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# The Upper Tropospheric Budget of PAN

N.A.D. Richards (1), M.P. Chipperfield (1), S.R. Arnold (1), D.P. Moore (2), and J.J. Remedios ()

(1) Institute for Atmospheric Science, School of Earth and Environment, University of Leeds, UK, (n.richards@see.leeds.ac.uk), (2) Earth Observation Science, Space Research Centre, Department of Physics and Astronomy, University of Leicester, U.K

Peroxyacetyl nitrate (PAN) is a key species in tropospheric chemistry. It acts as a reservoir for NOx, allowing it to be transported over large distances in the cold upper troposphere (UT). When UT air masses descend and warm PAN breaks down and the NOx released can lead to O3 production. PAN therefore plays an important role in the long-range transport of pollution to remote clean areas.

Recently, the first global measurements of upper tropospheric PAN and acetone have been retrieved from the Michelson Interferometer for Passive Atmospheric Sounding (MIPAS) instrument on board ENVISAT. MIPAS is a Fourier transform spectrometer which detects limb emission spectra in the middle and upper atmosphere for the retrieval of atmospheric trace gases. Here, we present these new observations (along with other available species such as ozone and nitric acid) and compare them to simulated PAN from the TOMCAT 3-D chemical transport model (CTM). We will investigate the PAN budget in the upper troposphere through the combined use of satellite and aircraft observations together with model simulations of PAN, its precursors and degradation products.