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First retrieval results of the GLORIA chemistry mode measurements

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GLORIA (Gimballed Limb Observer for Radiance Imaging of the Atmosphere) is a new airborne imaging Fourier Transform Spectrometer developed at Karlsruhe Institute of Technology and Research Center Jülich, Germany. Depending on the scientific aims, the instrument enables measurements in limb and nadir geometry with high spectral resolution and low spatial coverage (chemistry mode) or high spatial coverage and lower spectral resolution (dynamic mode). Up to now, GLORIA successfully accomplished three scientific measurement campaigns with flights carried out under various atmospheric conditions and at wide range of latitudes and seasons (ESSENCE in December 2011, TACTS and ESMVAL in summer 2012) and provided huge amount of data enabling extensive research on transport and mixing in the extratropical UTLS region, biomass burning emissions, stratospheric polar ozone chemistry and the interaction between the Indian monsoon and the changing climate. Here, we describe shortly the GLORIA data processing developed at Karlsruhe Institute of Technology and present the first profiles and spatial distribution cross sections of atmospheric constituents retrieved from GLORIA chemistry mode measurements. To illustrate the GLORIA performance, an intercomparison of in-situ, remote sensing and GLORIA observations of temperature and chosen gases is introduced.