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## Technical Note: Recipe for monitoring of total ozone with a precision of around 1 DU applying mid-infrared solar absorption spectra

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**Abstract.** Mid-infrared solar absorption spectra recorded by a state-of-the-art ground-based FTIR system have the potential to provide precise total O<sub>3</sub> amounts. The currently best-performing retrieval approaches use a combination of small and broad spectral O<sub>3</sub> windows between 780 and 1015 cm<sup>-1</sup>. We show that for these approaches the uncertainties of the temperature profile are by far the major error sources. We demonstrate that a joint optimal estimation of temperature and O<sub>3</sub> profiles widely eliminates this error. The improvements are documented by an extensive theoretical error estimation. Our results suggest that mid-infrared FTIR measurements can provide total O<sub>3</sub> amounts with a precision of around 1 DU, placing this method among the most precise ground-based O<sub>3</sub> monitoring techniques. We recapitulate the requirements on the instrumental hardware and on the retrieval that are needed to achieve this high precision.

▣ [Final Revised Paper](#) (PDF, 2838 KB) ▣ [Discussion Paper](#) (ACPD)

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