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Interactive Comment

Interactive comment on "Nonlinear relationships between atmospheric aerosol and its gaseous precursors: Analysis of long-term air quality monitoring data by means of neural networks" by I. B. Konovalov

J. Kaipio

kaipio@venda.uku.fi

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The manuscript is well written and sound. There are just a few issues.

1) Page 2, paragraph starting with "Thus, at present ...". The author claims that the method that is proposed is "novel original". The MPL has not been invented by the author, so the contribution has to be clarified. Also, the author criticises e.g. Gardner and Dorling who have used neural networks in athmospheric research by saying that they consider neural networks as "black boxes". However, the present author does exactly that too. That is one of the prevailing issues in the use of neural networks: to



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assimilate data with a non-parametric model. Only when the parameters of the network were examined together with their functional forms could one disclaim to to use them as black boxes, but this would be unnecessary.

2) The standard state of the art in neural network practice is to divode the data to three sets: the first two are used to train the data: the first as input for the learning and the second to determine the truncation of the learning phase. The third would then be used to draw the inference and actual studies of the data. Only when the data is very limited, the sets 1 and 2 above would be a single set. But never ever one would use the same set of data for learning and inference. This has been done in the manuscript and is not acceptable due to the risk of "overmodelling". However, the author seems to have done something according to the correct principles and states that "The results for the validation subsets are very insignificantly worse." It is unavoidable to switch to showing these results instead of the ones shown currently. As a note to the author's claim for doing otherwise: since this is not a time series model problem, the three sets can (and should) be chosen randomly among all data instead of consecutive blocks. If this would render the results significantly worse, the conclusion would be that the particular neural network (or NN's in general - or any method in general) is unable to extract the sought after information.

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ACPD 3, S119–S120, 2003

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