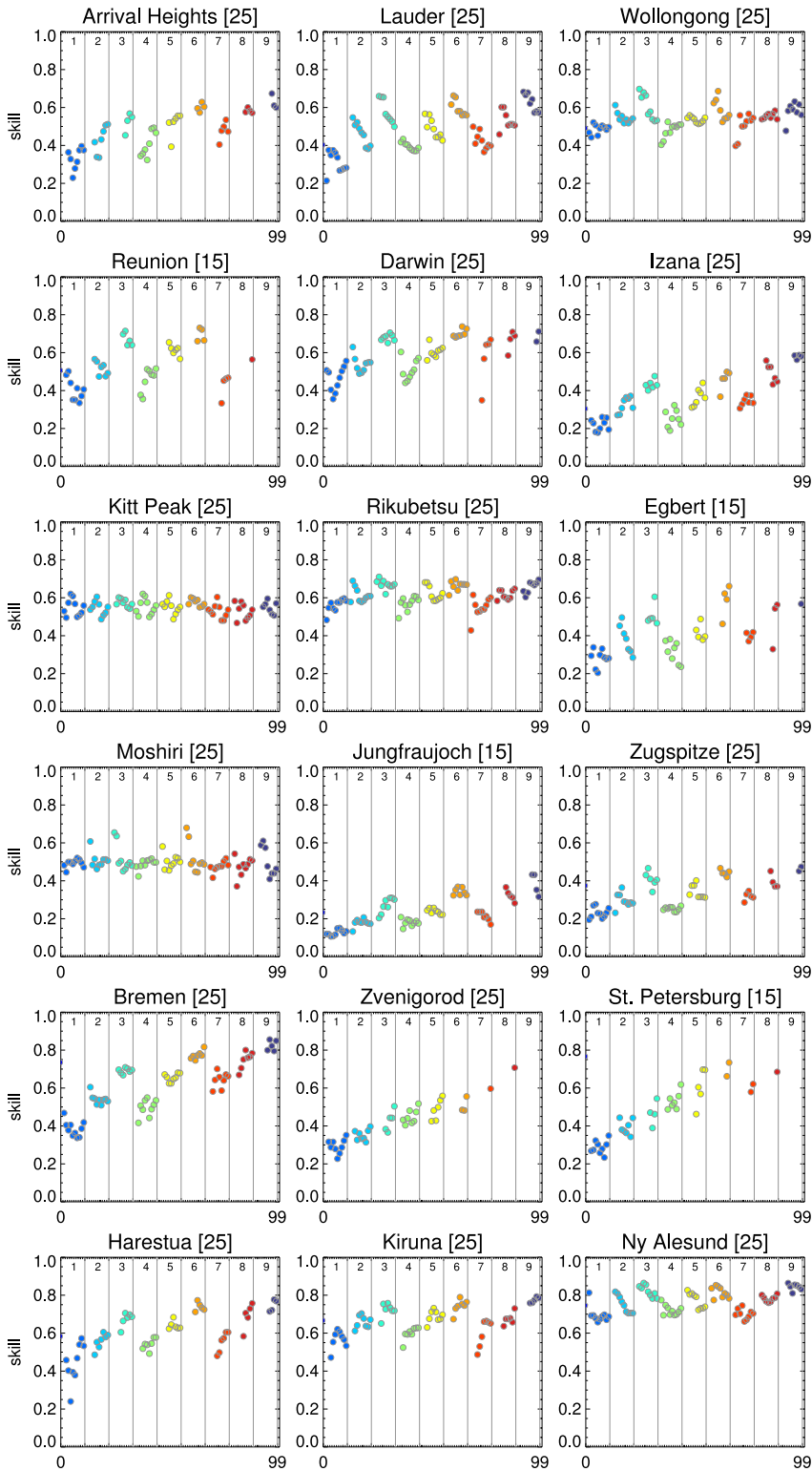


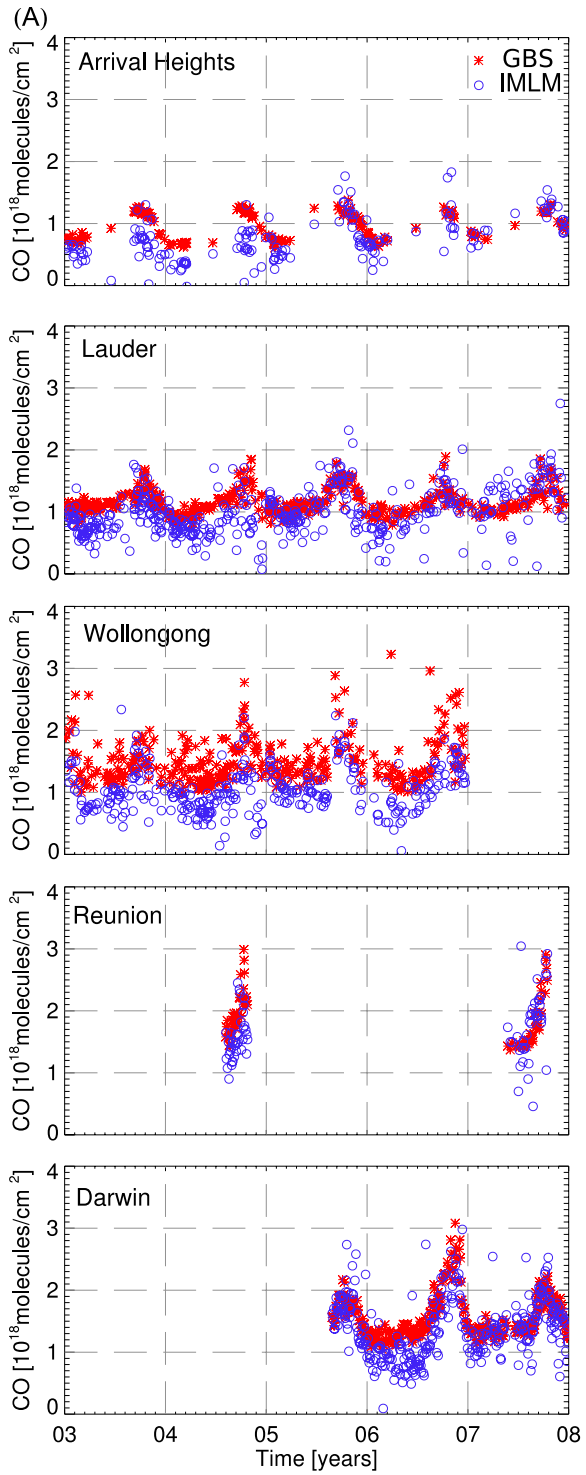
1 Supplementary information

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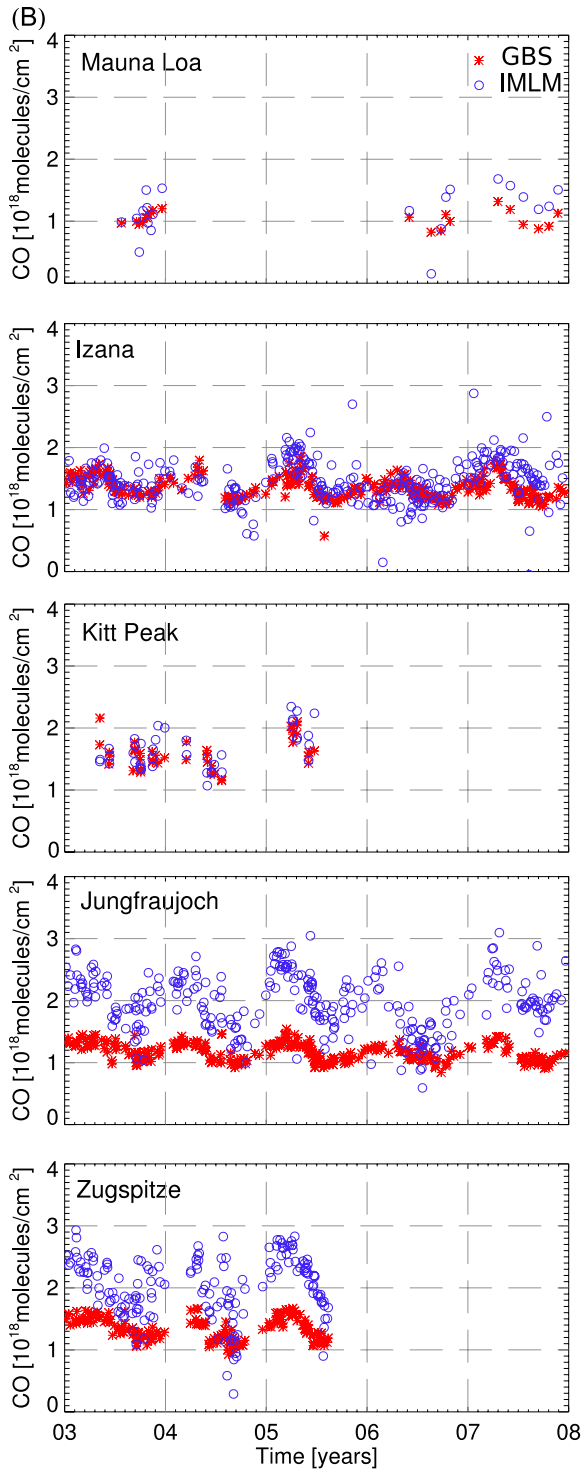
1 **Figure S1.** Skill score of the SCIAMACHY-GBS comparison for nine different
2 parameter combinations as defined in Table 3 for each station used in this paper, with the
3 exception of Mauna Loa where insufficient data was available for a useful calculation of
4 skill levels. For each combination the skill scores are then ordered from left to right from
5 the smallest to the largest sampling area size. In addition, for most locations we excluded
6 any dataset where less than 25 SCIAMACHY-GBS comparison values could be
7 calculated. At Egbert and St. Petersburg there were considerably fewer GBS CO
8 measurements available for comparison with SCIAMACHY and we lowered the accepted
9 minimum number of SCIAMACHY-GBS comparison values to 15. The colors are added
10 for visualization purposes only.



1

2 **Figure S2A.** As Figure 5A but for parameter set N^o 6 in Table 3 and an area of $20^\circ \times 20^\circ$.

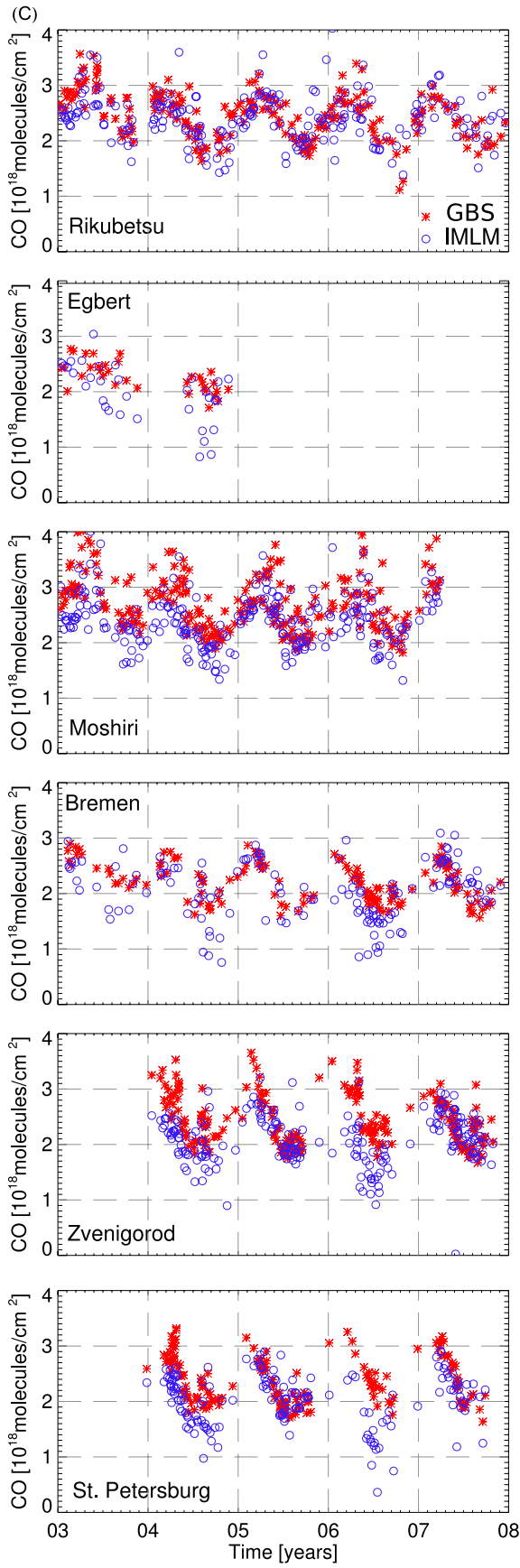
3



1

2 **Figure S2B.** As Figure 5B but for parameter set N^o 6 in Table 3 and an area of 20°×20°.

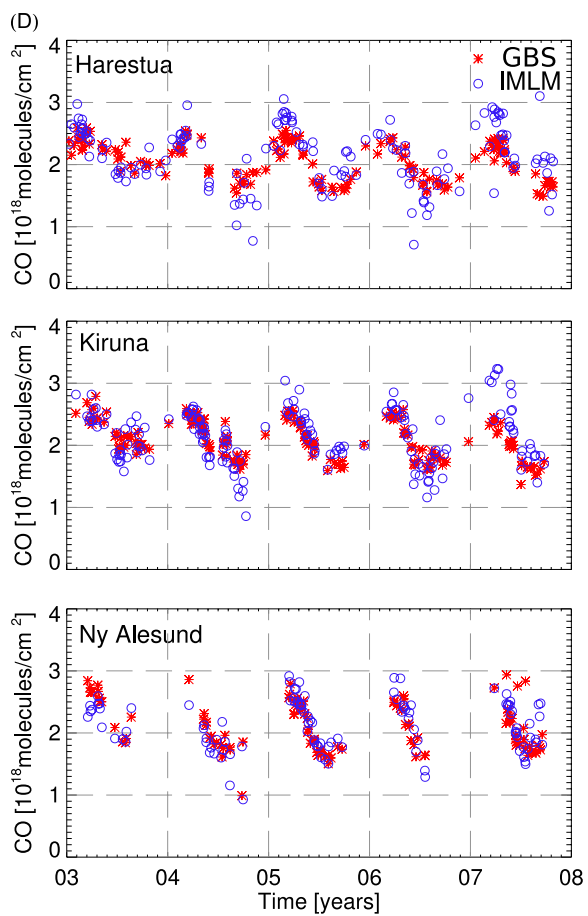
3



1

1 **Figure S2C.** As Figure 5C but for parameter set N^o 6 in Table 3 and an area of 20°×20°.

2



3

4 **Figure S2D.** As Figure 5D but for parameter set N^o 6 in Table 3 and an area of 20°×20°.