

Street name and number Aristotle University of Thessaloniki
Postal Code 540 06 **City** Thessaloniki **Country** Greece
Phone 031-992704 **Telex** **FAX** 031-428320
5. **Title of primary employment:**
Professor
6. **Titles of first degrees, organization and year:**
Diploma of Civil Engineer - Aristotle University of Thessaloniki - 1967
7. **Postgraduate titles, organizations, year and scientific area:**
Doctora Thesis -AUT-1973-Groundwater Hydraulics
Ifigesia-AUT-1976-Fluid Mechanics
Postdoctoral studies-V.P.I USA-1974
8. **Foreign languages:** English, French
9. **Fields of scientific and professional activities:**
Mathematical models (Water Resources Management, Groundwater Hydraulics, Transient Flow)
Experimental studies (Unsteady Flow in Porus Media, Instability and Resonance in Fluid mechanics phenomena)
10. **Published work (attach complete list):**
Number of publications in journals 16
Number of publications in conference proceedings 35
Number of books, dissertations, etc. 5
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Participation in five research projects

Other professional work
Applied studies

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Pericles Latinopoulos
2. **Date of birth** 1950 **Place of birth** Thessaloniki
3. **Home address:**
Street name and number Leda-Maria
Postal Code 570 01 **City** Thermi-Thessaloniki
Country Greece **Phone** 031-471496
4. **Organization of primary employment: Title**
Aristotle University of Thessaloniki, Department of Civil Engineering, Division of Hydraulics and Environmental Engineering

Street name and number Aristotle University of Thessaloniki
Postal Code 540 06 **City** Thessaloniki **Country** Greece
Phone 031-992683 **Telex** **FAX**
5. **Title of primary employment:**
Professor
6. **Titles of first degrees, organization and year:**
Diploma in Civil Engineering, AUT, 1973
7. **Postgraduate titles, organizations, year and scientific area:**
PhD in Civil Engineering, AUT, 1980, Non-steady flows of incompressible, viscous fluids
Ifigesia, AUT, 1983, Water resources
8. **Foreign languages:** English, French, Germany
9. **Fields of scientific and professional activities:**
Fluid flow in ducts and pipes with varying cross-sections (biological flows-waterhammer analysis). Stochastic hydrology. Groundwater flow and management of groundwater resources. Aquifer contamination. Numerical and analytic solutions of partial differential equations
10. **Published work (attach complete list):**
Number of publications in journals 27
Number of publications in conference proceedings 34
Number of books, dissertations, etc. 4
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Contribution in research projects
8 research projects and applied studies, mainly in subjects related with Water Resources Management

Other professional work

Date: 7/5/91

CURRICULUM VITAE

1. **Name** Yiannis Mylopoulos
2. **Date of birth** 1958 **Place of birth** Thessaloniki
3. **Home address:**
Street name and number 7, Ipsilanti str.
Postal Code 542 48 **City** Thessaloniki
Country Greece **Phone** 031-303848
4. **Organization of primary employment: Title**
Aristotle University of Thessaloniki, Department of Civil Engineering, Division of Hydraulics and Environmental Engineering

Street name and number Aristotle University of Thessaloniki
Postal Code 540 06 **City** Thessaloniki **Country** Greece
Phone 031-992626/992704 **Telex** **FAX** 031-992697
5. **Title of primary employment:**
Lecturer
6. **Titles of first degrees, organization and year:**
Diploma of Engineering, Aristotle University of Thessaloniki, 1982
7. **Postgraduate titles, organizations, year and scientific area:**
PhD. in Civil Engineering, AUT, 1988 "Groundwater resources quality management"
8. **Foreign languages:** English, French
9. **Fields of scientific and professional activities:**
Water Resources Engineering and Management-Groundwater Hydrology-Groundwater pollution-Transport in Porus Media-Development of simulation and optimization techniques in water resources management
10. **Published work (attach complete list):**
Number of publications in journals 2
Number of publications in conference proceedings 12
Number of books, dissertations, etc. 1
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Participation to 2 research projects funded by Greek Ministries. Participation to the pilot-study "Water resources management of Louros and Aracthos Basins". Scientific collaborator to the Directorate of water and Natural Resources, M.I.E.T, (1989-1990)

Other professional work
Scientific Collaborator to the Greek ministry of research and Technology-Responsible of research projects of the scientific area of "Water Resources" (1989-1990)

Date: 14/5/91

CURRICULUM VITAE

1. **Name** Panagiotis Maheras
2. **Date of birth** 1941 **Place of birth** Istiea, Evia
3. **Home address:**
Street name and number 4A, Z. Papadoniou str.
Postal Code 546 46 **City** Thessaloniki
Country Greece **Phone** 031-415687
4. **Organization of primary employment: Title**
University of Thessaloniki, Department of Meteorology and Climatology

Street name and number
Postal Code 540 06 **City** Thessaloniki **Country** Greece
Phone 031-991366 **Telex** **FAX**
5. **Title of primary employment:**
Professor
6. **Titles of first degrees, organization and year:**
Graduate of Natural Sciences, University of Thessaloniki
7. **Postgraduate titles, organizations, year and scientific area:**
Thesis "de 3 eme Cycle", 1976, University of Nancy II, Climatology
"Doctorat d'Etat", 1979, University of Dijon, Climatologie
8. **Foreign languages:** French, English
9. **Fields of scientific and professional activities:**
Research occupies the fields of Regional and Dynamic Climatology, Biometeorology, Bioclimatology, Climatic change, Climatological and Meteorological Hazards and Hydrometeorology
10. **Published work (attach complete list):**
Number of publications in journals 47
Number of publications in conference proceedings 21
Number of books, dissertations, etc. 3, 3
Other published work 5
Number of patents
11. **Related professional experience:**
Contribution in research projects
Scientific responsible of research project "Study of the drought, development of methods for long-term prevision and methods of their confronting Financy: General Secretary of Research and Technology

Other professional work

Date: 15/5/91

CURRICULUM VITAE

1. **Name** Epaminondas Sidiropoulos
 2. **Date of birth** 1948 **Place of birth** Thessaloniki
 3. **Home address:**
Street name and number 11, Nikopoleos-Kalamaria
Postal Code 551 31 **City** Thessaloniki
Country Greece **Phone** 031-410040
 4. **Organization of primary employment: Title**
Aristotle University of Thessaloniki, Faculty of Engineering, School of Rural and Surveying Engineering

Street name and number
Postal Code 540 06 **City** Thessaloniki **Country** Greece
Phone 031-992721 **Telex** **FAX** 031-203587
 5. **Title of primary employment:**
Associate Professor
 6. **Titles of first degrees, organization and year:**
Diploma in Civil Engineering, Aristotle University of Thessaloniki, 1971
 7. **Postgraduate titles, organizations, year and scientific area:**
Master of Science in Engineering, The Johns Hopkins University, 1975
Ph.D. (Civil Engineering), Duke University, 1977
 8. **Foreign languages:** English
 9. **Fields of scientific and professional activities:**
Ocean Engineering
Groundwater hydraulics and modelling
 10. **Published work (attach complete list):**
Number of publications in journals 13
Number of publications in conference proceedings 9
Number of books, dissertations, etc.
Other published work
Number of patents
 11. **Related professional experience:**
Contribution in research projects
Research projects: Effects of passing ships on waterfront facilities,
Large displacement cable dynamics, Evaluation of Added mass, Damping and exciting forces in ships
- Other professional work**

Date: 17/5/91

CURRICULUM VITAE

1. **Name** Panagiotis Tolikas
2. **Date of birth** 1948 **Place of birth** Florina
3. **Home address:**
Street name and number 20, G. Nikolaidi str.
Postal Code 546 46 **City** Thessaloniki
Country Greece **Phone** 031-426750
4. **Organization of primary employment: Title**
Aristotle University of Thessaloniki

Street name and number
Postal Code 540 06 **City** Thessaloniki **Country** Greece
Phone 031-992721 **Telex** **FAX**
5. **Title of primary employment:**
Associate Professor, Faculty of Engineering, Univ. of Thessaloniki
6. **Titles of first degrees, organization and year:**
Diploma in Civil Engineering, Univ. of Thessaloniki
7. **Postgraduate titles, organizations, year and scientific area:**
Master of Science, Mechanical Engineering and Astronautical Sciences, Northwestern University, Evanston Ill USA, 1972
Doctor of Philosophy, Theoretical and applied Mechanics, Northwestern University, Evanston Ill USA, 1976.
Habilitation University of Thessaloniki, 1982
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Continuum Mechanics, Applied Mathematics, Groundwater Hydraulics
10. **Published work (attach complete list):**
Number of publications in journals 16
Number of publications in conference proceedings 10
Number of books, dissertations, etc. 3
Other published work Lecture Notes
Number of patents
11. **Related professional experience:**
Contribution in research projects
Design of a water supply system in Kastoria

Other professional work

Date: 15/5/91

CURRICULUM VITAE

1. **Name** Konstantinos Katsifarakis
2. **Date of birth** 1955 **Place of birth** Thessaloniki
3. **Home address:**
Street name and number 11, N. Talloglou str.
Postal Code 546 36 **City** Thessaloniki
Country Greece **Phone** 031-214489
4. **Organization of primary employment: Title**
AUT, Division of Hydraulics and Environmental Eng., Department of Civil Engineering, Aristotle University of Thessaloniki

Street name and number
Postal Code 540 06 **City** Thessaloniki **Country** Greece
Phone 031-992727 **Telex** **FAX**
5. **Title of primary employment:**
Assistant Professor
6. **Titles of first degrees, organization and year:**
Diploma in Civil Engineering (AUT 1978)
Diploma in Geology (AUT 1984)
7. **Postgraduate titles, organizations, year and scientific area:**
M.Sc. in Engineering Mechanics (University of Florida 1980)
Doctoral degree in Civil Engineering (AUT 1986) scientific area: Low enthalpy geothermal energy
8. **Foreign languages:** English, French, German
9. **Fields of scientific and professional activities:**
Geothermal energy, Groundwater flows and pollution control, Management of water resources, Solar energy (in connection with geothermal and water resources)
10. **Published work (attach complete list):**
Number of publications in journals 9
Number of publications in conference proceedings 11
Number of books, dissertations, etc. 3
Other published work 5
Number of patents
11. **Related professional experience:**
Contribution in research projects
I have participated in 7 research projects

Other professional work

I study of port structures of a fishery harbor at N. Mechaniona, Study of environmental impact of the construction of a sanitary landfill at Partheni

Date: 8/5/91

CURRICULUM VITAE

1. **Name** Margaritis Vafiadis
2. **Date of birth** 1955 **Place of birth** Thessaloniki
3. **Home address:**
Street name and number 75 Hermou str.
Postal Code 546 23 **City** Thessaloniki
Country Greece **Phone** 031-272530
4. **Organization of primary employment: Title**
Aristotle University of Thessaloniki, Division of Hydraulics and Environmental Engineering

Street name and number
Postal Code 540 06 **City** Thessaloniki **Country** Greece
Phone 031-992683 **Telex** **FAX** 031-992697
5. **Title of primary employment:**
Research Associate
6. **Titles of first degrees, organization and year:**
Chartered Civil Engineer P.S.AUT, 1978
Diplome d'Ingenieur S.S.H.Enseeiht, 1980
7. **Postgraduate titles, organizations, year and scientific area:**
DEA en Mecanique des Fluides
8. **Foreign languages:** French, English, German, Serbocrate, Italian
9. **Fields of scientific and professional activities:**
Mathematical Hydrology
Management and Processing of Digital Information
Water resources Management
10. **Published work (attach complete list):**
Number of publications in journals 3
Number of publications in conference proceedings 8
Number of books, dissertations, etc. 2
Other published work 2
Number of patents -
11. **Related professional experience:**
Contribution in research projects
Greek and international Research Programs of DHEE, on data management and procwssing
Hydrology, Contribution in research project ERASMUS and in a research project funded
by the Ministry of Research and Technology

Other professional work
7 hydrological case studies, for big hydraulic works projects, Various scientific and educational computer
programs for communications, Commercial computer programs

Date: 13/5/91

CURRICULUM VITAE

1. **Name** Panagiotis Anastasiadis
2. **Date of birth** 1965 **Place of birth** Serres
3. **Home address:**
Street name and number 31, Leoforos Stratou Av.
Postal Code 546 39 **City** Thessaloniki
Country Greece **Phone**
4. **Organization of primary employment: Title**
Division of Hydraulics and Environmental Engineering, Aristotle University of Thessaloniki

Street name and number
Postal Code 540 06 **City** Thessaloniki **Country** Greece
Phone 031-992683 **Telex** **FAX**
5. **Title of primary employment:**
Ph.D Student, Civil Engineer, Research Fellow
6. **Titles of first degrees, organization and year:**
Diploma of Civil Engineering, Aristotle University of Thessaloniki, 1989
7. **Postgraduate titles, organizations, year and scientific area:**
Participate in Postgraduate course program Erasmus in LEPT ENSAM Bordeaux-France. Scientific area:
Flow in Porus Media
8. **Foreign languages:** English, French
9. **Fields of scientific and professional activities:**
Groundwater pollution, Numerical simulation, Design of small dams, Hydrological studies
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings 3
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Participation in Research project funded by the Greek Ministry of Research and Technology,
Design of small dams in Larisa (Hellas)

Other professional work

Date:

CURRICULUM VITAE

1. **Name** Nikitas Milopoulos
2. **Date of birth** 1965 **Place of birth** Thessaloniki
3. **Home address:**
Street name and number 3, Delmousou str.
Postal Code **City** Thessaloniki
Country Greece **Phone** 031-275750
4. **Organization of primary employment: Title**
Aristotle University of Thessaloniki, Dept. of Civil Engineering, Dir. of Hydraulics and Environmental Engineering

Street name and number
Postal Code 540 06 **City** Thessaloniki **Country** Greece
Phone 031-992683 **Telex** **FAX** 031-992697
5. **Title of primary employment:**
Research Assistant Ph.D Student
6. **Titles of first degrees, organization and year:**
Diploma in Engineering, Aristotle University of Thessaloniki, 1989
7. **Postgraduate titles, organizations, year and scientific area:**
Postgraduate student in LEPT-E.N.S.A.M, Bodeaux, France (Erasmus Progr.). Scientific area: "Flow in Porus Media" (1989 and 1991)
8. **Foreign languages:** English, French
9. **Fields of scientific and professional activities:**
Water Resources Engineering Hydraulics of Groundwater Transport in Porus Media
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings 1
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Participation to research project funded by the Greek Ministry of Research and Technology with subject related with Water Resources Management

Other professional work
Participation to applied technical studies as Civil Engineer

Date: 14/5/91

CURRICULUM VITAE

1. **Name** Nikolaos Theodosiou
2. **Date of birth** 1962 **Place of birth** Cyprus
3. **Home address:**
Street name and number 13, Antifanous str.
Postal Code 543 51 **City** Thessaloniki
Country Greece **Phone** 031-902798
4. **Organization of primary employment: Title**
Division of Hydraulics and Environmental Engineering, Department of Civil Engineering, Aristotle University of Thessaloniki

Street name and number Aristotle University of Thessaloniki
Postal Code 540 06 **City** Thessaloniki **Country** Greece
Phone 031-992683 **Telex** **FAX**
5. **Title of primary employment:**
Civil Engineer, Researcher, Postgraduate student
6. **Titles of first degrees, organization and year:**
Diploma of Civil Engineer, Aristotle University of Thessaloniki, Greece, 1988
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:** English, French
9. **Fields of scientific and professional activities:**
Water resources management
Numerical models in groundwater hydraulics
Restoration of contaminated aquifer
10. **Published work (attach complete list):**
Number of publications in journals 1
Number of publications in conference proceedings 2
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Participation in a research project funded by the Greek ministry of Research and Technology

Other professional work

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Anastasia Tsomou
2. **Date of birth** 1960 **Place of birth** Piraius
3. **Home address:**
Street name and number 7, Ipsilanti str.
Postal Code 542 48 **City** Thessaloniki
Country Greece **Phone** 031-303848
4. **Organization of primary employment: Title**
Aristotle University of Thessaloniki, Dept. of Civil Engineering, Div. of Hydraulics and Environmental Engineering

Street name and number
Postal Code 540 06 **City** Thessaloniki **Country** Greece
Phone 031-992626/992683 **Telex** **FAX**
5. **Title of primary employment:**
Research assistant
6. **Titles of first degrees, organization and year:**
Diploma in Rural and Surveying Engineering, School of Technology, Aristotle University of Thessaloniki
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:** English, French
9. **Fields of scientific and professional activities:**
Data Base Management Systems Land Information Systems, CAD Systems
10. **Published work (attach complete list):**
Number of publications in journals 1
Number of publications in conference proceedings 1
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Participation to many research projects and applied studies in subjects related to Hydraulics and Survey Works - CAD Systems Technical support to computer companies "Rainbow" and "Dynamorfics"

Other professional work

Date: 14/5/91

CURRICULUM VITAE

1. **Name** Stavros Ladas
2. **Date of birth** 1962 **Place of birth** Thessaloniki
3. **Home address:**
Street name and number 32 Makedonias str.
Postal Code 546 44 **City** Thessaloniki
Country Greece **Phone** 031-814176
4. **Organization of primary employment: Title**
I.C.B.S Business College
Infomedica Hellas (Software House)

Street name and number 3, N. Koudouriotou str.
Postal Code 546 20 **City** Thessaloniki **Country** Greece
Phone 031-517783 **Telex** **FAX**
5. **Title of primary employment:**
Professor of Information Systems
6. **Titles of first degrees, organization and year:**
Diploma in Mathematics, School of Applied Science, Aristotle University of Thessaloniki
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:** English, French
9. **Fields of scientific and professional activities:**
Software Development (Artificial Intelligence-Picture Processing)
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work Lecture Notes
Number of patents
11. **Related professional experience:**
Contribution in research projects

Other professional work
Applications of computer software for use in Business

Date: 16/5/91

CURRICULUM VITAE

1. **Name** Lambros Pantekis
 2. **Date of birth** 1946 **Place of birth** Thessaloniki
 3. **Home address:**
Street name and number 75, Hermou str.
Postal Code 546 23 **City** Thessaloniki
Country Greece **Phone** 031-260080
 4. **Organization of primary employment: Title**
Aristotle University of Thessaloniki

Street name and number
Postal Code 540 06 **City** Thessaloniki **Country** Greece
Phone 031-992626 **Telex** **FAX** 031-992697
 5. **Title of primary employment:**
Assistant Professor
 6. **Titles of first degrees, organization and year:**
Civil Engineer, Aristotle University of Thessaloniki, 1969
 7. **Postgraduate titles, organizations, year and scientific area:**
Hydraulic Enginner, I.H.E. Delft, 1980
 8. **Foreign languages:** English, French
 9. **Fields of scientific and professional activities:**
Hydraulics, Hydrology, Hydraulic Works, Coastal Engineering, Design of Hydraulic and Coastal Works
 10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc. 5
Other published work
Number of patents
 11. **Related professional experience:**
Contribution in research projects
Theoretical Investigation of river pollution, Design of water supply of Kilkis area, Flood protection of Apollonias area, Design of 2 irrigation plants, Design of 2 small coastal works
- Other professional work**

Date: 16/5/91

CURRICULUM VITAE

1. **Name** Dimosthenis Asimakopoulos
2. **Date of birth** 1948 **Place of birth** Athens
3. **Home address:**
Street name and number 30, V. Pavlou str., P. Pendeli
Postal Code 152 36 **City** Athens
Country Greece **Phone** 8030748
4. **Organization of primary employment: Title**
Institute of Meteorology and Physics of the Atmospheric Environment, National Observatory of Athens

Street name and number Lofos Nymphon
Postal Code P.O Box 20048, 118 10 **City** Athens **Country** Greece
Phone 3456257,3464566 **Telex** 215530 **FAX** 01-3421019

5. **Title of primary employment:**
Professor-Director
6. **Titles of first degrees, organization and year:**
Diploma, Electronic and Electrical Eng., University College London, 1972
7. **Postgraduate titles, organizations, year and scientific area:**
Ph.D, Electronic and Electrical Eng., University College London, 1976

8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Atmospheric, Physics, Meteorology, Atmospheric Environment

10. **Published work (attach complete list):**
Number of publications in journals 50
Number of publications in conference proceedings 29
Number of books, dissertations, etc. 3
Other published work 40
Number of patents

11. **Related professional experience:**
Contribution in research projects
Contribution in research projects: Chief investigation in at least 25 research projects

Other professional work
Consultant

Date: 20/5/91

CURRICULUM VITAE

1. **Name** George Kallos
2. **Date of birth** 1951 **Place of birth** Lamia
3. **Home address:**
Street name and number Ellanikou 38
Postal Code 116 35 **City** Athens
Country Greece **Phone** 7233690
4. **Organization of primary employment: Title**
University of Athens
Department of Applied Physic, Meteorology Lab.

Street name and number Ippocratous 33
Postal Code 106 80 **City** Athens **Country** Greece
Phone 3610006 **Telex** **FAX** 3605080/3233846
5. **Title of primary employment:**
Asst. Professor
6. **Titles of first degrees, organization and year:**
MS: University of Athens, 1975, School of Mathematics
7. **Postgraduate titles, organizations, year and scientific area:**
Ph. D: Georgia Institute of Technology, 1985, Geophysical Science (Atmospheric Science Div.)
M. Sc: Georgia Institute of Technology, 1983, Geophysical Science (Atmospheric Science Div.)
M. Sc: University of Athens, 1977, Physics Dept.
8. **Foreign languages:** English, French
9. **Fields of scientific and professional activities:**
Atmospheric Dynamics (Regional and Mesoscale Modelling)
Air Pollution Modelling (Dispersion, Diffusion)
Atmospheric Chemistry
Agricultural Meteorology
Severe weather phenomena
Wind Energy Applications
10. **Published work (attach complete list):**

Number of publications in journals	18
Number of publications in conference proceedings	9
Number of books, dissertations, etc.	3
Other published work (Technical Reports etc)	15
Number of patents	-
11. **Related professional experience:**
Contribution in research projects
I have been participated in 19 research projects in Greece and in USA funded by various agencies (NSF, NASA, NCAR, ERA, EEC, IBM, different Greek Ministries, Agencies, Private Companies etc).
In 5 of them I was principal investigator
Consulting in different agencies in Greek and USA

Other professional work
Cooperation with WMO on air pollution problems in Mediterranean (MED-POL).
Member of the Scientific Committee of the NATO-CCMS

Date: 20.5.91

CURRICULUM VITAE

1. **Name** Nicolas Moussiopoulos
2. **Date of birth** 1956 **Place of birth** Athens
3. **Home address:**

Street name and number	Ellis 7	Box 21528		
Postal Code	55210	City	Panorama - Thessaloniki	
Country	Greece	Phone	031 941554	
4. **Organization of primary employment: Title**
Aristotle University Thessaloniki
Faculty of Engineering, Department of Mechanical Engineering
Energy Section, Laboratory of Heat Transfer

Street name and number	Box 483			
Postal Code	54006	City	Thessaloniki	Country Greece
Phone	+30 31 991562	Telex	412481 AUTH	FAX +30 31 215800
5. **Title of primary employment:**
Professor and Laboratory Director
6. **Titles of first degrees, organization and year:**
Dipl.-Ing., Universitaet Karlsruhe, 1978
7. **Postgraduate titles, organizations, year and scientific area:**
Dr.-Ing., Universitaet Karlsruhe, 1982, Technical Thermodynamics
Dr.-Ing. habil., Department of Mechanical Engineering,
Universitaet Karlsruhe, 1989, Technical Thermodynamics
8. **Foreign languages:** German, English, French
9. **Fields of scientific and professional activities:**
Technical Thermodynamics, Heat Transfer, Atmospheric Transport Phenomena,
Pollution Abatement Technology, Numerical Methods
10. **Published work (attach complete list):**

Number of publications in journals	24
Number of publications in conference proceedings	20
Number of books, dissertations, etc.	4
Other published work	22
Number of patents	-
11. **Related professional experience:**
Contribution in research projects
Scientist in charge of 8 research projects (funded by: German Research Foundation, Federal Ministry of Research and Technology F.R.G., Ministry of Science Baden-Wuerttemberg, General Secretariat for Research and Technology, Organization of Thessaloniki)
Contribution to a large number of studies and consultations

Other professional work
Consultant to the Greek Minister for the Environment on Pollution Abatement, Editor of the scientific journal "Environmental Software", National Representative of Greece to EUROTRAC (Environmental project of EUREKA), Deputy Coordinator of the EUROTRAC - subproject EUMAC.

Date: April 29, 1991

CURRICULUM VITAE

1. **Name** Nikolaos Prezerakos
2. **Date of birth** 1938 **Place of birth** Gythio
3. **Home address:**
Street name and number 44, Dimoktitou str.
Postal Code 164 51 **City** Athens
Country Greece **Phone** 9928578
4. **Organization of primary employment: Title**
National Meteorological Service

Street name and number
Postal Code **City** **Country**
Phone **Telex** **FAX**
5. **Title of primary employment:**
Director of Education Division
6. **Titles of first degrees, organization and year:**
B.Sc. Mathematics, University of Athens, 1964
7. **Postgraduate titles, organizations, year and scientific area:**
Certificate of Meteorological School Class A, NMS, 1968
Diploma of Meteorological Office College, England, 1974
Ph.D in Meteorology, University of Thessaloniki, 1978
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Meteorology
10. **Published work (attach complete list):**
Number of publications in journals 20
Number of publications in conference proceedings 7
Number of books, dissertations, etc. 4
Other published work 8
Number of patents
11. **Related professional experience:**
Contribution in research projects
Participation in research programs concerning the air mass flow, climatology,
the sea breeze circulation

Other professional work
Teaching Meteorology

Date: 6/6/91

CURRICULUM VITAE

1. **Name** Dimitris Katsimardos
2. **Date of birth** 1943 **Place of birth** Ag. Paraskevi-Trixonis
3. **Home address:**
Street name and number 19A, Rizountos str.
Postal Code 167 77 **City** Athens
Country Greece **Phone** 9628941
4. **Organization of primary employment: Title**
Hellenic National Meteorological Service

Street name and number P.O Box 73502
Postal Code 166 03 **City** Helliniko **Country** Greece
Phone 9629316 **Telex** **FAX** 9628952
5. **Title of primary employment:**
Head of Prediction Section
6. **Titles of first degrees, organization and year:**
Bachelor of Mathematics (University of Athens)
7. **Postgraduate titles, organizations, year and scientific area:**
M.Sc. in Meteorology, University of Reading, England, 1975
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Meteorology
Numerical Prediction
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc. 1
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 22/5/91

CURRICULUM VITAE

1. **Name** Ioannis Papageorgiou
2. **Date of birth** 1949 **Place of birth** Larissa
3. **Home address:**
Street name and number 40, Karaiskaki str.
Postal Code 153 41 **City** Athens
Country Greece **Phone**
4. **Organization of primary employment: Title**
Hellenic National Meteorological Service

Street name and number P.O.Box 73502-Helliniko
Postal Code 166 03 **City** Athens **Country** Greece
Phone 9623316 **Telex** **FAX** 9628952
5. **Title of primary employment:**
Head of Section of Synoptic Climatology-Pollution
6. **Titles of first degrees, organization and year:**
Batchelor of Mathematics (University of Thessaloniki)
7. **Postgraduate titles, organizations, year and scientific area:**
Ph.D in Meteorology, University of Reading-England, 1985
M.Sc in Meteorology, University of Athens, 1975
Certificate of Meteorological School of HNMS, 1980
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Meteorology
Numerical prediction
Software development
10. **Published work (attach complete list):**
Number of publications in journals 1
Number of publications in conference proceedings 1
Number of books, dissertations, etc. 1
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 15/5/91

CURRICULUM VITAE

1. **Name** Manolis Anadranistakis
2. **Date of birth** 1956 **Place of birth** Spili-Rethimno
3. **Home address:**
Street name and number 1, Ptolemeou str.
Postal Code 173 43 **City** Athens
Country Greece **Phone** 9753100
4. **Organization of primary employment: Title**
National Meteorological Service

Street name and number P.O.Box 73502-Helliniko
Postal Code 166 03 **City** Athens **Country** Greece
Phone 9629316 **Telex** **FAX** 9628952
5. **Title of primary employment:**
Meteorologist
6. **Titles of first degrees, organization and year:**
Physics, University of Thessaloniki, 1980
7. **Postgraduate titles, organizations, year and scientific area:**
MS.c. in meteorology, University of Athens, 1990
Computer Programming/Analysis, ELKEPA, 1984
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Meteorology
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Real Time control, Member of the Group

Other professional work

Date: 3/6/91

CURRICULUM VITAE

1. **Name** Charalambos Giannakos
 2. **Date of birth** 11956 **Place of birth** Athens
 3. **Home address:**
Street name and number 23, Irakleous str.
Postal Code 163 45 **City** Athens
Country Greece **Phone** 9737266
 4. **Organization of primary employment: Title**
National Meteorological Service

Street name and number Helliniko
Postal Code **City** **Country**
Phone **Telex** **FAX**
 5. **Title of primary employment:**
Meteorologist A Class
 6. **Titles of first degrees, organization and year:**
University of Patras, Science of Mathematics, 1982
 7. **Postgraduate titles, organizations, year and scientific area:**
 8. **Foreign languages:** English
 9. **Fields of scientific and professional activities:**
Meteorology
 10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
 11. **Related professional experience:**
Contribution in research projects
Participation in the group of the new MSS of National Meteorological Service (Study-development of quality control system)
- Other professional work**

Date: 5/6/91

CURRICULUM VITAE

1. **Name** Andonis Lalos
2. **Date of birth** 1958 **Place of birth** Athens
3. **Home address:**
Street name and number 41-43, Parichi str.
Postal Code 154 51 **City** New Psychico
Country Greece **Phone** 6478001
4. **Organization of primary employment: Title**
N.M.S

Street name and number E. Venizelou
Postal Code 166 03 **City** Helliniko **Country** Greece
Phone 9628942 **Telex** **FAX**
5. **Title of primary employment:**
Meteorologist
6. **Titles of first degrees, organization and year:**
Bachelor of Physics, University of Thessaloniki, 1982
7. **Postgraduate titles, organizations, year and scientific area:**
M.Sc. of Meteorology, Athens University, 1985
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Meteorology
10. **Published work (attach complete list):**
Number of publications in journals 2
Number of publications in conference proceedings 1
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Pollution over Thriasio area of Athens, University of Athens

Other professional work

Date: 4/6/91

CURRICULUM VITAE

1. **Name** Theodore Kolidas
2. **Date of birth** 1959 **Place of birth** Stenies Andros
3. **Home address:**
Street name and number 1, Athinogenous str.
Postal Code 161 21 **City** Kessariani
Country Greece **Phone** 7222387
4. **Organization of primary employment: Title**
National Meteorological Service

Street name and number P.O.Box 73502-Helliniko
Postal Code 166 03 **City** Athens **Country** Greece
Phone 9629316 **Telex** **FAX** 9628952
5. **Title of primary employment:**
Meteorologist
6. **Titles of first degrees, organization and year:**
B.C. Mathematics, Un. Thessaloniki, 1981
7. **Postgraduate titles, organizations, year and scientific area:**
M.Sc. in meteorology, Un. of Athens, 1990
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Weather Forecast in Meteorology
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 3/6/91

CURRICULUM VITAE

1. **Name** Nikolaos Karatarakis
2. **Date of birth** 1958 **Place of birth** Iraklio Kritis
3. **Home address:**
Street name and number 66, Pellis str.
Postal Code 165 61 **City** Glyfada
Country Greece **Phone** 9626557
4. **Organization of primary employment: Title**
National Meteorological Service

Street name and number P.O.Box 73502-Helliniko
Postal Code 166 03 **City** Athens **Country** Greece
Phone 9629316 **Telex** **FAX** 9628952
5. **Title of primary employment:**
Meteorologist A Class
6. **Titles of first degrees, organization and year:**
B.C Physics-Un. Athens, 1982
7. **Postgraduate titles, organizations, year and scientific area:**
Analyst ELKEPA
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Weather Forecast in Meteorology
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 3/6/91

CURRICULUM VITAE

1. **Name** Aggeliki Marinaki
2. **Date of birth** 1962 **Place of birth** Rethimno Kritis
3. **Home address:**
Street name and number
Postal Code **City**
Country **Phone**
4. **Organization of primary employment: Title**
National Meteorological Service

Street name and number
Postal Code **City** **Country**
Phone **Telex** **FAX**
5. **Title of primary employment:**
Meteorologist
6. **Titles of first degrees, organization and year:**
Mathematics, University of Athens, 1985
7. **Postgraduate titles, organizations, year and scientific area:**
Computer Programming/ELKEPA, 1986
8. **Foreign languages:** French, English
9. **Fields of scientific and professional activities:**
Meteorology
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 5/6/91

CURRICULUM VITAE

1. **Name** George Siatos
2. **Date of birth** 1944 **Place of birth** Par. Platanou - Achaia
3. **Home address:**
Street name and number 26 Themou Anninou str.
Postal Code 111 41 **City** Athens
Country Greece **Phone** 01-2931059
4. **Organization of primary employment: Title**
Ministry of Industry, Energy and Technology
Directorate of Water and Natural Resources

Street name and number 80, Michalakopoulou str.
Postal Code 101 92 **City** Athens **Country** Greece
Phone 01-7789465 **Telex** 215811/215089 **FAX** 7772485
5. **Title of primary employment:**
Head of the section of studies for water resources management
6. **Titles of first degrees, organization and year:**
University degree, University of Athens - Natural Sciences, 1972
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Water Management (1986 - today)
Exploration for radioactive raw materials (G.A.E.C./N.R.C. Democritus, 1975-1985)
10. **Published work (attach complete list):**
Number of publications in journals -
Number of publications in conference proceedings 2
Number of books, dissertations, etc. -
Other published work Technical Reports 4
Number of patents -
11. **Related professional experience:**
Contribution in research projects

Other professional work

Ten years experience in exploration for uranium ore deposits (Head of a field office -
Dep. of Rad. Raw Mat. -GREEK ATOM. EN. CO.)

Date: 3.5.91

CURRICULUM VITAE

1. **Name** Maria Ghini

2. **Date of birth** 1955 **Place of birth** Keratea, Attiki

3. **Home address:**
Street name and number Aristidou 9
Postal Code 155 62 **City** Cholargos, Athens
Country Greece **Phone** 01-6535574

4. **Organization of primary employment: Title**
Ministry of Industry, Energy and Technology

Street name and number 80, Michalacopoulou str.
Postal Code 101 92 **City** Athens **Country** Greece
Phone 7789465 **Telex** 215811/215089 **FAX** 7772485

5. **Title of primary employment:**
Rural and Surveying Engineer

6. **Titles of first degrees, organization and year:**
Diploma in School of Rural and Surveying Engineering of the N.T.U.A., 1979

7. **Postgraduate titles, organizations, year and scientific area:**
- Master of Science in Civil Engineering, Dep. of Hydraulics, Purdue Univ., W. Lafayette, Indiana, USA, 1981
- Master of Science in Civil Engineering, Dep. of Water Resources and Hydrodynamics, Massachusetts Inst. of Technology, Cambridge, Massachusetts, USA, 1984

8. **Foreign languages:** English

9. **Fields of scientific and professional activities:**
Water Resources Management
Hydrology
Hydraulic Works
Treatment Plants

10. **Published work (attach complete list):**

Number of publications in journals	3
Number of publications in conference proceedings	-
Number of books, dissertations, etc.	-
Other published work	-
Number of patents	-

11. **Related professional experience:**
Contribution in research projects
- Synthetic Generation of discharge time series for Statistical Analysis ana Reservoir Reliability - Purdue University
- Optimization of irrigation networks: water table elevation and Salt allocation in the root zone, Massach. Inst. of Technology
- Pilot Study for water Resources Management of Louros and Arachtos water basins

Other professional work
Research study on the Environmental Impact of the Irrigation network of Mikri Prespa

Date: 15.5.91

CURRICULUM VITAE

1. **Name** Panayiotis Tsoumanis
2. **Date of birth** 1952 **Place of birth** Athens
3. **Home address:**
Street name and number 19, Antinoros str
Postal Code 116 34 **City** Athens
Country Greece **Phone** 01-7225844
4. **Organization of primary employment: Title**
Ministry of Industry Energy and Technology
Directorate of Water and Natural Resources

Street name and number 80, Michalakopoulou str.
Postal Code 10192 **City** Athens **Country** Greece
Phone 01-7776282 **Telex** 215811/215089 **FAX** 7772485
5. **Title of primary employment:**
Consultant
6. **Titles of first degrees, organization and year:**
Graduate of N.T.U.A. - Agronomist and Surveyor Engineer, 1975
7. **Postgraduate titles, organizations, year and scientific area:**
DEA in Hydrology - University PARIS VI, France, 1977
8. **Foreign languages:** French, English
9. **Fields of scientific and professional activities:**
Water Management
Hydrology
Topography
10. **Published work (attach complete list):**

Number of publications in journals	-
Number of publications in conference proceedings	2
Number of books, dissertations, etc.	-
Other published work	-
Number of patents	-
11. **Related professional experience:**
Contribution in research projects
Pilot study of water management of Louros and Arachtos basins, (MEDSPA)

Other professional work

Date: 2.5.91

CURRICULUM VITAE

1. **Name** Simon Tsimpidis
2. **Date of birth** 1963 **Place of birth** Athens
3. **Home address:**
Street name and number 50, Baktrianis str.
Postal Code 157 72 **City** Zografou, Athens
Country Greece **Phone** 01-7779394
4. **Organization of primary employment: Title**
Ministry of Industry Energy and Technology
Directorate of Water and Natura Resources

Street name and number 80, Michalakopoulou str.
Postal Code 10192 **City** Athens **Country** Greece
Phone 01-7776282 **Telex** 215811/215089 **FAX** 7772485
5. **Title of primary employment:**
Consultant
6. **Titles of first degrees, organization and year:**
Graduate of National Technical University of Athens - Civil Engineer (Hydraulics), 1987
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Hydrology
Hydraulic Works
Water Resources Management
10. **Published work (attach complete list):**

Number of publications in journals	1
Number of publications in conference proceedings	-
Number of books, dissertations, etc.	-
Other published work	-
Number of patents	-
11. **Related professional experience:**
Contribution in research projects
 - Lead in Athens Environment (GSET/N.T.U.A., 1986)
 - Water Balance in Basin and Lake Mikri Prespa (N.T.U.A., 1987)
 - Pilot-Study at water resources management in Louros and Arachtos Basins, (MIET/MEdSPA, 1989-91)

Other professional work

Date: 13.5.91

CURRICULUM VITAE

1. **Name** Ioannis Andreadis
2. **Date of birth** 1938 **Place of birth** Kavala
3. **Home address:**
Street name and number 21 G. Grypari str.
Postal Code 176 71 **City** Kallithea, Athens
Country Greece **Phone**
4. **Organization of primary employment: Title**
Ministry of Agriculture, Directorate of Geology-Hydrology

Street name and number 46 Chalkokondyli str.
Postal Code 176 71 **City** Athens **Country** Greece
Phone 5243125 **Telex** **FAX** 5243828
5. **Title of primary employment:**
Director of the Geology-Hydrology Directorate, Ministry of Agriculture
6. **Titles of first degrees, organization and year:**
Graduate of Physics and Mathematical School of the University of Salonica, department of natural Sciences
7. **Postgraduate titles, organizations, year and scientific area:**
Fotogeology in the Institute of Petroil France (I.F.P) 1972 (1/3 until 30/6/72). Certificate.
Hydrogeology in the office of Geological and Mining research in France (B.R.G.M) 1972 (1/7 until 30/11/72). Certificate.
8. **Foreign languages:** French
9. **Fields of scientific and professional activities:**
Geologist in the Ministry of Agriculture since 1965. Head of the department of Technical Geology, Ministry of Agriculture, 8/7/83 until 24/1/91. Director of the Geology-Hydrology Directorate 25/1/91 until today.
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 9/5/91

CURRICULUM VITAE

1. **Name** Maria Kilakou-Salapata
2. **Date of birth** 1939 **Place of birth** Pirea
3. **Home address:**
Street name and number 49 Sofokleous str.
Postal Code 151 26 **City** Maroussi Attiki
Country Greece **Phone** 8060953
4. **Organization of primary employment: Title**
Ministry of Agriculture Directorate of Geology-Hydrology Department of Hydrology

Street name and number 46 Chalkokondili str.
Postal Code 104 32 **City** Athens **Country** Greece
Phone 5243455 **Telex** **FAX** 5243828
5. **Title of primary employment:**
Head of the Department of Hydrology of the directorate of Geology-Hydrology
6. **Titles of first degrees, organization and year:**
Graduate of the department of Natural Sciences, Faculty of Physics and Mathematic of University of Athens
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:** English-French
9. **Fields of scientific and professional activities:**
Elaboration and surveillance of hydrogeological and hydrological works and studies.
Analysis of hydrological data.
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work Hydrological data (No 2, 3, and 4)
Number of patents
11. **Related professional experience:**
Contribution in research projects
Hydrogeological studies.
Study and exploitation water resources.
Project on ground water.

Other professional work

Date: 10/4/91

CURRICULUM VITAE

1. **Name** Panagiotis Megremis
2. **Date of birth** 1939 **Place of birth** Arkadia
3. **Home address:**
Street name and number Aigaiou Pelagous 46
Postal Code **City** Ag. Paraskevi, Attiki
Country Greece **Phone** 6550536
4. **Organization of primary employment: Title**
Ministry of Agriculture-General Division of land reclamation works and Agriculture structures-Dir. of Planning land reclamation, works and exploitation of soil and water resourcew

Street name and number Chalkokondili 46
Postal Code 104 32 **City** Athens **Country** Greece
Phone 5244378 **Telex** **FAX**
5. **Title of primary employment:**
Head of the section of New Technology
6. **Titles of first degrees, organization and year:**
Graduate of the Agricultural University of Athens
7. **Postgraduate titles, organizations, year and scientific area:**
Certificate of a one year post graduate course on irrigation subjects from the National Institute of Agricultural studies of France
8. **Foreign languages:** French
9. **Fields of scientific and professional activities:**
Land reclamation works
10. **Published work (attach complete list):**
Number of publications in journals 2
Number of publications in conference proceedings 2
Number of books, dissertations, etc. 4 (Translations)
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Sotiris Beloukas
2. **Date of birth** 1946 **Place of birth** Pireas
3. **Home address:**
Street name and number 19 Pergamou str.
Postal Code 171 21 **City** N. Smirni
Country Greece **Phone** 9324777
4. **Organization of primary employment: Title**
Ministry of Agriculture. Directorate of Geology-Hydrology.
Department of Hydrology

Street name and number 46 Chalkokondili str.
Postal Code 104 32 **City** Athens **Country** Greece
Phone 5243455 **Telex** **FAX** 5243828
5. **Title of primary employment:**
Hydrogeologist of the department of Hydrology
6. **Titles of first degrees, organization and year:**
Graduate of the department of Natural Sciences. Faculty of Physics and Mathematics of University of Athens (1971). Graduate of the department of Geology of University of Salonica (1979)
7. **Postgraduate titles, organizations, year and scientific area:**
Diploma in Hydrogeology (1982), University College of London
Master in Hydrogeology (1983), University College of London
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Elaboration of hydrogeological studies, supervision of drilling works, elaboration of hydrological data, supervision of hydrological stations. Geologist in the Minister of Agriculture since 1975
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Hydrogeological survey of the region Chalki Larissas
Hydrogeological survey of the region Potamias Elassonas
Hydrogeological survey of the region Makrichori Larissas

Other professional work
Program of Development of underground water of Thessaly in cooperation with the French company S.O.G.R.E.A.H

Date: 10/4/91

CURRICULUM VITAE

1. **Name** Efthimios Drosos
2. **Date of birth** 1950 **Place of birth** Lidoriki
3. **Home address:**
Street name and number 4, Platia Varnava
Postal Code 116 35 **City** Athens
Country Greece **Phone** 7015764
4. **Organization of primary employment: Title**
General Division of Land Reclamation and Agriculture Structures, Division of Geology-Hydrology,
Dpt of hydrogeology wells and Mathematical models

Street name and number 46, Chalkokondili
Postal Code 104 32 **City** Athens **Country** Greece
Phone 5236911 **Telex** **FAX**
5. **Title of primary employment:**
6. **Titles of first degrees, organization and year:**
B.Sc. in Natural Science from the University of Athens in 1976
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Elaboration of hydrogeological surveys for the construction of individual wells, supervision of hydrogeological studies, procedures for the assignment of hydrogeological projects, checking projects, supervision of the artificial recharge project in Argolis area
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Elaboration of hydrogeological projects

Other professional work

Date: 3/5/91

CURRICULUM VITAE

1. **Name** Epaminondas Lianos
2. **Date of birth** 1948 **Place of birth** Athens
3. **Home address:**
Street name and number Formionos 273 str.
Postal Code **City** Athens
Country Greece **Phone** 7669313
4. **Organization of primary employment: Title**
Ministry of Agriculture Directorate of Land Reclamation

Street name and number 46, Chalkokondili str.
Postal Code 104 32 **City** Athens **Country** Greece
Phone 5243455 **Telex** **FAX**
5. **Title of primary employment:**
Hydrogeologist of the department of hydrology of the Geology-Hydrology Directorate
6. **Titles of first degrees, organization and year:**
Laurea in Scienze Geologiche Universita degli studi di Bari-Italia (1976)
7. **Postgraduate titles, organizations, year and scientific area:**
Specializzazione in Idrografia-Idrologia Facolta di Ingegneria dell Universita di Padova-Italia (1982)
Diploma dell corso Internazionale di Idrologia Facolta di Ingegneria dell Universita di Padova-Italia
8. **Foreign languages:** Italiano-English
9. **Fields of scientific and professional activities:**
Hydrogeologist of the Ministry of Agriculture since 1980, especially in the department of hydrology of the directorate of land Reclamation. Subject: Elaboration and control of hydrology studies, collection and elaboration of hydrological data of the hydrological stations of the Ministry of Agriculture
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Hydrological study of Erithrai-Kaparelli Area

Other professional work

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Catherine Logothetou
2. **Date of birth** 1957 **Place of birth** Pireaus
3. **Home address:**
Street name and number Omiridou 82-84
Postal Code 185 37 **City** Pireaus
Country Greece **Phone**
4. **Organization of primary employment: Title**
Ministry of Agriculture-General Division of Land Reclamation works and Agriculture structures-Dir. of planning land Reclamation works and exploitation of soil and water resources

Street name and number 46, Chalkokondili str.
Postal Code 104 32 **City** Athens **Country** Greece
Phone 5244378 **Telex** **FAX**
5. **Title of primary employment:**
Agricultural engineer in the section of new technology
6. **Titles of first degrees, organization and year:**
Degree in Agricultural Engineering-Aristotelian University of Salonica (1982).
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:**
English
9. **Fields of scientific and professional activities:**
Land Reclamation works
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Georgia Kostopoulou
 2. **Date of birth** 1960 **Place of birth** Athens
 3. **Home address:**
Street name and number 15, Ierosolymon str.
Postal Code 112 52 **City** Athens
Country Greece **Phone** 8645409
 4. **Organization of primary employment: Title**
Ministry of Agriculture General Directorate of Land Reclamation Department of Planning Land Reclamation Works and Management of soil and water Resources

Street name and number 46, Chalkokondili str.
Postal Code 104 32 **City** Athens **Country** Greece
Phone 5244135 **Telex** **FAX** 5243828
 5. **Title of primary employment:**
Agriculture Engineer in the Department of Agro-Technical, Agro-Economical and Soil-Survey Studies of projects of land reclamation
 6. **Titles of first degrees, organization and year:**
Graduate of Agriculture Engineer, Faculty Land Reclamation (Agricultural University, 1984)
 7. **Postgraduate titles, organizations, year and scientific area:**
 8. **Foreign languages:** English-French
 9. **Fields of scientific and professional activities:**
Control and Elaboration of Agro-Techno-economical studies. Elaboration of initiative data to be used in the composition of studies. Estimation of the need of crop in water.
 10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
 11. **Related professional experience:**
Contribution in research projects
Program of monitoring the estimate of Acid rain in the prefecture of Attica
- Other professional work**
Participation in the Elaboration of environmental studies

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Stavroula Nikolopoulou
2. **Date of birth** 1955 **Place of birth** Manessi Messinias
3. **Home address:**
Street name and number 269, Patission str.
Postal Code 112 54 **City** Athens
Country Greece **Phone** 2233739
4. **Organization of primary employment: Title**
Ministry of Agriculture, Directorate of Geology-Hydrology-Depatrment of Hydrology

Street name and number 46, Chalkokondili str.
Postal Code 104 32 **City** Athens **Country** Greece
Phone 5236911 **Telex** 5243828 **FAX**
5. **Title of primary employment:**
Technical assistant of the department of hydrology
6. **Titles of first degrees, organization and year:**
Public Technical School of Kalamata (1975)
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:**
9. **Fields of scientific and professional activities:**
Control, arrangement and classification of the hydrological data and hydrological measurements of the hydrological stations of the Land Reclamation sector
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Participations to the hydrological study for the lower basin of Evrotas river and Molai region that was elaborated from the Ministry of Agriculture with the contribution of FAO

Other professional work

Date: 18/5/91

CURRICULUM VITAE

1. **Name** Stilian Tzima
2. **Date of birth** 1946 **Place of birth** Flabouresi Trikalon
3. **Home address:**
Street name and number 12, Telesiou str.
Postal Code 111 43 **City** Athens
Country **Phone** 2514310
4. **Organization of primary employment: Title**
Ministry of Agriculture, Directorate of Geology-Hydrology, Department of Hydrology

Street name and number 46, Chalkokondili str.
Postal Code 104 32 **City** Athens **Country** Greece
Phone 5242472 **Telex** 5243828 **FAX**
5. **Title of primary employment:**
Technical assistant of the department of hydrology
6. **Titles of first degrees, organization and year:**
Technical school of Taskendi USSR, specialisation in hydrology
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:** Russian
9. **Fields of scientific and professional activities:**
Control arrangement and classification of the hydrological data and hydrological measurements of the hydrological stations of the Land Reclamation sector
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 18/5/91

CURRICULUM VITAE

1. **Name** Sofoklis Tzovaridis
2. **Date of birth** 1945 **Place of birth** Kymi
3. **Home address:**
Street name and number 7, Kykladon str.
Postal Code 183 45 **City** Moschato
Country Greece **Phone** 9415986
4. **Organization of primary employment: Title**
Ministry of Environmental Physical Planning and Public Works/General Secretariat of Public Works

Street name and number 9, Fanarioton str.
Postal Code 101 78 **City** Athens **Country**
Phone 6445002 **Telex** **FAX**
5. **Title of primary employment:**
Head of Hydrology and Water Resources Section
6. **Titles of first degrees, organization and year:**
Rural and Surveyor Engineer - Polytechnical School of Salonica, 1969
7. **Postgraduate titles, organizations, year and scientific area:**
DEA degree, University "Paul Sabatier", Toulouse France, 1973, Fluid Mechanics
Ph.D in Fluid Mechanics, 1975, Polytechnical Institut of Toulouse France
8. **Foreign languages:** French, English
9. **Fields of scientific and professional activities:**
Hydrology and water resources
Water supply and sewerage plants. Land Reclamation Works
Environmental Engineering
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings 5
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 31/5/91

CURRICULUM VITAE

1. **Name** Eleimon Tiligadas
2. **Date of birth** 1951 **Place of birth** Athens
3. **Home address:**

Street name and number	8, M. Asteriou str.
Postal Code 105 58	City Athens
Country Greece	Phone 3228145
4. **Organization of primary employment: Title**
Ministry of Environmental Regional Planning and Public Works/General Ceceeriat of Public Works/Land Reclamation Works Division

Street name and number	9, Fanarioton str.	Country	Greece
Postal Code 101 78	City Athens	FAX	
Phone 6445068	Telex		
5. **Title of primary employment:**
Engineer in the section of Hydrology
6. **Titles of first degrees, organization and year:**
Diploma of Rural and Surveyor Engineer NTUA, 1974
7. **Postgraduate titles, organizations, year and scientific area:**
DEA in Fluid Mechanics, University "P. et M. Curie", 1981
Ph.D in Fluid Mechanics University "P. et M. Curie", Paris 1984 (Flow through porus media-Drainage)
8. **Foreign languages:** French, English
9. **Fields of scientific and professional activities:**
Land Reclamation Works (Irrigation-Drainage), Hydrology, Information Technology
10. **Published work (attach complete list):**

Number of publications in journals	1
Number of publications in conference proceedings	5
Number of books, dissertations, etc.	
Other published work	
Number of patents	
11. **Related professional experience:**
Contribution in research projects

Other professional work
Supervisor of land reclamation projects

Date: 28/5/91

CURRICULUM VITAE

1. **Name** Mixalis Petrakis
2. **Date of birth** 1944 **Place of birth** Athens
3. **Home address:**
Street name and number
Postal Code **City**
Country **Phone**
4. **Organization of primary employment: Title**
Institute of Meteorology and Physics of the Atmospheriz Environment, National Observatory of Athens

Street name and number	Lofos Nymphon P.O.Box 20048		
Postal Code 118 10	City Athens	Country	Greece
Phone 3456257	Telex 215530 OBSA	FAX	3421019
5. **Title of primary employment:**
Researcher
6. **Titles of first degrees, organization and year:**
Diploma (Physics), University of Athens
7. **Postgraduate titles, organizations, year and scientific area:**
M.Sc. Computer Science, University of Manchester Institute of Science and Technology, 1974
M.Sc. University of Athens, 1976
Diploma, Delft Techniche Hochescule, 1975
Ph.D University of Athens, 1983
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Computer science, Telecommunications Software, Automated data asquisition systems, Numerical models of wind and pollution flow, Wind Energy Generation
10. **Published work (attach complete list):**
Number of publications in journals 5
Number of publications in conference proceedings 9
Number of books, dissertations, etc.
Other published work 19
Number of patents
11. **Related professional experience:**
Contribution in research projects
Pollution Research Programmes in Ptolemais, Megalopolis, Athens
Collaboration with Julich Research Centre (Germany) in the area of contaminant and ozon flow. Collaboration with the Public Power Corporation of Greece. Principle Scientist in the EUFRAT programme (E.E.C)

Other professional work

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Basil Stergiopoulos
2. **Date of birth** 1954 **Place of birth** Hmathia
3. **Home address:**
Street name and number 16, Pandionos str.
Postal Code 111 43 **City** Athens
Country Greece **Phone** 2522327
4. **Organization of primary employment: Title**
Center for Renewable Energy Sources

Street name and number 6, Frati str.
Postal Code 194 00 **City** Koropi **Country** Greece
Phone 6626460-1 **Telex** **FAX** 6626462
5. **Title of primary employment:**
Project Leader in Small Hydro
6. **Titles of first degrees, organization and year:**
Diploma of Civil Engineering, Faculty of Engineering, University of Thessaloniki, 1978
7. **Postgraduate titles, organizations, year and scientific area:**
Doctorat D'Etat et Sciences Mathematiques-Mecanique, 1983
Diplome de Docteur-Ingenieur en Mecanique des Fluides, 1981
D.E.A./Diplome d'Etudes Approfondies en Mecanique des Fluides, 1979
8. **Foreign languages:** French, English, German
9. **Fields of scientific and professional activities:**
Research Scientist-Project Manager in Small Hydro Section. Research-design and development of small Hydroelectric Plants. Hydrological studies. General energy problems. Water turbines and turbomachinery.
10. **Published work (attach complete list):**
Number of publications in journals 12
Number of publications in conference proceedings 20
Number of books, dissertations, etc. 4
Other published work 23
Number of patents
11. **Related professional experience:**
Contribution in research projects
Contribution in research projects

Other professional work

1985-1988 Professor in Hydraulics, Fluid Mechanics, Turbomachinery in the TEI of Thessaloniki.

Date: 13/5/91

CURRICULUM VITAE

1. **Name** Socrates Kostikoglou
2. **Date of birth** 1968 **Place of birth** Athens
3. **Home address:**
Street name and number Monis Kikkou
Postal Code 115 26 **City** Athens
Country Greece **Phone** 6913490
4. **Organization of primary employment: Title**
Center for Renewable Energy Sources

Street name and number 6, Frati str.
Postal Code 194 00 **City** Koropi **Country** Greece
Phone 6626460 **Telex** **FAX** 6626462
5. **Title of primary employment:**
Computer Scientist
6. **Titles of first degrees, organization and year:**
Computer Engineer, Dept. of Computer Engineering & Informatics, University of Patras, 28/11/90
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:** English
9. **Fields of scientific and professional activities:**
Data Bases, Operating Systems, Computer Networks
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Project Valoven 61205: Cres Databases: 1989-1991
Project SPA13KAPE: Cres Databases: 1990-1993

Other professional work

Date: 17/5/91

CURRICULUM VITAE

1. **Name** Kostis Perrakis
2. **Date of birth** 1957 **Place of birth** Athens
3. **Home address:**
Street name and number 27, Kifissias Av.
Postal Code 115 23 **City** Athens
Country Greece **Phone** 01-6465782
4. **Organization of primary employment: Title**
Center for Renewable Energy Sources

Street name and number 6, Frati str.
Postal Code 194 00 **City** Koropi **Country** Greece
Phone 6626460 **Telex** **FAX** 6626462
5. **Title of primary employment:**
Project Leader
6. **Titles of first degrees, organization and year:**
Diploma of Electrical Engineering, National Technical of Athens, 1981
7. **Postgraduate titles, organizations, year and scientific area:**
Master of Engineering, Polytechnic Institute, N.Y, 1982 (Electric Power Engineering)
Master of Science in Operation Research, Georgia Institute of Technology, 1984 (Op.Research)
8. **Foreign languages:** English, French
9. **Fields of scientific and professional activities:**
Design & Development of data base Information Systems
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects
Project Valoren G1205: Cres Databases, 1989-91, Project Leader
Project SPA13KAPE: Cres Databases, 1990-93, Project Leader
NTUA-School of Architecture & General Secretariat for Research and Technology, 1991-92: Data base on Greack architects work

Other professional work

Date: 10/5/91

CURRICULUM VITAE

1. **Name** John Bartzis

2. **Date of birth** 1947 **Place of birth** Almiri Korinthias

3. **Home address:**

Street name and number	67, Zoodochou Pigis St		
Postal Code 106 81	City	Athens	
Country Greece	Phone	30-1-3642254	

4. **Organization of primary employment: Title**
NCSR "Demokritos"
Institute of Nuclear Technology and Radiation Protection

Street name and number		City	Ag. Paraskevi, Athens	Country	Greece
Postal Code 15310		City	Ag. Paraskevi, Athens	Country	Greece
Phone 30-1-6525004		Telex	216199	FAX	30-1-6533431

5. **Title of primary employment:**
Research Scientist

6. **Titles of first degrees, organization and year:**
Diploma in Mechanical and Electrical Engineering, N.T.U.A., 1970

7. **Postgraduate titles, organizations, year and scientific area:**
M. Sc. Nuclear Engineering, MIT, USA, 1975
Ph. D. Nuclear Engineering, MIT, USA, 1977

8. **Foreign languages:** English

9. **Fields of scientific and professional activities:**
Fluid Mechanics, Heat Transfer and Numerical Analysis
Applications to the Safety of Nuclear and Other Energy Systems and to the Atmospheric Pollution

10. **Published work (attach complete list):**

Number of publications in journals	11
Number of publications in conference proceedings	19
Number of books, dissertations, etc.	-
Other published work	36 reports
Number of patents	-

11. **Related professional experience:**
Contribution in research projects
Participation in US NRC and ERDA research projects
Project leader in various CEC and IAEA projects

Other professional work
Teaching and Industrial experience

Date: 10.5.91

CURRICULUM VITAE

1. **Name** Nicolas Katsaros
2. **Date of birth** 1952 **Place of birth** Athens
3. **Home address:**
Street name and number 3, Eptanissou str.
Postal Code 153 41 **City** Ag. Paraskevi, Athens
Country Greece **Phone**
4. **Organization of primary employment: Title**
N.C.S.R. "DEMOKRITOS" , Institute of Nuclear Technology - Radiation Protection

Street name and number
Postal Code 153 10 **City** Ag. Paraskevi, Athens **Country** Greece
Phone 30-1-6525004 **Telex** 216199 **FAX** 30-1-6533431
5. **Title of primary employment:**
Research staff
6. **Titles of first degrees, organization and year:**
Maitrise de Physique, Universite de Paris XI (Orsay), 1976
Ingenieur Genie Atomique, Institut National de Sciences et Techniques Nucleaires (Saclay), 1980
7. **Postgraduate titles, organizations, year and scientific area:**
DEA Physique Nucleaire - Physique de Reacteurs, Universite de Paris XI et INSTN, 1977
Dr Physique de Reacteurs Nucleaires, Universite de Paris XI e Commissariat a l' Energie Atomique (Saclay), 1980
8. **Foreign languages:** French, English
9. **Fields of scientific and professional activities:**
Nuclear Technology
Math. Simulation of Complex Systems
10. **Published work (attach complete list):**

Number of publications in journals	4
Number of publications in conference proceedings	5
Number of books, dissertations, etc.	-
Other published work	7
Number of patents	-
11. **Related professional experience:**
Contribution in research projects
3 CEC projects
Atmosph. pollution of the Attiki area (staff from Athens Observatory, Univ. of Athens, Demokritos)

Other professional work
Heat Transfer, School of Engin. Greek Air Force Academy
Reactor Project GECHNICATOME Co
Research staff, Service d' Etudes de Reacteur et de Mathematiques Appliquees (Commissariat a l' Energie Atomique, Saclay)

Date: 10/5/91

CURRICULUM VITAE

1. **Name** George Amanatidis
2. **Date of birth** 1959 **Place of birth** Kilkis
3. **Home address:**
Street name and number Kitsou 20
Postal Code 115 22 **City** Athens
Country Greece **Phone** 30-1-6411231
4. **Organization of primary employment: Title**
NCSR "Demokritos", Institute of Nuclear Technology and Radiation Protection

Street name and number
Postal Code 153 10 **City** Ag. Paraskevi, Athens **Country** Greece
Phone 30-1-6525004 **Telex** 216199 **FAX** 30-1-6533431
5. **Title of primary employment:**
Research Associate
6. **Titles of first degrees, organization and year:**
Diploma of Physics, Aristotle University of Thessaloniki, 1983
7. **Postgraduate titles, organizations, year and scientific area:**
DEA Chemistry of Pollution, Universite Paris 7, 1984
Doctorate on Physics, Aristotle University of Thessaloniki, 1988
8. **Foreign languages:** English, French
9. **Fields of scientific and professional activities:**
Atmospheric Pollution
Meteorology
Atmospheric Chemistry
10. **Published work (attach complete list):**

Number of publications in journals	6
Number of publications in conference proceedings	11
Number of books, dissertations, etc.	2
Other published work	10
Number of patents	-
11. **Related professional experience:**
Contribution in research projects
Participation in two research programmes financed by the General Secretary of Research and Technology of Greece and in three research programmes by the Commission of the European Communities

Other professional work
Teaching activities (three years)

Date: 3.5.91

CURRICULUM VITAE

1. **Name** Michalis Stratis
2. **Date of birth** 1946 **Place of birth** Athens

3. **Home address:**
Street name and number 17, Timoleonos Vassou str.
Postal Code 115 21 **City** Athens
Country Greece **Phone** 6465606

4. **Organization of primary employment: Title**
EYDAP - Water Supply and Sewage Corporation of Athens

Street name and number 156, Oropou str.
Postal Code 111 46 **City** Athens **Country** Greece
Phone 7753977 **Telex** 219353 **FAX** 2533124/7751369

5. **Title of primary employment:**
Head Department of Evaluation of EEC Activities

6. **Titles of first degrees, organization and year:**
Diploma, B. Sc, Rural Engineering, N.T.U.A., 1968
Diploma, B. SC. Civil Engineering, N.T.U.A., 1975

7. **Postgraduate titles, organizations, year and scientific area:**

8. **Foreign languages:** English

9. **Fields of scientific and professional activities:**

10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents

11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 13.5.91

CURRICULUM VITAE

1. **Name** Kiriaki Konstadinidou
 2. **Date of birth** 1955 **Place of birth** Athens
 3. **Home address:**
Street name and number 2, Kirkis str.
Postal Code 162 32 **City** Athens
Country Greece **Phone** 7641991
 4. **Organization of primary employment: Title**
Water Supply and Sewage Corporation of Athens

Street name and number 156, Oropou str
Postal Code 111 46 **City** Athens **Country** Greece
Phone 2533402 **Telex** 219353 **FAX** 2533124/7751369
 5. **Title of primary employment:**
Head Operation of Mornos Aquaduct Department
 6. **Titles of first degrees, organization and year:**
Diploma B. Sc. Civil Engineering N.T.U.A., 1978
 7. **Postgraduate titles, organizations, year and scientific area:**
Master of Science Civil Engineer, PURDUE University USA, 1979
Hydraulics System Analysis
 8. **Foreign languages:** English
 9. **Fields of scientific and professional activities:**
Design of Hydraulic Projects
 10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
 11. **Related professional experience:**
Contribution in research projects
Research projects "Model of the Energy System", European Community DG XII
- Other professional work**

Date: 13.5.91

CURRICULUM VITAE

1. **Name** Alexander Zaphirakos
2. **Date of birth** 1956 **Place of birth** Athens
3. **Home address:**
Street name and number 6, Antiopis str.
Postal Code 173 43 **City** Ag. Dimitrios, Athens
Country Greece **Phone** 9710019
4. **Organization of primary employment: Title** EYDAP
Water and Sewage Company of Athens

Street name and number 156, Oropou Str.
Postal Code 111 46 **City** Galatsi, Athens **Country** Greece
Phone 2462555 **Telex** 219353 **FAX** 2463577
5. **Title of primary employment:**
Head Department of Water Treatment Plant at Menidi site, Division of Water Treatment Plants
6. **Titles of first degrees, organization and year:**
Diploma B. Sc. of Civil Engineering, N.T.U.A., 1979
7. **Postgraduate titles, organizations, year and scientific area:**
M. Sc., University of Iowa, USA, 1982
Department of Civil and Environmental Engineering program of water resources
8. **Foreign languages:** English, French
9. **Fields of scientific and professional activities:**
Field of water resources planning and management water and wastewater treatment
10. **Published work (attach complete list):**
Number of publications in journals -
Number of publications in conference proceedings 1
Number of books, dissertations, etc. 4
Other published work -
Number of patents -
11. **Related professional experience:**
Contribution in research projects
Research assistant, IIHR, University of Iowa, 1980-82
Projects: Ralston Greek Project; Hydrologic investigations. IIHR Distributed Watershed and Sedimentation model. Project A-077-IA Application to the Des Moines River of multiple reservoir operating strategies
Incorporating short and long term information in real time.

Other professional work
SERDC, DESIGN, Construction and operation of a pilot plant for treatment of municipal wastewater (NATO and EYDAP).

Date: 5.8.1991

CURRICULUM VITAE

1. **Name** Marina Kottidi
2. **Date of birth** 1952 **Place of birth** Athens
3. **Home address:**
Street name and number 24, Tsitouri st
Postal Code 152 31 **City** Chalandri, Athens
Country Greece **Phone** 6476319
4. **Organization of primary employment: Title** EYDAP
Water Supply and Sewage Corporation of Athens

Street name and number 156, Oropou st.
Postal Code 11146 **City** Galatsi, Athens **Country** Greece
Phone 7753977 **Telex** 219353 **FAX** 2533124/7751369
5. **Title of primary employment:**
Department of Evaluation of EEC Activities
6. **Titles of first degrees, organization and year:**
B. Sc. of Economics, University of Athens, 1977
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:** English, French, Deutch
9. **Fields of scientific and professional activities:**
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 13.5.91

CURRICULUM VITAE

1. **Name** Markos Hambakis
2. **Date of birth** 1962 **Place of birth** Athens
3. **Home address:**
Street name and number Mahis Analatou 51
Postal Code 117 44 **City** Athens
Country Greece **Phone** 30-1-9015001
4. **Organization of primary employment: Title** EYDAP
Water Supply and Sewage Corporation of Athens

Street name and number 156 Oropou st.
Postal Code 111 46 **City** Galatsi, Athens **Country** Greece
Phone 7753977 **Telex** 219353 **FAX** 2533124/7751369
5. **Title of primary employment:**
6. **Titles of first degrees, organization and year:**
Electrical Eng. N.T.U.A., 1985
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:** English, French
9. **Fields of scientific and professional activities:**
Computer Installation
Specifications for CAD/CAE/CIM
Data Bases and Expert Systems
Computer Network and Linking
Electromagnetic Theory - Plasma Physics
10. **Published work (attach complete list):**

Number of publications in journals	1
Number of publications in conference proceedings	-
Number of books, dissertations, etc.	-
Other published work	1
Number of patents	-
11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 10/5/91

CURRICULUM VITAE

1. **Name** Demetrious Lykourias
2. **Date of birth** 1955 **Place of birth** Australia
3. **Home address:**
Street name and number 1, Orinis Taxiarchias str.
Postal Code 157 73 **City** Zografou, Athens
Country Greece **Phone** 7787071
4. **Organization of primary employment: Title**
Hellenic Agency for Local Development and Local Government

Street name and number 19, Omirou str.
Postal Code 106 72 **City** Athens **Country** Greece
Phone 3608889 **Telex** 226572 **FAX** 3602445
5. **Title of primary employment:**
Computer Engineer
6. **Titles of first degrees, organization and year:**
Center of Higher Technical Education, Athens, 1977
School of Mathematics, Athens University, 1980
Electrical Engineer, NTUA, 1983
7. **Postgraduate titles, organizations, year and scientific area:**
8. **Foreign languages:** English, German
9. **Fields of scientific and professional activities:**
Analysis, design, implementation of information systems
Publications (technical periodicals), Seminar Management
Technical support for EEC programmes
10. **Published work (attach complete list):**
Number of publications in journals
Number of publications in conference proceedings
Number of books, dissertations, etc.
Other published work
Number of patents
11. **Related professional experience:**
Contribution in research projects

Other professional work

Date: 13/5/91