

Figure S1. Domain-averaged standard deviations of background errors ($\mu\text{g m}^{-3}$) as a function of height for SO_2 .

Figure S2. The time series of statistics between model simulations and observations for SO_2 . O-observation, B-NO_DA, A-CONC_DA. Statistics includes number of data pairs, MEAN-mean bias, STDV- standard deviation, RMSE-root mean square error. Left:2015, right-2016.

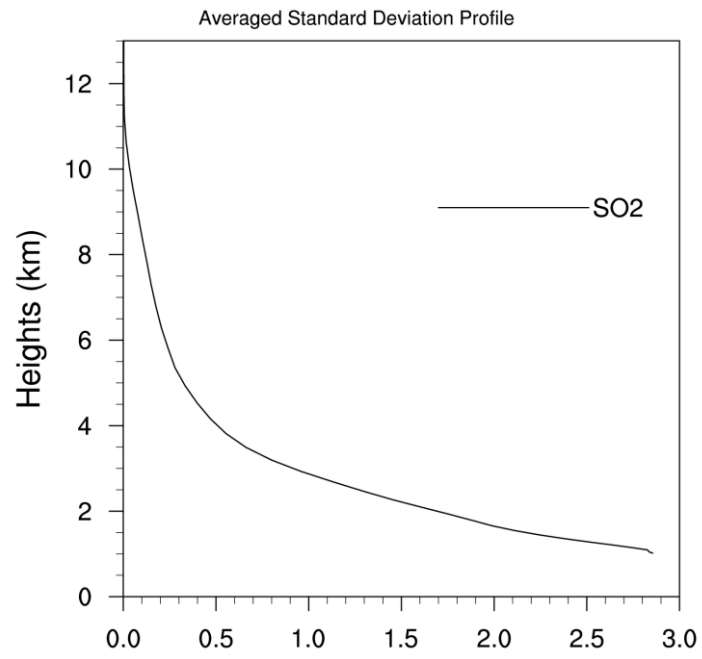


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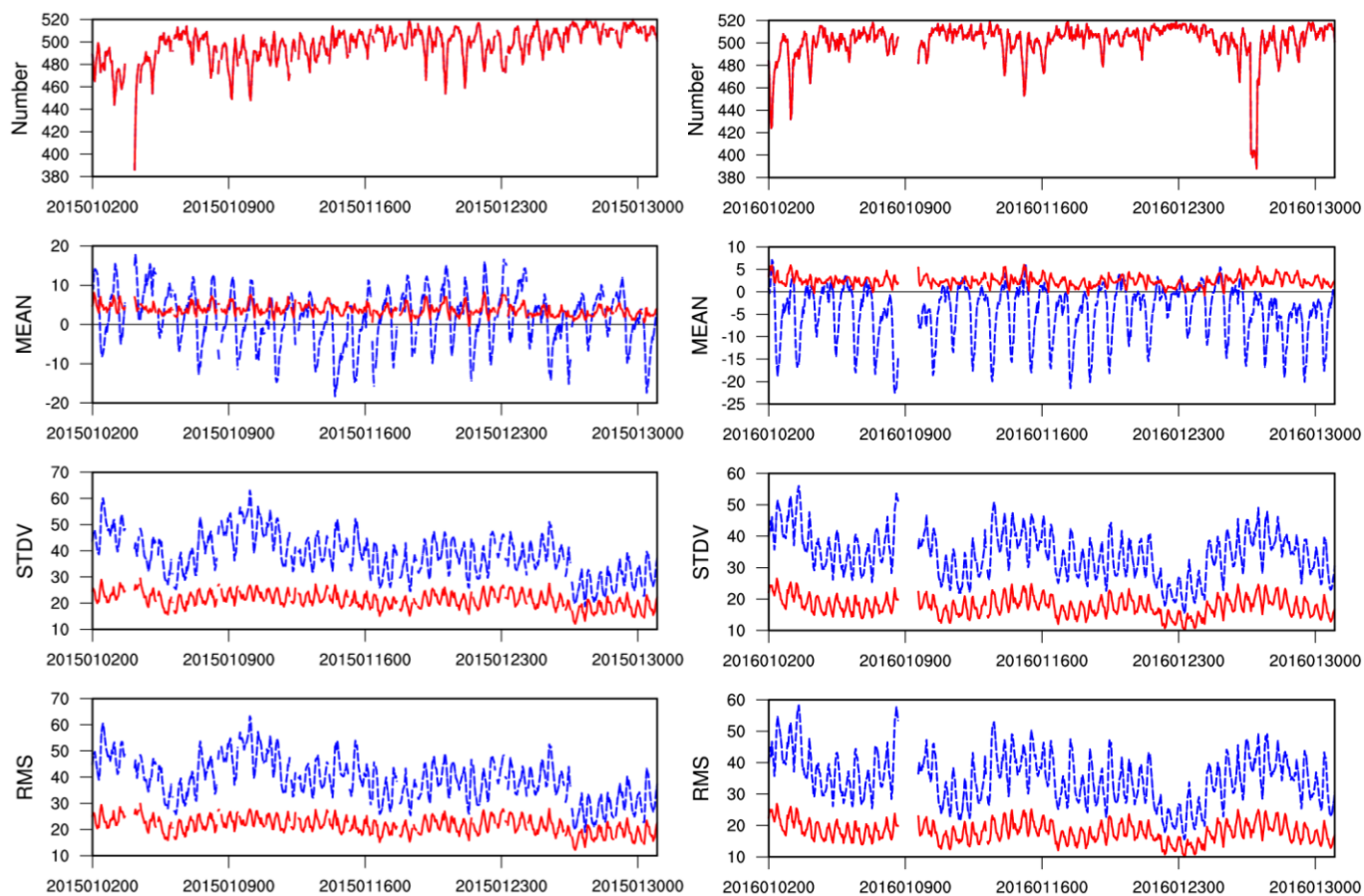


Figure S2. The time series of statistics between model simulations and observations for SO₂. O-observation, B-NO_DA, A-CONC_DA. Statistics includes number of data pairs, MEAN-mean bias, STDDV- standard deviation, RMSE-root mean square error. Left:2015, right-2016.