



Observations by GLORIA of stirring and mixing in the UTLS following Rossby wave breaking in winter 2015/2016

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The Gimbaled Limb Observer for Radiance Imaging of the Atmosphere (GLORIA) is an airborne infrared limb-imager combining a 2-D infrared detector with a Fourier transform spectrometer. It was operated aboard the German Gulfstream G550 research aircraft HALO during a series of simultaneous campaigns (POLSTRACC, SALSA, GWLCYCLE, GWEX) during the winter of 2015/2016 over Europe and the Arctic.

This poster shows a set of GLORIA observations and analyses of 2-D trace gas cross-sections in the extratropical upper troposphere / lower stratosphere (UTLS). The spatially highly-resolved temperature, H₂O, O₃ and HNO₃ data reveal an intricate layered structure in the extratropical Transition Layer (exTL). This heterogeneous structure was caused by Rossby wave breaking and is similar to the state found during previous measurements in summer 2012 over Europe.

This study presents first analyses of the stirring and stratosphere-troposphere-exchange by means of backward-trajectory calculation.