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comment**

Interactive comment on "STEFLUX, a tool for investigating stratospheric intrusions: application to two WMO/GAW global stations" *by* Davide Putero et al.

Anonymous Referee #1

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General Comments: This paper presents STEFLUX, a new tool that detects stratospheric intrusions affecting a specific location during a specific time period. STEFLUX is well described and the results are thoroughly discussed revealing the benefits and restrictions of the tool. As the transport of stratospheric air masses into the troposphere is of great importance, STEFLUX can be used in conjunction with observations for several scientific purposes. Therefore, I consider the paper to be an interesting study and recommend its publication in ACP, but only after addressing the following comments.

Main comments: It seems that there are inconsistencies between the skill scores values (False Alarm Rate, ORSS) presented in the manuscript (Page 7 line 27 – Page 8 line 5, Table 1) and the contingency tables presented in Table 1. Moreover, the presen-

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Discussion paper

tation of the results in Table 1 needs to be more reader-friendly. I suggest the following:

1. Include (in Section 4.1.2) the formulas used to calculate all skill scores along with the corresponding references, i.e. ORSS=(AD-BC)/(AD+BC) (Thornes and Stephenson, 2001), explaining what A, B, C and D stands for in your case.

2. Assign A, B, C and D to the respective values in Table 1.

3. Check calculations for the skill scores. It is likely that your results are better (higher ORSS values and lower False Alarm Rate values).

4. Add a label for each table in Table 1, in order to be clear which approach is the "reference" and which is the "predictor". i.e for Table 1a,c "SIO vs STEFLUX" and for Table 1b,d "STEFLUX vs SIO".

5. Revise the discussion (for skill scores) in the manuscript if needed.

Minor comments: Please add degree symbols for lon and lat values in the manuscript. i.e. Page 3, line 20.

Section 4.1.1: Please include a definition for STEFLUX SI day. i.e. threshold of at least 1 box crossing per day?

Page 7, lines 6-7: "(see the Supplementary Material)". Please specify exactly where in the Supplementary Material.

Table 2: Add "(b)" in the second table.

Figure 1a: Please replace "STEFLUX [#]" with "STEFLUX [number of crossings]".

Figure 4: The map continents are not so clear. Please change map continents color if possible (maybe grey).

Thornes, J. E. and Stephenson, D. B.: How to judge the quality and value of weather forecast products, Meteorological Applications, 8,307–314, 2001.

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-514, 2016.