

SNOWSCHOOL

Curriculum Module: LTER Snowpack Dust Experiment

The Niwot Ridge Long-Term Ecological Research (LTER) site located in the Colorado Front Range is an interdisciplinary research program with the long-term goals of building a predictive understanding of ecological processes in high-elevation mountain ecosystems and contributing to broad conceptual advances in ecology. Niwot Ridge LTER also provides education, outreach, and knowledge to inform alpine resource management and conservation. As a SnowSchool site, Niwot Ridge LTER provides a unique opportunity to better integrate cutting-edge snow science into the SnowSchool curriculum and activity guides. Winter Wildlands Alliance developed the following educational activity at the National Flagship SnowSchool site near Boise ID after an interview with Niwot Ridge PhD student Cliff Bueno de Mesquita about his ongoing snowpack and climate science research.



Background Science: Snow scientists have determined that the global snowpack is melting on average a few weeks earlier due to climate change. This trend carries with it many implications for our water supply, soil moisture, plant phenology and wildlife habitat. To better understand the effect of an earlier snowpack melt, scientists at Niwot Ridge designed an experiment using black sand spread over the surface of the snow. The black sand significantly reduces the snow's albedo (reflectiveness) and, depending on weather, melts the snowpack up to a week early. This provides scientists with a unique opportunity to study the effects of climate change on high mountain ecosystems. Additionally, dust settling on the surface of the mountain snowpack is itself an increasingly frequent phenomenon and a research topic of interest to snow scientists. Thus, this experiment makes for an ideal SnowSchool activity with the potential to provoke rich science-based discussions among student participants.