Overview of SnowEx Field Campaign in Northern Alaska, U.S.

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ABSTRACT

Snow Experiment (SnowEx) was initiated by NASA's Terrestrial Hydrology Program in 2017 to "enable trade studies for a snow satellite mission design." The specific focus of SnowEx is on testing and maturing technology for satellite remote sensing of global snow water equivalent (SWE). Currently, the SnowEx team is planning an airborne and ground-based snow campaign in Alaska in 2022-2023 to address SWE and snow depth measurement questions unique to taiga and tundra snowpacks. Three SnowEx sites are selected in Interior Alaska, a boreal forest environment with discontinuous permafrost and seasonal taiga snowpack. Two SnowEx sites are located on the North Slope of Alaska, a region dominated by low-stature land cover, tundra snowpack, and continuous permafrost. A suite of airborne and ground-based validation activities will take place in fall 2022 and spring 2023 to quantify and compare the capabilities of radar and altimetry sensors to measure differences in SWE and snow depth accumulation during one winter season. The same set of sensors was tested by the SnowEx team in mountain ranges and temperate forests of the Western U.S. in 2017-2021. When taken together, the SnowEx field campaigns provide snow datasets in support of testing and advancement of remote sensing, modeling, and measurements techniques needed for the development of global SWE products. This presentation focuses on the objectives of the boreal forest and tundra SnowEx campaign and presents an overview of upcoming field activities in Alaska.

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