Apps for Arctic Science Planning: ARMAP & AOV

June 6, 2018

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armap.org

arcticobservingviewer.org
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This work is supported by the National Science Foundation under Contract No. NSFDACS11C1675. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.
A Challenge ...

... is knowing who is doing what where.

What research activities, networks, and assets already exist?

Where are the gaps?

Is there overlap?

How can we better plan, coordinate, and achieve scientific objectives?
Each project location is a logistical base of operation.

Each data collection site is an instrument, platform, or repeat measurement.

Each data collection site can have many datasets.
Meet User Needs

Project Planning

Who is doing what, when and where?
How do we plan for logistics?
Where are medical facilities, field research stations, ship tracks, airports, etc.?
How do we best achieve the science?

Observations & Networks

Where are existing data collection sites?
Where are more sites needed?
Who operates and manages existing sites?
Which sites can I use?

Dataset Usage & Understanding

Is this dataset suitable for my research?
Does it cover my area for the right time period?
How was it created?
What are the errors?
Who do I contact with questions?
Scope

Project Planning
- The big picture of Arctic science
- 2800+ research projects
- For science planning, logistics, and more

Observations & Networks
- A high-resolution view of observing
- 13,000+ observing sites
- For network planning, data discovery, and more

Dataset Usage & Understanding
- By geographic area, discipline, or initiative
- A million+ scientific datasets
- For data discovery, access, reuse, and synthesis
Each project location is a logistical base of operation.

Each data collection site is an instrument, platform, or repeat measurement.

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What’s in ARMAP?

- NSF and 17 other agencies
- 132 ship tracks
- 2800+ research projects
- 1300+ project locations
Project Details in ARMAP

- Funding Agency
- Funding Program
- Logistics Provider

**Discipline**

- Region
- Subregion
- Location

- Project Title
- Award Number
- Institution
- PI Name

**PI Contact Info**

- Active Years

Links to logistics reports, project summaries, data, and more
Agencies in ARMAP

![Bar chart showing the number of projects by agency.

- NSF: 2000+ projects
- USGS: 500 projects
- BOEM, NASA, NPS, NSB, ADFG, ARCTIC LCC, BLM, CPAI, NOAA, BPXA, Other: Fewer than 50 projects]
Logistics Providers in ARMAP

- CPS
- BASC
- Air National Guard
- USCG
- IAB
- Canadian Coast Guard
- U. Washington
- US Navy
- Other

No. of Projects
Disciplines in ARMAP

Biology
Cryosphere
Data Management
Education and Outreach
Geological Sciences
Instrument Development
Meteorology and Climate
Oceanography
Social and Human Sciences
Space Physics
Each project location is a logistical base of operation.

Each data collection site is an instrument, platform, or repeat measurement.

Each data collection site can have many datasets.
### Search Results - 44 collection sites found.

<table>
<thead>
<tr>
<th>Collection Type</th>
<th>Discipline</th>
<th>Initiative</th>
<th>Place</th>
<th>Site Name</th>
<th>Alt. ID1</th>
<th>Alt. ID2</th>
<th>GCMD Science and Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Positioning (GPS) Station</td>
<td>Cryosphere</td>
<td>GNET: The Greenland GPS Network</td>
<td>Narsarsuaq, West</td>
<td>Narsarsuaq, West, Greenland</td>
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### Global Positioning (GPS) Station

**Discipline:** Cryosphere  
**Initiative:** GNET: The Greenland GPS Network  
**Place:** Kangerlussuaq  
**Country:** Greenland  
**Site Name:** Kangerlussuaq ITEX Study Site  
**Alternate ID1:**  
**Alternate ID2:**  
**GCMD Science and Services:**  
**GCMD Instrument Keyword:**  
**Latitude (DD):** 67.018  
**Longitude (DD):** -50.694  
**Locational Accuracy:** Logistics Base  
**Elevation (m):**  
**Funding Country:** United States  
**Funding Agency:** NSF  
**Funding Program:** GEO> PLR > ARC > ARCSS > AON  

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Showing 1 to 25 of 44 entries
What’s in AOV?

- Focused on “Arctic Observing”
- More international
- >13,900 observation sites
- Project information from ARMAP
- Plus additional information for sites
Site Details in AOV

Initiative

Collection Type
GCMD Science and Services Keyword
GCMD Platform Keyword
GCMD Instrument Keyword

Site Name
Place
Country
Latitude & Longitude
Locational Accuracy
Elevation

Alternate ID1
Alternate ID2
Site Start Year
Site End Year

Links to logistics reports, project summaries, data, and more
Agencies in AOV

- NSF
- NOAA
- Nordic Council of Ministers
- NASA
- Canadian Permafrost Monitoring Network
- Geological Survey of Canada
- AmeriFlux
- Russian Academy of Science
- CarboEurope-IP (EU-FP6)
- DOE
- Norwegian Geological Survey
- MIREKO
- Canadian Carbon Program
- AsiaFlux
- GHG-Europe (EU-FP7)
- USGS
- Other

No. of Sites
Initiatives in AOV
Collection Types in AOV

- Ecosystem Plot
- Vegetation Plot
- Borehole
- Flux Tower
- Stake
- Conductivity, Temperature, and Depth (CTD)
- Seismic Observatory
- Active Layer Measurement
- Snow Accumulation Measurement
- Snow Pinger
- Biotic Study Site
- Tucker Trawl
- Mooring
- Soil Temperature Probe
- Ground Control Point
- Observing Station
- Water Logger
- RingNet
- Autonomous Ocean Flux Buoy (AOFB)
- River Biogeochemistry
- Surface Velocity Profiler (SVP)
- Acoustic Doppler Current Profiler (ADCP)
- Research Station
- Meteorological Station
- Global Positioning (GPS) Station
- Other

No. of Sites
Add Your Sites to AOV

template spreadsheet

or release compatible, public-facing web services
Web Services

Field Research Project Locations, Data Collection Sites, Location Placenames, Arctic Base Map, Arctic Countries, Arctic World Cities

ISO 19115-1, ISO 19115-2, FGDC, TXT, WMS, WFS, KMZ, ArcGIS
Annotated template ISO XML's, use case ISO XML's, contributors' template spreadsheet, data dictionaries, picklists ...
Manley et al. 2015 article in Arctic about AOV, ARMAP, and interoperability

Habermann 2018 article in Geosciences about hierarchical and distributed metadata services, with a focus on ARMAP and AOV
For Science Planning

• Browse who’s doing what where when
• See where and how research is concentrated
• Search, filter, or zoom in to see opportunities for coordination
• Find points of contact for collaboration
• Follow links to other resources
• Conduct “Strategic assessment”

Assess status. Coordinate Logistics.
Identify co-location of activities, large facilities, and resources.
Find overlap. Fill gaps. Clarify directions.
Use ...

for logistics bases

armap.org

for observing sites

arcticobservingviewer.org