

The role of Senator Beck Basin Study Area and Grand Mesa Study Plot, CO, USA in Year 1 of NASA's SnowEx Campaign

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Senator Beck Basin Study Area in the San Juan Mountains of southwestern Colorado, USA was established in 2003 to monitor the hydrologic impacts of dust deposition on mountain snow cover. It contains two well instrumented study plots; Senator Beck Study Plot (SBSP) is located in the alpine tundra (3719 m) above tree line, at a level site near the center of SBBSA, and Swamp Angel Study Plot (SASP) is located in a clearing below tree line in a subalpine forest at 3368 m, in the lower part of SBBSA just above the basin pour point. The instrumentation arrays at each site have been collecting net solar radiation fluxes, net longwave radiation, snow depth, wind speed, wind direction, air temperature, and relative humidity at two heights since 2005. Precipitation is also monitored at SASP. Regular snow pit measurements at both sites, monthly in the winter and weekly in the spring, for dust stratigraphy/concentrations, snow temperature, grain type, density, and snow water equivalent (SWE) have been carried out over this same time period by the Center for Snow and Avalanche Studies in Silverton, CO. Grand Mesa Study Plot (GMSP), located 150 km to the north of SBBSA on Grand Mesa in west central Colorado, was established in 2009 to constrain spatial variability in dust deposition and impacts. The GMSP, managed by the Snow Optics Laboratory at NASA's Jet Propulsion Laboratory, is similar in elevation and site environment to SASP, and has a similar instrumentation and snow observation record. These sites, three of six full snow energy balance sites in the Western US, were selected as ground validation sites for Year 1 of NASA's SnowEx campaign, which is focused on answering the question, 'How much water is stored in Earth's terrestrial snow covered regions?'. Year 1 of SnowEx is specifically focused on addressing the challenges presented by forests for determining SWE from different remote sensing techniques. I will discuss the role of SBSP, SASP, and GMSP in year 1 of NASA's SnowEx campaign, which initiated in September, 2016 with a snow free campaign and overflights of NASA's Airborne Snow Observatory and will continue in February, 2017.