

1 **SUPPLEMENTARY INFORMATION**

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3 **Transport mechanisms for synoptic, seasonal and interannual SF₆**
4 **variations in troposphere**

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17 Here we show some additional comparisons of SF₆ simulations using MOZART
18 (Gloor et al., 2007), this study using ACTM and observed data.

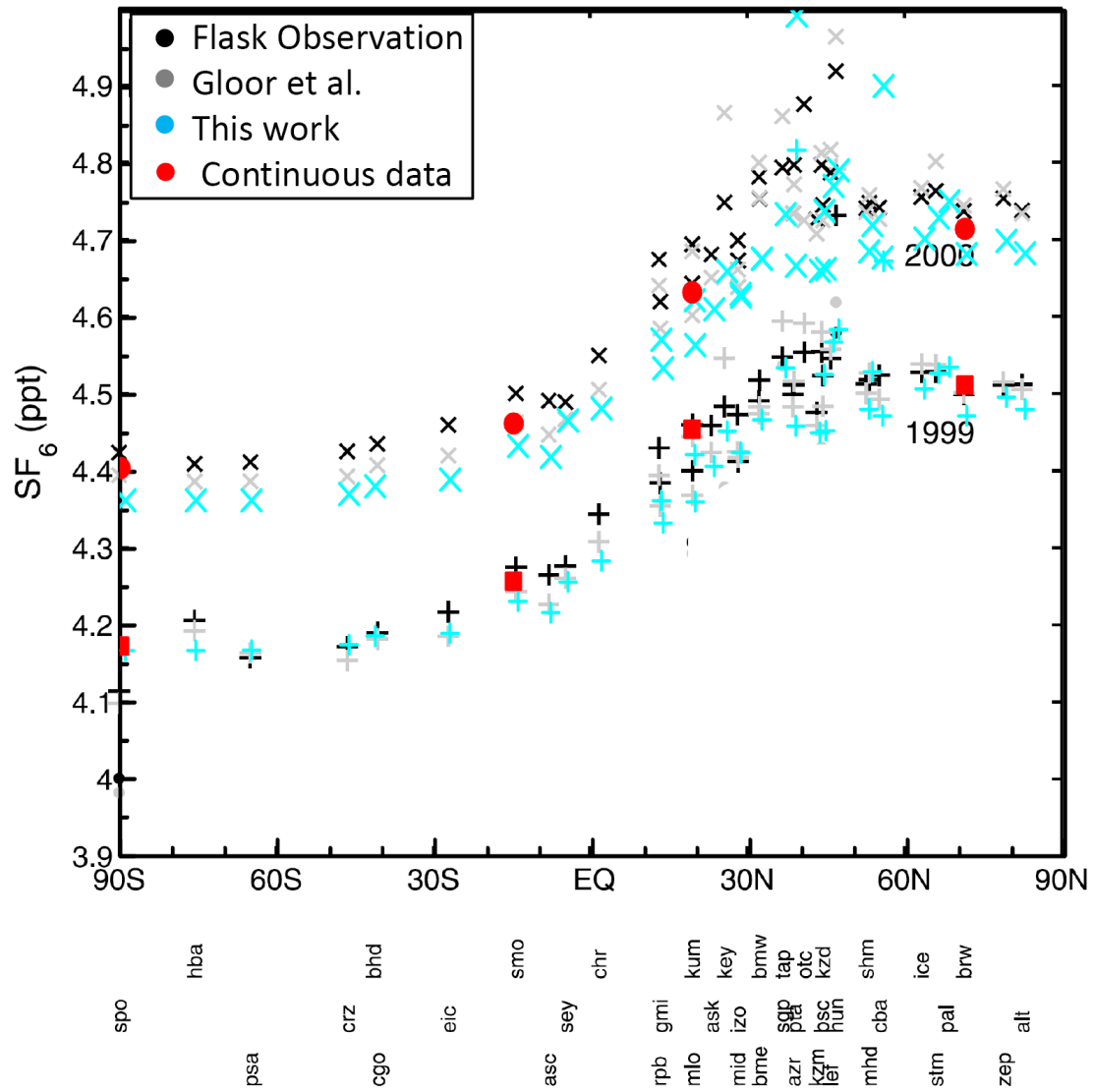
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20 In this study we used the latitudinal profiles of SF₆ from 6 continuous monitoring
21 sites only, while there are weekly flask samplings from many other sites as discussed
22 in Gloor et al. (2007). Since the focus of this study is not validation of model transport,
23 but to understand the various transport processes contributing to the synoptic,
24 seasonal and inter-hemispheric gradients in SF₆, we show these model-data
25 comparison for growing confidence in the SF₆ simulation quality by ACTM.

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27 Figure S1 shows the comparison of inter-hemispheric gradients at 39 flask sampling
28 sites during the years 1999 & 2000 in addition to the 6 continuous monitoring sites
29 used in this work.

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31 Figure S2 shows comparison SF₆ time series at two sites at the PBL height region (0-
32 2 km) and upper troposphere (6-8 km).

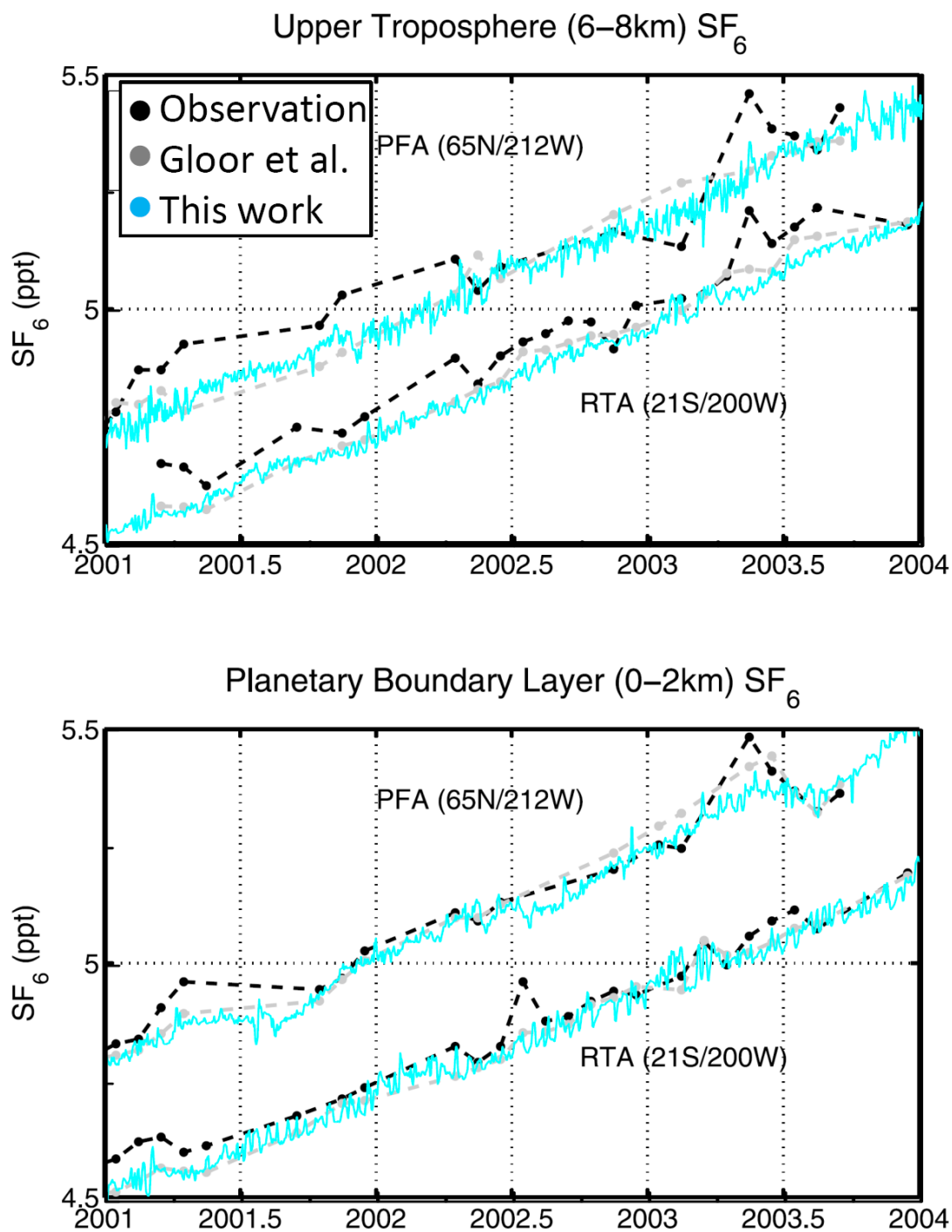
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34 These two comparisons suggest an overall agreement in ACTM simulation and data at
35 different latitude and height regions.

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Figure S1: Comparison of inter-hemispheric gradient is SF₆ as observed at flask sampling and continuous sites with those obtained using MOZART (Gloor et al., 2007) and ACTM forward transport simulations.



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Figure S2: Comparison of SF₆ time series at PFA (65.07°N, 147.29°W) and RTA (21.25°S, 159.83°W) sites at lower (bottom panel) and upper (top panel) tropospheric heights as obtained from measurements, MOZART (Gloor et al., 2007) and ACTM forward simulations.