

Interactive comment on “Version 2 Ozone Monitoring Instrument SO₂ Product (OMSO2 V2): New Anthropogenic SO₂ Vertical Column Density Dataset” by Can Li et al.

Anonymous Referee #2

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The paper presents a new version of OMI SO₂ algorithm and a dataset based on that algorithm. The new dataset has several improvements over the previous PCA-based OMI PBL SO₂ dataset. It is an important step forward in the satellite SO₂ retrievals. The paper is well-written and can be published after some minor revisions.

Comments:

The authors did not mention temperature dependence of SO₂ absorption. It could play a role, for example, in the Norilsk case, when the difference between winter and summer temperature could be as large as 50 degrees C.

P.6, l. 162. I wonder if the row anomaly had any impact on the number of selected PC.

What % of total variance is typically explained by them?

P. 10, l. 294 The condition that pixels with large SCDs (> 1 DU) are excluded could be too restrictive since the determined standard deviations were as high as 0.3 . What would happen if, for example, the limit was set to 2 DU?

p. 14, l. 410. It is not clear what these low correlation coefficients represent. The correlation coefficient depends on spatial resolution of the data as well as on the geographical region. From Figure 7, it looks that the correlation coefficient between a and c should be much higher if, for example, North Korea is excluded.

p.14, l. 417. This seems contradicts to the sentence above (l. 409) that says about winter snow/ice enchantment of SO₂.

Figure 4, l. 664. Correlation coefficient with what? A linear function? How can we interpret these values? I think, you are trying to say something about statistical significance of the trend. Why do not you just give error bars for the slope?

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Discussion paper

