Accuracy of the derived total column amounts in the FT-IR observations of O3, HCl, and HF

Nobutaka Kobayashi[1], Isao Murata[2], Hiroshi Fukunishi[3], Hideaki Nakane[4]

[1] Geophysics Sci,Tohoku Univ, [2] Astronomy and Geophysics, Tohoku Univ., [3] Department of Geophysics, Tohoku Univ., [4] Atmospheric Environment Div., NIES

The vertical column amounts of O3, HCl, and HF are derived from infrared spectra observed with a FT-IR using the SFIT nonlinear least-squares spectral fitting program. The calculated spectra are fitted to observed ones by a scaling of assumed initial profiles. Here, the selection of an adequate initial profile is very important to improve accuracy in the derivation of total column amounts. In the derivation of ozone column amounts, we already showed that the upward or downward shift of the monthly mean initial profiles improves accuracy. In this paper we investigated the sensitivities of initial volume mixing ratio profiles to the derived amounts concerning HCl and HF. We also discuss the accuracy of total column amounts derived with the iterative inversion algorithm (SFIT2).