Monitoring Alaskan snow pack with InSAR

Richard Forster(1) and Elias Deeb(1)

(1) University of Utah, 260 S. Central Campus Dr., Salt Lake City, UT 84112, United States

Abstract

The snow pack on the arctic tundra of Alaska is relatively shallow, unobstructed by woody vegetation, and minimally influenced by the gentle topography. This area is used to study the ability of InSAR to detect and measure changes in snow water equivalent (SWE). Crossing orbits from the ERS–1 3–day repeat phase are used to construct a near–daily time series of an Arctic Alaskan snowpack over a three–month period. A time series of coherence and fringe images will be used along with the amplitude images and ground–based meteorological data to observe the potential effects of precipitation events, wind scour, wind slab formation, depth and surface hoar production and melt. A high–resolution (spatial and temporal) snow redistribution model is investigated for comparison with InSAR estimates of changes in SWE between precipitation and wind events.