The Arctic Research Mapping Application (ARMAP): a geoportal for visualizing project-level information about U.S. funded research in the Arctic

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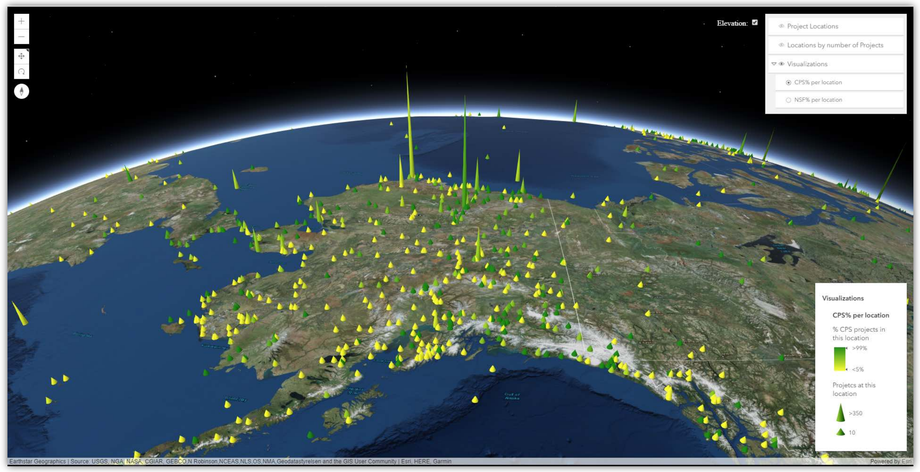
Abstract

The Arctic Research Mapping Application (ARMAP; http://armap.org/) is a suite of online applications and data services that support Arctic science by providing project tracking information (who's doing what, when and where in the region) for United States Government funded projects. In collaboration with 17 research agencies, project locations are displayed in a visually enhanced web mapping application. Key information about each project is presented along with links to web pages that provide additional information, including links to data where possible. The latest ARMAP iteration has visible improvements to the front end user interface including revamped search tools with common filters that incorporate autocomplete and drop-down menus for user-driven queries; a new heat map visualization that provides a clear image of where field projects are concentrated; a companion application with 3D visualization; plus new reference layers and an updated ship track information. On the backend, the application incorporates improved search algorithms and filtering capabilities to support a higher volume of data without affecting performance. An upgrade to SOLR version 7.4.0 has also optimized performance and the user experience. Refinements to an ISO 19115-1 metadata web service have allowed for greater collaboration with international logistics providers. These improvements have been made to improve discoverability, enhance logistics coordination, identify geographic gaps in research/observation effort, and foster enhanced collaboration among the research community. Additionally, ARMAP can be used to demonstrate past, present, and future research effort supported by the U.S. Government.

An information system for research activities funded by IARPC agencies:

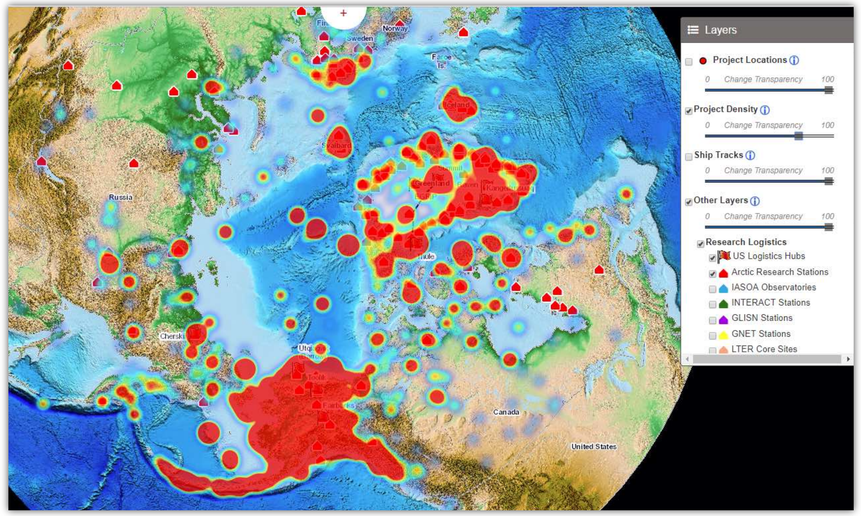
3D Globe

Provides novel visualization of project locations tied to logistical bases of operation such as a field camp, airstrip, research station, etc. Clicking on a location opens a window with numerous project details such as discipline, title, PI name and contact info., funding agency, funding program, logistics provider, and more – with links to more information.



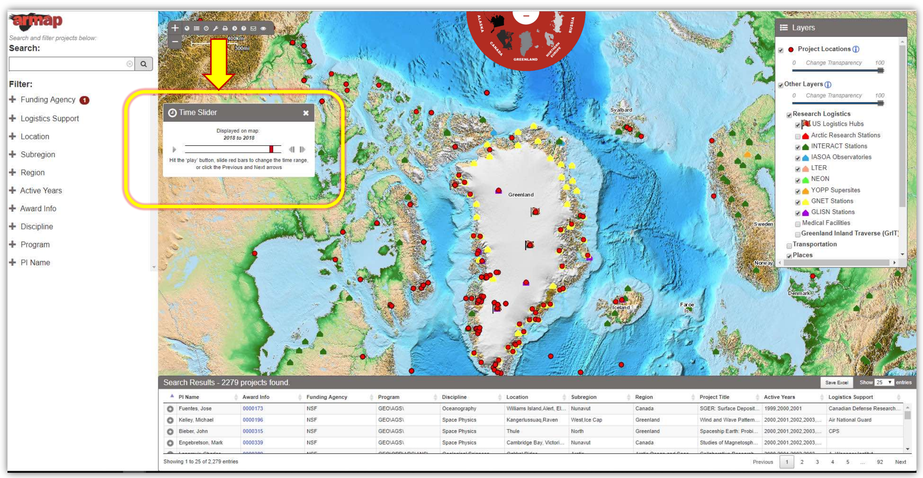
Heat Map

Shows the concentration of field research projects and research activity.



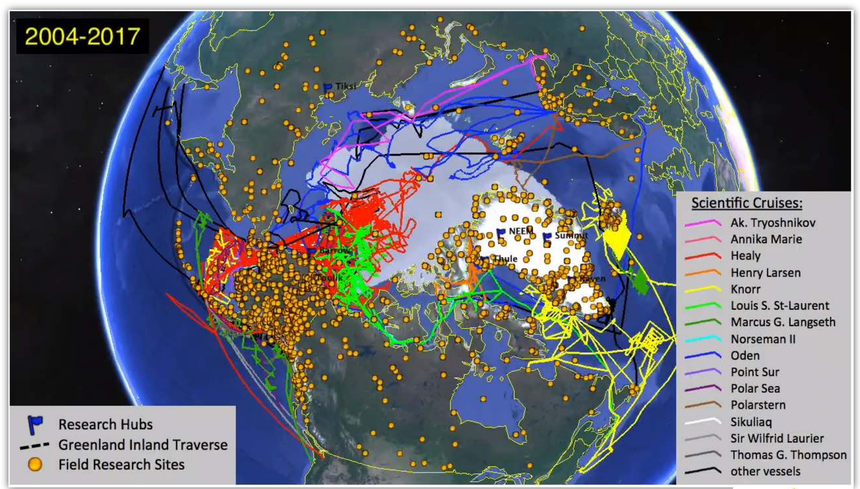
Time Slider

Step through research projects by year. Shown here is a view of Greenland with research stations, as well as project locations funded by NSF for 2018. ARMAP can be used to demonstrate past, present, and future research effort supported by IARPC agencies.



Animation

NSF's Arctic field research activities can be viewed as an animation dating back to 2004. The animation shows the locations of scientific research projects funded specifically by the U.S. National Science Foundation (NSF), as well as ship tracks for NSF-funded scientific cruises.



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