

Responds to referee comments

The whole text: Although I respect the selection of analyzed elements, the ratio to the sea salt (if known) would improve interpretation possibilities of the results. For some reason, Se is mentioned as “selenium“ while the other elements are named by their chemical symbols. Detailed comments have one number per page of ACPD text and one or more line numbers when necessary.

The ratio to sea salt could not be estimated, since the main sea salt ions including Na, Mg, are not measured by our TXRF instrument. Although Cl can be measured by TXRF, because of its volatility it could not be quantified due to the sample preparation method used as described in the manuscript.

Selenium is now mentioned as Se, thanks.

1) Abstract page 29537 line 1 In my opinion, the sentence about the origin of most Se in oceanic emissions is not justified by the data and the sentence does not agree with the conclusions

Sentence is now changed and reads “oceanic and biogenic sources might have contributed to most of the observed Se”.

2) Introduction, p. 29538 line 11 -12 Probably should be “trace metals concentrations in PM are enriched above their concentrations in oceanic and crustal sources“ instead of the text there.

Lines have been changed. Thanks.

3) Experimental, p. 29539. line 25 Cut diameter of a HV Digital sampler sampling head should be specified here.

Done (PM 10)

4) p. 29540, line 5. The sampling on ungreased foils may result in the increased particle bounce inside a cascade impactor depending on aerosol properties and ambient relative humidity. Some comment on this issue should be given here.

Done. The following line has been added on Page 5, lines 25-29.

Generally, sampling with ungreased foils could lead to increased particle bounce-off inside of a cascade impactor depending on aerosol properties and ambient relative humidity. However, due to the proximity of the CVAO to the shores the relative humidity did not vary significantly throughout the year, rendering such effects negligible. Such events could be observed only during dust storms and could account for about less than 5 % particle lost depending on the dust loading.

5) p.29542, line 10-13 The method of vertical velocity calculation should be specified.

The vertical velocity was calculated by the HYSPLIT model using the vertical velocity field that is included with the input meteorological data. This information, together with the information of the meteorological input data used (GDAS) has been included in the revised manuscript.

6) Results, p. 29546 line 2 If Sr, Ba, and Rb concentrations were all explained by emissions from oceans due to high wind speeds we might expect that their concentrations will be in the ratios similar to those in sea water. This was not the case here. Please comment.

True, these concentrations cannot be solely explained via emissions from the oceans due to high wind speeds, anthropogenic emissions might have also influenced their concentration.

Line now reads (page 12 lines 5-6): “The higher wind speed and high variability in aerosol content due to long range transport could explain the higher concentrations of Sr, Ba, and Rb.”

Line 21 Ref. Kriews and Schrems (1998) is not in the reference list.

Reference has been added. Thanks

7) P. 29547, line 3 "Haung" should be Huang

Thanks: Line has been corrected.

8) P.29549 line 8-9 Steel production should be also mentioned as a source of Mn (as done further in the text)

Done: Line has been edited.

Line 10 : La should be placed in the next group based on the results – it was almost all found in the fine mode

Done. La is now placed in the next group.

Line 18: the coal and waste combustion are also Pb sources

Included. Thanks

9) P. 29550, line 2 If gas to particle conversion took place or revolatilisation/condensation process was present in case of Se then the surface size distribution of the aerosol should be taken into account.

This is true. However other biogenic sources of selenium exist and thus the size distribution of selenium would be different when these fractions are included which was the case in this study, since mostly long range transported air masses have been analyzed.

Line 7 La PM1.2/PM10 ratio variability is relatively small in comparison with other elements and should be in the next group.

Changed

Lines 7 and 16 Messages about Mn are different at these lines

Thanks, changed.

10) Size distribution of Se in fig.4 does not correspond to PM1.2/PM10 ratio of Se shown in fig 5. Moreover, Se in fig. 5 is probably shown as Sc (the first element on x axes)

Changed: This was a presentation error. The two figures and labels are now placed correctly and Fig 5 has been changed with the correct figure.

11) P. 29550, line 22 Reference Wedepohl (1995) is not in reference list

Reference has been added. Thanks

12) P. 29551, line 18 The message about Mn is again different in comparison with what was mentioned earlier in the text

Message has been changed and all discussions about Mn are now similar.

Line 24 Size range for stages 2 and 3 was 140-1200 nm, not 140-520 nm as it is in the text.

Error has been changed and the right size range has been stated.

13) P. 29552 line 13 Pb can be also from coal and waste combustion

Done. These sources have been included.

14) Conclusions, p. 29555, lines 3-6 In my opinion, this statement is not sufficiently justified by presented data. Neither Co nor Cd are analysed in this work.

Since these concentrations were close to the detection limit their data were not presented as mentioned above, these elements have been removed from those lines.