SNOWEX-2020 DATASET AND RECENT RAIN-SNOW TRANSITION ZONE HYDROLOGICAL RESEARCH AT THE REYNOLDS CREEK EXPERIMENTAL WATERSHED

Ernesto Trujillo[1, 2] and Andrew Hedrick[2]

1. Department of Geosciences, Boise State University, Boise, ID, USA
2. USDA-ARS Northwest Watershed Research Center, Boise, ID, USA

Abstract

One of the research sites of the SnowEx-2020 campaign was the Reynolds Creek Experimental Watershed (RCEW) located near Boise, Idaho, and operated by the USDA-ARS Northwest Watershed Research Center (NWRC). In-situ observations focused on the Reynolds Mountain East (RME) sub-watershed; a small (0.38 km^2) snow dominated headwater catchment located at the southern end of the RCEW. Elevation ranges from 2028 to 2137 m and vegetation is patchy with fir, aspen and sagebrush. RCEW has been the focus of research for decades and was established in 1959. Meteorological, soil and snow measurements at RME exist from 1983-present, and snow course activities are performed during the winter at one of the instrument sites, adjacent to an instrument cluster that includes a snow pillow and snow depth sensors. The three main measurement sites represent the major landscape units in RME, with a sheltered site located within a clearing in an aspen/fir grove near the center of the catchment, and exposed sites located on the western and eastern catchment divides in areas dominated by mixed sagebrush. A streamflow weir is located at the outlet of the catchment. Here, we present an overview of the multiple remote sensing datasets collected during the SnowEx 2020 campaign that complement the existing in-situ datasets, in what is one of the most well instrumented watersheds of the western US. Additionally, results from some of our recent studies on the spatial and temporal patterns of surface water inputs in the rain-snow transition zone at the Johnston Draw watershed (1.8 km^2) within RCEW will also be discussed. These studies highlight the use of the iSnobal physics-based snow model developed at the USDA-ARS NWRC for the representation of the physical processes in some of the characteristic environments of a watershed like RCEW.