

[DAAC Home](#) > [Get Data](#) > [NASA Projects](#) > [Arctic-Boreal Vulnerability Experiment \(ABoVE\)](#) > [User guide](#)

ABoVE: Thaw Depth at Selected Unburned and Burned Sites Across Alaska

Get Data

Documentation Revision Date: 2024-02-06

Dataset Version: 1.0

Summary

This dataset provides thaw depth measurements made at seven locations across Alaska, during August 2016, June and September 2017, and July-August 2018. Three of the locations are paired unburned-burned sites. At each site, three 30-meter transects were established and thaw depth was measured at 1-meter increments along each transect using a 1.15 m T-shaped thaw depth probe. Locations were selected to investigate fire disturbance, to span the range of permafrost regions from continuous to sporadic, and to cover vegetation types from boreal forests, tussock tundra, upland willow/herbaceous scrub, and lowland fen and wet tundra sites across Alaska. The data are provided in comma-separated values (CSV) format.

There is one data file with this dataset in comma-separated (.csv) format.



Figure 1. Locations of thaw depth measurement sites. Five of the locations are paired unburned-burn sites and IMNH & IMNL sites that are very close together and appear as one symbol.

Citation

Natali, S., S. Ludwig, C. Minions, and J.D. Watts. 2023. ABoVE: Thaw Depth at Selected Unburned and Burned Sites Across Alaska. ORNL DAAC, Oak Ridge, Tennessee, USA. <https://doi.org/10.3334/ORNLDAAC/1579>

Table of Contents

1. [Dataset Overview](#)
2. [Data Characteristics](#)
3. [Application and Derivation](#)

4. [Quality Assessment](#)
5. [Data Acquisition, Materials, and Methods](#)
6. [Data Access](#)
7. [References](#)
8. [Dataset Revisions](#)

1. Dataset Overview

This dataset provides thaw depth measurements made at seven locations across Alaska, during August 2016, June and September 2017, and July-August 2018. Three of the locations are paired unburned-burned sites. At each site, three 30-meter transects were established and thaw depth was measured at 1-meter increments along each transect using a 1.15 m T-shaped thaw depth probe. Locations were selected to investigate fire disturbance, to span the range of permafrost regions from continuous to sporadic, and to cover vegetation types from boreal forests, tussock tundra, upland willow/herbaceous scrub, and lowland fen and wet tundra sites across Alaska.

Project: [ABoVE](#)

The Arctic-Boreal Vulnerability Experiment (ABoVE) is a NASA Terrestrial Ecology Program field campaign being conducted in Alaska and western Canada, for 8 to 10 years, starting in 2015. Research for ABoVE links field-based, process-level studies with geospatial data products derived from airborne and satellite sensors, providing a foundation for improving the analysis, and modeling capabilities needed to understand and predict ecosystem responses to, and societal implications of, climate change in the Arctic and Boreal regions.

Acknowledgements

This project was funded by NASA ABoVE grant number NNX15AT81A.

2. Data Characteristics

Spatial Coverage: Alaska

ABoVE Reference Locations:

Domain: Core ABoVE

State/territory: Alaska

Grid cells: Ahh1Avv0Bh1Bv4, Ahh1Avv0Bh0Bv5, Ahh0Avv1Bh1Bv5Ahh0, Avv0Bh1Bv5, Ahh1Avv0Bh2Bv3, Ahh0Avv0Bh2Bv3

Spatial resolution: Multiple points at 1-m intervals along three 30-m transects

Temporal coverage: 2016-08-09 to 2018-08-28

Temporal resolution: Each site was sampled one or more times.

Study Areas (All latitude and longitude given in decimal degrees)

Site	Westernmost Longitude	Easternmost Longitude	Northernmost Latitude	Southernmost Latitude
Alaska	-163.2388	-146.5575	68.9911	61.2699

Data file information

There is one data file with this dataset in comma-separated (.csv) format: **thaw_depth.csv**.

The file contains measurements of thaw depth at 1-m intervals along three 30-m transects at various sites throughout Alaska. Coordinates were recorded for the start and end of every 30-meter transect.

Missing data are recorded as -9999.

Table 1. Variables in the data file **thaw_depth.csv**

Column Name	Units/format	Description
date	YYYY-MM-DD	Measurement date
site_name	-	Name of site where measurements were made
site_code	-	Abbreviated site name. See Table 2.
latitude	degrees north	Latitude in decimal degrees at the beginning and end of each sampling transect. Values only given for <i>sample_location</i> with values of 0 and 30. Other <i>sample_location</i> values are -9999.
longitude	degrees east	Longitude in decimal degrees at the beginning and end of each sampling transect. Values only given for <i>sample_location</i> with values of 0 and 30. Other <i>sample_location</i> values are -9999.
transect	-	Transect number, 1-3
sample_location	m	Measurement location along the 30-m transect, 0 to 30. There are 31 measurements per transect.
thaw_depth	cm	Measurement of thaw depth taken with probe
notes	-	Notes recorded during measurements. When a "rock" was encountered, <i>thaw_depth</i> was set to -9999. Other notes may describe surface features (e.g., tussock, tree well) that may indicate that the recorded value is not representative of the site transect. For some of the measurements, the depth exceeded the length of the probe.

Table 2. Study site locations

Site Name / Code	Latitude	Longitude
Hess Creek Unburned (HCU)	65.5674	-148.9251
Hess Creek Burned (HCB)	65.5688	-148.9234
Nome Creek Unburned – Old (NCU-OLD)	65.2856	-146.5600
Nome Creek Burned – Old (NCB-OLD)	65.3401	-146.9100
Eight Mile Lake (EML)	63.8801	-149.2560
Bonanza Creek (BNZ)	64.6960	-148.3257
I-Minus Low (IMNL)	68.5593	-149.5160
I-Minus High (IMNH)	68.5571	-149.5329
YK Delta Unburned (YKDU)	61.2703	-163.2410
YK Delta Burned (YKDB)	61.2705	-163.2356
Anaktuvuk Unburned (AKU)	68.9299	-150.2798
Anaktuvuk Burned (AKB)	68.9908	-150.2702
Nome Creek Burned – New (NCB-NEW)	65.2860	-146.5583

3. Application and Derivation

These data are part of a larger study to investigate how the magnitudes, fates, and land-atmosphere exchanges of carbon pools are responding to environmental change, and the biogeochemical mechanisms driving these changes.

4. Quality Assessment

Not provided.

5. Data Acquisition, Materials, and Methods

Site Selection

Sites were selected to investigate fire disturbance, to span the range of permafrost regions from continuous to sporadic, and to cover vegetation types from boreal forests, tussock tundra, upland willow/herbaceous scrub, and lowland fen and wet tundra sites across Alaska.

Methods

Three 30-meter transects were established at each of the 13 sites (refer to Table 3). Transects were spaced approximately 10-30 m apart a site. Coordinates for the 0-m and 30-m end point locations were recorded. Thaw depth was measured and recorded at 1-meter increments along each transect using a 1.15-m T-shaped thaw depth probe. The ABoVE thaw depth protocol was followed, and thaw depth measurements were taken from the top of the moss layer when present. Measurements were made in August 2016, June and September 2017, and July and August 2018 for most sites (Table 3).

Table 3. Site Descriptions

Site Name	2016 Sampling Dates	2017 Sampling Dates	2018 Sampling Dates	Description
Hess Creek Unburned	August 9	June 10, September 10 & 15	July 5, August 27	The site is located just off the Dalton Highway between mile 11 and 12 within an unburned boreal black spruce forest.
Hess Creek Burned	NA	June 10, September 15	July 5, August 27	The site is located just off the Dalton Highway between mile 11 and 12 within a burned boreal black spruce forest (1995).
Nome Creek Unburned – Old	August 10	June 13, September 18	NA	The site is located within the White Mountain Recreation Area on a south facing slope characterized by willow/herbaceous scrub vegetation.
Nome Creek Burned – Old	NA	June 13	NA	The site is located within the White Mountain Recreation Area on a south facing slope characterized by willow/herbaceous scrub vegetation which had been previously burned (2004).
Eight Mile Lake	August 11	June 9, September 20	July 4, August 26	The site is located off the Stampede Trail in Healy. The area is characterized by moist tundra and sedge/shrub vegetation.

Bonanza Creek	August 23	June 6, September 17	July 6, August 26	The site is located near the Bonanza Creek LTER Site within a boreal black spruce stand.
I-Minus Low	August 21	June 15, September 11	NA	The site is located approximately 1-km off the Dalton Highway, a few miles south of Toolik Field Station. The station is in a lowland, wet sedge fen area (Riparian). Day of sampling not provided for June 2017. Date set to June 15, 2017.
I-Minus High	August 21	June 15, September 11	NA	The site is located approximately 1-km off the Dalton Highway a few miles south of Toolik Field Station. The station is located on top of a hillside, and is characterized by tussock tundra. Day of sampling not provided for June 2017. Date set to June 15, 2017.
YK Delta Unburned	NA	September 24	NA	The site is located on the Yukon-Kuskokwim Delta characterized by wet tundra vegetation.
YK Delta Burned	NA	September 24	NA	The site is located on the Yukon-Kuskokwim Delta characterized by wet tundra vegetation. The area has been previously burned (2015).
Anaktuvuk Unburned	NA	NA	July 11	Located in an undisturbed area near the Anaktuvuk river north of Toolik field station. The vegetation at the site is characterized by moss and tussock tundra.
Anaktuvuk Burned	NA	NA	July 11	Located near the Anaktuvuk river north of Toolik field station within the severely burned area of the 2007 Anaktuvuk river fire. The vegetation is characterized by moss and tussock tundra.
Nome Creek Burned – New	NA	NA	July 7, August 28	Located less than a 1 km off the Steese Highway near mile 63. The station is in a burned area (2004), and the vegetation is characterized by willow/herbaceous scrub.

6. Data Access

These data are available through the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC).

[ABoVE: Thaw Depth at Selected Unburned and Burned Sites Across Alaska](#)

Contact for Data Center Access Information:

- E-mail: uso@daac.ornl.gov
- Telephone: +1 (865) 241-3952

7. References

Not provided.

8. Dataset Revisions

Product Version	Release Date	Revision Note
1.0	2024-02-06	Additional data were added from additional sites.
1	2018-04-17	ORNL DAAC released Natali et al. (2018), Version 1.



[Privacy Policy](#) | [Feedback](#) | [Help](#)



Home

About Us

Mission
Data Use and Citation
Policy
User Working Group
Partners

Get Data

Science Themes
NASA Projects
All Datasets

Submit Data

Submit Data Form
Data Scope and
Acceptance
Data Authorship Policy
Data Publication Timeline
Detailed Submission
Guidelines

Tools

TESVIS
THREDDS
SDAT
Daymet
Airborne Data Visualizer
Soil Moisture Visualizer
Land - Water Checker

Resources

Learning
Data Management
News
Earthdata Forum [↗](#)

Contact Us