

**Details of the Barrow Area Information Database (BAID)  
A Useful Tool**

**1) The status of current data management and integration efforts**

BAID is a suite of online, interactive maps and services that support Arctic science with a special focus on the research hubs of Barrow, Atqasuk and Ivotuk on the North Slope of Alaska.

The BAID database currently includes the locations of nearly 10,000 research plots and instrument locations. The database incorporates both new research locations and sampling sites dating back to the 1940s. Locations are primarily for NSF funded work (but other agencies such as NOAA, DOE, USGS, USFWS, CRREL, etc. are tracked as well.)

The online applications include mapping interfaces developed with off the shelf software from ESRI, Google Earth and Adobe Flex. The BAID Internet Map Server (IMS) provides access to high level project information and 200 layers of commonly requested base maps (land cover, shorelines, satellite imagery, topography, administrative boundaries, etc.) BAID in Google Earth provides access to research sites, instruments with descriptive info (researcher, project title, funding agency, year, key words, data links, etc.) plus site photos. The BAID SAR viewer is focused on a time series of near real time sea ice imagery. The BAID Instrumentation Browser is focused on 800+ permanent and seasonal instruments.

These data are publicly available via <http://baidims.org>. The lead database can also be accessed via variety of web based services including: Open Geospatial Consortium WMS and WFS services as well as a customized KML for Google Earth. Data updates are archived at the Earth Observing Lab at UCAR. FGDC metadata records will also be posted to a Web Accessible Folder (WAF) for automated harvesting by the GeoSpatial OneStop. A final review and update of the main research site and instrumentation database is underway.

NSF funding for this project ends in 2009 and future funding is uncertain. A new NSF proposal will be developed to support ongoing efforts including the Differential GPS field mapping of additional research locations; to migrate the BAID-IMS application to the Adobe Flex environment; to improve linkages to data; to adopt improved key words; to conduct training and outreach; to improve integration with other regional data management initiatives; funding from the State of Alaska is being pursued to expand the mapping of shoreline erosion; funding from the Google Foundation is also a possibility.

**2) Description of how the system is similar or different from some of the others, and its relative strengths and weaknesses**

**Similarities:** Project tracking system with point locations; includes ancillary spatial data layers; includes FGDC metadata; promotes data archiving activities; heavy on student participation; provides online geobrowser interfaces (Adobe Flex, IMS, Google Earth); implements best practices for data management (Open Geospatial Consortium services, FGDC metadata.)

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**Differences:** Began as a grassroots, “bottom up” field researcher driven effort to locate hundreds of old sites for re-sampling. Project documentation evolved out of the requirement to document research activity on Native land and the need for online mapping to support Barrow based logistics and research / observatories planning efforts. Data mining to capture historic research locations for change detection key; high level project information links to data archives where available; includes detailed plot level site mapping with most sites mapped via DGPS technology (2 cm horizontal accuracy); adopts off the shelf technologies for data processing (Trimble, Microsoft, ESRI) and user interfaces (ESRI, Adobe, Google) to leverage university site licenses.

**Strengths:** BAID has fostered collaboration between researchers who are often eager to co-locate projects with existing science infrastructure (towers, boardwalks, power, etc.), instrumentation or sampling conducted by synergistic efforts; BAID is used as a logistics tool to enhance science planning and safety of researchers (and local subsistence hunters); community support from Barrow residents and researchers has grown significantly since 2000; includes a suite of options for various user audiences with varying requirements to access BAID including: Internet Map Server, Google Earth viewer, Adobe Flex, Open Geospatial Web services; BAID-IMS has gained broad acceptance since 2003 in part because it does not require the user to download software; best practices for data sharing encouraged and implemented; focus on providing access to commonly requested information to avoid duplication of effort; supports research in the Barrow Environmental Observatory (BEO); provides Differential GPS mapping support on the ground to researchers.

**Weaknesses:** Overall highlights the lack of a transparent work flow in how to deal with projects, PIs, logistics, collection of science data and archiving of science data. Need an automated approach to link from high level PTS to project data sets logged at the archives; BAID is not fully integrated into the logistics support work flow at Barrow Arctic Science Consortium and CH2M Hill Polar Services for Barrow for scheduling the DGPS mapping of new sites; lacks support via full time technician; need to upgrade key words to NASA GCMD and other well known vocabularies; metadata creation and data archiving is a slow process; work flow from field data acquisition to online interfaces to data archives needs to be streamlined; advanced SQL database support desired. Dated IMS technology still works the best in remote field locations with limited Internet bandwidth; administrative rights & technical support to install Adobe Flash plug in not available in most local offices so new, improved user interfaces have limited adoption which makes it difficult to phase out the old IMS technology; acquisition of annual metadata updates on established instrumentation is challenging.