



## **A case study of water vapour in-mixing into the LS from GLORIA measurements acquired during the WISE campaign**

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During autumn of 2017, the WISE campaign was taking place based in Shannon, Ireland, using the German research aircraft HALO. The aircraft carried a comprehensive payload of in situ instruments that allow for highly precise measurements of a variety of trace gasses at aircraft position as well as remote sensing instruments providing spatially resolved cross-sections of selected species. Here, we focus on measurements of the limb imager GLORIA. This instrument acquires simultaneously 6144 infrared spectra from 750 to 1400 wave numbers with a spectral resolution of 0.2 or 0.0625 wavenumbers (in 3 or 10 s, respectively), depending on scientific demands. Using dedicated flight patterns, a 3-D reconstruction of observed air masses is feasible.

On October the 12th and 14th, we could probe a LC1 Rossby wave breaking event over Iceland that initially exhibited a very strong tropopause inversion layer and a warm conveyor belt lifting wet air masses to high altitudes. During the breaking of the Rossby wave, wet tropospheric air was mixed into the lowermost stratosphere between 330 and 250 K. We will present our initial measurements of water vapour, ozone and nitric acid to quantify the exchange. First 3-D reconstructions of the filament will show the full spatial extent and thus allow a quantification of the in-mixed water vapour. Trajectories are used to follow the transport path of the water.