

***Interactive comment on* “Defining the climatic signal in stream salinity trends using the Interdecadal Pacific Oscillation and its rate of change” by V. H. McNeil and M. E. Cox**

Anonymous Referee #3

Received and published: 21 September 2006

General comments

Decadal variability in ambient groundwater tables and stream salinity in Queensland is examined. The variability is compared with an index for the IPO and the rate of change of the IPO. Understanding the cause of such variability and the extent to which it is driven by climatic variability is an important research topic. However, I am not aware of any other study using the rate of change of the IPO Index as a guide to climatic variability in any part of the world for any variable. The authors do not justify its use other than by pointing out a statistical association between the rate of change and the hydrological variables of interest. The statistical significance of the relationship is

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not assessed but it must be extremely limited because of the decadal nature of the variability and the relatively short duration of the records. No explanation is given as to why the rate of change of the IPO might be important climatically. Finally, the possibility that some of the decadal variability present in the hydrological records is driven by decadal changes in the SOI is not examined. This strikes me as a very plausible, non-controversial candidate. In my opinion the paper is not suitable for publication in its current form.

Specific recommendations

The topic is important and so it would be good if the authors could modify the paper so that it is acceptable for publication. In my opinion the following changes are required:

Drop the analysis and discussion of the rate of change of the IPO or reduce it to an extremely short section and mention that it is of a highly speculative nature.

Investigate the possibility that the decadal changes in the hydrological variables examined are driven by decadal changes in the SOI. To do this find the best fit relationship between the hydrological variables and the SOI, and then determine the decadal variability you would expect on the basis of decadal changes in the SOI from this relationship. How well does it do? Compare and contrast with the variability you'd expect from the IPO (i.e. the IPO - not its rate of change).

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 3, 2963, 2006.

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