



Long-Range Transport of tropospheric NO₂ as seen by GOME and SCIAMACHY

A. Heckel, A. Richter, J. P. Burrows

Institute of Environmental Physics, University of Bremen, Germany
(Andreas.Heckel@iup.physik.uni-bremen.de)

Recent studies show that air pollution from anthropogenic emissions is not only a problem locally but can travel far distances and even reach other continents. To understand the influence of this long range transport on air quality along its path it is crucial to investigate frequencies and patterns of transport events. Satellite instruments provide a unique data set of continuous measurements to study these transport events.

The satellite instruments GOME (Global Ozone Monitoring Experiment) and SCIAMACHY (Scanning Imaging Absorption SpectroMeter for Atmospheric CHartographY) provide a long term data set of almost 10 years of continuous tropospheric NO₂ measurements. The resulting maps of tropospheric NO₂ are well known and nicely show global patterns of anthropogenic NO_x pollution. The examination of this time series of global measurements reveal typical pathways and conditions for the export of NO₂ from the North American continent eastward into the Atlantic Ocean and to Europe.

In this study, NO_x export from the US into the Atlantic sector has been studied, and seasonal and geographical patterns been investigated. The dependence of the different pathways on meteorological conditions is discussed as well as the impact on pollution import to Europe.