

Interactive comment on “Use of neural networks for tropospheric ozone time series approximation and forecasting – a review” by A. A. Argiriou

Anonymous Referee #2

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This paper reviews the state of neural networks as applied to predict tropospheric ozone. The paper gives a reasonably comprehensive (but not an authoritative) review of the available literature. There are in my view several limitations with this work and these are outlined below. My principal concern with this paper is that it reads like a summary of a selection of papers and there is not enough done to pull them together to reflect the status of these approaches for predicting concentrations of ozone. While a review article should summarise the literature, it should also place the work in its proper context and this requires the author to provide much more of their own input to interpreting existing work. These limitations should be addressed if this article is to be considered for publication in ACP.

1. The initial description of neural networks (NN) (section 2) is rather inaccessible for

a review of this type. This section should be re-written to provide a clearer description as to what NNs are, why they are used etc.

The final sentence of the same section states that NNs "constitute a 'black box' approach and this limits their use". This is a key concern over the use of such methods due to the limited inferences that can be made. This "downside" of NN should be discussed in much more detail. Reading the paper as a whole it is difficult to gain an impression about the pros/cons of NNs and how the field is developing.

2. There is in general a lack of the author's own thoughts on the large numbers of studies and papers reviewed. The text reads very much like a summary of the papers, but little is said about their key findings, advantages and disadvantages and progress made.

3. Even though the review considers NNs, it would help if (some) consideration was given to other methods used for ozone prediction/forecasting to put them in their proper context.

4. NNs in the context of the review are for time series of concentrations. One of the key features of time series is their correlation structure (i.e. autocorrelation). Some explanation should be given as to how NNs do (or do not) model this correlation structure.

5. One would expect to see in such a review some discussion about where the field is heading, what are the most important issues to be addressed in future, what are the competing methods for prediction, is there a need for a common and consistent method for comparing the validity and accuracy of NNs etc.?

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 5739, 2007.

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