Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2018-285-RC2, 2018

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Satellite-derived sulphur dioxide (SO_2) emissions from the 2014–2015 Holuhraun eruption (Iceland)" *by* Elisa Carboni et al.

Anonymous Referee #2

Received and published: 29 May 2018

This paper developed a new scheme to calculate daily SO2 fluxes and average e-folding time for volcanic SO2 emissions in Iceland. In order to overcome the difficulties in latitude and time, the authors propose to use satellite-based thermal infrared spectrometers instead of UV bands to study the volcanic SO2. The results look sound and interesting. I recommend publishing the paper after addressing the comments below.

General comments:

1. Page 3, line 18. In this study all the SO2 measured from 30N to 90N between September 2014 and February 2015 is referred to as Holuhraun SO2. What is the uncertainty of this assumption?

Printer-friendly version

Discussion paper

2. This paper is based on the previous work performed by the same author. I understand the authors would like to keep the text simple and avoid repeating contents mentioned by their previous work. However, sometime the text seems to be too brief to keep all important information. For example, Page 3, line 27-28. "regridding the observations of column amount and plume altitude into a 0.125 latitude/longitude boxes following Carboni et al. (2016)." What is special of the regridding approach in Carboni et al. (2016)? I have the similar concern for Section 2.

Specific comments:

1. Page 2, line 22. The exact location of the IASI data should be added.

2. Page 2, line 30. Putting a rough quantification of the uncertainty of the "minimum" here would be appreciated.

3. Page 6, Line 10. The a priori values used were 0.2 $\pm$ 0.2 Tg/day for flux and 2 $\pm$ 2 day for the e-folding time. Is there any sources for the priori values? If not, will the fitting results be sensitive to the choices of the priori values?

4. Figure 2. The color of blue is difficult to see.

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2018-285, 2018.

Printer-friendly version

Discussion paper