



ESSenCe 2011 GLORIA Measurements

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The ESA Sounder Campaign (ESSenCe) was conducted in November and December of 2011 in Kiruna (Swedish Lapland). Its main focus has been on observation of the UT/LS region using the new Gimballed Limb Observer for Radiance Imaging of the Atmosphere (GLORIA), an infrared remote sensing instrument developed jointly by Forschungszentrum Jülich (FZJ) and Karlsruher Institut für Technologie (KIT). Arena Arctica served as the campaign's base of operations and the Myasishchev Design Bureau's M-55 Geophysica high-altitude research aircraft as the instrument carrier.

GLORIA, the successor to the MIPAS and CRISTA instruments, is a limb-sounding Fourier transform spectrometer that can capture several thousand interferograms at once on a two-dimensional detector array. The instrument is mounted on a frame that provides high-precision attitude control and stabilization. GLORIA is designed to run in either of two operation modes, emphasizing spatial (Dynamics Mode) or spectral resolution (Chemistry Mode) as desired. The chemistry mode makes the retrieval of profiles for a multitude of trace species feasible while dynamics mode data is optimized for resolving spatial structures like tropospheric intrusions and gravity (bouyancy) waves. Studies performed at FZJ have shown that, given the right conditions, dynamics mode measurements can serve as the input for 3-dimensional tomographic retrievals.

GLORIA data processing is performed jointly by FZJ (IEK-7) and KIT (IMK-ASF), where the focus is on the dynamics mode and the chemistry mode, respectively.

During the ESSenCe campaign, two flights were performed on December 11th and 16th. GLORIA provided measurements during both flights and the data is as of now being processed and evaluated. This presentation aims to give an overview of GLORIA campaign operations as well as the status of the ongoing data analysis, with an outlook on future activities.