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Analysis and improvement of SCIAMACHY limb data for tropospheric ozone retrieval

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Pollution events have a great influence on the atmosphere. During these pollution events, ozone precursors such as carbon monoxide (CO), nitrogen oxides (NO_x), methane (CH4), and other hydrocarbons are emitted. With chemical chain reaction, tropospheric ozone is photochemically produced [Jenkin, Clemitshaw, 2000] and influence large region due to its long lifetime.
SCIAMACHY has produced over the past 10 years a unique set of database [Bovensmann et al., 1999]. Based on SCIAMACHY measurements, tropospheric ozone is retrieved by using the limb-nadir matching (LNM) technique [Sierk, Richter et al., 2006]. The focus of this study is the improvement of SCIAMACHY limb profiles with respect to optimise the retrieval of stratospheric ozone amount to get finally a more accurate tropospheric ozone product. Results show limb profile improvements in different altitude layers. The comparison with ozonesonde demonstrates a decline of differences of about 5 $\sim$ 15 DU in stratospheric ozone amount, hence a significant average up of retrieval accuracy.