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Validation of IFE-1.6 SCIAMACHY limb ozone profiles

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Abstract. The IFE-1.6 scientific data set of SCIAMACHY limb ozone profiles is validated for the period August–December 2002. The data set provides ozone profiles over an altitude range of 15–45 km. The main uncertainty in the profiles is the imprecise knowledge of the pointing of the instrument, leading to retrieved profiles that are shifted in altitude direction. To obtain a first order correction for the pointing error and the remaining uncertainties, the retrieved profiles are compared to their a-priori value and ozone sondes based on absolute distance and equivalent latitude criteria. A vertical shift of the satellite profiles with 2 km downward is found to be an appropriate correction for the data set studied. A total root-mean-square difference between limb profiles and sondes of 10–15% remains for the stratospheric ozone profile after application of the correction. Small biases are left above and below the ozone maximum at mid latitudes, where the vertical gradients in the retrieved product are in general too strong.

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