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## GLORIA observations of pollution tracers C<sub>2</sub>H<sub>6</sub>, C<sub>2</sub>H<sub>2</sub>, HCOOH, and PAN in the North Atlantic UTLS region

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The Gimbaled Limb Observer for Radiance Imaging of the Atmosphere (GLORIA) is an imaging Fourier transform spectrometer (iFTS) using a 2-dimensional detector array to record emission spectra in the mid-infrared region with high spatial resolution. GLORIA is operated on high altitude research aircraft, mainly in the limb observational geometry to measure vertical profiles of temperature and atmospheric trace species with high vertical resolution.

In autumn 2017, the Wave-driven Isentropic Exchange (WISE) aircraft campaign took place from Shannon (Ireland). Sixteen flights with the High Altitude and Long Range Research Aircraft (HALO) were performed between 31 August and 21 October 2017 over the eastern North Atlantic region.

GLORIA observations were analysed with regard to pollutant species like C<sub>2</sub>H<sub>6</sub>, C<sub>2</sub>H<sub>2</sub>, HCOOH, and PAN, which are produced at distinct source regions near the ground and transported to remote regions due to their atmospheric lifetime of several weeks. Enhanced volume mixing ratios of these molecules were detected along some parts of the flight track in the upper troposphere and lowermost stratosphere (UTLS).

Measured profiles of these species are compared to simulations from the ECHAM/MESy Atmospheric Chemistry (EMAC) model and reanalysis data from the Copernicus Atmosphere Monitoring Service (CAMS). Furthermore, emission tracers and back-trajectories from the Chemical Lagrangian Model of the Stratosphere (CLaMS) are used to analyse the source regions of these pollution events.