

## ***Interactive comment on “Source apportionment and sensitivity analysis: two methodologies with two different purposes” by Alain Clappier et al.***

**Alain Clappier et al.**

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**General comments** The paper present an interesting research about the difference between source apportionment and sensitivity analysis, supported by theoretical examples, and helps clarifying the purpose of each approach and when it should be applied. The paper is in general well-written and structured with references supporting it. Only minor changes and some specific and technical comments are suggested before publication. **Specific comments** Introduction: This section is poor on references and state-of-art about the subject (source apportionment and sensitivity analysis methods). The authors should improve this section refereeing what have been done already by other authors about these two methods and the assessment of “contribution” and “impact”.

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R: We agree with the Reviewer. The introduction has been re-structured (also according to Reviewer 2 suggestions) and additional references have been introduced in the text.

Lines 41-48: a reference to support this statement is missing and is necessary

R: A reference has been introduced

Line 373: please introduce the regimes that are will be analysed in the following sections

R: The two regimes are now mentioned and detailed prior to the example section

Line 667-676: Figure 4 should be refereed/introduced in the text

R: Figure 4 is now referenced in the different sub-sections of the example section

Line 735: Figure 5 should be refereed/introduced in the text

R: Done as suggested

Lines 768-798: This text (or at least part of that) should be placed at Conclusions section

R: We agree with the Reviewer and we introduced new sub-sections (comparative overview) in the two examples sections to highlight the fact that the parts of text are meant as summary of all approaches discussed earlier.

Lines 801-810: This text should be placed at the “Introduction” section Conclusions: Authors should revised this section: part of that is state-of-art, other is too much detail about what was done and finally the last part should be part of the discussion of results. This last section (Conclusions) should be a summary of what was presented before and not enter in detail in what was done and obtained. Technical corrections”: typing errors, etc.).

R: We agree with the Reviewer and re-structured the introduction and conclusion sec-

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tions according to suggestions.

Line 18: Define DDM

R: DDM is now defined in the text.

Line 23: Rephrase this sentence: the use of vice-versa in the middle of the sentence it is not clear

R: Rephrased as suggested

Line 92: authors instead of “Authors”

R: Done as suggested

Line 114: missing the year on “Clappier et al”

R: Year has been added

Line 156: write “precursor’s emission” instead of “emission precursors”

R: Done as suggested

Line 167: missing the year on the reference “Stein and Alpert”

R: Year has been added

Line 307: replace “paragraph” by “section” or “chapter”

R: Done as suggested

Line 437: “computed by the difference”

R: Done as suggested

Line 679: Figure 4 instead of figure 3 Figures: it is not used the same format for the captions

R: Harmonized as suggested

Line 721: “production” instead of “productions”

R: Done as suggested

Line 741: Figure 5 instead Figure 4

R: Done as suggested

Line 752: Figure 6 instead Figure 5

R: Done as suggested

Line 753: The text (analysis and interpretation of the results) should be after Figure 6

R: Moved as suggested

Line 764: Figure 6 instead Figure 5

R: Done as suggested

References: they are not all in the same format (very different formats are used among the list of references) and not by alphabetic Order

R: We have harmonized the references format and re-order them by alphabetical and chronological order

Line 884-886: this paper is still in preparation: : should not make part of the list of references

R: This paper has been removed from the reference list.

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Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2017-161>, 2017.

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