



The Canadian CoReH2O Snow and Ice Experiment 2009-2010

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The Canadian CoReH2O Snow and Ice (Can-CSI) Experiment 2009 is designed to investigate the electromagnetic response of snow and ice throughout the 2009-2010 winter season in the Hudson Bay lowlands in order to support science development activities of the Cold Regions Hydrology High Resolution (CoReH2O) mission. CoReH2O is a candidate mission in the Earth Explorer programme at ESA that is in the feasibility stage of the competition. CoReH2O's objectives are to provide detailed spaceborne observations of key snow, ice and water cycle variables for improved characterization of the cryosphere. The Can-CSI Experiment 2009 aims to support the CoReH2O mission science justification by undertaking active and passive microwave observations of seasonal changes in terrestrial snow, lake ice and lake snow, and sea ice in the Hudson Bay lowland regions. The selected study domain contains a wide range of land surface types from shrub tundra, to wetland fen, to open canopy to open lakes and to Hudson Bay to undertake snow and ice measurements. The specific science objectives of the project are to quantify and characterize the active microwave response of seasonal snow and ice at 9.5 and 17.2 GHz frequencies and to explore the active-passive microwave relationships between these two measurement approaches. To achieve this, the experiment is building a comprehensive data set of ground based active microwave measurements at 9.5 and 17.2 GHz frequencies and with multi polarization capability and passive microwave remote sensing observations at 6, 19, 37 and 89 GHz frequencies. Supporting measurements of cold season hydrologic processes are also being made and include conventional snow and lake ice surveys, measurements of snow and ice electrical properties, meteorological observations, and supporting satellite active and passive microwave observations from existing satellite based systems. Together with other similar experiments planned in Europe, this cold season active and passive microwave observation experiment will contribute to the CoReH2O science preparation