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The Cold Land Processes Experiment (CLPX) Local Scale Observation Site (LSOS)

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The Local Scale Observation Site (LSOS) is the smallest study site of the Cold Land Processes Experiment (CLPX) and is located within the Fraser Meso-cell Study Area (MSA), near the Fraser Experimental Forest Headquarters Facility, in Fraser, CO USA. The 100-m x 100-m site consists of a small open field, a managed dense canopy and an open, mixed age canopy. Unlike the other components of the experiment, which focus on spatial distributions at relatively brief "snapshots" in time, measurements at the local-scale site focused on the temporal domain. Measurements made at the LSOS were designed to produce a comprehensive assessment of the snow, soil, and vegetation characteristics viewed by the ground-based remote sensing instruments. The objective of ground-based microwave remote sensing was to collect time series of active and passive microwave spectral signatures over snow, soil, and forest, coincident with intensive physical characterization of these features. Ground-based remote sensing instruments included the FMCW Radar (bandwidth: 0.5 - 40 GHZ), the microwave AMSR Simulator (channels: 18.7, 23.8, 36.5, and 89.0-GHz V/H), and in 2003, a L/C/X/Ku-band scatterometer radar system. Snow and soil measurements include standard snow physical properties, snow surface roughness, snow depth transects, and soil moisture. The stem and canopy temperature, and xylem flux of several trees within the area are monitored. Two micrometeorological towers, one located in the open snow area and the other in the forested area, monitored ambient conditions and provide forcing data sets for 1-D snow/soil models. Arrays of radiometers (0.3-3 μm) and a scanning thermal radiometer (8-12 μm) characterized the variability of radiative receipt in the forests. These measurements, together with the ground-based remote sensing, provide the framework for evaluating and improving microwave radiative transfer models and coupling them to land surface models.

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