

# Alaska Arctic Vegetation and Map Archives for ABoVE: A Pre-ABoVE project



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1<sup>st</sup> ABoVE Science Team Meeting,  
Minneapolis, 29 September- 2 October 2015



# Key People



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**Lisa Wirth**  
GINA Web Portal  
Coordinator,  
GINA/UAF

# ABOVE science questions, objectives, & overarching goals of the AVA and AMA

**A data gathering effort that addresses ABOVE Tier 2 Science Questions:** 3.2 Disturbance regimes & 3.5 Flora and fauna.

**And contributes to ABOVE Tier 2 Science Objectives:**

1. Vegetation-permafrost interaction; 3. vegetation-hydrology interactions; 4. vegetation-snow interactions; 5. greening and browning trends; and 7. fish and wildlife habitat in relation to climate and disturbance.

**Overarching goals of the Alaska AVA and AMA:**

- To unite & harmonize the vegetation data from Arctic Alaska.
- Use the archives in developing an Alaska Arctic and a pan-Arctic vegetation classification and as a resource for climate-change and biodiversity research.
- An open-access plant-community resource.



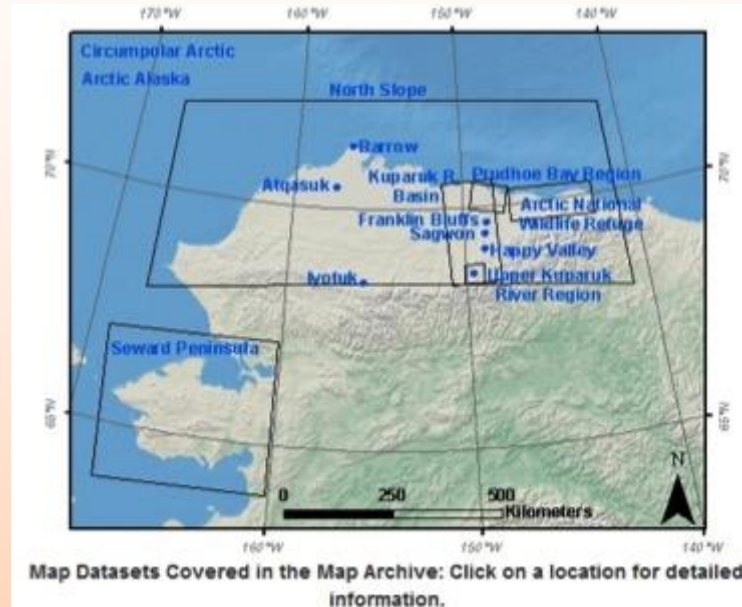
# Three major project components:

## Plot Archive

### Plot Archive



## Map Archive



## Data Portal

Map and Plot Data for **Alaska Arctic Geoeological Atlas**

Welcome to the Alaska Arctic Geoeological Atlas

News & Events

Relevant Publications

A synthesis of data from Arctic Alaska vegetation plot studies + remote sensing and map products derived from these studies.

# Data portal

## 2013. Alaska Arctic Geoeological Atlas data portal

- Housed at the Geographic Information Network of Alaska (GINA), UAF.
- Includes the AK-AVA (plot archive) and AK-AMA (map archive).
- Web Link: <http://alaskaaga.gina.alaska.edu/>

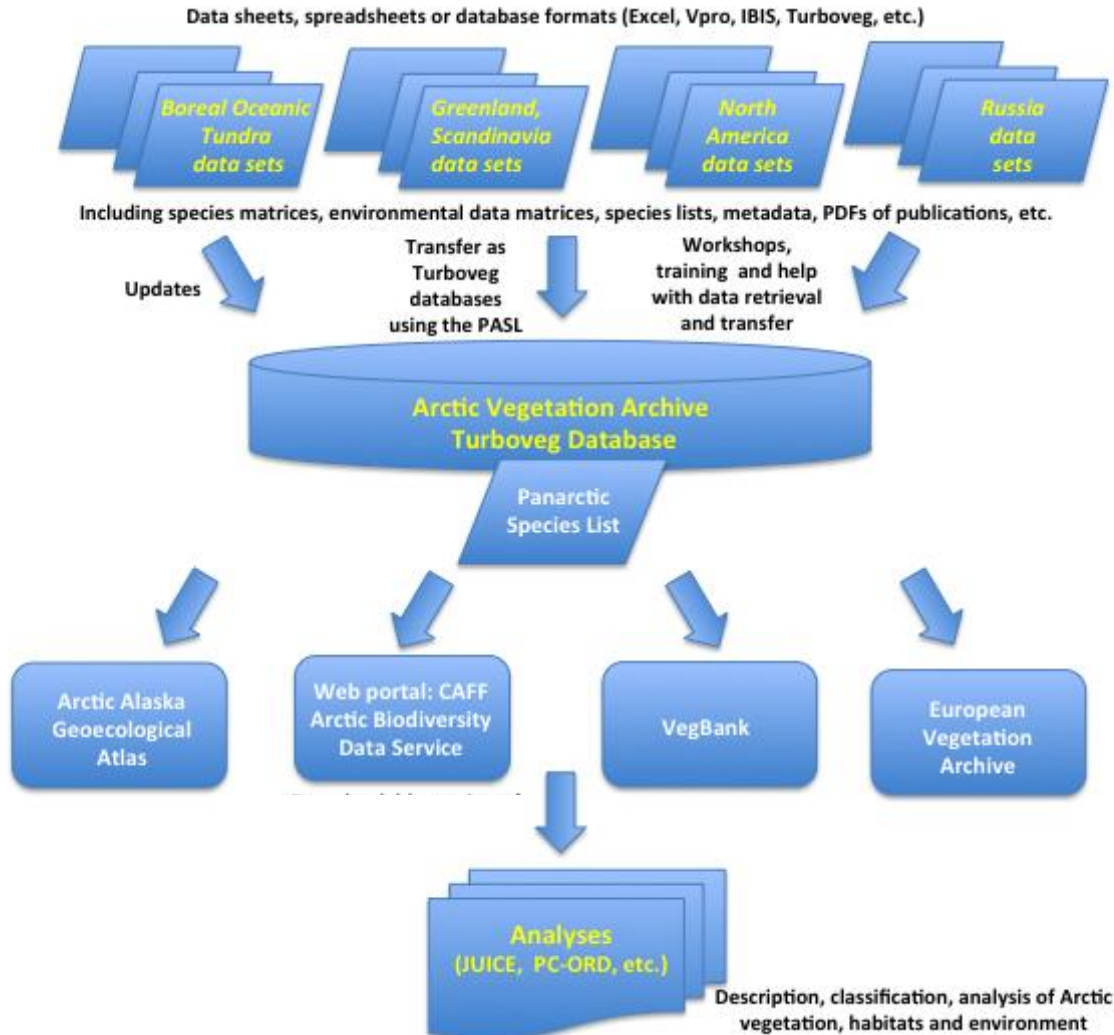


The screenshot shows the homepage of the Alaska Arctic Geoeological Atlas data portal. The header features the title "Alaska Arctic Geoeological Atlas" with the ABoVE logo. A navigation menu includes links for Home, ABoVE, Map Archive, Plot Archive, Data Catalog, About Us, and Contact Us. The main content area is divided into several sections:

- Alaska Arctic Map Archive:** A large satellite-style map of the Arctic region. Text to the right states: "Map products from satellite data and elevation models of arctic Alaska. Available map themes include vegetation, topographic, and hydrologic data."
- Welcome to the Alaska Arctic Geoeological Atlas:** A paragraph of introductory text describing the atlas's purpose and the types of data it contains.
- Relevant Publications:** A list of three publications with small thumbnail images and titles:
  - Molecular Ecology*, 23: 3268-3272. "Rich and cold: Diversity, distribution and drivers of fungal communities in patterned-ground ecosystems of the North American Arctic." Tilling, I. et al. 2014.
  - Plant Ecology and Evolution in Harsh Environments*. In N. Rajakaruna, R. Boyd and T. B. Harris (Eds.), *Plant Ecology and Evolution in Harsh Environment* (pp. 149-177). Ecology and evolution of plants in arctic and alpine environments. Bisen, A.L. et al. Hauppauge, New York: Nova Science Publishers, 2014.
- News & Events:** A section titled "Earth to Sky Climate Change Science and Communication: A Regional Approach October 14-16, 2015 in Anchorage No Tuition! Applications due August 15, 2015". It lists a target audience and details about the event.

# The Arctic Vegetation Archive

## AVA Conceptual Framework



Several regional archives in the total AVA.

Central Turboveg Database contains all the plot data in a standardized form.

Links through other vegetation archives.


Linked to spatial data and applied to a variety of vegetation, biodiversity, and environmental analyses.



# The AVA is modeled after the European Vegetation Archive (EVA).

The European Vegetation Archive: A methodology for handling massive vegetation databases.

**Vegetation Databases for the 21<sup>st</sup> Century**



**2012**

**Biodiversity & Ecology 4**

J. Dengler, J. Oldeland, F. Jansen, M. Chytrý, J. Ewald, M. Finckh, F. Glöckler, G. Lopez-González, R.K. Peet & J.H.J. Schaminée (Eds.)

Applied Vegetation Science ■ (2015)

**REPORT**

**European Vegetation Archive (EVA): an integrated database of European vegetation plots**

Milan Chytrý, Stephan M. Hennekens, Borja Jiménez-Alfaro, Iлона Knollová, Jürgen Dengler, Florian Jansen, Flavia Landucci, Joop H.J. Schaminée, Svetlana Ačić, Emiliano Agrillo, Didem Ambarlı, Pierangela Angelini, Iva Apostolova, Fabio Attorre, Christian Berg, Erwin Bergmeier, Idola Biurnun, Zoltán Botta-Dukát, Henry Brisse, Juan Antonio Campos, Luis Carión, Andraž Carni, Laura Casella, János Csiky, Renata Custerovska, Zora Dajić Stevanović, Jiri Daniheka, Els De Bie, Patrice de Ruffray, Michele De Sanctis, W. Bernhard Dickow, Panayotis Dimopoulos, Dmytro Dubyna, Tetiana Dziuba, Rasmus Ejrnæs, Nikolai Ermakov, Jörg Ewald, Giuliano Fanelli, Federico Fernández-González, Una FitzPatrick, Xavier Font, Itziar García-Mijangos, Rosario G. Gavilán, Valentin Golub, Riccardo Guarino, Renée Haveman, Adrian Indreica, Deniz Isık Gürsoy, Ute Jandt, John A.M. Janssen, Martin Jiroušek, Zygmont Kačák, Ali Kavğacı, Martin Klekamp, Vitaly Kolomyichuk, Mirjana Kristivojević Čuk, Daniel Kristenović, Anna Kuzemko, Jonathan Lenoir, Tatiana Lysenko, Corrado Marcenò, Vassily Martynenko, Dana Michalčová, Jesper Erenskjöld Moeslund, Viktor Onyshchenko, Hristo Pedashenko, Aaron Pérez-Haase, Tomáš Peterka, Vadim Prokhorov, Valerijus Rasomavičius, Maria Pilar Rodríguez-Rojo, John S. Rodwell, Tatiana Rogova, Eszter Ruprecht, Solvita Rusija, Gunnar Seidler, Jozef Sibik, Urban Šilc, Željko Škvorc, Desislava Sopotlieva, Zvezdana Stanić, Jens-Christian Svenning, Grzegorz Swacha, Ioannis Tsielipidis, Pavel Dan Turtureanu, Emin Uğurlu, Domas Uogintas, Milan Valachovič, Yulia Vashenyak, Kiril Vassilev, Roberto Venanzoni, Risto Virtanen, Lynda Weekes, Wolfgang Willner, Thomas Wohlgemuth & Sergey Yamalov

**Keywords**  
Biodiversity informatics; Database; Euroinformatics; European Vegetation Survey; International Association for Vegetation Science; Phytosociological data; R-INFORM; Vegetation database; Vegetation plot

**Abbreviations**  
EVA = European Vegetation Archive, EVS = European Vegetation Survey, GVD = Global Index of Vegetation-Plot Databases, IAVS = International Association for Vegetation Science

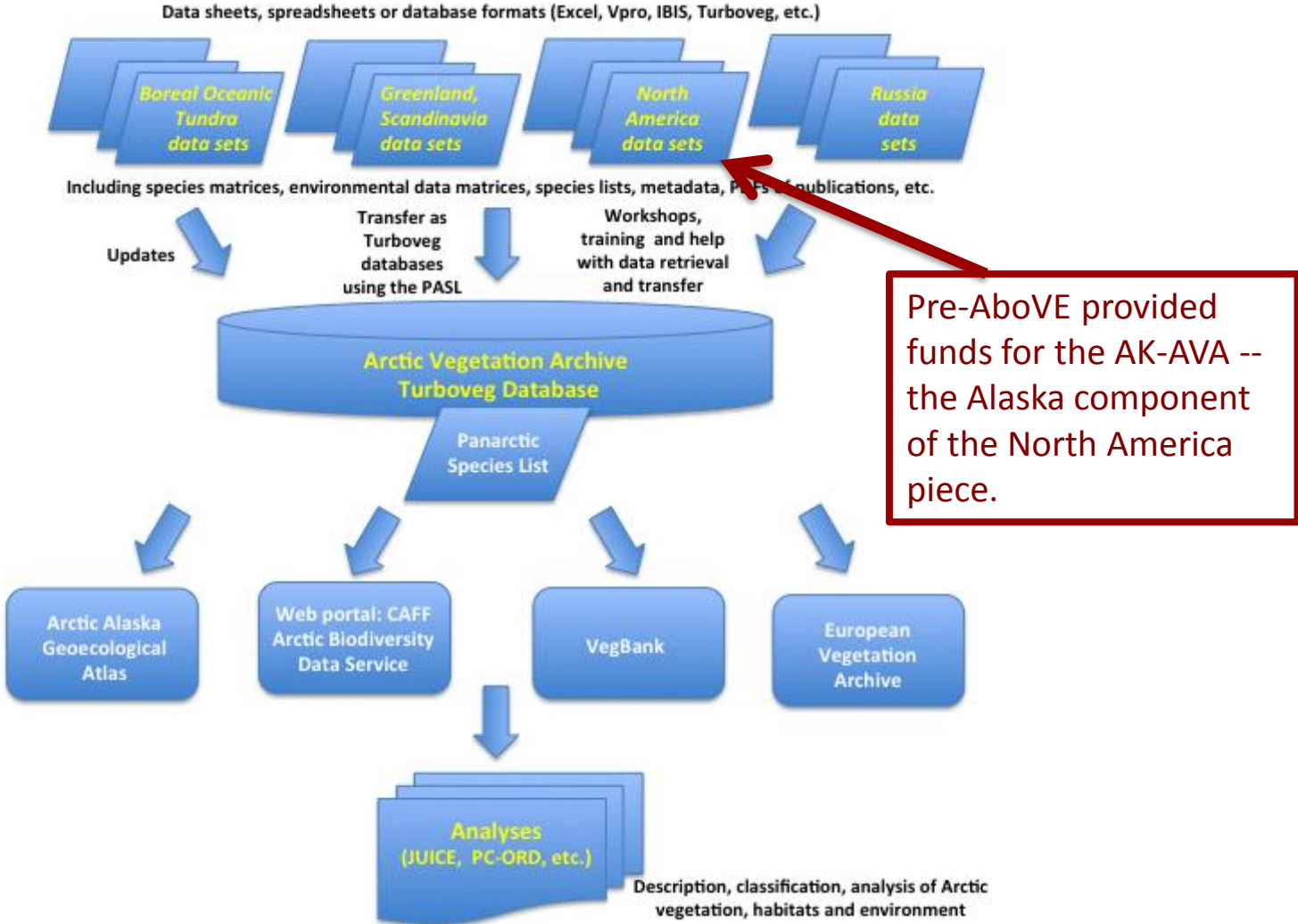
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**Abstract**  
The European Vegetation Archive (EVA) is a centralized database of European vegetation plots developed by the IAVS Working Group European Vegetation Survey. It has been in development since 2012 and first made available for use in research projects in 2014. It stores copies of national and regional vegetation-plot databases on a single software platform. Data storage in EVA does not affect on-going independent development of the contributing databases, which remain the property of the data contributors. EVA uses a prototype of the database management software TURBOVEG 3 developed for joint management of multiple databases that use different species lists. This is facilitated by the SynKey Taxon Database, a system of taxon names and concepts used in the individual European databases and their corresponding names on a unified list of European flora. TURBOVEG 3 also includes procedures for handling data requests, selections and provisions according to the approved EVA Data Property and Governance Rules. By 30 June 2015, 61 databases from all European regions have joined EVA, contributing in total 1 027 376 vegetation plots, 82% of them with geographic coordinates, from 57 countries. EVA provides a unique data source for large-scale analyses of European vegetation diversity both for fundamental research and nature conservation applications. Updated information on EVA is available online at <http://euroveg.org/eva-database>.

**61 databases, 1,027,376 plots**

# How the AK-AVA fits in the overall AVA



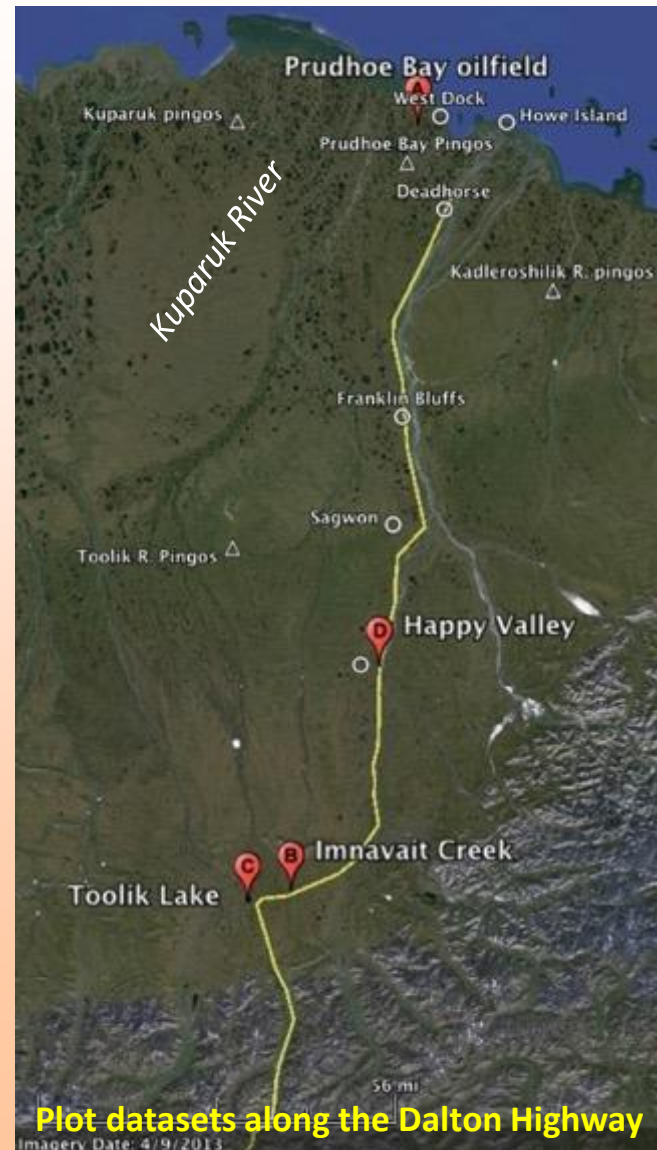


# AK-AVA: Current status

## Initial focus:

### *Dalton Highway Transect*

- Highest concentration of quality plot and map data in northern Alaska.
- Along well-described climate and geoecological gradient with easy access to all locations.
  1. Prudhoe Bay: DA Walker 1985, 89 plots
  2. Dalton Highway Patterned Ground Vegetation: A. Kade et al. 2005, 117 plots
  3. Dalton Highway Willow Communities: U. Schickhoff et al. 2002, 85 plots
  4. North Slope pingos: MD Walker 1990, 293 plots
  5. Happy Valley: DA Walker et al. 1997, 56 plots
  6. Imnavait Creek: DA Walker et al. 1989, 73 plots
  7. Toolik Lake: DA Walker et al., 1991, 81 plots
  8. North Slope Balsam Poplar Communities: A. Breen 2013, 19 plots



# AK-AVA: Current status

Nr.	Plot dataset (citation)	Plot Nr.	Archive Complete			VegBank
			Turboveg	Atlas	GIVD	
Priority-1: Dalton Highway and Brooks Range						
1	Arrigetch Peaks (Cooper 1986)	439	X	X	X	
2	Frostboil Vegetation (Kade et al. 2005)	117	X	X	X	
3	Happy Valley (Walker et al. 1997)	56	X	X	X	
4	Imnavait Creek (Walker et al. 1987)	84	X	X	X	
5	Pingo vegetation (Walker 1990)	293	X	X	X	
6	Poplar Vegetation (Breen 2014)	32	X	X	X	
7	Prudhoe Bay (Walker 1985)	89	X	X	X	
8	Toolik Lake (Walker & Barry 1991)	81	X	X	X	X
9	Willow Vegetation (Schickhoff et al. 2002)	85	X	X	X	
		Total	1276			
Priority-2: Western Arctic Transect						
10	ATLAS-1 Vegetation (Edwards et al. 2000)	15	X	X	X	
11	ATLAS-2 Vegetation (Raynolds et al. 2002)	52	X	X	X	
12	Atqasuk (Komarkova & Webber 1980)	31	X		X	
13	Barrow (Webber 1978; Villerreal et al. 2012)	33	X		X	
14	Legacy Vegetation (Elias et al. 1996)	61	X	X	X	
15	Barrow (Sloan et al. 2014)	48	X		X	
16	Oumalik (Ebersole 1985)	87	X	X	X	
		Cumulative Total	1603			
Priority-3: Other Arctic Alaska data						
17	NPS Arctic Network (Jorgenson et al. 2009)	936	X (Spp only)			
18	Yukon-Kuskokwim Delta (Jorgenson 2000)	63				
19	NSF FLUX (Walker 1995, 1996)	29				
20	Prudhoe Bay (Walker 2014, 2015)	48				
		Cumulative Total	2679			

**16 Dataset (1603 plots) in Turboveg and the Atlas.  
4 Datasets on deck.**



## Plot Archive



Click on a dataset number to display author, year, number of plots and a site photo.

The Alaska Arctic Vegetation Archive (AAVA) is a prototype database for the Arctic Vegetation Archive (AVA). The goal of the AVA is to unite and harmonize the vegetation data from the Arctic tundra biome for use in developing a pan-Arctic vegetation classification and to facilitate research on vegetation and biodiversity change and ecosystem models. This open-access database will be the first to represent an entire global biome.

The AAVA utilizes Turboveg for Windows (Hennekens and Schaminee 2001), which is a comprehensive data management system for vegetation-plot data. Our data model is a set of tables that comprise our relational database. More information about the structure of the AAVA can be seen with our data dictionary

### PLOT DATASETS

- 1: Arrigetch Peaks
- 2: Alaska Natural Heritage Program
- 3: ATLAS-1 Vegetation Studies
- 4: ATLAS-2 Vegetation Studies
- 5: Atkasuk
- 6: Barrow
- 7: Barrow-NGEE
- 8: Cape Thompson
- 9: Colville River Delta
- 10: Fish Creek
- 11: Frost Boil Vegetation Plots
- 12: Happy Valley
- 13: Ice-wedge Degradation Plots
- 14: Imnaviat Creek
- 15: ITEX Vegetation Plots
- 16: Legacy (Barter Island and Barrow)
- 17: NPS Arctic Network
- 18: National Petroleum Reserve AK
- 19: Nome
- 20: North Slope-FLUX
- 21: Oumalik
- 22: Pingo Vegetation Plots
- 23: Poplar Vegetation Plots
- 24: Prudhoe Bay
- 25: Prudhoe Bay-ArcSEES
- 26: Selawik National Wildlife Refuge
- 27: Southwest Alaska Vegetation Plots
- 28: Toolik Lake
- 29: Umiat
- 30: Western Alaska Vegetation Plots
- 31: Willow Vegetation Plots
- 32: Yukon-Kuskokwim Delta Plots

# Data available in AK-AVA datasets: Plot Archive

## Plot Archive Home Page

- Datasets accessible by location name,
- Or by project name in cases where datasets include data from numerous locations.



# Data available in AK-AVA datasets: Plot Archive

## Plot Archive

The screenshot displays the Plot Archive interface. At the top left, there are zoom controls (+ and -). The main content area features a large site photo of a grassy field with mountains in the background. Below the photo, the following information is displayed:

- 11 - Happy Valley (Walker et al. 1997)**
- Source:** Walker et al. 1997
- Num. Plots:** 56

Below this information are two buttons: "View Plots" and "Go to Record". The bottom half of the interface shows a map of Alaska with various colored markers representing different datasets. A legend titled "Dataset Status" is located in the bottom right corner of the map area:

Dataset Status	
<span style="color: green;">■</span>	Complete data record <span>?</span>
<span style="color: lightgreen;">■</span>	Catalog record only <span>?</span>
<span style="color: orange;">■</span>	In progress
<span style="color: gray;">■</span>	Pending evaluation

At the bottom left of the map, there are scale bars for 300 km and 200 mi. The map is credited to Mapbox and OpenStreetMap.

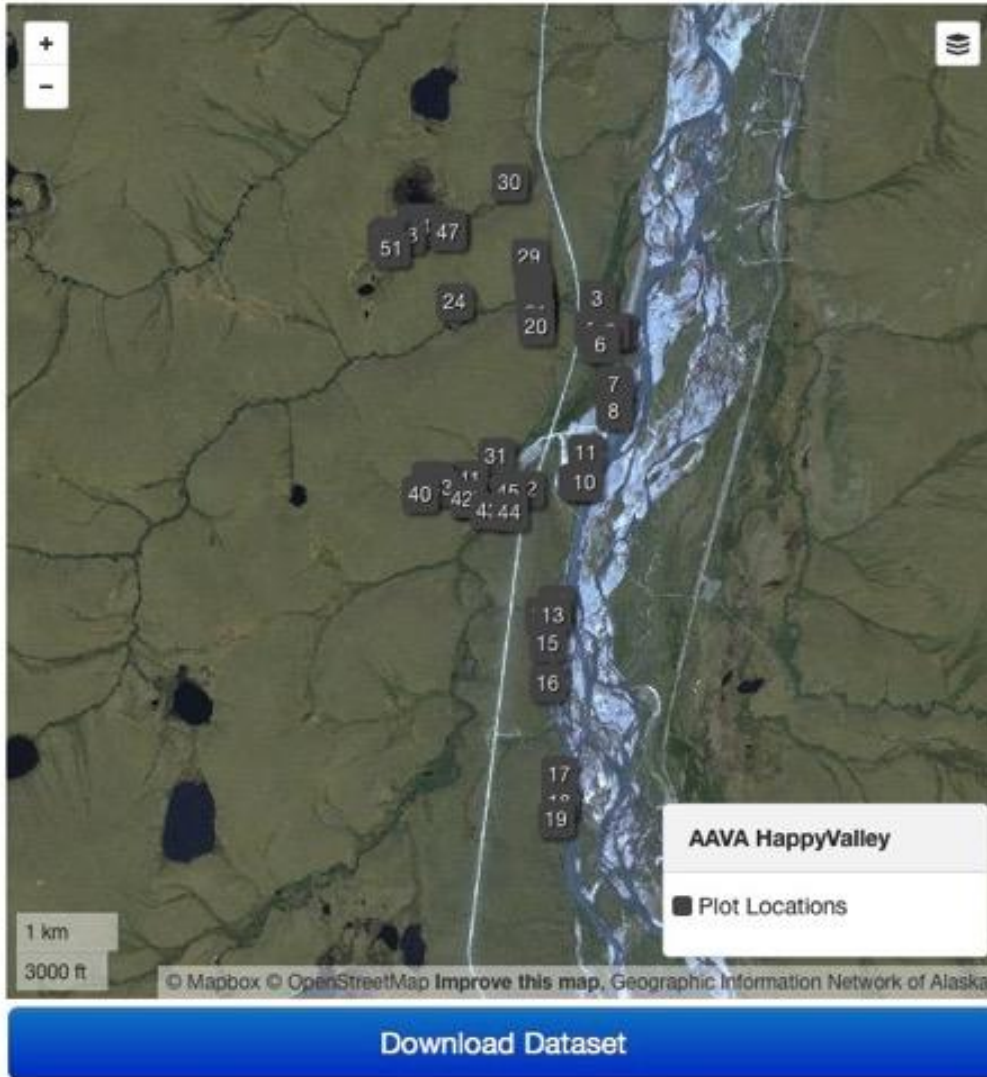
Click on a dataset number to display author, year, number of plots and a site photo.

## Site photos and dataset descriptions

- ✓ Dataset number and name
- ✓ Source of data
- ✓ Number of plots
- ✓ Links:
  - Plot map
  - Data catalog record

# Data available in AK-AVA datasets: Plot Archive

## 11: Happy Valley



## Plot map

- Plot locations on highest resolution imagery available.

# Data available in AK-AVA datasets: Plot Archive



Landscape



Vegetation close up

## 11: Happy Valley

The screenshot shows a web interface for the Happy Valley dataset. It features a map with several numbered plot locations (10, 11, 20, 31, 40, 42, 44). A popup window provides detailed information for plot 11:

- Happy Valley vegetation (Walker et al. 1997)**
- Surveyed by:** Donald A. 'Skip' Walker
- Year surveyed:** 1994
- Plant community name:** Eriophorum vaginatum-Sphagnum sp.
- Habitat Type:** Moist to wet acidic tussock and nontussock (Eriophorum vaginatum-Carex bigelowii-Sphagnum-Hylocomium) tundra

At the bottom of the interface, there is a blue button labeled "Download Dataset".

Plot photos



Soil



# Data available in AK-AVA datasets: Plot Archive

## Data Catalog Record



### Top of record (Basic dataset information)

- ✓ Image showing location of dataset.
- ✓ Title and author of dataset.
- ✓ Source of data.
- ✓ Description of the dataset.
- ✓ Key references.
- ✓ Funding agency.



**Alaska Geobotany Center,  
University of Alaska  
Fairbanks**

Other agencies



NSF

Record Previews



**Alaska Arctic Vegetation Archive: Happy Valley Vegetation Plots  
(Walker et al. 1997)**

The Happy Valley research site is located along the Sagavanirktok River in a glaciated valley of the northern Arctic Foothills of the Brooks Range. Vegetation of the Happy Valley research site was described and mapped by Walker et al. through the Institute of Arctic and Alpine Research, Tundra Ecosystem Analysis and Mapping Laboratory, for a project funded by the Arctic System Science Flux Study, National Science Foundation grant OPP-9318530. The primary source document for this dataset is a data report prepared for the project (Walker et al. 1997).

Data are presented for 56 plots subjectively located in 17 plant communities that occur in five broad habitat types including: 1) dry tundra (including river terraces and frost scars) (10 plots), 2) snowbeds (2 plots), 3) moist tundra (including acidic tussock tundra and nonacidic tundra) (14 plots), 4) shrublands (including riparian alders, riparian willow communities, and dwarf-birch shrub tundra) (16 plots), and 5) wet tundra (including fens, poor fens, and aquatic marshes) (14 plots).

All the plots were permanently marked with a 4-foot black and white-striped 1-inch PVC pipe with the plot number stamped into an aluminum tag at the top of the post. The plots had no fixed size in order to obtain a complete species list, however the size of the plots were estimated and are included in the data. Species and environmental data (including soil physical variables, subjective site assessments, and active layer depths) were collected in the field and soil samples were brought back to the lab for chemical assessments. Species cover-abundance, environmental site factors, and soil physical and chemical data are included in the data report. GPS coordinates were obtained for many plots in the mid-2000's. An aerial photograph and Google Earth were used to approximate the location and obtain coordinates for the remaining plots.

These data were subsequently used in several reports and publications listed below.

References:

Kane, D. L., and W. S. Reeburgh. 1998. Introduction to special section: Land-Air-Ice Interactions (LAI) Flux Study. *Journal of Geophysical Research* 103:28-913-28-915.

McGuire, A. D., M. Sturm, and F. S. Chapin III. 2003. Arctic Transitions in the Land-Atmosphere System (ATLAS): Background, objectives, results, and future directions. *Journal of Geophysical Research* 108:8166 (ALT1-7).

Raynolds, M. K., D. A. Walker, and C. R. Martin. 2004. Biocomplexity of Frost-Bolt Ecosystems: Snow Data Report. Alaska Geobotany Center, University of Alaska Fairbanks, Fairbanks, Alaska, USA.

Walker, D. A., N. A. Auerbach, T. K. Nettleton, A. Gallant, and S. M. Murphy. 1997. Arctic System Science Flux Study Data Report. Happy Valley Vegetation Plots: Site factors, physical and chemical soil properties, plant species cover, photographs, soil descriptions, and ordination. Institute of Arctic and Alpine Research, University of Colorado, Boulder, Colorado, USA.

# Data available in AK-AVA datasets: Plot Archive

## Data Catalog Record

### Data and Resources



**Download :: Happy Valley Readme**

aava\_happyvalley\_dwalker\_1997\_readme\_metadata.pdf (27.1 KB)

Download



**Download :: Happy Valley Data: species and environmental (source and Turboveg), map, photos, publications, soils (chemical, physical and description), and metadata**

aava\_happyvalley\_dwalker\_alldata.zip (20.8 MB)

Download



**Website :: Alaska Geobotany Center's Toolik-Arctic Geobotanical Atlas**

<http://www.arcticatlas.org/support/icdatareport/>

View website



**Metadata :: Current Turboveg Data Dictionary and Panarctic Species List (PASL)**

<http://geobotanical.portal.gina.alaska.edu/catalogs/10623-current-turboveg-data-dictionary-and-panarctic>

View metadata

### Bottom of record

- ✓ Short readme file describing the available data.
- ✓ Data download.
- ✓ Links to other relevant web sites.

# Data available in AK-AVA datasets: Plot Archive

## Data Catalog Record

### Bottom of record

#### Data and Resources



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aava\_happyvalley\_dwalker\_1997\_readme\_metadata.pdf (27.1 KB)

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**Download :: Happy Valley Data: species and environmental (source and Turboveg), map, photos, publications, soils (chemical, physical and description), and metadata**

aava\_happyvalley\_dwalker\_alldata.zip (20.8 MB)

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**Website :: Alaska Geobotany Center's Toolik-Arctic Geobotanical Atlas**

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<http://geobotanical.portal.gina.alaska.edu/catalogs/10623-current-turboveg-data-dictionary-and-panarctic>

View metadata

### Species data:



- ✓ Original species cover data (as published).
- ✓ Corrected and standardized data in xls. and csv. files for species-cover.
- ✓ Species data standardized (according to PASL) and formatted for Turboveg.


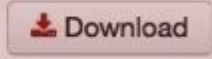




# Data available in AK-AVA datasets:



## Ancillary data

**Data and Resources**

 **Download :: Happy Valley Readme**   
aava\_happyvalley\_dwalker\_1997\_readme\_metadata.pdf (27.1 KB)

 **Download :: Happy Valley Data: species and environmental (source and Turboveg), map, photos, publications, soils (chemical, physical and description), and metadata**   
aava\_happyvalley\_dwalker\_alldata.zip (20.8 MB)

 **Website :: Alaska Geobotany Center's Toolik-Arctic Geobotanical Atlas**   
<http://www.arcticatlas.org/support/icdatareport/>

 **Metadata :: Current Turboveg Data Dictionary and Panarctic Species List (PASL)**   
<http://geobotanical.portal.gina.alaska.edu/catalogs/10623-current-turboveg-data-dictionary-and-panarctic>

## Ancillary data

- ✓ For example, soils data, environmental information, plot photos, plot location maps, publications, original data reports, biomass data, & spectral data.
- ✓ These are included as xls. and csv. or pdf. (for some some data).
- ✓ A subset of ancillary data is standardized and included as header data for the Turboveg file.

# Data available in AK-AVA datasets: Plot Archive

## Data Catalog Record

Bottom of Catalog record

### Tuboveg file

A single file formatted for import into Turboveg that contains species data from all plots in all datasets.

✓ This can be downloaded from the data download link.

✓ Explanation of the Turboveg file is in the Turboveg data dictionary.

✓ Using this file requires downloading Turboveg program.

#### Data and Resources



Download :: Happy Valley Readme

aava\_happyvalley\_dwalker\_1997\_readme\_metadata.pdf (27.1 KB)

Download



Download :: Happy Valley Data: species and environmental (source and Turboveg), map, photos, publications, soils (chemical, physical and description), and metadata

aava\_happyvalley\_dwalker\_alldata.zip (20.8 MB)

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Website :: Alaska Geobotany Center's Toolik-Arctic Geobotanical Atlas

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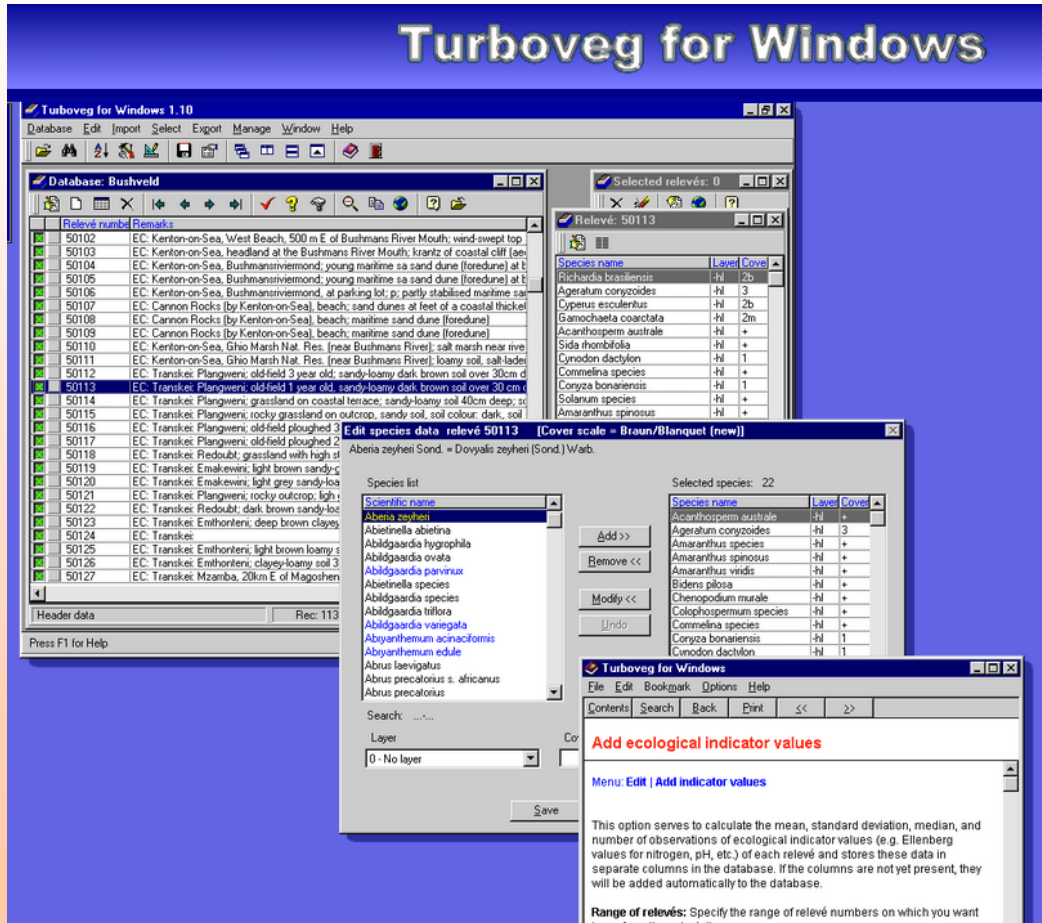
View metadata

# Data available in AK-AVA datasets: Species data

## Turboveg

Database management system for the storage, selection, and export of vegetation data (relevés).

### Turboveg for Windows



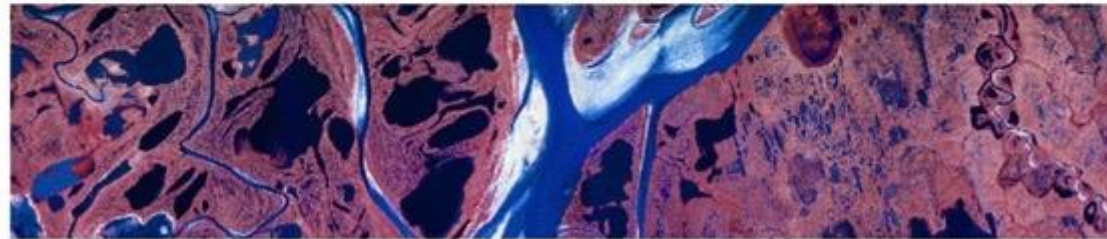
- ✓ Free for:
  - private use
  - students
  - institutes or universities which don't have sufficient resources to buy the software.
- ✓ Easy import into vegetation analysis programs (e.g., JUICE, Twinspan, Canoco, Excel, Mulva).

Hennekens, S. M., & Schaminée, J. H. J. (2001). TURBOVEG, a comprehensive data base management system for vegetation data. *Journal of Vegetation Science*, 12, 589–591.



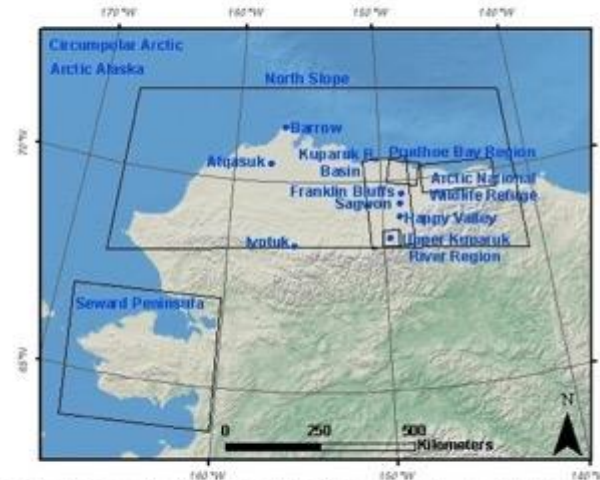
# Data available in Map Archive (AK- AMA)

- Map Archive Home Page
- ✓ Similar construction to the plot archive.



## Map Archive

The hierarchy of maps currently available in the atlas range in scale from plant species maps of 1x1-m plots at Toolik Lake and Innvait Creek to maps of the entire circumpolar Arctic. Most regions have a variety of map themes available including vegetation, landforms, topography, and hydrology. Some of the maps are raster-based map products derived from satellite data and digital elevation models. Some of the maps are polygon-based geocological maps, with many different attributes coded into a geographic information system (GIS). Various search options make the maps and associated information easy to find.



**Map Datasets Covered in the Map Archive:** Click on a location for detailed information. This map shows the major regions that are available for Arctic Alaska excluding arctic parts of southwest Alaska (Yukon-Kuskokwim river delta region), where the only map data contained here is that on the Arctic Alaska Vegetation Map.

### DATASET LOCATIONS

1. Arctic Alaska
2. Arctic National Wildlife Refuge (2)
3. Atkasuk
4. Barrow (2)
5. Circumpolar Arctic
6. Franklin Bluffs
7. Happy Valley
8. Ivotuk (3)
9. Kuparuk Basin
10. North Slope (6)
11. Prudhoe Bay (24)
12. Sagwon
13. Seward Peninsula
14. Upper Kuparuk River (Toolik Lake & Innvait Creek) (5)



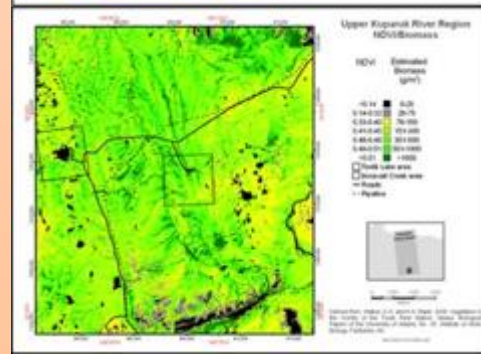
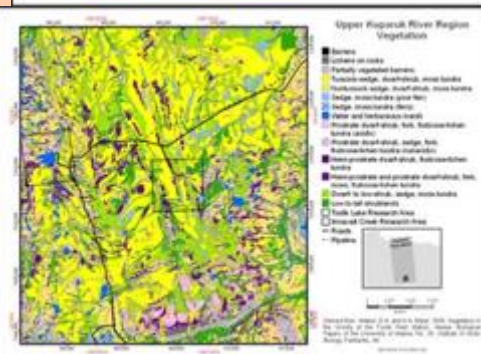
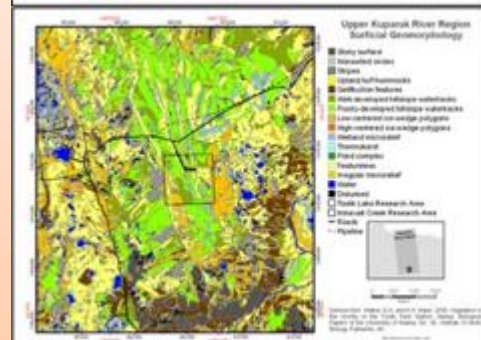
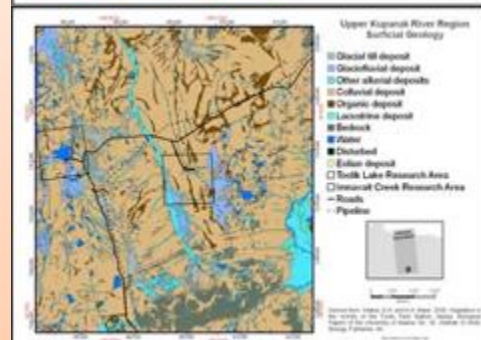
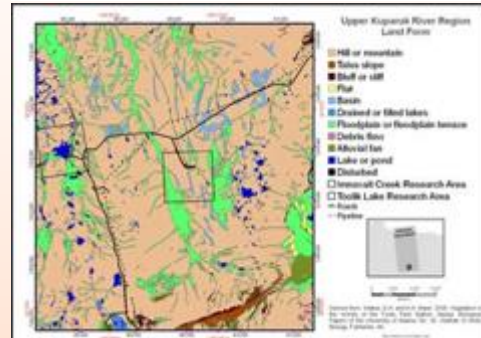
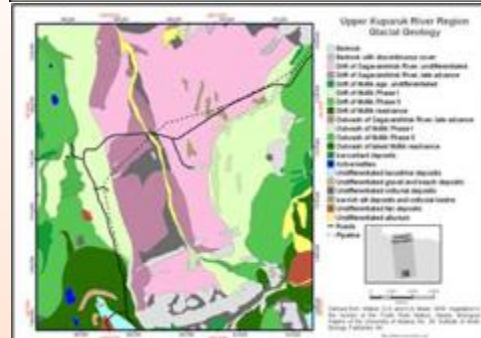
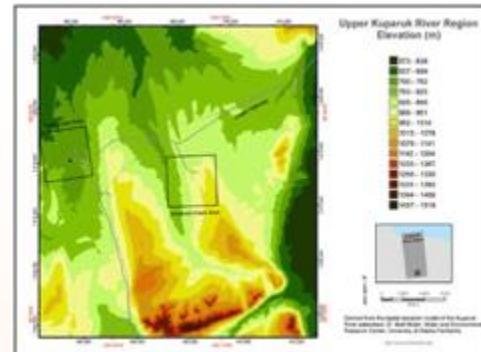
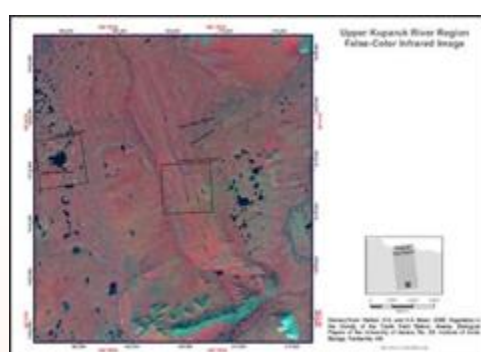
Martha Reynolds checking the Russian portion of the Circumpolar Arctic vegetation map with Dr. Nadya Matveyeva, 2002, Cherski, Russia.  
Photo: D.A. Walker.

# Data available in Map Archive (AK-AMA)

Archive focuses on integrated geoeological maps with multiple themes:

*For example, for the upper Kuparuk River region:*

- SPOT image
- Elevation
- Glacial geology
- Landforms
- Surficial geology
- Surficial geomorphology
- Vegetation
- SPOT derived NDVI, biomass
- Hydrology (not shown)



# Current content of the AK-AMA

Regions	Datasets	Themes
Arctic Alaska	1	9
Arctic National Wildlife Refuge	2	2
Circumpolar Arctic	1	15
Kuparuk Basin	1	4
North Slope	5	13
Prudhoe Bay	5	62
Seward Peninsula	2	2
Upper Kuparuk River	1	10

**Total: 218 Thematic maps in 18 datasets**



# Alaska Arctic Map Archive (AK- AMA)

## Catalog Page

- ✓ Data are downloadable in a variety of formats.

Enter keyword search

Sort: Relevance Ascending

Limit: 30 Reset

Export as... Search

Arctic Geocological Atlas Collections

- Arctic National Wildlife Refuge 0 results
- Circumpolar Arctic 0 results
- Upper Kuparuk 0 results
- Innvait Grid 0 results
- Deadhorse 0 results
- Howe Island 0 results
- Innvait Area 0 results
- Kuparuk Basin 0 results
- Oumalik 0 results
- Toolik Area 0 results
- Toolik Grid 0 results
- Franklin Bluffs 0 results
- Happy Valley 0 results
- Ivotuk 0 results
- Sagwon 0 results
- Atkasuk 0 results
- National Petroleum Reserve-Alaska 0 results
- Prudhoe Bay 0 results
- Dalton Highway 0 results
- Vegetation Plot Data 0 results
- Seward Peninsula 0 results
- Barrow 0 results
- North Slope 0 results
- Arctic Alaska 8 results**
- Map Data 8 results

Alaska Arctic Tundra Vegetation Map

The AATVM contains maps of several geobotanical themes covering the tundra region of Alaska. The map was published at 1:4 million scale (Raynolds et al. 2006) and displays the vegetation with 33 map units. The back of the map shows a list of the vegetation communities included in each map unit an...

+ More Full Record

Arctic Alaska False color-infrared image of AVHRR satellite data

Advanced Very High Resolution Radiometer (AVHRR) data were obtained from the USGS Global AVHRR 10-day composite data. (<http://edodac.usgs.gov/1KM/1kmhomepage.asp>). Glaciers and oceans were masked out using information from the Digital Chart of the World (ESRI 1993). The image is composed of 1 x ...

+ More Full Record

Arctic Alaska AVHRR NDVI Map

The normalized difference vegetation index (NDVI) is a measure of greenness. NDVI was calculated as:  $NDVI = (NIR - R) / (NIR + R)$ , where NIR is the spectral reflectance in the AVHRR near-infrared channel (0.725-1.1  $\mu$ m, channel 2) where light-reflectance from the plant canopy is dominant, and R is...

+ More Full Record

Arctic Alaska Bioclimate Subzone Map

A temperature gradient from north to south exists in the Arctic, with plants further south able to take advantage of higher temperatures than those in the northern parts. The mean July temperatures are near 0 C on the northernmost islands. At these temperatures, plants are at their metabolic limi...

+ More Full Record

Arctic Alaska Floristic Provinces Map

The Arctic has a relatively consistent core of plant species that occur throughout the circumpolar region, but there is also considerable east to west variation in regional floras, particularly in the southern bioclimate subzones. These differences are due to factors such as different histories r...

+ More Full Record

# Data archiving and distribution

## Primary Archives

1. **GINA:** Current primary archive for plot and map data is with the Geographic Information Network of Alaska (GINA).
1. **NASA DAAC:** Working with NASA to also archive the data with the NASA Distributed Active Archive Center (DAAC). Test for export from GINA to the DAAC was successful. All data on the GINA site will also be archived at the DAAC by the end of the project.

# Other data archiving and distribution:

## 1. Vegbank:

Home | Datasets | Logout  
Jump to...

find plots containing go  
download 81 items advanced search browse data  
HOME SUBMIT DATA MY ACCOUNT FAQ ABOUT SITE MAP

**VegBank Plots -- mapped with Google Maps**

If you are having problems with this mapping functionality, please see the instructions and tips on [this page](#).

You searched for plots: In Project: Alaska Arctic Vegetation Archive: Toolik Lake Vegetation Plots AND In Alaska.

Combined Accuracy: Each plot's icon reflects the coordinate accuracy combined with any fuzzing (confidentiality) applied.  
 0-50m 50-200m 200-1000m > 1000m unknown change icons

Map Satellite

Google

Home | Datasets | Logout  
Jump to...

find plots containing go  
download 81 items advanced search browse data  
HOME SUBMIT DATA MY ACCOUNT FAQ ABOUT SITE MAP

### VegBank Plots

You can also [map these plots](#).

You searched for plots: In Project: Alaska Arctic Vegetation Archive: Toolik Lake Vegetation Plots AND In Alaska.

«previous | page 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | next»  
records 1 through 10 of 81

add all query results to datcart, add plots on page to datcart, drop plots on page from datcart

Add/Drop	Author Code Plot Location	Plants Found on Plot	Plot Communities
		Change plant label: ? Current Interpretation, Scientific Name without authors	
Plot #1	1 Alaska, United States » <a href="#">Details...</a>	<ul style="list-style-type: none"> <li>» <a href="#">Carex membranacea**</a> (37.5%)</li> <li>» <a href="#">Salix chamissonis**</a> (15%)</li> <li>» <a href="#">Aulacomnium palustre**</a> (15%)</li> <li>» <a href="#">Tomentypnum nitens**</a> (15%)</li> <li>» <a href="#">Sanionia uncinata**</a> (2.55%)</li> </ul>	No data
Plot #2	59 Alaska, United States » <a href="#">Details...</a>	<ul style="list-style-type: none"> <li>» <a href="#">Salix glauca**</a> (87.5%)</li> <li>» <a href="#">Dasiphora fruticosa**</a> (15%)</li> <li>» <a href="#">Rhytidium rugosum**</a> (2.55%)</li> <li>» <a href="#">Betula nana**</a> (2.55%)</li> <li>» <a href="#">Entodon concinnus**</a> (2.55%)</li> </ul>	No data
Plot #3	68 Alaska, United States » <a href="#">Details...</a>	<ul style="list-style-type: none"> <li>» <a href="#">Salix pulchra**</a> (37.5%)</li> <li>» <a href="#">Calamagrostis canadensis**</a> (15%)</li> <li>» <a href="#">Rubus acaulis**</a> (15%)</li> <li>» <a href="#">Salix richardsonii**</a> (15%)</li> <li>» <a href="#">Anemone richardsonii**</a> (2.55%)</li> </ul>	No data

U.S. National Vegetation Classification data archive.


Peet, R. K., Lee, M. T., Jennings, M. D., & Faber-Langendoen, D. (2012). VegBank – a permanent, open-access archive for vegetation-plot data. *Biodiversity and Ecology*, 4, 233–241. <http://doi.org/10.7809/b-e.00080>

# Other data archiving and distribution:

## 2. Global Index of Vegetation-Plot Databases (GIVD):

- Metadata source and link to global vegetation databases.
- Current content of GIVD is 230 databases and 3,140,672 plots.
- AK-AVA ID: is NA-US-014.

Dengler, J., et al. (2011). The Global Index of Vegetation-Plot Databases (GIVD): a new resource for vegetation science. *Journal of Vegetation Science*, 22(4), 582–597. <http://doi.org/10.1111/j.1654-1103.2011.01265.x>



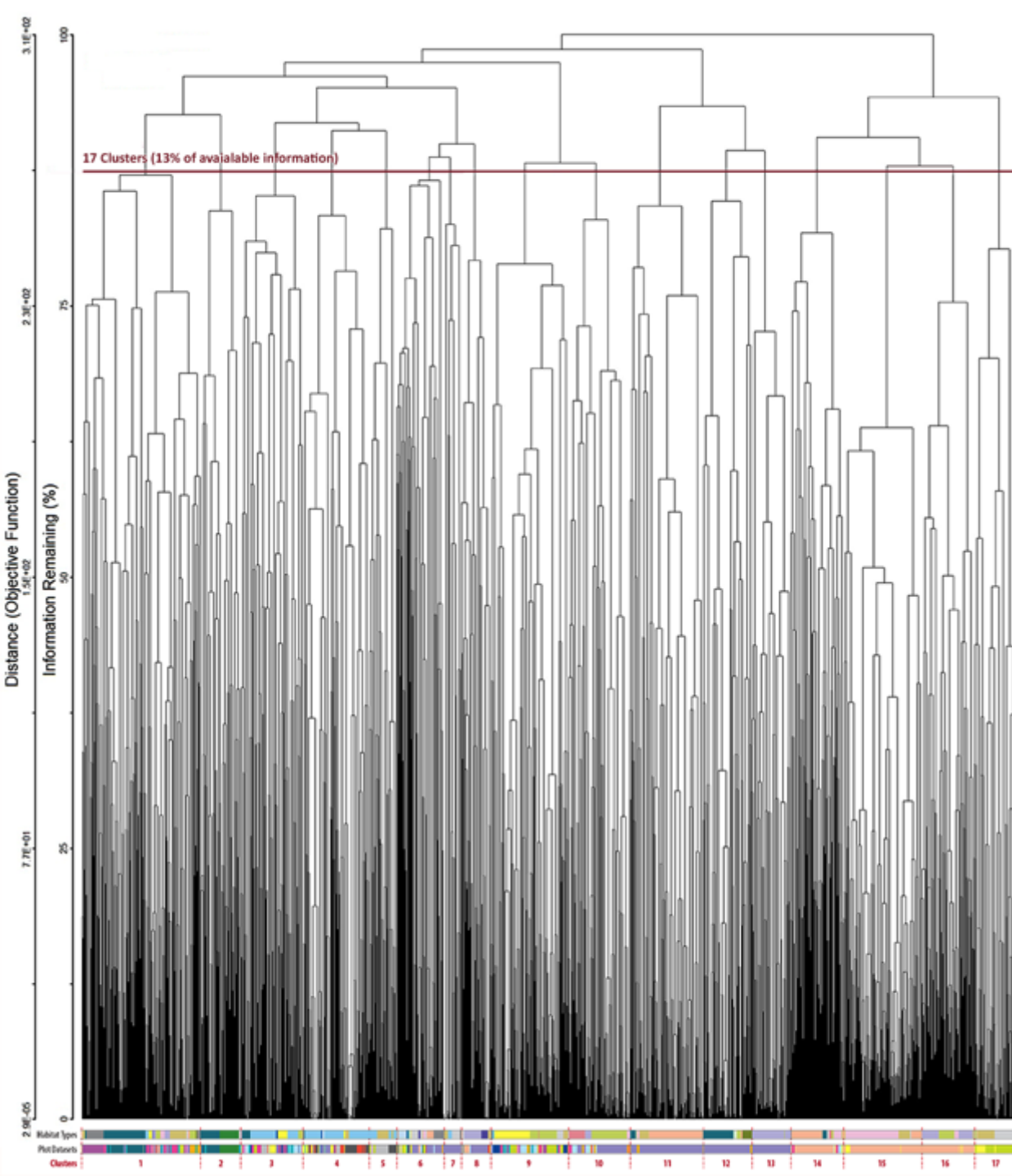
The screenshot displays the GIVD website interface. At the top, the title "Global Index of Vegetation-Plot Databases" is visible, along with a navigation menu including "Home", "Info -", "Publications -", "Databases", "Register or update databases", and "Statistics -". Below the navigation, a breadcrumb trail shows the current database: "NA-US-014 - Alaska-Arctic Vegetation Archive" with a link to its profile page, the name "Walker, D. A. et al.", and the count "1590 plots". A "Back to list" link is also present. The main content area features a tabbed interface with "Description" selected. Under "Database Details", a note instructs users to refer to the ID "NA-US-014". A table lists key information: ID (NA-US-014), Registered since (2013-04-02), Last update (2015-09-17), Web address (<http://geobotanical.portal.gina.alaska.edu/plot-archive>), and Availability (available with reduced precision). Below this, the "Name of the Database" is "Alaska-Arctic Vegetation Archive" (marked as a required field) and the "Subtitle" is "Alaska-AVA". A "Scope" section contains a text box describing the Alaska Arctic Vegetation Archive (Alaska-AVA) as a prototype database for the Arctic Vegetation Archive (AVA), detailing its goals, data sources, and content.



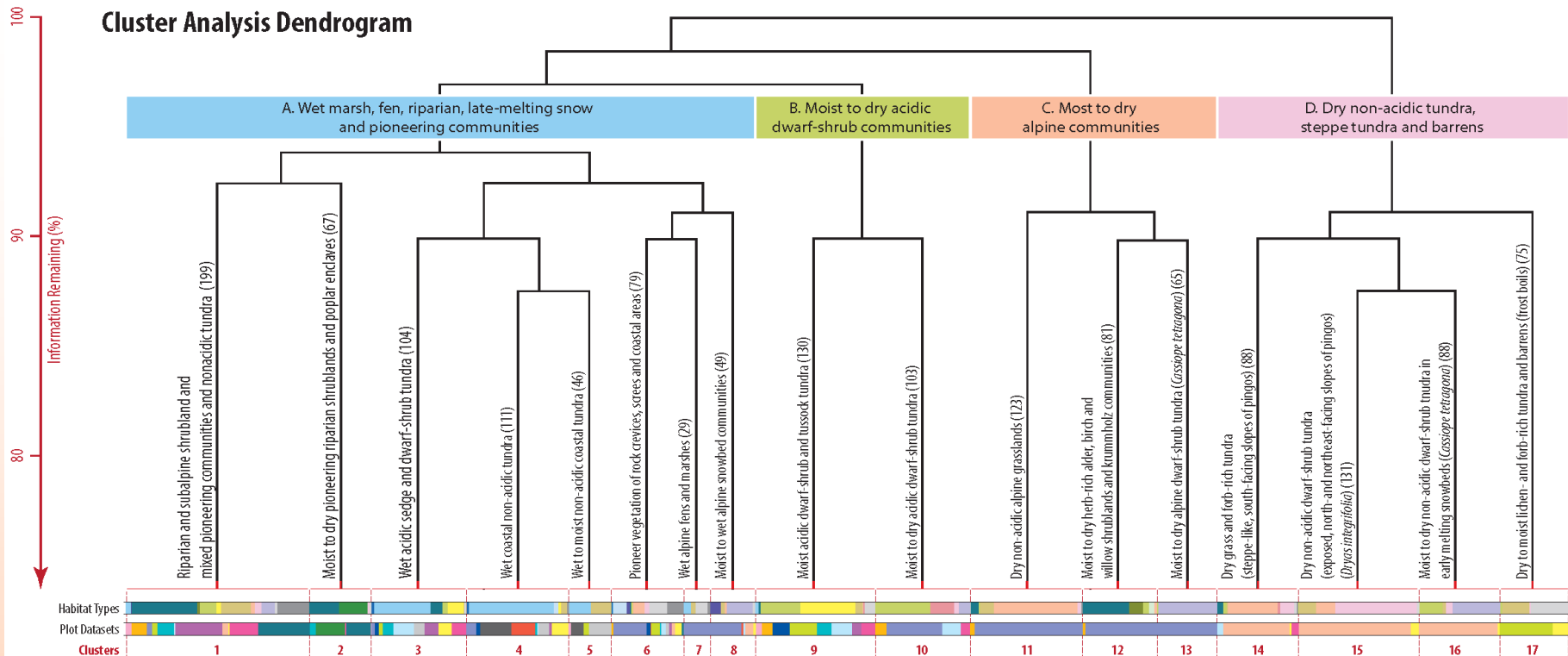
# Preliminary analysis of AK-AVA data: Cluster analysis

**Full dendrogram showing all relevés with associated habitat types and dataset origins.**

- 1603 plots analyzed according similarity.
- 17 high-level clusters (above the red line) show the highest “separation power” (next slide).
- The two bottom color bars show the habitat type and datasets of the plots.



# Preliminary cluster analysis of AK-AVA data: Top 4 and top 17 clusters: sorted by habitat type and dataset.



Sibik et al. 2015 in prep.

Cluster A: Wet tundra, wet snowbeds, riparian shrublands, poplar groves, azonal and pioneering communities: 684 plots.

Cluster B: Acidic tundra types including tussock tundra, dry dwarf-shrub heaths: 233 plots.

Cluster C: Most alpine plant communities with high cover of forbs and grasses: 269 plots.

Cluster D: Dry non-acidic tundra and steppe tundra vegetation: 382 plots.



# Next steps

- Continue import of remaining identified data sets into the AK-AVA and VegBank.
- Work with ABoVE scientists to apply the AK-AVA and AK-AMA to their projects.
- Finish preliminary analysis and publish AK-AVA papers in *Phytocoenologia*, *J. Appl. Veg. Sci.*
- 2<sup>nd</sup> International AVA Workshop:
  - Develop other AK-AVA classification papers.
  - Demo the Atlas and AK-AVA.

Thanks to NASA Pre-ABoVE, & all participants in the project!