

Stratospheric variability over a sub-tropical high altitude station in Central Mexico

Michel GRUTTER¹, Rubén PAVIA¹, Wolfgang STREMME¹, and Adolfo MAGALDI¹, Thomas BLUMENSTOCK and Frank HASE²

¹ *Universidad Nacional Autónoma de México, Mexico City, Mexico*

² *Karlsruhe Institute of Technology, Karlsruhe, Germany*

The chemical composition of the upper-troposphere and stratospheric layers is analysed with a high resolution FTIR instrument that has been recording solar absorption spectra over the past 5 years in Central Mexico (19 N). The measurements are performed from the Altzomoni Atmospheric Observatory at nearly 4,000 m above the sea level and contribute to the Network for the Detection of Atmospheric Composition Change (NDACC). We present in this work the seasonal variability of various gases such as O₃, HNO₃, HCl and HF and correlate the observed anomalies of the partial columns at different altitudes with N₂O and CH₄ to study possible troposphere-stratosphere interactions. With the help of numerical weather prediction models, we explore individual events in order to identify periods when the exchanges occur and describe the phenomena in terms of dynamical processes. Several publications affirm that, in the region of study, these exchanges occur. This unique data set offers the possibility to study stratospheric intrusions and their impacts in latitudes where observations have been rare in the past.

Key words: Stratospheric intrusions, Tropical NDACC station, FTIR, Altzomoni, Mexico