

Interactive comment on “A refinement of the emission data for Kola Peninsula based on inverse dispersion modelling” by M. Prank et al.

Anonymous Referee #3

Received and published: 24 August 2010

Interactive comment on “A refinement of the emission data for Kola Peninsula based on inverse dispersion modelling” by M. Prank et al.

The authors presented results from their collective work on an important issue concerning the validity of available emission inventories. However, the authors did not present any new methodology that could be extended to correct other sources. It appears the presented paper is really a collage of several reports prepared for funding agencies mentioned in the Acknowledgements.

The purpose of this paper is not clear. Also, it is not clear what the impact should be of the presented findings. One would think that if a source location was identified as wrong a simple correction of its coordinates (on the modelling domain) is required and the case is closed. The strength of a source is a different story that belongs to the past

C6767

and it will never be established with the available data. I am afraid we have to live with the uncertainty of our past.

The authors did not strongly emphasise the importance of the missing source, its relative strength (emission flux, stack height, plume rise) in comparison to other sources (i.e. Vale-Inco) at present and in the past. Also, are there any satellite observations that could be used in the analysis process? The missing (underestimated) DMS source is mentioned several times. I would suggest adding the source to the SILAM European domain and to the domain used in this study. What is the (potential) impact of the missing/misplaced Nikel source on the Arctic environment? Is it outside the SILAM domain and thus cannot be assessed in this study?

I second the first reviewer's comment that parts of the text are imprecise and should be re-written. These include all references to: inverse vs. adjoint modelling; dispersion vs. air quality modelling; PM as primary particulate matter vs. aerosol particulate matter. Also, I would take issue with the frivolous use of “ensemble modelling”. What is presented in the paper are scenarios – good old scenarios – nothing else. An elegant and rigorous mathematical formulation of an ensemble approach is being used to give credibility to a rather limited set of scenario runs using models and input meteorological data readily available to the authors.

Furthermore, the following examples of a colloquial use of the English language should be changed :

page-line:

15967-26: ... by a factor of times – what does it mean ?

15969-11: ... exhibit such jumps – changes ?

15978-7: ... variability quickly fades out – decreases ?

15979-24: ... suspected problems – what does it mean ?

C6768

15980-9: ... approximately correct – what does it mean ?

15980-3: ... hardly lower – what does it mean ?

15981-17: ... exactly correct – what does it mean ?

15983:3: ... up to a factor of times - what does it mean ?

These and other expressions have no place in the scientific literature, are imprecise and confusing.

The overall impression is that the paper should be re-written, names and expressions should be unified. Also, a clear purpose should be presented.

Do we need a paper for each emission source wrongly placed by the EMEP experts? How many sources are wrongly identified in the official emission inventories? Is there a universal and practical methodology to correct all the mistakes introduced by the emission experts?

I note that over a third of the references are from the 'grey literature domain' – including internal reports, web sites, and even newsletters. This observation could be very important, as it gives an insight into the 'life of emission modelling' done by arbitrary decisions often without rigorous and open review.

I would strongly encourage the authors to re-write the presented paper with a clear focus of its purpose, methodology, and outcome. It could be a valuable paper or a note to provide guidance for use and correction of the official emission inventories.

Finally, the Technical Editor has missed two papers in preparation included in the References. These ought to be entered as footnotes.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 15963, 2010.