



25 October 2001

Dr. William G. Gray
Editor, Water Resources Research
American Geophysical Union
2000 Florida Avenue, NW
Washington, DC 20009
USA

RE: WRR Paper No. 000679 (*Climate change, Hurst phenomenon, and hydrologic statistics* by D. Koutsoyiannis)

Dear Dr. Gray,

Thank you for the processing of the above referenced manuscript and your suggestions to improve it. Also, I appreciate the comments of the reviewers. Based on your guidelines and the reviewers' comments I have prepared a revised manuscript. Please find enclosed two copies of it and two copies of a report describing in detail my responses to the comments.

In your letter of September 3, 2001, you raised four points regarding the revision. Here is a brief response to these points:

- **Improved literature search.** The revised manuscript contains 16 additional references to recent works whose review, I think, places my work in a better context.
- **More simple and pragmatic approach.** I think I have eliminated interpretations that could raise disputes in the revised manuscript. However, I could not eliminate the entire Section 2 and go directly to Section 3 because Section 2 contains (a) the presentation of the example time series, without which the approach would not be pragmatic; (b) some observations on the statistical behavior of the time series and the discussion of alternative explanations (which I have added in the revised manuscript to address the fourth point below); and (c) the notation, the main hypothesis and the basic equations that form the mathematical background of the methodology. I have shortened Section 2 as much as possible, eliminating discussions about the deterministic versus stochastic approaches and criticism of some practices commonly followed in hydrology. Overall, I have rewritten Subsection 2.1 four or five times. I hope you will find the final version satisfactory.
- **Interpretations and implications of analyses.** I have followed the specific suggestions of Reviewer 1 to reformulate the interpretations and state the implications of the analysis in a more modest way. Also I have inserted a few sentences about what is known on the physical side on the driving processes of climate, taking advantage of a remark by Reviewer 2. My emphasis, however, is on the uncertainties and inaccuracies in order to justify that there is some space for a stochastic approach.

- **Discussion of alternative explanations.** I have discussed some alternative explanations of the observed statistical behavior. I would like to mention that the methods proposed depend on this statistical behavior and not on which explanation is adopted. This, however, does not mean that the proposed explanation is unimportant, because it worked as a motivation of the entire approach.

In conclusion, the reviewers' comments and the additional work I have done to address them resulted, in my opinion, in an improved manuscript. I hope you will find it satisfactory and approve it for publication to WRR.

I am looking forward to hearing from you.

Sincerely,

Demetris Koutsoyiannis