

Integrating the Spatial Variability of Snowpack Properties

Rob Davis, Cassidi Rosenkrance, Joseph Fattor, Steven R. Fassnacht, Anna K.D. Pfohl
ESS-Watershed Science, Colorado State University

Abstract. Understanding snowpack characteristics is essential for forecasting runoff and water yield in regions with a persistent snowpack. Characterizing snowpack properties across large areas is challenging due to spatial variability. In 2002 and 2003, NASA completed the Cold Land Process Experiment (CLPX) which analyzed snowpack properties using field measurements and remote sensing. Spatial variability was compared among three one square kilometer study areas for measurements made in late February, 2003 at the Rabbit Ears intensive study areas (Buffalo Pass, Spring Creek and Walton Creek). When viewed from space across a one kilometer pixel, this variability is integrated over the entire area. This study analyzed this variability of snowpack properties and how they may be integrated over space. The properties include snow density, temperature, and layer characteristics. Geospatial assessments were made to quantify this variability to better understand how these characteristics vary across local areas.