SnowEx21 Time Series Snow Change Measurements from Interval Boards, Version 1 Technical Reference

1 INTRODUCTION

1.1 DATA SET OVERVIEW

This data set contains snow change measurements from interval boards collected as part of the NASA SnowEx21 time series field campaign. Surveys were conducted at field sites across the Western United States 18 November 2020 and 12 May 2021. Snow change measurements from interval boards record the height of new snow (HN) and snow water equivalent (SWE) over weekly, and in some cases biweekly, intervals. Measurements were taken using a 30 cm Snowmetrics Snow Tube and spring scale. The interval board network was expanded from the 2020 Time Series campaign to capture a broader spatial domain than previously done. A network of 4-6 interval boards accompanied a single snow pit study area varying in elevation and other physiographic characteristics. During each visit, if new snow had accumulated on the board, three samples were collected before the board was cleared and placed at the top of the snow surface. Height of new snow was measured to the nearest 0.5 cm and SWE to the nearest mm. Observers also recorded a qualitative Yes/No regarding evidence of melt on the board. These data were collected to provide ground validation for the airborne UAVSAR L-band flights. Although the variable is referred to as "height of new snow", it represents the change in snow height and SWE depth over a given interval and is therefore subject to snow settlement and/or melt between visits.

At most sites, interval board measurements of new snow, or changes in snow since the previous visit, were collected on a weekly basis. In some cases, weekly measurements were not possible due to hazardous conditions or limited observer availability. Additional gaps in the record occurred when boards were knocked by wind, resulting in no usable data for those intervals. 49 unique sites were visited; the median number of visits to a specific site was 9, the maximum number of visits was 17 and the minimum number of visits was 1.

1.2 File Information

1.2.1 Format and Naming Convention

The data are available in a single .csv file, named `SNEX21_TS_IB_Summary_newSnow_v01.csv`.

1.2.2 File Contents

Descriptions of the contents of each file are in Table 1. Fields containing the -9999 flag value indicate no data collection for that date.

Table 1. File Contents

Variable	Description
Latitude	Latitude (decimal degrees)
Longitude	Longitude (decimal degrees)
Easting	Projected x-coordinate in UTM 10N, 11N, 12N, 13N WGS84 (meters)
Northing	Projected y-coordinate in UTM 10N, 11N, 12N, 13N, WGS84 (meters)
UTM Zone	2-digit UTM zone
Date	Date, YYYY-MM-DD
Time	Standard Local Time, HH:MM
Week No.	Week count starting at 2020-01-01 as week 1, prior weeks are <1
BoardID	Interval board identifier: XXXXXX: • 6-letter alpha(numeric) for State (2-letter) • Location (2-letter) • Site (2-letter) code
State	2-letter state
Location	Regional site location
Site	Study plot area name
HN (cm) A	Height of new snow A profile (cm)
HN (cm) B	Height of new snow B profile (cm)
HN (cm) C	Height of new snow C profile (cm)
AVG HN (cm)	Average height of three samples (cm)
SWE (mm) A	Height of snow water equivalent A profile (mm)
SWE (mm) B	Height of snow water equivalent B profile (mm)
SWE (mm) C	Height of snow water equivalent C profile (mm)
AVG SWE (mm)	Average SWE height of three samples (mm)
Melt	Evidence of snow melt on the interval board

2 ACKNOWLEDGEMENT

Special thanks to all the field crews collecting data during the NASA SnowEx 2021 Time Series Field Campaign.

3 RELATED DATA SETS

SnowEx at NSIDC | Data Sets

SnowEx21 Time Series Snow Pit Measurements, Version 1

SnowEx UAVSAR L-band Synthetic Aperture Radar, Version 1