



First results of the Light Precipitation Validation Experiment

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Precipitation products from different satellite instruments, i.e. CloudSat, Aqua and Tropical Rainfall Measuring Mission (TRMM), shows considerable differences at high latitudes. The current hypothesis is that these differences are due to dominance of light rainfall with shallow freezing levels that can pose a significant challenge to most satellite precipitation sensors. To augment currently limited database of high latitude rainfall and to facilitate development of new or improved algorithms the Light Precipitation Validation Experiment (LPVEx) was conducted from Sept-Oct, 2010 in the Gulf of Finland. This presentation outlines the overall observing strategy adopted for LPVEx and highlights examples of high latitude precipitation events captured during the experiment. LPVEx IOP took place in the Helsinki Testbed area on Sept 15 – Oct 20, 2010. During the experiment University of Wyoming King Air sampled around 10 cloud and precipitation cases, by doing spirals, and flying legs at different altitudes. These observations provide a wealth of information on ice and mixed-phase precipitation. The flights were coordinated with the University of Helsinki weather radar operations. King Air was equipped with a cloud radar (W-band), 2DP, 2DC and CPI particle probes, IWC and LWC sensors, and aerosol measurement equipment. Cloud and rain microphysical properties and cloud radar reflectivity profiles in upward, downward, and sideways pointing configurations were measured.

During the experiment three sites, two coastal and one inland, which hosted ground based instrumentation, were established. The coastal sites were located on islands of Harmaja (about 3 km from the coast of Helsinki) and Emäsalo (right at the coast), the inland site was in the city of Järvenpää next to the University of Helsinki vertically pointing C-band radar. The surface instrumentation for these sites were extended by three 2D-video disdrometers, six Parsivel disdrometers, Joss-Waldvogel disdrometer, multi-frequency polarimetric scanning radiometer (ADMIRARI), three Micro Rain Radars, ceilometers and weighing rain gauges. Furthermore, during the experiment RV Aranda was equipped with a Parsivel and ODM-470 optical disdrometers, and a Micro Rain Radar. During Sept 21 and Oct 20, RV Aranda sailed just under the aircraft track. During the experiment daily radio-soundings were carried out.

After the completion of the LPVEx IOP, the Jarvenpaa site remained fully equipped through January 2011. During the extended observations period a wealth of ice and mixed phase precipitation data that is common in Finland during this time of year was collected.