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Interactive comment on "The STRatospheric Estimation Algorithm from Mainz (STREAM): Estimating stratospheric NO$_2$ from nadir-viewing satellites by weighted convolution" *by* S. Beirle et al.

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Main comments:

1. One of the strengths of STREAM is its capability of exploiting measurement data also over continents, for estimating Vstrat. The largest benefit with respect to other STS methods would hence be at clear sky continental scenes. Please clarify if that is correct. If so, a dedicated analysis of such scenes would be valuable, eg based on the synthetic data used.

2. STREAM differs from other STS methods in the sense that scenes with tropospheric

NO2 are not excluded but that a low weight is assigned. Please clarify whether this introduces a bias in Vstrat, and - if so - whether the tropospheric-residual-based weight mitigates such a bias. STREAM is tested in a scenario where only the pollution weights and the cloud weights are applied (Section 4.2.5), which would be the ideal test scenario to answer this question.

3. The pollution weight is derived from multi-annual mean tropospheric NO2 column data from SCIAMACHY (Beirle and Wagner, 2012). Please clarify how spatially smooth these data are, in the context of the width of the convolution kernels, and vis-à-vis the application of STREAM to higher spatially resolving instrumentations.

Minor comments:

- The assumptions made for the stratospheric Air Mass Factor should be specified (it is expected to be approximated by the geometric AMF).

- p4, line 16: Typo: complImentary → complEmentary

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