Supplement of Atmos. Chem. Phys., 18, 735–756, 2018
https://doi.org/10.5194/acp-18-735-2018-supplement

Atmospheric Chemistry and Physics
Open Access
EGU

Supplement of

Top-down constraints on global N_2O emissions at optimal resolution: application of a new dimension reduction technique

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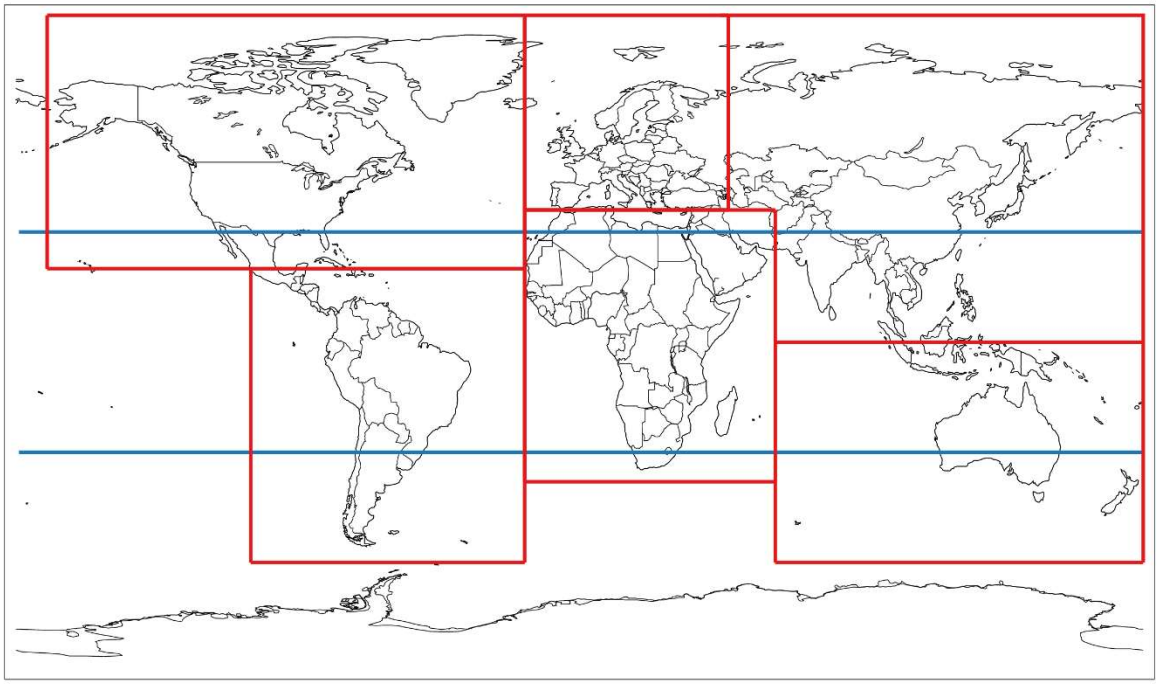

Figure S1: Bounding boxes for the six continental (red) and three ocean (blue) regions considered in this study.

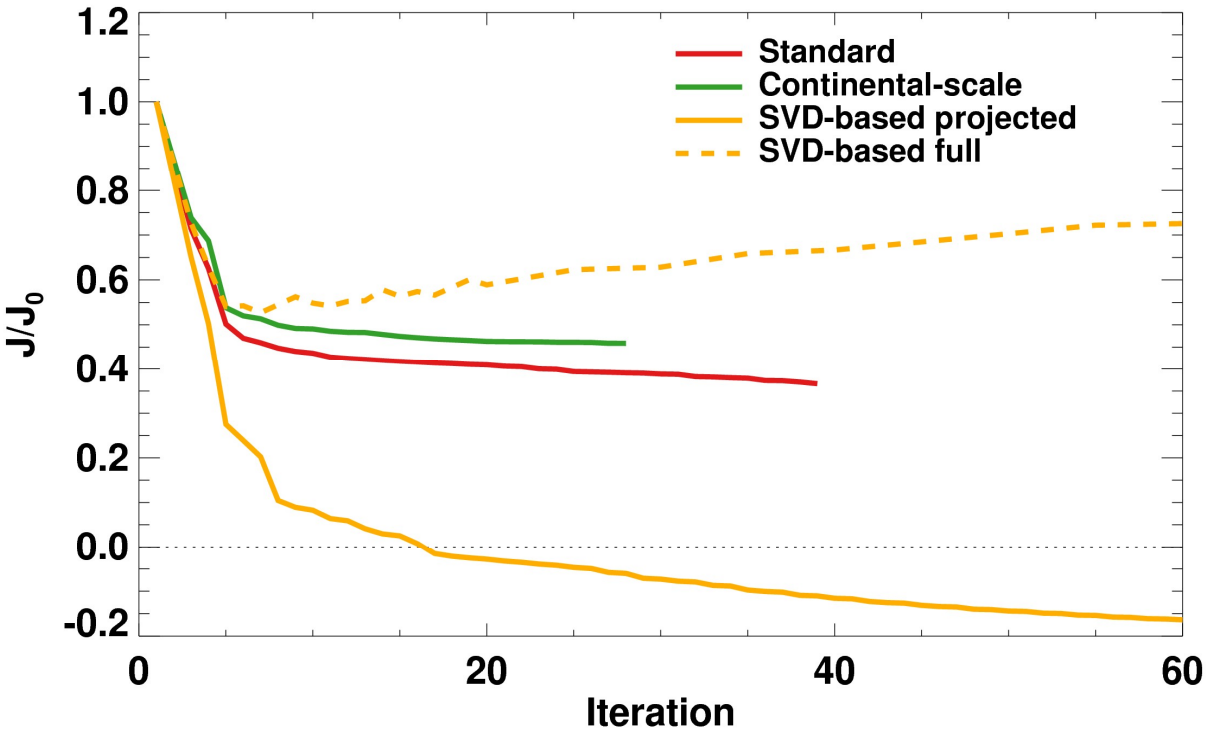

Figure S2: Cost function evolution (expressed as the ratio of the final cost function, J, to the initial cost function, J_0) for the three inversion frameworks used in this study: the standard inversion (red solid line), continental-scale inversion (green solid line), and the SVD-based inversion (gold solid line). Because the SVD-based inversion uses the projected cost function formulation, we also calculate the full cost function evolution using the forward model (gold dashed line).

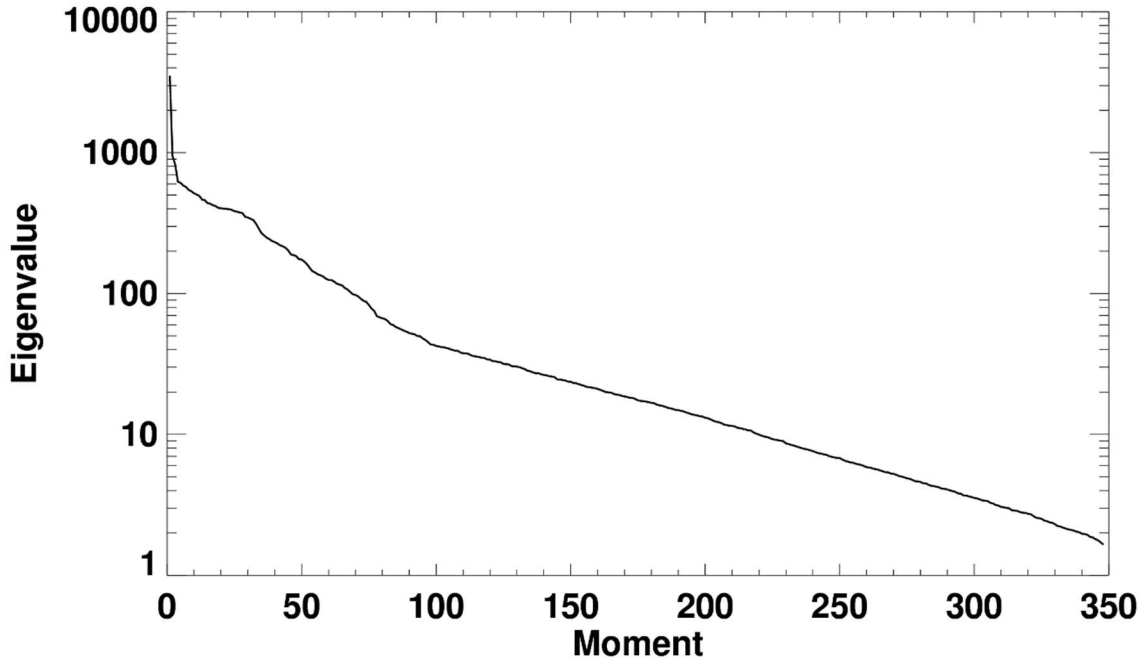

Figure S3. Eigenvalue spectra for the 350 moments used in the SVD-based inversion.

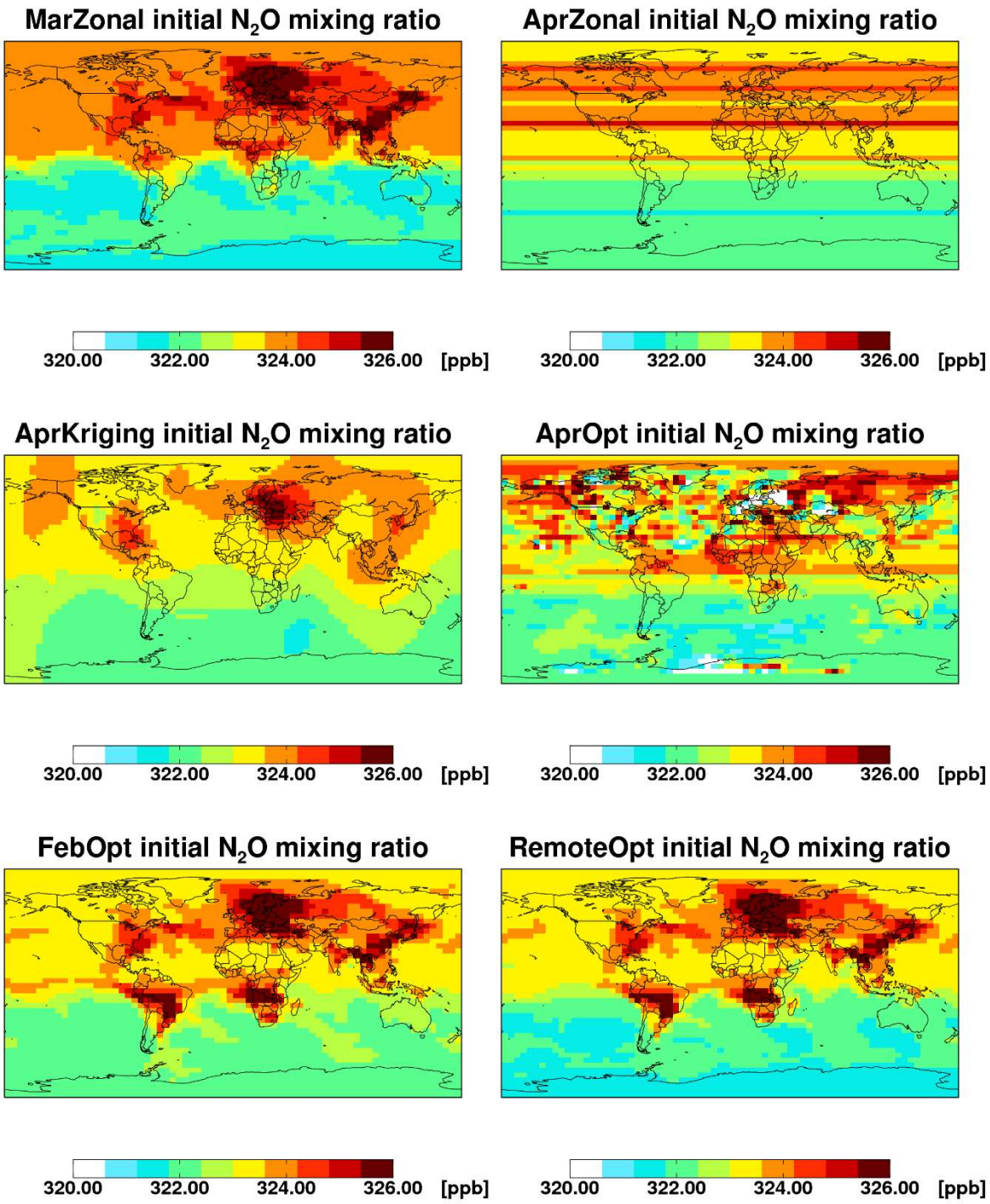

Figure S4. Initial surface N_2O mixing ratios for 1 April 2010 as determined using the six different initial condition setups listed in Table 1.