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Initial validation of ENVISAT/SCIAMACHY columnar CO by FTIR profile retrievals at the Ground-Truthing Station Zugspitze

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Abstract. Carbon monoxide vertical profile retrievals from ground-based solar FTIR measurements at the Permanent Ground-Truthing Station Zugspitze (47.42° N, 10.98° E, 2964m a.s.l.), Germany are used to validate columnar CO retrieved from ENVISAT/SCIAMACHY spectra (WFM-DOAS version 0.4). The WFM-DOAS retrievals of CO include an empirical column scaling factor of 0.5. Therefore, not absolute column levels are validated, but the proper response of the SCIAMACHY retrievals to the atmospheric inter-annual variability is quantitatively assessed in comparison to the Zugspitze FTIR results. Although CO WFM-DOAS data for only 33 days were available for this study (data covering January-October 2003), it is possible to retrieve information on the CO annual cycle (≈10% amplitude) in a statistically significant fit out of the scatter of the SCIAMACHY WFM-DOAS data. To obtain this, all pixels within a minimum radius of 2000km around Zugspitze had to be averaged for each day.

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