European Geosciences Union General Assembly 2010
Vienna, Austria, 2-7 May 2010

Session SC5: How to write (and publish) a scientific paper in hydrology

Why (and how) to write and publish a scientific paper in hydrology?

Demetris Koutsoyiannis
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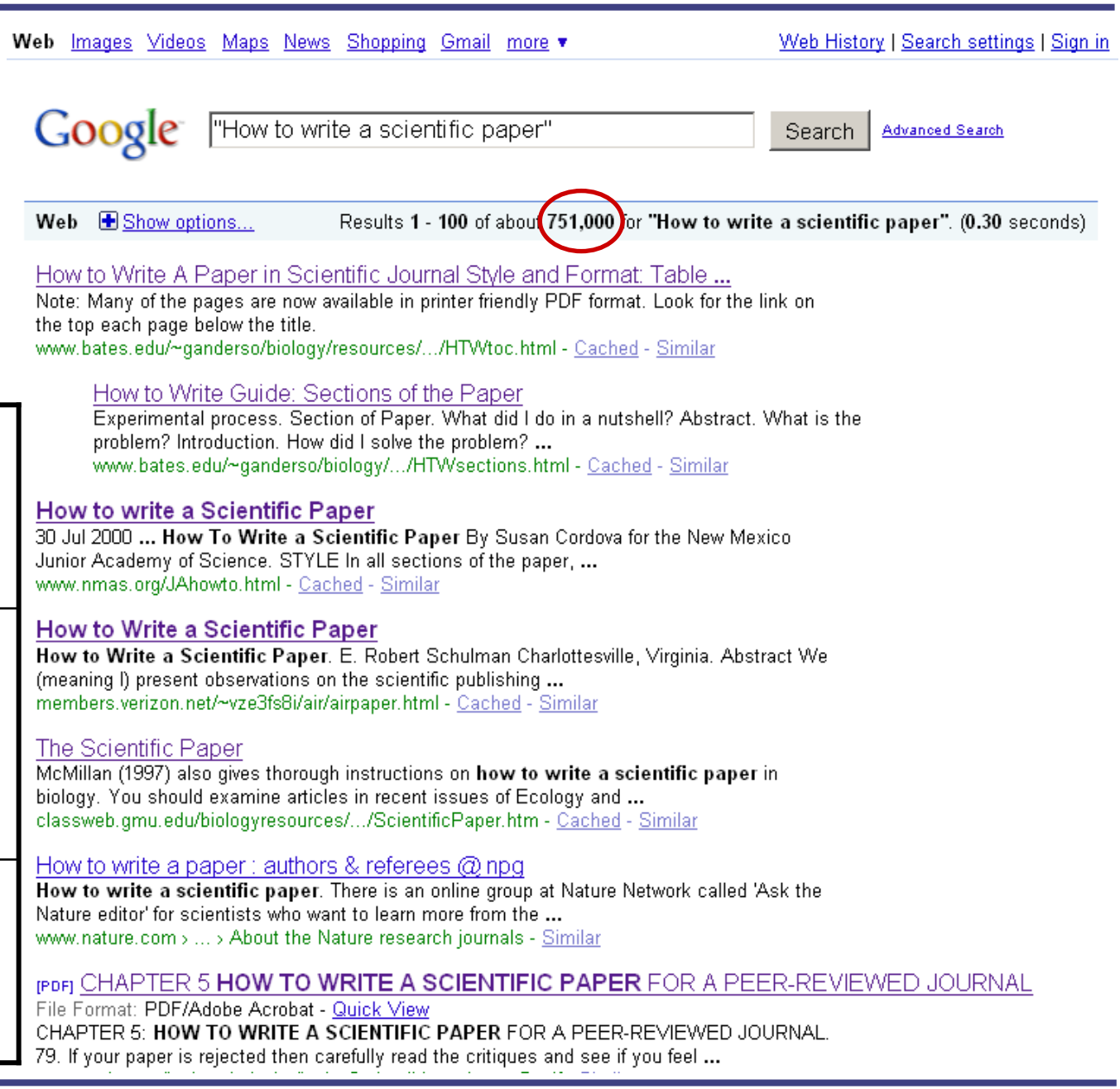
Presentation available online: http://www.itia.ntua.gr/en/docinfo/975/

There is abundant information on the subject ...

"how to write a scientific paper"	751 000 entries
"how to write and publish a scientific paper"	132 000 entries
"how to publish a scientific paper"	86 entries

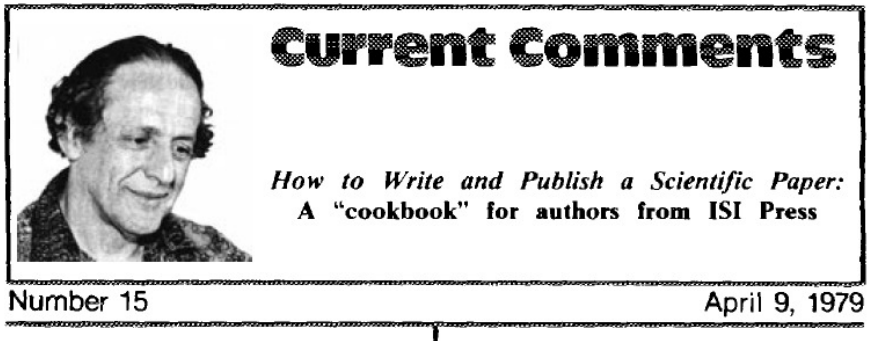


There is also information specific for hydrology …

- Jeff McDonnell, How to publish, http://twws6.vub.ac.be/hydr/download/meetings/09_04_29%20how%20to%20publish%20review%20(jef).pptx
  - Older version: Jeff McDonnell, How to write a journal paper, http://www.cof.orst.edu/cof/fe/watershd/fe537/powerpoint_2007/FE%20How%20to%20PUBLISH%20A%20paPER%20handouts.pdf
- Getachew Mohammed, Jef Dams and Jiri Nossent, How to write and publish a scientific paper in hydrology, http://twws6.vub.ac.be/hydr/download/meetings/09_04_29%20how%20to%20write%20and%20publisch%20a%20scientific%20paper%20in%20hydrology%20(jiri).ppt

Both these presentations are very useful to read and are regarded "**additional material**" to this one

There are books…

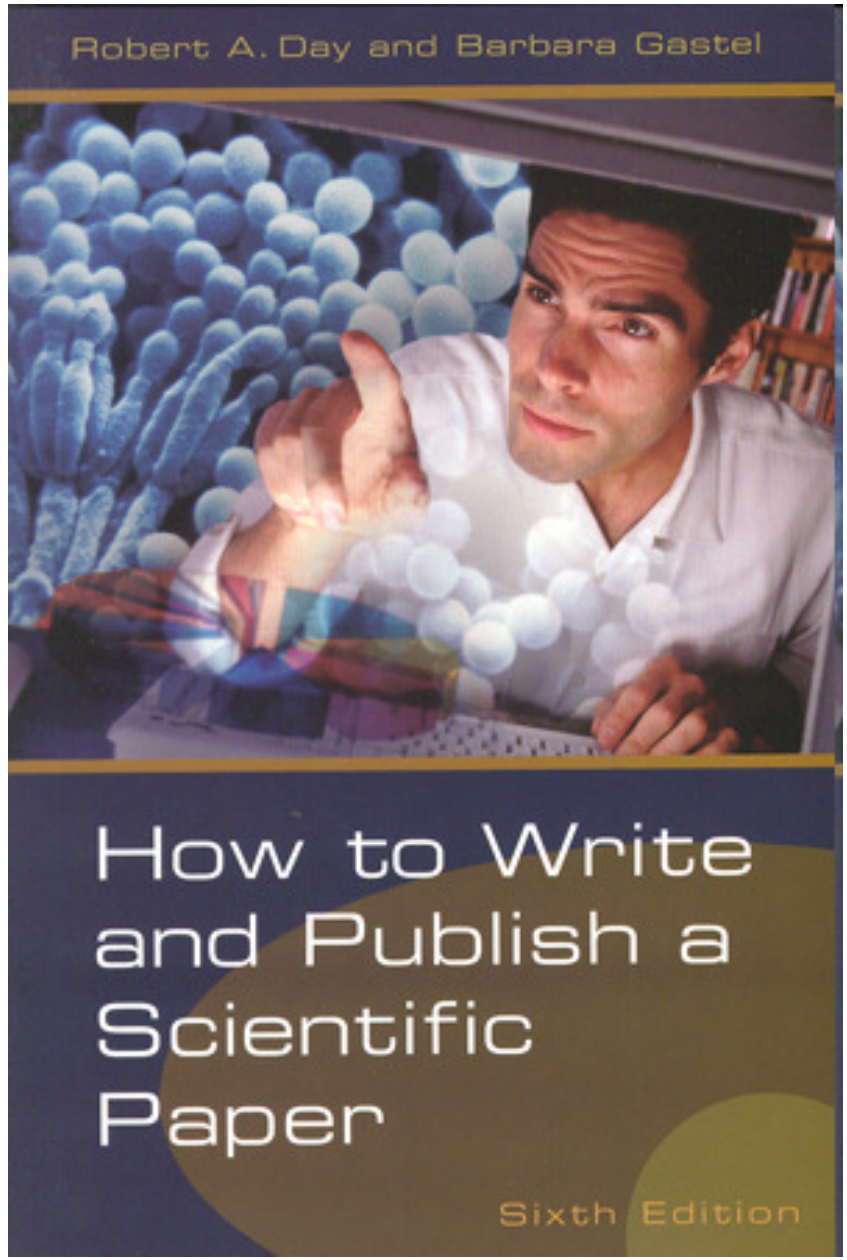


Current Comments

How to Write and Publish a Scientific Paper:
A "cookbook" for authors from ISI Press

Number 15 April 9, 1979

In the late fifties and throughout the sixties, numerous books appeared on how to make scientists more efficient communicators. But if you consider the large number of universities that now offer courses in scientific writing,[3] a curiously small number of books have been written on the subject lately. Ex-



There are journal articles…

Personal perspective

How to write a scientific masterpiece

Ushma S. Neill

Executive Editor, The Journal of Clinical Investigation

I've been asked several times to give talks about various aspects of the scientific publishing enterprise, and sometimes to comment specifically on how to write a manuscript that will have maximal impact. While many in my audiences have felt that my presentations are designed for students and trainees, I hope everyone listens, as sometimes even established scientists are prone to making mistakes. I hope here to outline a few pointers that will help your manuscripts skate through the submission and peer review process. Some points may be elementary, but all bear repeating.

Before you start writing

It goes without saying that you need to be realistic about which journal to send your work to in the first place. Our particular goal at the *JCI* is to publish basic biological findings and translational studies that have clear biomedical interest and implications for the treatment of human diseases and represent a novel concep-

and it is probably not sufficient to communicate your message. What is to be contained in these precious few paragraphs? First, introduce the study and list the authors. The middle paragraphs should be dedicated to explaining the basic premise of your study and why the findings are interesting and novel. In the case of the *JCI*, you should also note what clinical implica-

Neill, U. S., How to write a scientific masterpiece, *J. Clin. Invest.*, 117:3599–3602, 2007 doi:10.1172/JCI34288

There are web sites…

How to Write a Paper in Scientific Journal Style and Format

A Strategy for Writing Up Research Results

[Table of Contents] [PDF Version]

Get Organized	Literature Review	Introduction	Design and Methods
Analyze Your Data	Results	Discussion	Abstract and Title	Self-Revise
Peer Review	Prepare Final Draft

Get Organized: Lists, Outlines, Notecards, etc. Before starting to write the paper, take the time to think about and develop a list of points to be made in the paper. As you progress, use whichever strategy works for you to begin to order and to organize those points and ideas into sections.

A. Balanced Review of the Primary Research Literature: Do an in-depth, balanced review of the primary research literature relevant to your study questions prior to designing and carrying out the experiments. This review will help you learn what is known about the topic you are investigating and may let you avoid unnecessarily repeating work done by others. This literature will form the basis of your Introduction and Discussion. Training in *on-line searches* is available from the Reference Librarians. Do your search early enough to take advantage of the *Interlibrary Loan System* if need be.

B. Write the Introduction: Once your hypothesis has been refined for testing, you will draft the Introduction to your paper. In PI courses you will bring a draft of the Introduction to lab the day of the experiment for critique by an instructor or TWA (Technical Writing Assistant).

C. Design and Conduct the Experiment: Keep careful notes on procedures used during the experiment . You should write the Materials and Methods section upon completion of the experiment.

Top of page

http://abacus.bates.edu/~ganderso/biology/resources/writing/ HTWtoc.html

… most of which are very useful and some are fun …

How to Write a Scientific Paper

E. Robert Schulman
Charlottesville, Virginia

Abstract

We (meaning I) present observations on the scientific publishing process which (meaning that) are important and timely in that unless I have more published papers soon, I will never get another job. These observations are consistent with the theory that it is difficult to do good science, write good scientific papers, and have enough publications to get future jobs.

Schulman, E. R., How to write a scientific paper, *Annals of Improbable Research*, 2 (5), 8, 1996, http://members.verizon.net/~vze3fs8i/air/airpaper.html

Some extracts from the last paper…

- **1. Introduction**
  Scientific papers … are an important—though poorly understood—method of publication. They are important because without them scientists cannot get money from the government or from universities. They are poorly understood because they are not written very well. …

  The real purpose of introductions, of course, is to cite your own work…, the work of your advisor … or even the work of someone you've never met, as long as your name happens to be on the paper…

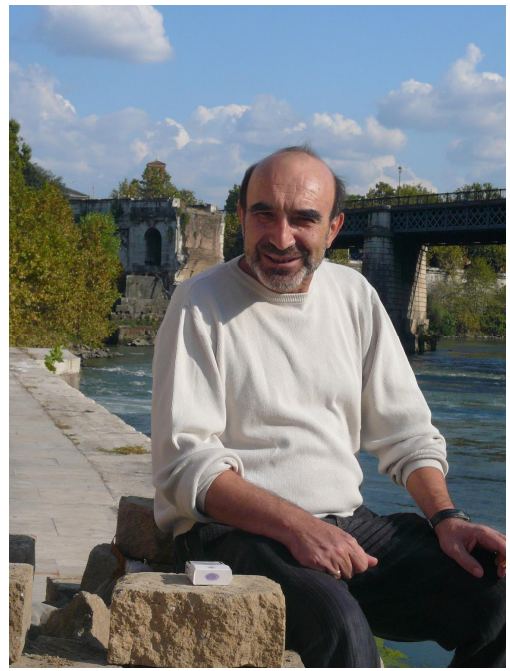
  At the end of the introduction you must summarize the paper by reciting the section headings. In this paper, we discuss scientific research (section 2), scientific writing (section 3), scientific publication (section 4), and draw some conclusions (section 5).
- …
- **5. Conclusions**
  The conclusion section is very easy to write: all you have to do is to take your abstract and change the tense from present to past.

Schulman, E. R., How to write a scientific paper, *Annals of Improbable Research*, 2 (5), 8, 1996, http://members.verizon.net/~vze3fs8i/air/airpaper.html

So, what can I add to this inflationary information and professional advice?

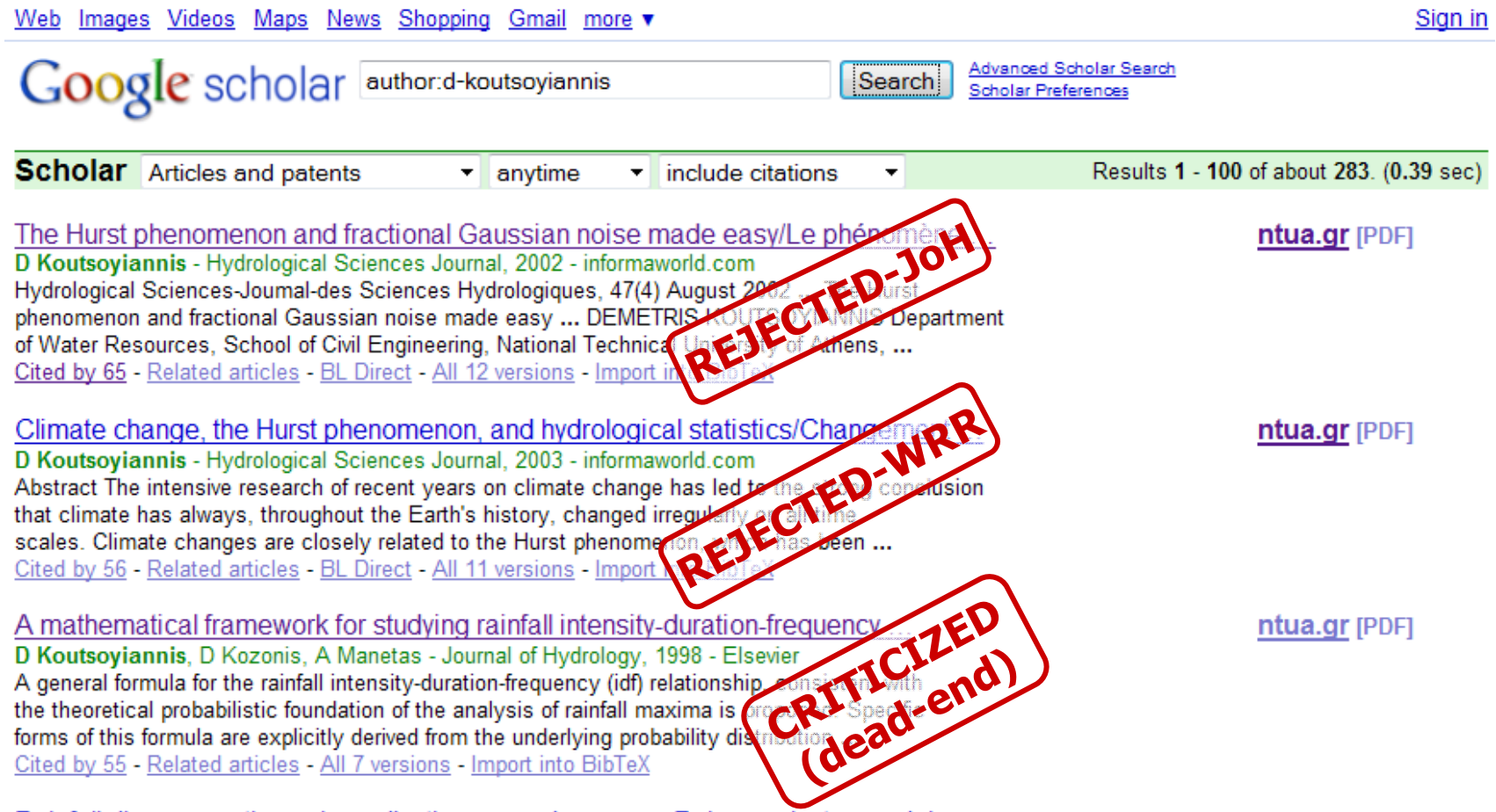
- Nothing …
- … except some personal views and personal experience…
- … some help in discussing issues you raise ...
- + a discussion of the "Why" question and its implications

Introducing myself…



- Profession: Civil Engineer specialized in hydrology and hydrosystems
- Affiliation: National Technical University of Athens (professor)
- Author: 75 journal papers, 525 scientific/technical documents
- Reviewer: 270 journal papers (in about 20 journals), 100 other papers and proposals
- Associate editor: *Journal of Hydrology* (2000-08), *Hydrological Sciences Journal* (2003-06), *Water Resources Research* (2007-09), *Hydrology and Earth System Sciences* (2007-).
- (Co-)Editor, *Hydrological Sciences Journal* (2006-)

A note on my critical attitude



A note on my transparent attitude: rejections

ITIA
RESEARCH TEAM
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National Technical University of Athens
Faculty of Civil Engineering
Department of Water Resources and Environmental Engineering

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6 documents, sorted by reverse date.

1. Koutsoyiannis, D., N. Zarkadoulas, A. N. Angelakis, and G. Tchobanoglous, Urban water management in Ancient Greece: Legacies and lessons, *Journal of Water Resources Planning and Management - ASCE*, 134 (1), 45–54, 2008.

   [doc_id=750] English More information and full text

2. Koutsoyiannis, D., and A. Montanari, Statistical analysis of hydroclimatic time series: Uncertainty and insights, *Water Resources Research*, 43 (5), W05429, doi:10.1029/2006WR005592, 2007.

   [doc_id=781] English More information and full text

3. Koutsoyiannis, D., On the quest for chaotic attractors in hydrological processes, *Hydrological Sciences Journal*, 51 (6), 1065–1091, 2006.

   [doc_id=714] English More information and full text

4. Koutsoyiannis, D., Climate change, the Hurst phenomenon, and hydrological statistics, *Hydrological Sciences Journal*, 48 (1), 3–24, 2003.

   [doc_id=537] English More information and full text

5. Koutsoyiannis, D., The Hurst phenomenon and fractional Gaussian noise made easy, *Hydrological Sciences Journal*, 47 (4), 573–595, 2002.

   [doc_id=511] English More information and full text

6. Koutsoyiannis, D., and G. Baloutsos, Analysis of a long record of annual maximum rainfall in Athens, Greece, and design rainfall inferences, *Natural Hazards*, 22 (1), 29–48, 2000.

   [doc_id=20] English More information and full text

http://www.itia.ntua.gr/en/documents/?tags=rejected

I have made available on line "prehistories" (manuscripts, reviews and decisions) of my papers initially rejected

A note on my contributions on scientific publishing

ITIA
RESEARCH TEAM
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National Technical University of Athens
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Department of Water Resources and Environmental Engineering

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6 documents, sorted by reverse date.

1. Koutsoyiannis, D., and Z. W. Kundzewicz, Editorial—Recycling paper vs recycling papers, *Hydrological Sciences Journal*, 54 (1), 3–4, 2009.

   [doc_id=891] English More information and full text

2. Koutsoyiannis, D., and Z. W. Kundzewicz, The choice of language and its relationship to the impact of hydrological studies. Reply to discussions of "Editorial-Quantifying the impact of hydrological studies", *Hydrological Sciences Journal*, 53 (2), 495–499, 2008.

   [doc_id=856] English More information and full text

3. Koutsoyiannis, D., and Z. W. Kundzewicz, Editorial - Quantifying the impact of hydrological studies, *Hydrological Sciences Journal*, 52 (1), 3–17, 2007.

   [doc_id=746] English More information and full text

4. Kundzewicz, Z. W., and D. Koutsoyiannis, The peer review system revisited, *Hydrology Journal Editors Meeting*, Vienna, Advances in Water Resources, Hydrological Processes, Hydrological Sciences Journal, Hydrology and Earth Systems Sciences, Journal of Hydrology, Journal of River Basin Management, Nordic Hydrology, Water Resources Research, 2006.

   [doc_id=713] English More information and full text

5. Kundzewicz, Z. W., and D. Koutsoyiannis, Pathologies, improvements and optimism, *Hydrological Sciences Journal*, 51 (2), 357–363, 2006.

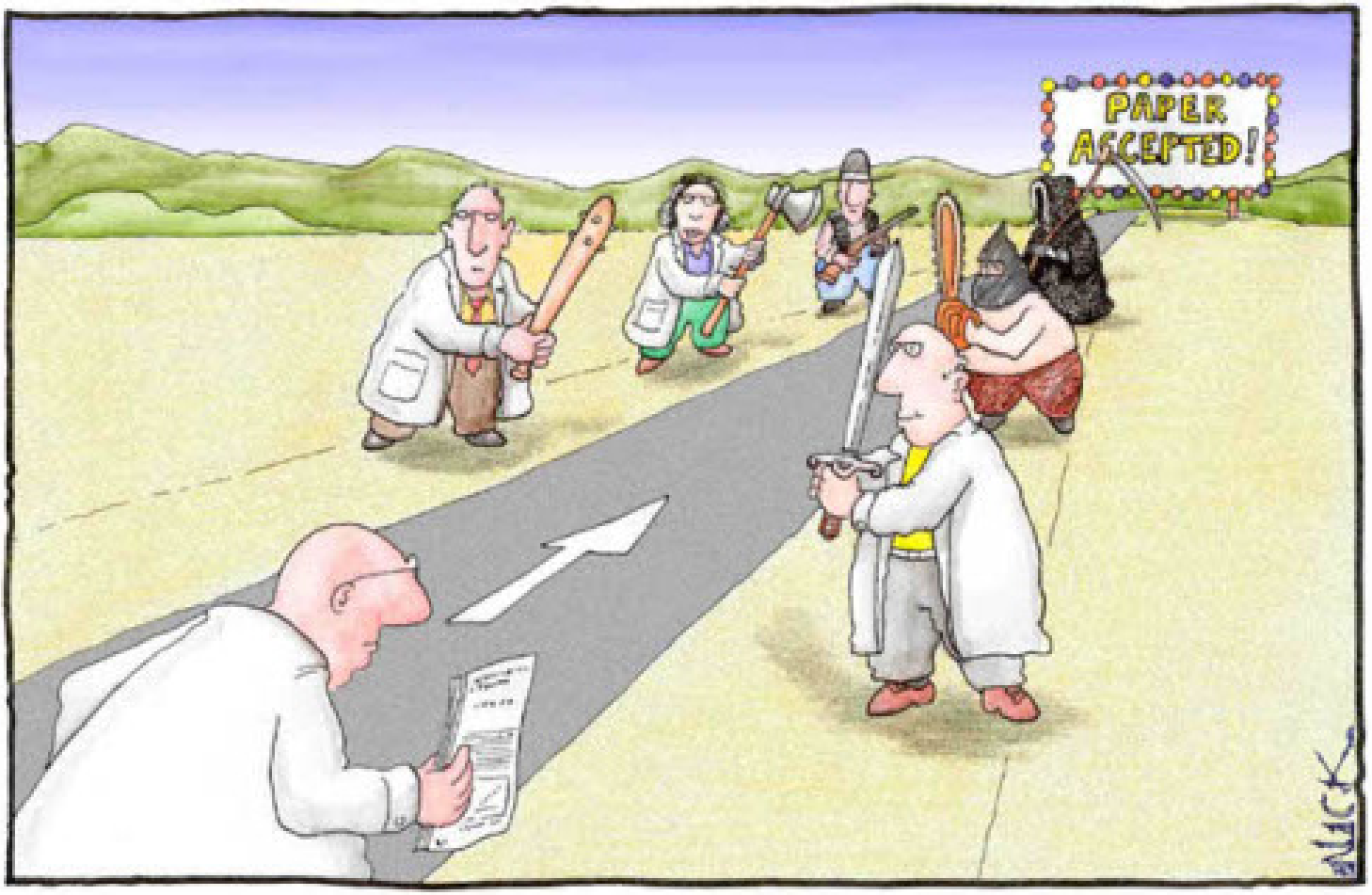
   [doc_id=702] English More information and full text

6. Kundzewicz, Z. W., and D. Koutsoyiannis, Editorial - The peer-review system: prospects and challenges, *Hydrological Sciences Journal*, 50 (4), 577–590, 2005.

   [doc_id=661] English More information and full text

http://www.itia.ntua.gr/en/documents/?authors=koutsoyiannis&tags=peer_review

Exploring the landscape: the peer review system



If publishing a paper is so important, the procedure must make it appear as a deed...

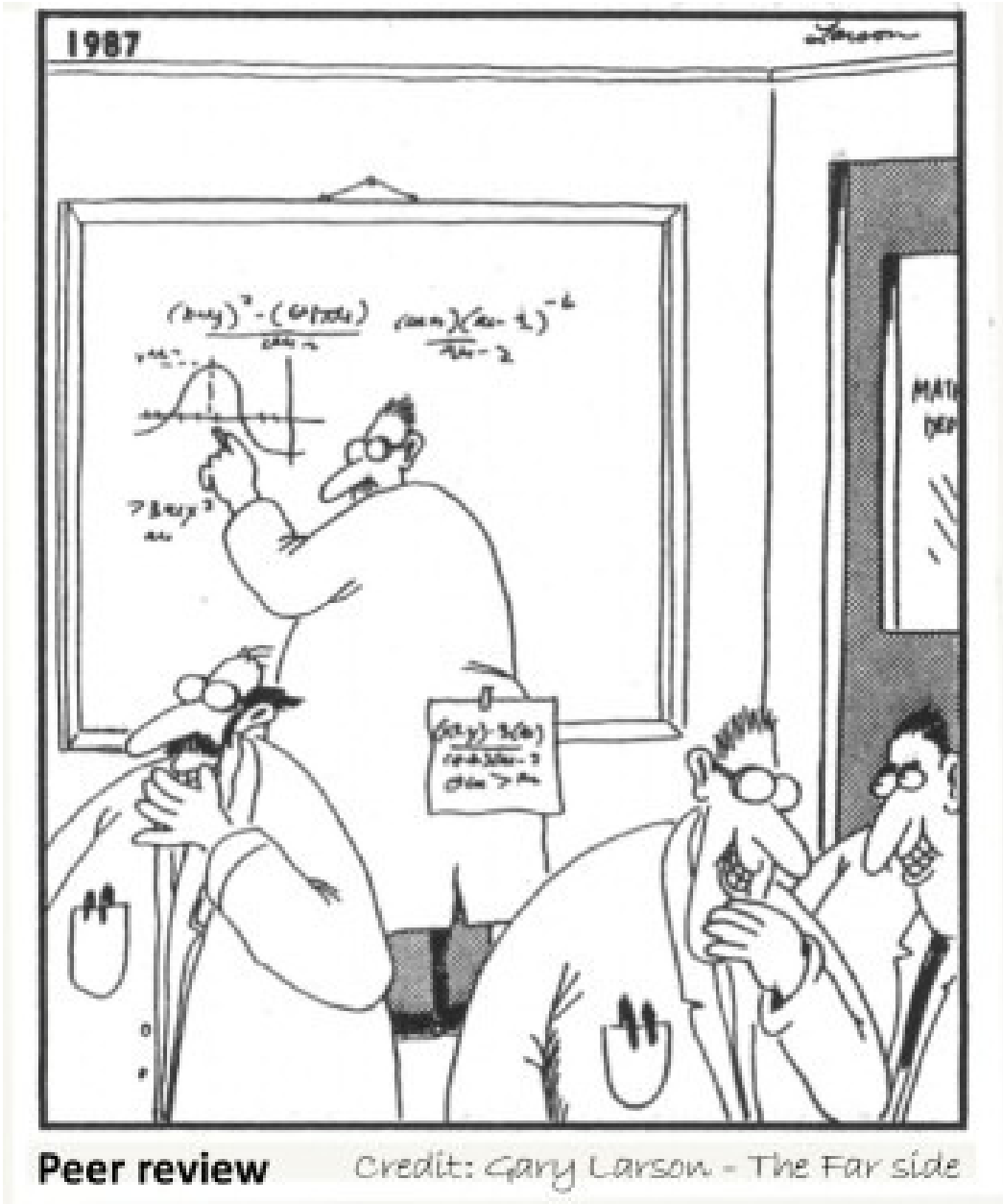
Cartoon copied from
http://plazamoyua.wordpress.com/2009/11/16/cambio-climatico-450-estudios-peer-reviewed/
http://rogerpielkejr.blogspot.com/2009/11/redefining-peer-review.html

The peer review system (2)

... and, thus, rejection should be very common

The peer review system (3)

- The system exhibits several pathologies
- Some of them are related to the anonymous transactions, which are the most common
- The peer review system is related to, and interacts with, the ethics of the scientific community



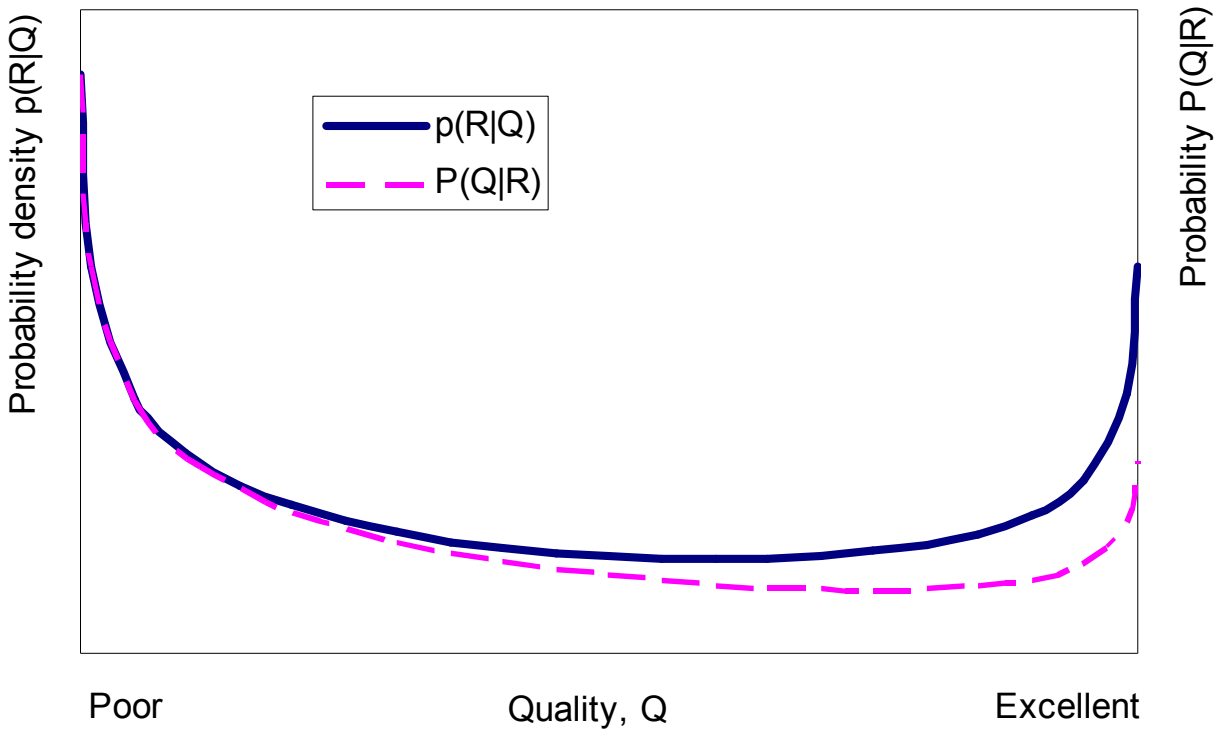
Diagnosis of pathologies

- Ioannidis (2005) on published research findings:
  1. False findings may be the majority or even the vast majority of published research claims
  2. The greater the financial and other interests and prejudices in a scientific field, the less likely the research findings are to be true
  3. The hotter a scientific field (with more scientific teams involved), the less likely the research findings are to be true
- Horrobin (2001) states that peer review:
  1. is a non-validated charade whose processes generate results little better than does chance
  2. is a crucial determinant of what sees the light of day in a particular journal. Fortunately, it is less effective in blocking publication completely; there are so many journals that most even modestly competent studies will be published provided that the authors are determined enough

Ioannidis, J. P. A., Why most published research findings are false, *PLoS Med.*, 2(8), 124. 2005.
Horrobin, D., 2001, "Something Rotten at the Core of Science?" Trends in Pharmacological Sciences, 22(2), 2001 (http://post.queensu.ca/~forsdyke/peerrev4.htm)

An attempt for probalitization

- Peer review captures the poorest papers, but also tends to convict (reject) the excellent (e.g. breakthrough) papers
- Here is a Bayesian probabilistic analysis of quality (Q) and rejection (R), assuming a modest "prior" for a specific author, i.e.,
  - the probability of producing a poor paper is highest and that of producing an excellent paper is zero $p(Q) \sim (Q_{excellent} - Q)$
- Modest papers have lowest probability of rejection
- When I receive a rejection, the most probable possibility is that my paper is poor
- The second most probable is that it is excellent



An older perspective (1963)

Chaos in the Brickyard

Once upon a time, among the activities and occupations of man there was an activity called scientific research and the performers of this activity were called scientists. In reality, however, these men were builders who constructed edifices, called explanations or laws, by assembling bricks, called facts.

...

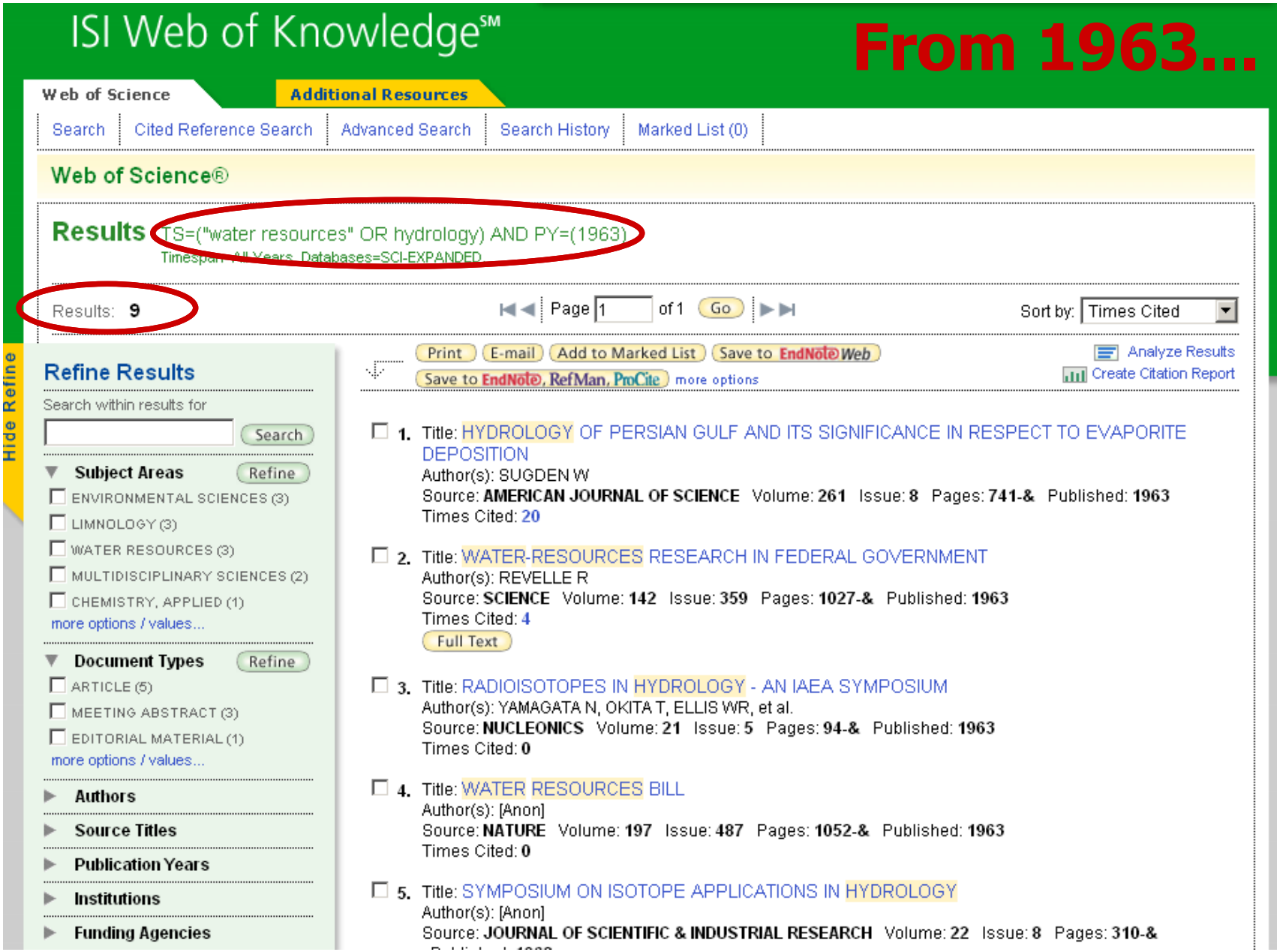
...

...

Unfortunately, the builders were almost destroyed. It became difficult to find the proper bricks for a task because one had to hunt among so many. It became difficult to find a suitable plot for construction of an edifice because the ground was covered with loose bricks. It became difficult to complete a useful edifice because, as soon as the foundations were discernible, they were buried under an avalanche of random bricks. And, saddest of all, sometimes no effort was made even to maintain the distinction between a pile of bricks and a true edifice.

BERNARD K. FORSCHER
Mayo Clinic, Rochester, Minnesota

Letter published in *Science* in 1963
h/t: Younes Alila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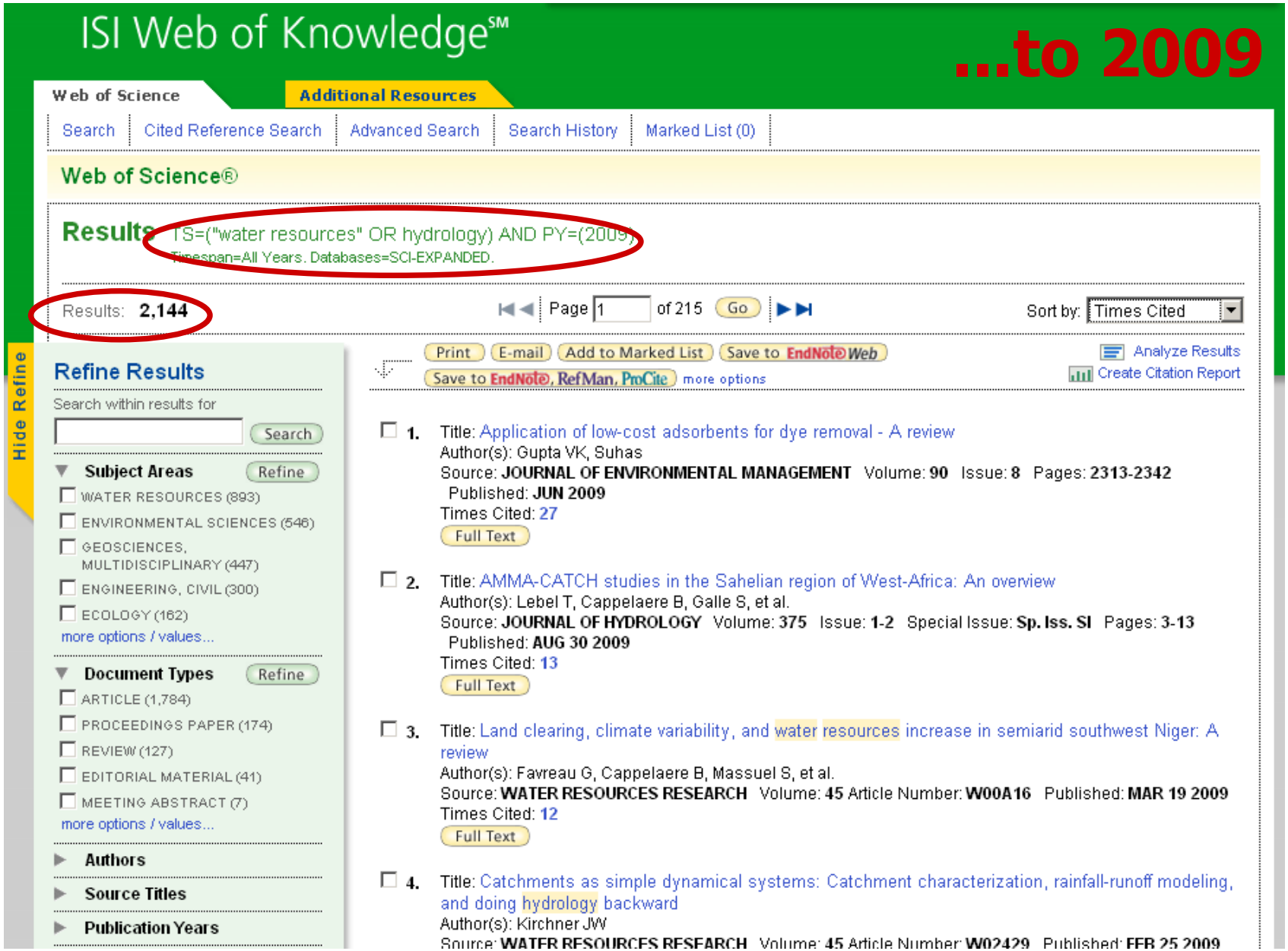
1. Title: HYDROLOGY OF PERSIAN GULF AND ITS SIGNIFICANCE IN RESPECT TO EVAPORITE DEPOSITION
Author(s): SUGDEN W
Source: AMERICAN JOURNAL OF SCIENCE Volume: 261 Issue: 8 Pages: 741-& Published: 1963
Times Cited: 20
2. Title: WATER-RESOURCES RESEARCH IN FEDERAL GOVERNMENT
Author(s): REVELLE R
Source: SCIENCE Volume: 142 Issue: 359 Pages: 1027-& Published: 1963
Times Cited: 4
Full Text
3. Title: RADIOISOTOPES IN HYDROLOGY - AN IAEA SYMPOSIUM
Author(s): YAMAGATA N, OKITA T, ELLIS WR, et al.
Source: NUCLEONICS Volume: 21 Issue: 5 Pages: 94-& Published: 1963
Times Cited: 0
4. Title: WATER RESOURCES BILL
Author(s): [Anon]
Source: NATURE Volume: 197 Issue: 487 Pages: 1052-& Published: 1963
Times Cited: 0
5. Title: SYMPOSIUM ON ISOTOPE APPLICATIONS IN HYDROLOGY
Author(s): [Anon]
Source: JOURNAL OF SCIENTIFIC & INDUSTRIAL RESEARCH Volume: 22 Issue: 8 Pages: 310-&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Save to EndNote, RefMan, ProCite
more options
Analyze Results
Create Citation Report
1. Title: Application of low-cost adsorbents for dye removal - A review
Author(s): Gupta VK, Suhas
Source: JOURNAL OF ENVIRONMENTAL MANAGEMENT Volume: 90 Issue: 8 Pages: 2313-2342
Published: JUN 2009
Times Cited: 27
Full Text
2. Title: AMMA-CATCH studies in the Sahelian region of West-Africa: An overview
Author(s): Lebel T, Cappelaere B, Galle S, et al.
Source: JOURNAL OF HYDROLOGY Volume: 375 Issue: 1-2 Special Issue: Sp. Iss. SI Pages: 3-13
Published: AUG 30 2009
Times Cited: 13
Full Text
3. Title: Land clearing, climate variability, and water resources increase in semiarid southwest Niger: A review
Author(s): Favreau G, Cappelaere B, Massuel S, et al.
Source: WATER RESOURCES RESEARCH Volume: 45 Article Number: W00A16 Published: MAR 19 2009
Times Cited: 12
Full Text
4. Title: Catchments as simple dynamical systems: Catchment characterization, rainfall-runoff modeling, and doing hydrology backward
Author(s): Kirchner JW
Source: WATER RESOURCES RESEARCH Volume: 45 Article Number: W02429 Published: FEB 25 2009

From a recipe-based to a scientific approach

- A good paper is not a brick identical with other bricks
- A good paper is original and unique
- There cannot be a recipe for originality
- Reading other good papers is much more useful than reading guidelines about how to write and publish papers
- Writing a good paper presupposes good understanding of the subject studied
- Publishing the paper presupposes good understanding of how the peer review process works

All guidelines that follow should, thus, be treated with caution and sceptical attitude

The main pathology of papers

- **Schulman's diagnosis**
  Scientific papers … are poorly understood because they are not written very well
- **Koutsoyiannis's addition**
  They are not written very well because the scientific topic is poorly understood by the author

Schulman, E. R., How to write a scientific paper, *Annals of Improbable Research*, 2 (5), 8, 1996, http://members.verizon.net/~vze3fs8i/air/airpaper.html

Why to write and publish a scientific paper in hydrology?

Answer 1: Because I want to strengthen my CV

Explanation: It is my only portable currency; a key prerequisite for getting a job; and the main factor in promotion and tenure decisions
(see also "additional material")

Guidelines pertaining to "Answer 1"

Armstrong's (1982) hexalogue to increase the likelihood and speed of acceptance of a paper

1. Do not pick an important problem
2. Do not challenge existing beliefs
3. Do not obtain surprising results
4. Do not use simple methods
5. Do not provide full disclosure
6. Do not write clearly

Armstrong, J. S., Barriers to scientific contributions: the author's formula, *Behavioral and Brain Sci.*, 5(2), 197–199, 1982.

Additional guidelines when targeting high impact magazines

1. Be extraordinarily concise
2. Give emphasis to the title and abstract
3. Dramatize as much as possible
4. Be consistent with the political aims of the magazine

Note: These are just hypotheses and interpretations from reading papers of other authors and from a personal negative experience (I have no paper published in glorious journals)

Antisocial practice to avoid: recycling of papers ...

- ... otherwise known as plagiarism
- It appears in different forms, from copying (parts of) papers of other authors (with or without citing the original paper) to iterating (parts of) own papers ("self-stealer" type of plagiarism)
- This practice is damaging even from an egoistic point of view—because sooner or later it will be revealed (even after publication)

Hydrological Sciences–Journal–des Sciences Hydrologiques, **54**(1) February 2009

Editorial—Recycling paper *vs* recycling papers

While applauding the recycling of paper, we are strongly against "recycling" of scientific papers, behaviour which we view as the extension of greed and consumerism to the realm of scientific ethics. Unfortunately, we have had to handle several cases recently in which parts of manuscripts submitted to *HSJ* were, in fact, "recycled" pieces originating from other papers.

Demetris Koutsoyiannis & Zbigniew W. Kundzewicz

Why to write and publish a scientific paper in hydrology?

Answer 2: Because I wish to be part of the scientific community

Explanation: A paper published may be discussed by other scientists, may become known to editors (e.g. via web searches), who may invite the author to review other papers, and may create an avalanche or links with the community

Guidelines pertaining to "Answer 2"

- Understand that authors, reviewers and editors are different and switching **roles** of the **same people** (including you and me)
- Understand that, for a typical person who is part of the scientific community, the ratio of papers authored to papers reviewed is ≈1:3
- Understand that, if one wants to be treated well by others, one should treat others equally well
- Be sure that you know very well the subject of any paper you (co)author
  - It is embarrassing to reply "not my field" when invited to review a paper on the same field as this paper
- Try to be the first and the corresponding author
  - People usually contact the first author and/or the corresponding author
- Try to publish papers on a broad area of topics than on a very specialized topic
  - This increases the probability and speed of getting more involved in the scientific community

The Reviewer

From Don Siegel

- A busy scientist with too many demands on her/his time.
- Will compare yours with the 2 or 3 others that they are currently reviewing
- Will read it in 60 min or less
- Will compose her review in less than 30 min

Therefore, the paper must be extraordinarily well written

This slide is a verbatim copy from Jeff McDonnell (cf. the "additional material")

Some remarks on "The Reviewer"

Original "thesis"	**My remark**
The reviewer as a devil	We, individuals, have good and bad sides. A system is good if it activates the good sides of individuals and discourages the bad ones
A busy scientist with too many demands on her/his time.	The reviewer is just one of us
Will compare yours with the 2 or 3 others that they are currently reviewing	This is not what a reviewer is expected to do; rather he is expected (a) to help the editor to decide whether the paper is publishable, and (b) to help the author to improve the paper
Will read it in 60 min or less	This is not a very social behaviour (only a superman can understand, assimilate and provide advice for improvement in 60 min or less)
Will compose her review in less than 30 min	It takes me hours or even a working day (in some cases more) to compose my review
Therefore, the paper must be extraordinarily well written	The paper should indeed be well written—but we should have in mind the reader, not the reviewer

On the origin of antisocial behaviours in reviewing

I'm The Referee

David J. Pannell*

You've posted in your paper
To a journal of repute
And you're hoping that the referees
Won't send you down the chute

You'd better not build up a sense of
False security
I've just received your manuscript and
I'm the referee

This power's a revelation
I'm so glad it's come to me
I can be a total bastard with
Complete impunity

I used to be a psychopath
But never more will be
I can deal with my frustrations now that
I'm a referee

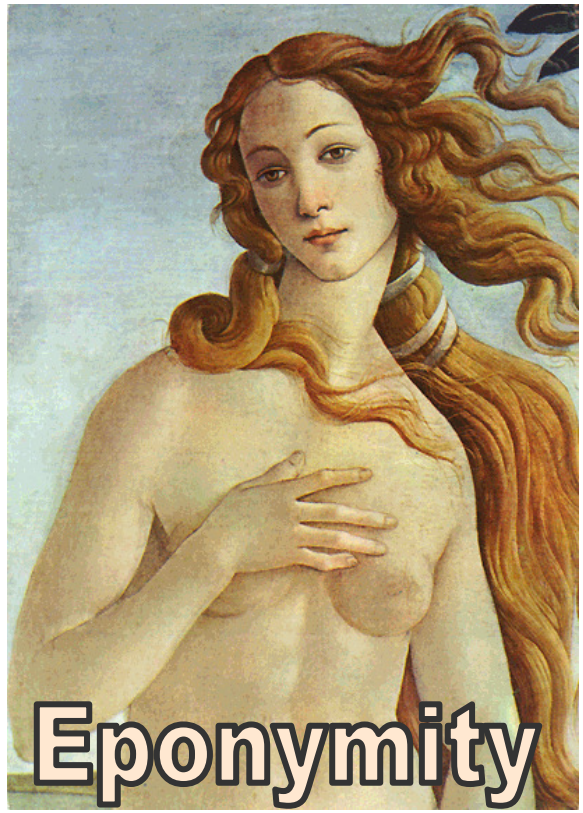
* from: Pannell, D. J., Prose, psychopaths and persistence: personal perspectives on publishing. *Can. J. Agric. Economics*, 50(2), 101–116 (2002)

Antisocial practices to avoid as a reviewer

- Do not confuse reviewing with having "power"
- Do not confuse peer review with authoritarianism
  - Sometimes editors trust reviewers that are "authorities" in a field, but this is not what exactly is meant by "peer"
- Do not assume "complete impunity" due to secrecy
  - Anonymity and secrecy are corruptible—and corruptive (e.g. I know who most of the anonymous reviewers of my papers are)
- Do not practise censorship
  - Disagreement with author's opinions and style of writing is not a reason to suggest rejection; it is just censorship
- Accept that scientific progress is fully dependent on the debate of opposite ideas
  - Counterexample from Climategate emails: "The skeptics appear to have staged a 'coup' at 'Climate Research' … Perhaps we should encourage our colleagues in the climate research community to no longer submit to, or cite papers in, this journal" (http://www.eastangliaemails.com/emails.php?eid=295)

Improving peer review: Eponymous reviewing

- Eponymous reviewing (allowed by most hydrological journals) has strong advantages over anonymous reviewing, on grounds:
  - ethical (more fair, equitable and courageous)
  - social (more cooperative productive and accountable)
  - political (more open, democratic and responsible)
  - esthetical



Adapted from: Kundzewicz, Z. W., and D. Koutsoyiannis, The peer review system revisited, *Hydrology Journal Editors Meeting*, Vienna, Advances in Water Resources, Hydrological Processes, Hydrological Sciences Journal, Hydrology and Earth Systems Sciences, Journal of Hydrology, Journal of River Basin Management, Nordic Hydrology, Water Resources Research, 2006.

Why to write and publish a scientific paper in hydrology?

Answer 3: Because I wish to contribute to science and publicize my research results and my opinions

Explanation: While this answer supposedly represents the rule in scientific publishing, sadly it is the exception

Guidelines pertinent to "Answer 3"

- Develop a broad and coherent background in science, scientific method and philosophy
- Read about the specific theme of the paper very well
  - Try to get rid of overloading of information: locate and read only papers compatible with "Answer 3"
  - Try to read critically: locate errors and misleading analyses and results in the literature—they abound
  - Try to read old books and papers: they are better quality than modern ones; in particular try to reach and read the original "benchmark" papers in the field
- Understand very well
- Write very well and clearly—but avoid being over-didactic
- Pay particular attention in terminology, notation, and the coherence and consistency of the mathematical part
- Use an iterative approach: reread and improve the paper and, if necessary, redo some analyses—but avoid perfectionism

Guidelines pertinent to "Answer 3" (post review)

- View the review comments as part of the iterative approach
- Take the review comments seriously
  - Counterexample from a review I received as an AE of WRR
    "From the Authors responses to my comments in the first review round I understand that I mistakenly believed that I could treat this manuscript as one of the many others I had the chance to review for WRR. Instead, your response revealed that this was not the case. In fact, once recognised this paper as belonging to the 'intrinsically perfect paper' (i.p.p.) category, all my previous concerns suddenly vanished....
    I am sorry for not being able to immediately recognize the signs of perfection. … I am very sorry to have forced the Authors to lowering themselves in putting obvious explanations in the response letter."
- In resubmissions give detailed replies to review comments
- In rejections persist
  - Challenge incorrect review comments and false editor decision
  - Resubmit the paper in another journal, along with the earlier correspondence (rejection and reviews of the first submission)

Antisocial practices to avoid

- Resist to practices dictated by the "publish or perish" syndrome
  - Avoid multiple submissions of similar papers to different journals ("salami" publishing); if necessary submit related papers to the same journal
- Do not mix ideology/politics with science
  - Scientific research is a process for the pursuit of the truth, not a "servant" other interests
  - Counterexample 1—reminder of yesterday's Great Debate: "Thank God" for mixing science with politics
  - Counterexample 2 from Climategate emails:
    "I tried hard to balance the needs of the science and the IPCC, which were not always the same."
    (http://www.eastangliaemails.com/emails.php?eid=794)
  - Counterexample 3 from Climategate emails:
    "I can't see either of these papers being in the next IPCC report. Kevin and I will keep them out somehow – even if we have to redefine what the peer-review literature is !"
    (http://www.eastangliaemails.com/emails.php?eid=419)

cf. Koutsoyiannis, D., Beware saviors!, *Climate Science* (weblog by Roger Pielke Sr.), 2009 (http://pielkeclimatesci.wordpress.com/2009/11/24/beware-saviors-by-demetris-koutsoyiannis/)

Antisocial practices to avoid (2)

- Accept erring as a possibility and correct errors in future publications
  - Encouraging story:
    Even Henri Poincare has erred in his award-winning essay on the problem of three bodies (soon later he corrected the error, thus becoming "the father of chaos"…)
- Do not fabricate data or results to comply with a priori hypotheses
- Do not stick to favourite hypotheses
  - Counterexample from Climategate emails:
    "If anything, I would like to see the climate change happen, so the science could be proved right, regardless of the consequences"
    (http://www.anelegantchaos.org/cru/emails.php?eid=544)

cf. Koutsoyiannis, D., Beware saviors!, *Climate Science* (weblog by Roger Pielke Sr.), 2009 (http://pielkeclimatesci.wordpress.com/2009/11/24/beware-saviors-by-demetris-koutsoyiannis/)

Out-of-body guidelines: Who are the authors?

- "I disapprove of the practice common, for example, in Canada and the USA, to include among a paper's authors the names of professors, office chiefs, and other persons who did not contribute to its scientific content and provided only financial or logistical help; the proper—and obvious—place for such acknowledgement is the Acknowledgements section."
- "I also disapprove of the common (in my days, anyway) European university practice, where a professor gave only a one-line acknowledgement for 'help' to his assistants and graduate students, who often were genuine coauthors of his books—and sometimes even that was missing as once happened to me: instead, I received a copy of the book with a dedication 'To dear comrade Klemeš with thanks for help'."

Quoted from: Klemes, V., Apocrypha, or "things that are hidden" - personal experience with "hidden" impacts over the past 50 years - Discussion of "Editorial - Quantifying the impact of hydrological studies", *Hydrological Sciences Journal*, 53(2), 488-494, 2008.

Out-of-body guidelines: Who to acknowledge?

- Acknowledge all people who have directly or indirectly helped in the research and in the specific paper—but not more than those
- Never forget to acknowledge the reviewers: in many cases some reviewers worked more on a paper than some of the authors did
- Try to find reasons to acknowledge even the negative reviewers
  - Example from a paper (of mine, under review) with strongly negative reviewers: "We wish to thank the three anonymous reviewers, whose both strongly positive and strongly negative comments were important to us: the former for encouraging us and the latter for making us more confident that we did not err, as well as for forcing us to improve the presentation significantly."
- Be careful in the way you acknowledge: do not imply that the acknowledged person agrees with the paper if he does not
  - Counterexample (quoation from Klemes, fully cited in next slide): "In my office after the lecture, [the author] asked my advice for the best place to publish his findings. I pointed to my waste basket and changed the topic. To my surprise, I later saw his 'findings' published in a paper, with an acknowledgement of my 'valuable advice'. I have reasons to believe that the acknowledgement should have hinted that I had refereed, and approved of, the paper."

Out-of-body guidelines: Who to acknowledge? (2)

- Acknowledge the reviewers by name if they are eponymous
- In open-review journals like HESS, if a reviewer's contribution is important, make an explicit reference (citation) to the review rather than just acknowledging it
  - Counterexample from an email exchange with an author of a HESS paper
    - Dear professor Koutsoyiannis,
      I am working on the paper submitted to HESS and am a little puzzled. Your suggestion of improvement of the proposed demonstration is very good and you suggested to include it in the revised version of the paper. But it is your idea and I have some scrupels to resubmit it under my name. Do you know how we could do.
    - Dear xxx,
      ...
      Well, the public character of the review process of this journal probably may help to find an optimal (both for you and me) solution for the particular case. That is, in your revised paper you can make a reference to my review.
    - Outcome: *Acknowledgements.* The author thanks... as well as Demetris Koutsoyiannis who suggested ...

Out-of-body guidelines: Who to cite?

- Citations are much more that a recognition of (and credit to) others' work
  - Proper citations enhance the value of the paper, by making it more convincing and by providing the links to existing literature
  - Also, they help make the paper more concise by avoiding repetition of stuff appearing elsewhere
  - The help the reader to easily locate further/original information on the issue
    - If the paper is good, the author may himself become a reader after some time (so they may also help himself)
- Citing should be accurate
  - Counterexample from a recent email exchange

Date: Sat, 13 Feb 2010 11:29:58 +0100
From: xxx
To: Demetris Koutsoyiannis
Dear Demetris, she is xxxx. I trying to get the paper to ascertain whether, indeed, IPCC cited it wrongly. One more thing to say students: **never cite papers if you did not read them**.... It's not easy, in our very fast world and academia....

Demetris Koutsoyiannis wrote:
> Dear xxx,
> I have seen many references to my own works that have incorrect citations and, even worse, they
> interpret what I say in their own way, which may be just the opposite from what I said. But I haven't
> raised any issue any time. I think it is not a big deal. But if the author asks it I guess you have to
> satisfy him. Who is this author?
> Ciao,
> Demetris

Out-of-body guidelines: Who to cite? (2)

- Second counterexample from a "snail" correspondence in 2003 (Vit Klemes to a colleague, copied to me)

However, turning the pages of Koutsoyiannis' article, I was attracted by its section "A physical explanation" (pages 582, 585 and Fig.5) since, as you of course know, explanation (rather than modelling) has always been the focus of my interest in the Hurst phenomenon and of my own 1974 "Hurst paper" which K references. My impression is that K misrepresented my position either because he had read my paper very superficially (notably its sections "Nonstationary model with zero memory" and "Physical considerations") or deliberately distorted my argument and ignored the specifics of my investigations in order to be able to claim his "absence of memory" explanation as his own original idea - *tertium non datur*, it seems.

Here, note that Klemeš referred to all his "changing mean" models as models with nonstationarity in their mean, even though this is strictly true only for models 1 and 2. He did point out that his final models in group 4 were in fact stationary and that he kept the term "nonstationary" for all changes in the mean to communicate the fact (elaborated in more detail in Ref. 26) that one cannot tell the difference from the pattern of a single "nonstationary-looking" time series (which even a stationary model is designed to mimic), but his explanation has sometimes been missed and led to a misconception about his work by some authors (including this one, who expresses his apology).

Not only was the problem fixed, but the gain for this mistake was unbelievable (including continuation of fascinating discussions with Vit Klemes)

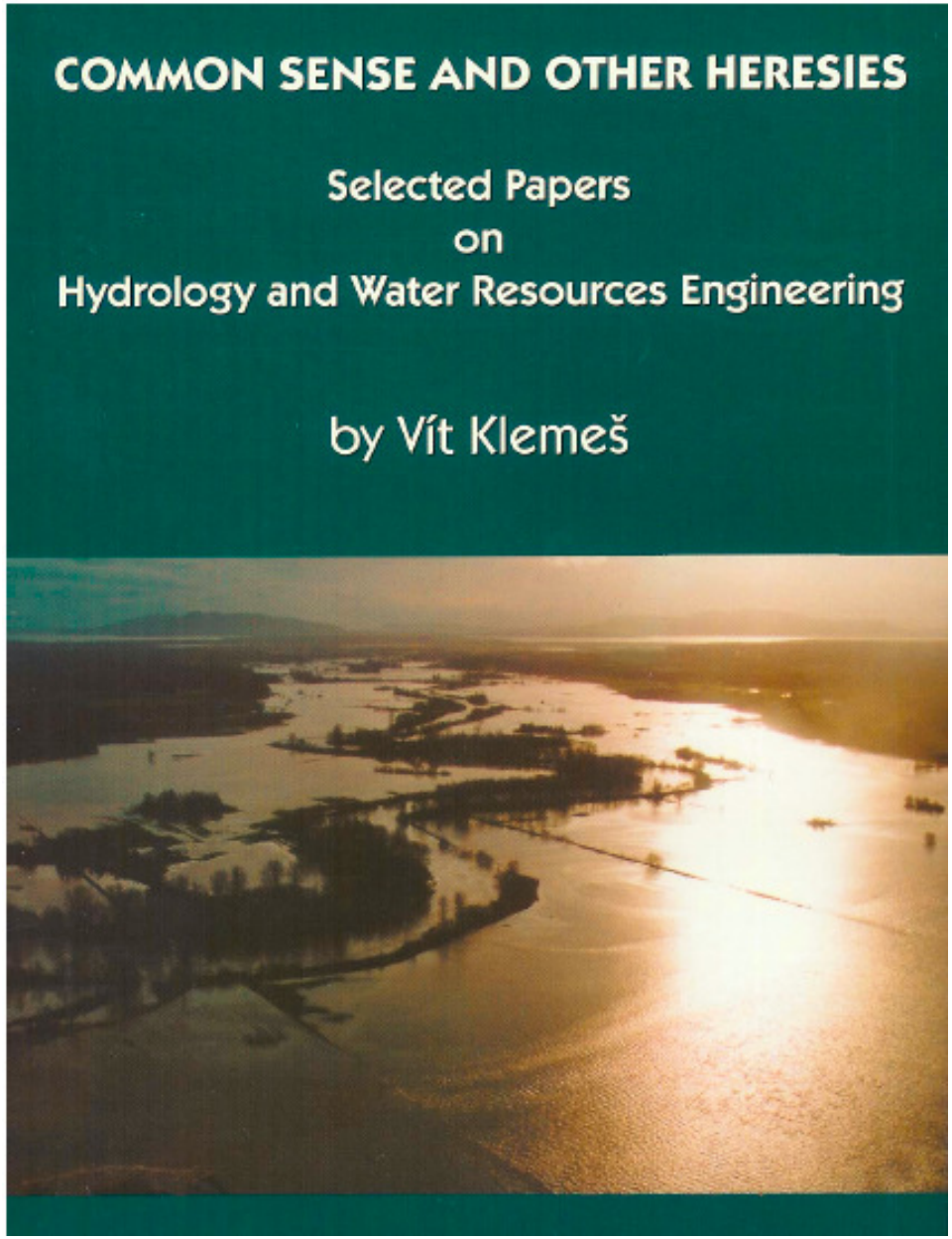
(The text on the left is from Koutsoyiannis, D., Hydrologic persistence and the Hurst phenomenon, *Water Encyclopedia*, Vol. 4, Surface and Agricultural Water, edited by J. H. Lehr and J. Keeley, 210–221, Wiley, New York, 2005).

Vit Klemes as a model for young* scientists

In addition to qualifying as an excellent and influential hydrologist (recipient of the 1994 International Hydrology Prize) and a fascinating author:

- He adopts a pragmatic engineering approach
- He is as courageous as to use common sense (instead, e.g., of trying to be politically correct)
- He suggests that being heretic in science is a positive qualification

His definition of "young" from his talk fully cited in next slide: Everybody under 60.



Additional skills: Knows about—and enjoys—wine

15 -Wine tasting in Valtice, 2005

As I occasionally have an opportunity to taste the local wines, I can testify that President Havel had made a good choice in this case (I in particular can recommend the region's whites: Traminer, Veltliner, Neuburger, Müller-Thurgau, Riesling).

Extract slide from his recent talk: Klemes, V., 20 years later: What has changed - and what hasn't, XXIV General Assembly of the International Union of Geodesy and Geophysics, Perugia, International Union of Geodesy and Geophysics, International Association of Hydrological Sciences, 2007 (http://www.itia.ntua.gr/en/docinfo/831/)

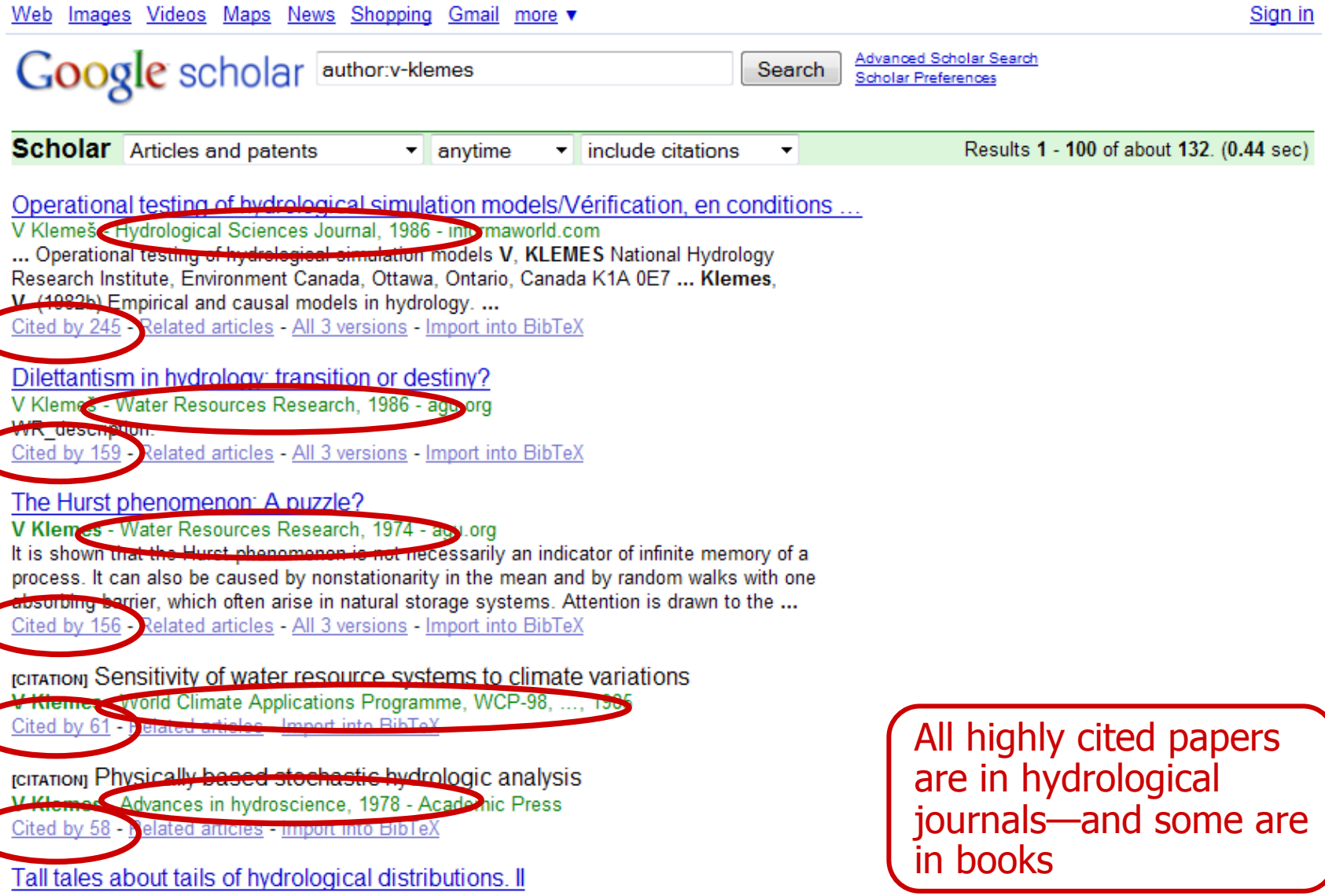
Additional skills: Sense of humour

8 - Scale invariance of self-similarity

Moreover, as I have carefully verified, this self-similarity is scale-invariant: it applies from the largest log to the smallest twig. To my knowledge, none of these insights have yet been published, not even posted on the internet!

Extract slide from his recent talk: Klemes, V., An unorthodox physically-based stochastic treatment of tree rings, XXIV General Assembly of the International Union of Geodesy and Geophysics, Perugia, International Union of Geodesy and Geophysics, International Association of Hydrological Sciences, 2007 (http://www.itia.ntua.gr/en/docinfo/723/)

Bibliometric data of Vit Klemes speaking...



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Operational testing of hydrological simulation models/Vérification, en conditions ...
V Klemeš - Hydrological Sciences Journal, 1986 - informaworld.com
... Operational testing of hydrological simulation models V, KLEMES National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, Canada K1A 0E7 ... Klemes, V. (1982b) Empirical and causal models in hydrology. ...
Cited by 245 - Related articles - All 3 versions - Import into BibTeX

Dilettantism in hydrology: transition or destiny?
V Klemeš - Water Resources Research, 1986 - agu.org
WR_description:
Cited by 159 - Related articles - All 3 versions - Import into BibTeX

The Hurst phenomenon: A puzzle?
V Klemes - Water Resources Research, 1974 - agu.org
It is shown that the Hurst phenomenon is not necessarily an indicator of infinite memory of a process. It can also be caused by nonstationarity in the mean and by random walks with one absorbing barrier, which often arise in natural storage systems. Attention is drawn to the ...
Cited by 156 - Related articles - All 3 versions - Import into BibTeX

[CITATION] Sensitivity of water resource systems to climate variations
V Klemes - World Climate Applications Programme, WCP-98, ..., 1985
Cited by 61 - Related articles - Import into BibTeX

[CITATION] Physically based stochastic hydrologic analysis
V Klemes - Advances in hydroscience, 1978 - Academic Press
Cited by 58 - Related articles - Import into BibTeX

Tall tales about tails of hydrological distributions. II

All highly cited papers are in hydrological journals—and some are in books

Lessons from Vit Klemes to young hydrologists

"I shall close with a plea to all of you, hydrologists and other water professionals, to stand up for water, hydrology and water resource engineering, to restore their good name, unmask the demagoguery hiding behind the various 'green' slogans. As in any sphere of human activity, errors with adverse effects were and will be made in our profession as well (think of the human toll of errors made in the medical profession – and nobody is vilifying hospitals and advocating tearing down medical clinics). But, on the whole, our profession has nothing to be ashamed of – from the times of the ancient Mesopotamia, Greece and Rome to the present, it has done more good for mankind than all its critics combined. This is not a revelation: this is a historical fact. So, be brave, be proud, be heretics if necessary, and above all, use your common sense"

Extract slide from his recent talk: Klemes, V., 20 years later: What has changed - and what hasn't, XXIV General Assembly of the International Union of Geodesy and Geophysics, Perugia, International Union of Geodesy and Geophysics, International Association of Hydrological Sciences, 2007 (http://www.itia.ntua.gr/en/docinfo/831/)

A success story

Keith Beven, Lancaster Univ

- Why is he the world's most cited hydrologist?
  - when there are so many other brilliant hydrologists out there?
    - Writing clarity (and very compelling)
    - Knows literature better than anyone
    - Writing theme(s) and core area
    - Uncanny knack to read where the field is headed
    - Pushes the field in new directions
    - Intellectual trailblazer

This slide is a verbatim copy from Jeff McDonnell (cf. the "additional material")

Additional activities

From his web page:
He also still likes to try and find time to take some photographs
(see www.mallerstangmagic.co.uk)

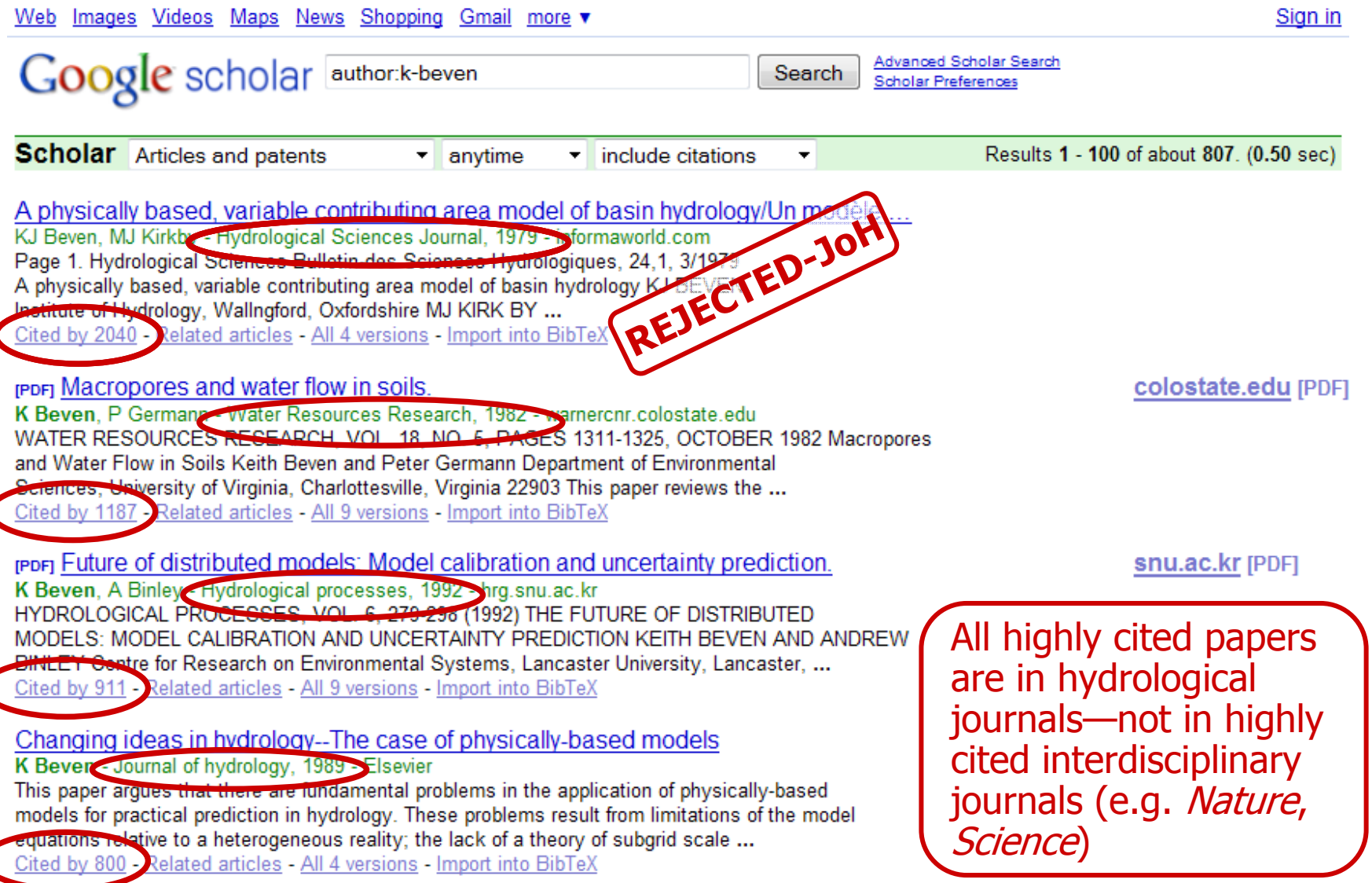
Nab from Angelholme, UK. Carboniferous Dales limestone pavement in the foreground. Photograph by Keith Beven

Lessons from Keith Beven to young hydrologists

"The encouragement to all the young hydrologists here is that the 1979 paper was originally rejected by the *Journal of Hydrology*. Eamonn Nash, the editor who dealt with it, thought that the enormous effort of the topographic analysis required – which in the 1970s essentially had to be done manually – would mean that it would only ever be of local interest. This was rather important to me at the time as it was only the second paper I had submitted. Fortunately, the paper was later accepted by the IAHS *Hydrological Sciences Bulletin* – clearly far more forward thinking at that time – and it is now one of their most highly cited papers. So, there are three lessons here for young hydrologists. The first is to make sure you publish in the IAHS *Hydrological Sciences Journal*, it leads to great things. The second lesson is to look forward to what might be possible in the future, even if it is not now. The third is not to get downhearted if your first paper is rejected, it may yet become a very highly cited paper and you may yet get to receive the International Hydrology Prize. In fact do not even get downhearted if you have five papers in a row rejected by *Water Resources Research*. When that happened I wrote to the editor at the time asking what the world record for successive rejections in *WRR* was because having got to five I really wanted to go for it. He wrote back saying they did not keep such records but would still be happy to receive any of my future papers for consideration!!"

Extract from his recent talk; see IAHS Newsletter 95, December 2009, pp. 10-12: "The 2009 International Hydrology Prize is awarded to Keith Beven"

Bibliometric data of Keith Beven speaking



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A physically based, variable contributing area model of basin hydrology/Un m...
KJ Beven, MJ Kirkby - Hydrological Sciences Journal, 1979 - Informaworld.com
Page 1. Hydrological Sciences Bulletin des Sciences Hydrologiques, 24,1, 3/1979 A physically based, variable contributing area model of basin hydrology K J BEVEN Institute of Hydrology, Wallingford, Oxfordshire MJ KIRK BY ...
Cited by 2040 - Related articles - All 4 versions - Import into BibTeX

REJECTED-JoH

[PDF] Macropores and water flow in soils. colostate.edu [PDF]
K Beven, P Germann - Water Resources Research, 1982 - warnercnr.colostate.edu
WATER RESOURCES RESEARCH, VOL. 18, NO. 5, PAGES 1311-1325, OCTOBER 1982 Macropores and Water Flow in Soils Keith Beven and Peter Germann Department of Environmental Sciences, University of Virginia, Charlottesville, Virginia 22903 This paper reviews the ...
Cited by 1187 - Related articles - All 9 versions - Import into BibTeX

[PDF] Future of distributed models: Model calibration and uncertainty prediction. snu.ac.kr [PDF]
K Beven, A Binley - Hydrological processes, 1992 - hrg.snu.ac.kr
HYDROLOGICAL PROCESSES, VOL. 6, 279-298 (1992) THE FUTURE OF DISTRIBUTED MODELS: MODEL CALIBRATION AND UNCERTAINTY PREDICTION KEITH BEVEN AND ANDREW BINLEY Centre for Research on Environmental Systems, Lancaster University, Lancaster, ...
Cited by 911 - Related articles - All 9 versions - Import into BibTeX

Changing ideas in hydrology--The case of physically-based models
K Beven - Journal of hydrology, 1989 - Elsevier
This paper argues that there are fundamental problems in the application of physically-based models for practical prediction in hydrology. These problems result from limitations of the model equations relative to a heterogeneous reality; the lack of a theory of subgrid scale ...
Cited by 800 - Related articles - All 4 versions - Import into BibTeX

All highly cited papers are in hydrological journals—not in highly cited interdisciplinary journals (e.g. *Nature*, *Science*)

Self assessment of my experience in scientific publishing

- As an author
  - Overall the peer review system helped me …
    … to improve my knowledge and my papers
    … and to build courage and self-confidence
    … because I had to fight to publish my papers
- As a reviewer
  - Overall I developed the positive feeling of participating in one of the most significant functions of the scientific community
  - I learned some things but not in proportion to the time I devoted
  - I took the opportunity to disseminate my own works and ideas
    - Yes, I suggested the authors to read papers of mine (if they were related to the subject of the paper) and I am not embarrassed for this: I want to disseminate my ideas and I am always eponymous
  - I am happy that my work was voluntary
    … but I regret that it was not accountable
- As an editor
  - I understood the narrow domain of an editor's possible moves
  - I understood the randomness in the outcomes the review process

Concluding remarks

- There are no recipes or secrets about how to write a good paper
- It is important to decide which answer to the "Why" question to put in first priority
  - The answers may not be mutually exclusive or antagonistic
- Such a decision is personal and not necessarily static
- Personal decisions and personal examples matter and reflect on the entire community
- In science and in scientific procedures and behaviours, small improvements by personal contributions are important and build infrastructure for larger improvements