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Observations of OH–airglow from ground, aircraft, and satellite during the GW-LCYCLE campaign: investigation of different wave types

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During the GW–LCYCLE campaign from January to February 2016 in Northern Scandinavia, we operated four instruments: two ground–based OH* IR–spectrometers (scanning and non–scanning mode at ALOMAR (69°N), Norway, and Kiruna (68°N), Sweden) and one ground-based OH* IR all–sky camera (at Kiruna) as well as one OH* IR–camera on board the research aircraft FALCON (field of view ca. 30°, spatial resolution 150 m x 150 m). Due to the differing spatial and temporal resolution of the instruments, this equipment allows the investigation of temporal and spatial gravity wave parameters in a wide spectral range. The flights of the research aircraft provide the opportunity to investigate gravity waves in between both measurement sites.
During the campaign period, the dynamical situation changed due to a minor stratospheric warming. The effect of this warming on the OH*–layer is investigated using TIMED-SABER data.
We provide an overview of the development of planetary and gravity wave parameters and energy density at mesopause height during the campaign period and present first results of the airborne measurements. Finally, we discuss possible wave sources and the influence of the stratospheric warming on wave parameters, and propagation.