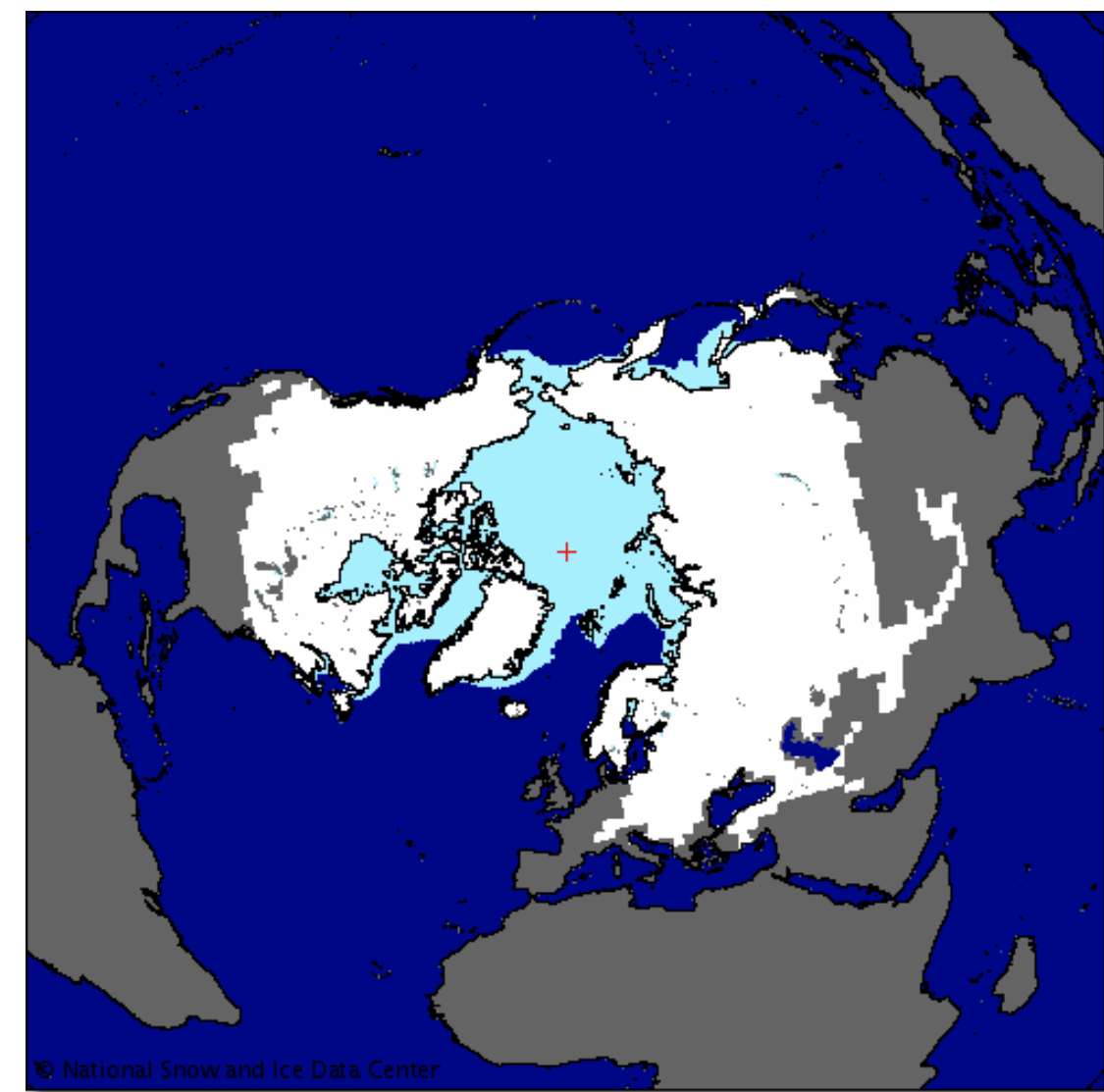
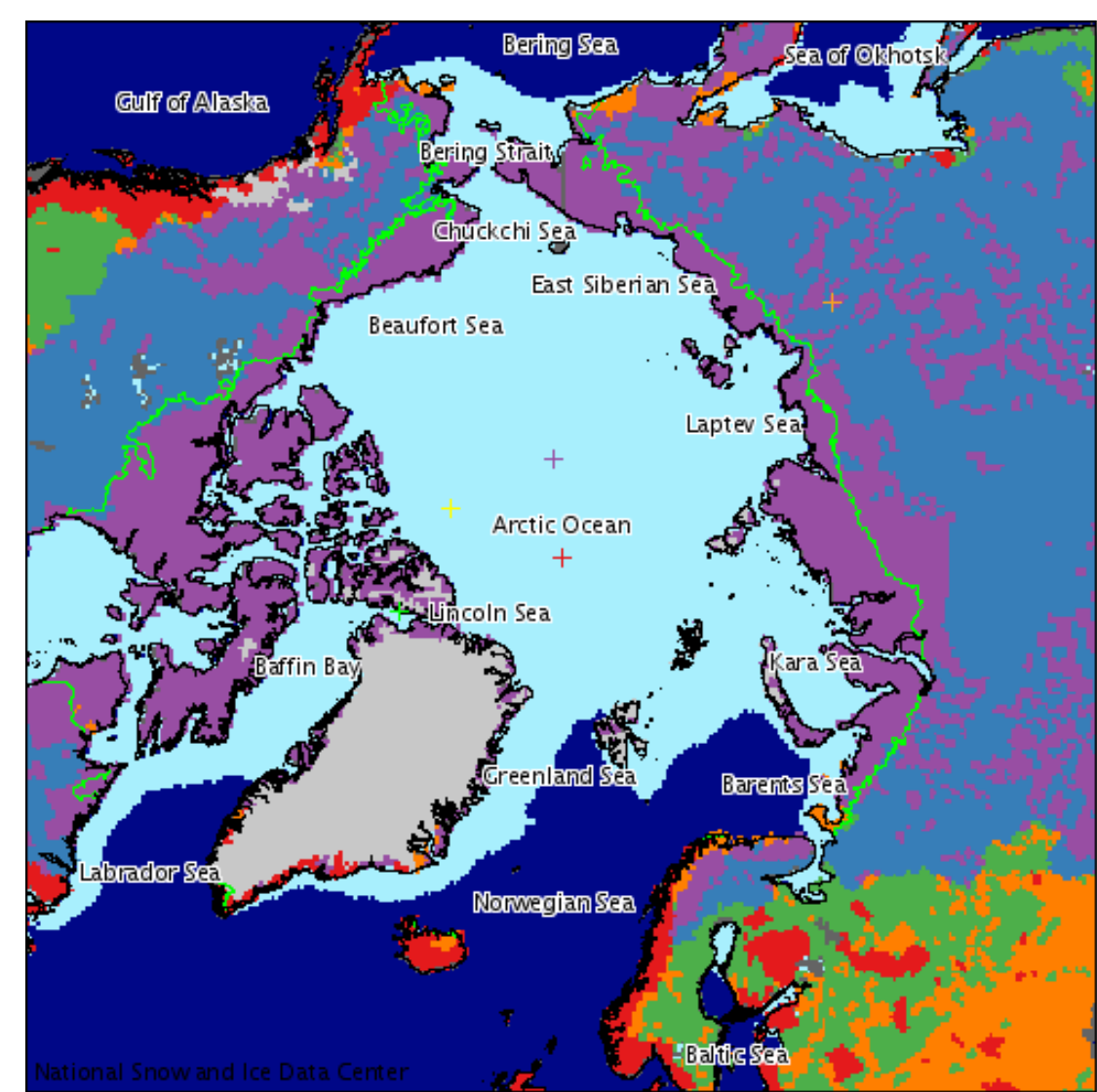
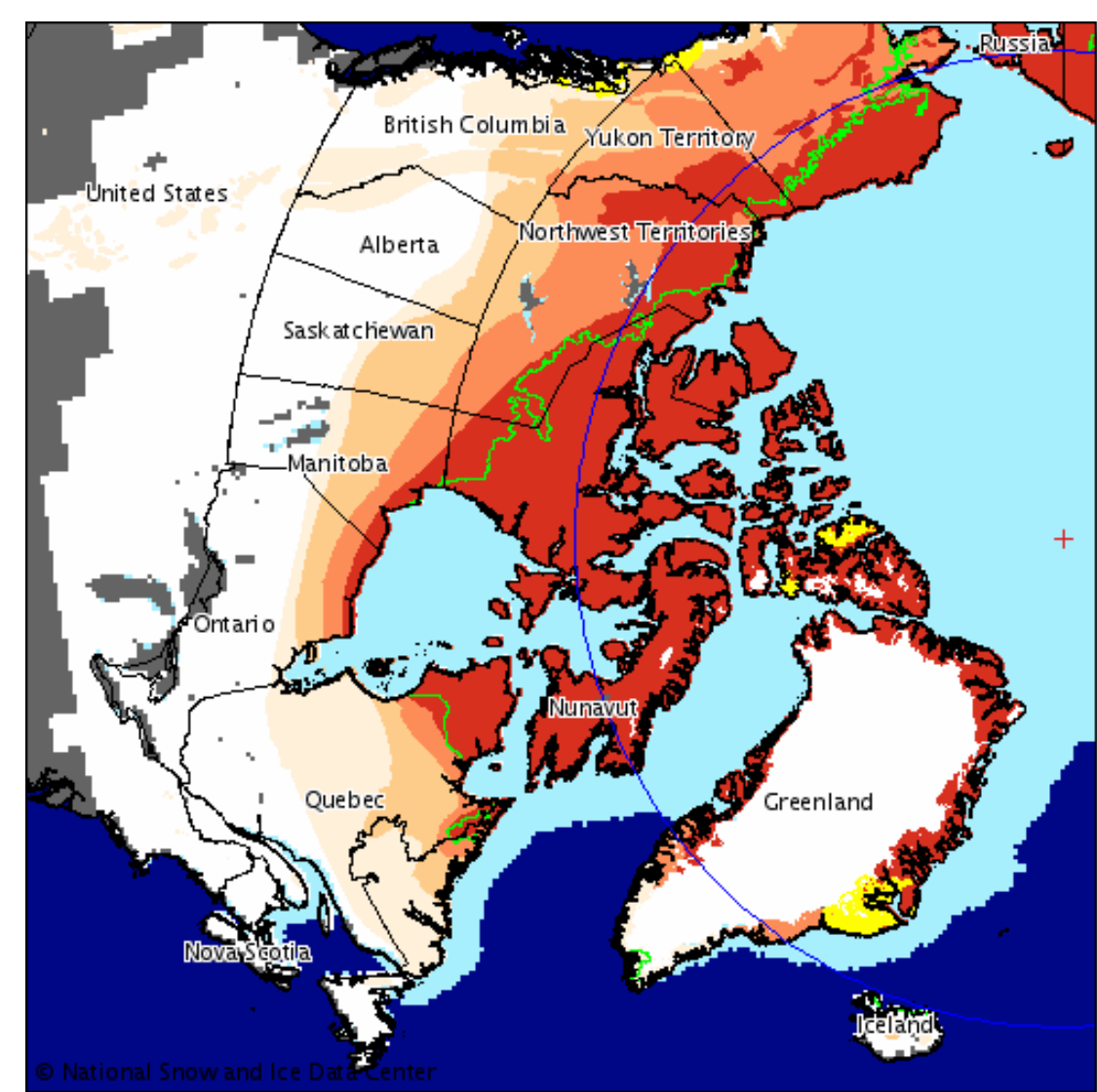




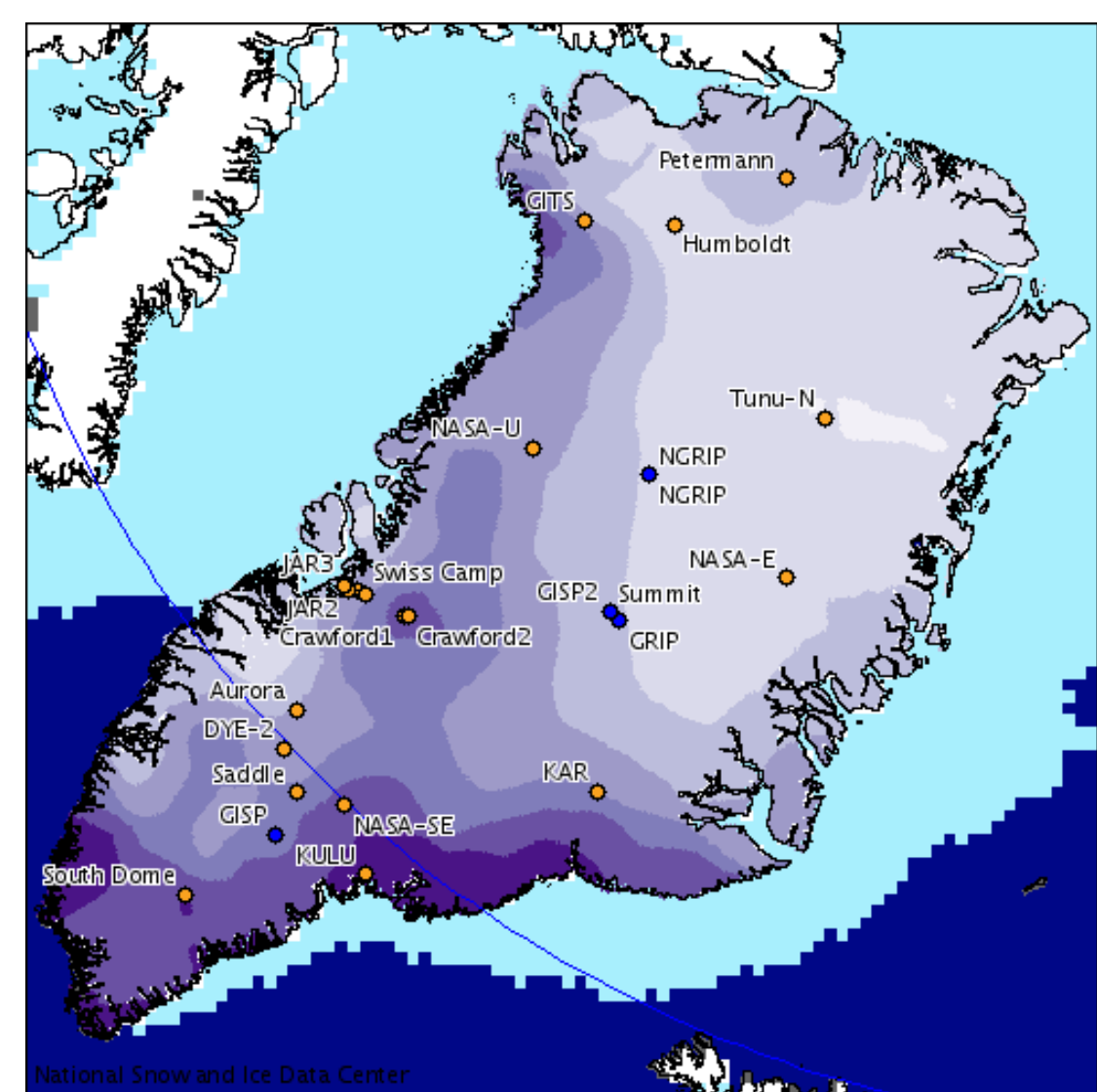
January climatology of Northern Hemisphere sea ice (1979-2005) and snow extent (1967-2005) with North Pole referenced (cross).



Arctic view of January sea ice climatology (1979-2005); seasonal snow classification on land; northern limit of forests (green line); and various types of North Poles referenced (crosses); geographic (red), geomagnetic (green), magnetic (yellow), cold pole (orange), and pole of inaccessibility (purple).



Northern Hemisphere view of permafrost extent; northern limit of forests (green line); glacier outlines (yellow); January climatology of sea ice (1979-2005) and snow extent (1967-2005); and Arctic Circle (blue line).



Greenland view of average annual snow accumulation (purples); January sea ice extent climatology (1979-2005); deep ice core locations (blue dots); Greenland Climate Network (GC-Net) Automatic Weather Station (AWS) locations (orange dots); and Arctic Circle (blue line).

Introduction

The National Snow and Ice Data Center (NSIDC) Atlas of the Cryosphere is a dynamic web mapping site, designed to be user-friendly, that allows the visitor to explore and interact with the frozen regions of Earth. Viewed from a polar perspective, information that can be displayed includes snow cover, sea ice extent and concentration, glaciers, permafrost, and other critical components of the Earth's cryosphere. The user can zoom in to a specific region on the Earth as well as overlay country borders, major cities, and other geographic information.

In addition to providing an interactive web interface, maps and data sources contained in the Atlas of the Cryosphere are also accessible via the Open Geospatial Consortium (OGC) Web Map Service (WMS), Web Feature Service (WFS), or Web Coverage Service (WCS). These international specifications provide a framework for sharing maps and geospatial data over the internet.

To visit the Atlas, go to: <http://nsidc.org/data/atlas>

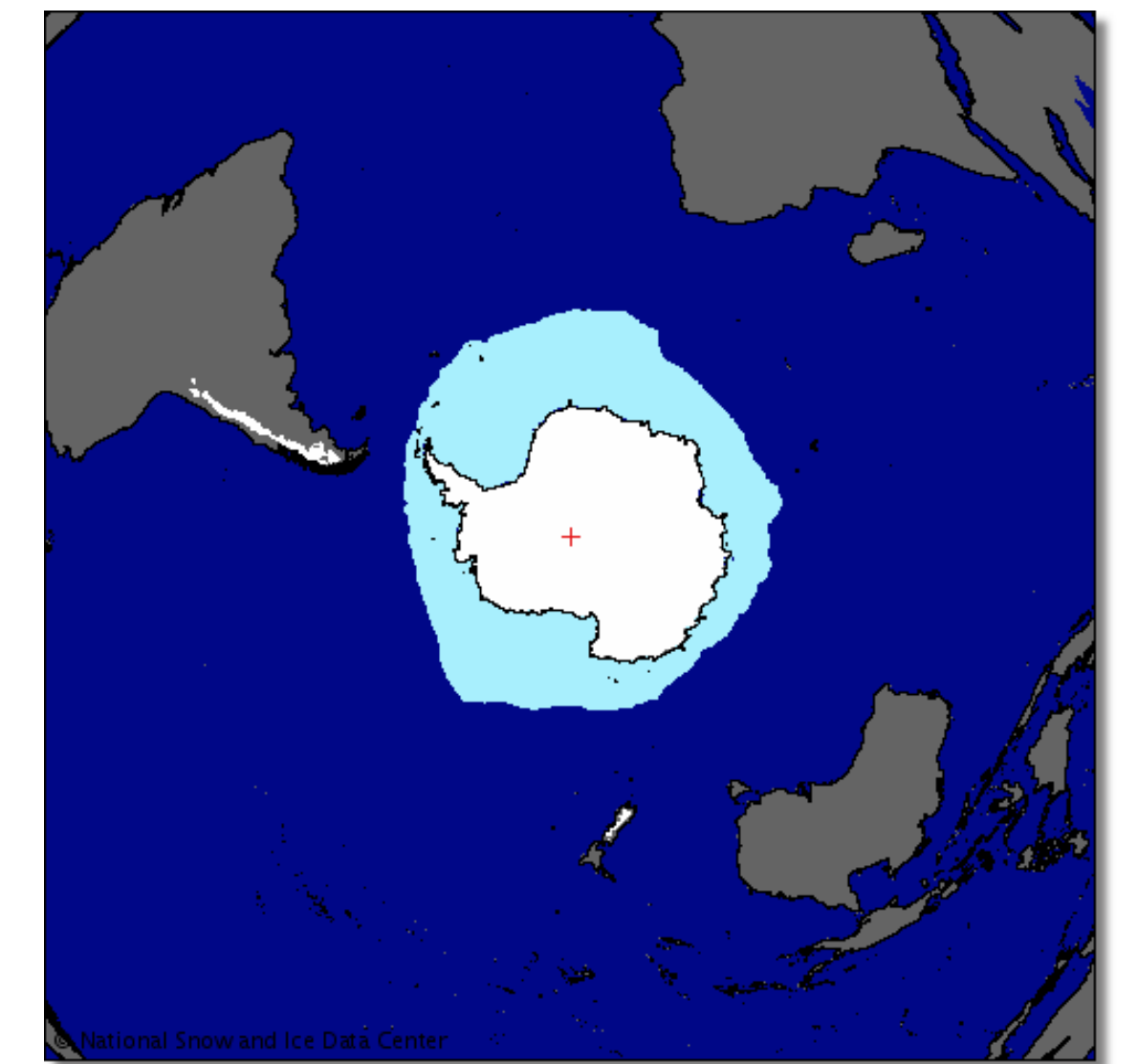
Selectable Parameters

Cryosphere:

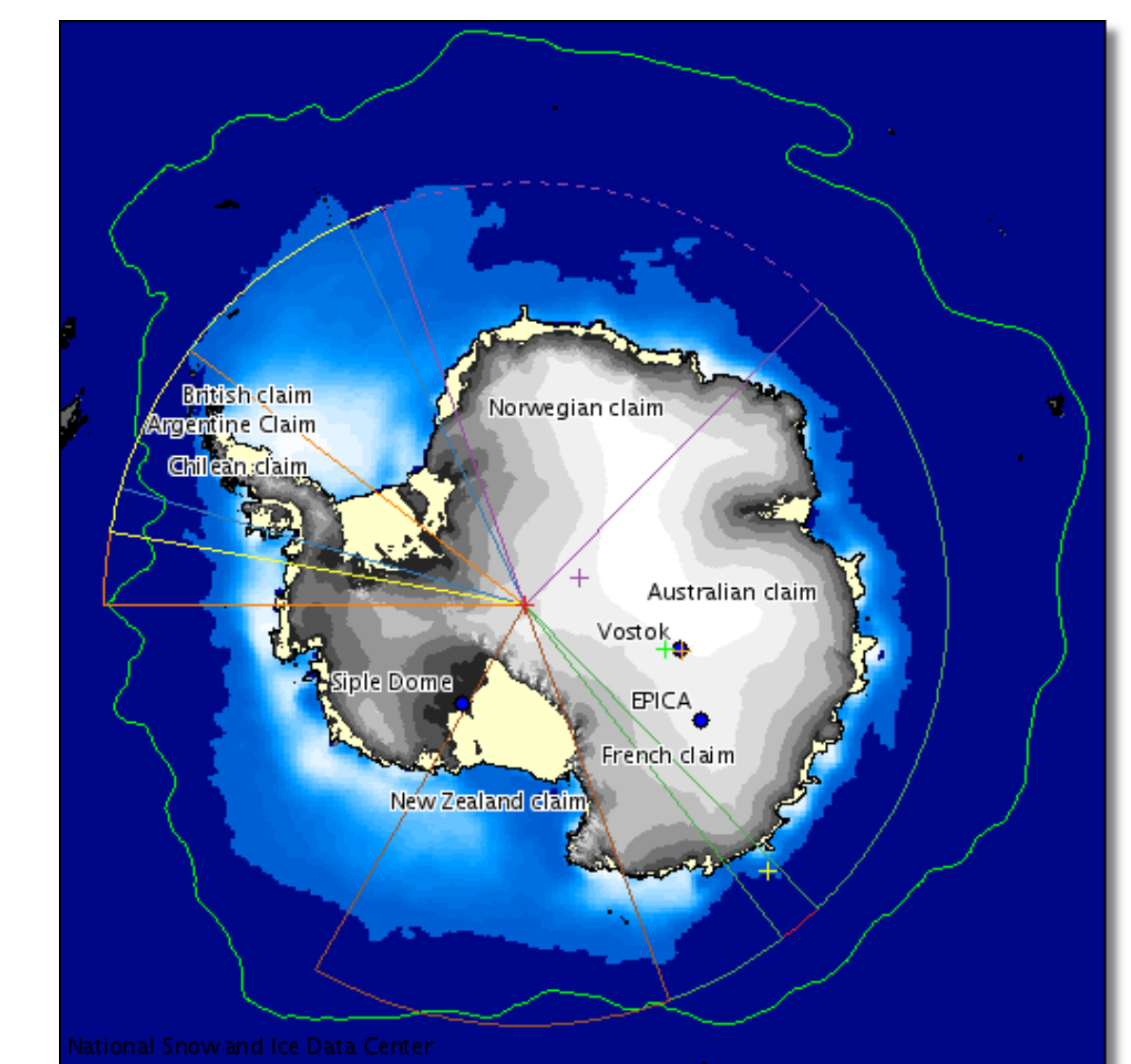
- glacier locations
- glacier outlines
- ice core locations
- ice sheet accumulation
- ice sheet elevation
- permafrost extent
- permafrost ice content
- sea ice concentration
- sea ice extent
- seasonal snow classification
- snow extent
- snow water equivalent
- treeline (northern limit of forests)
- and more...

Other:

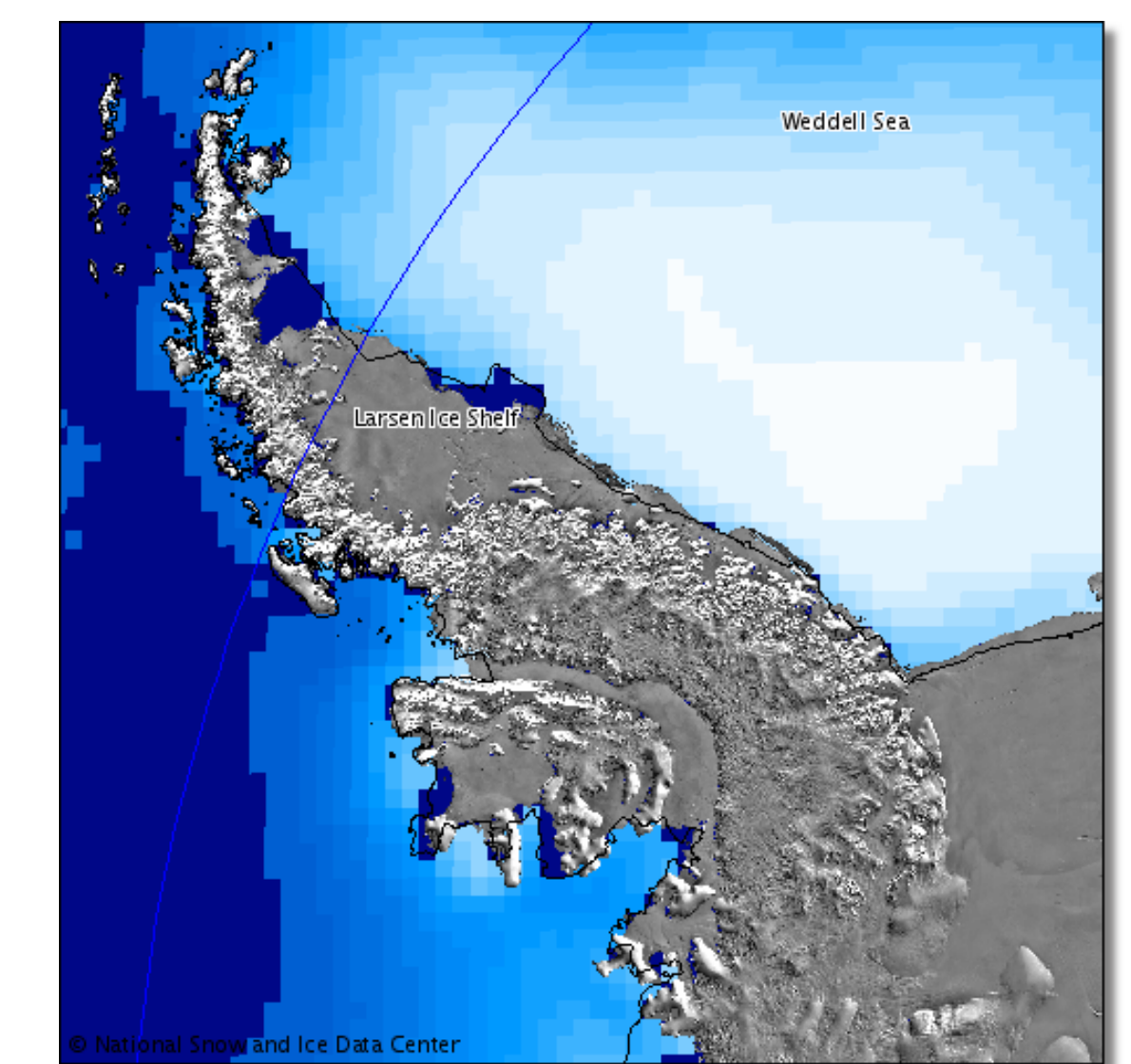
- Antarctic Circle
- Arctic Circle
- cities
- countries
- Equator
- geographic features (land, sea, and ice)
- International Date Line
- latitude and longitude
- North Pole
- South Pole
- Tropic of Cancer
- Tropic of Capricorn
- U.S. states
- and more...



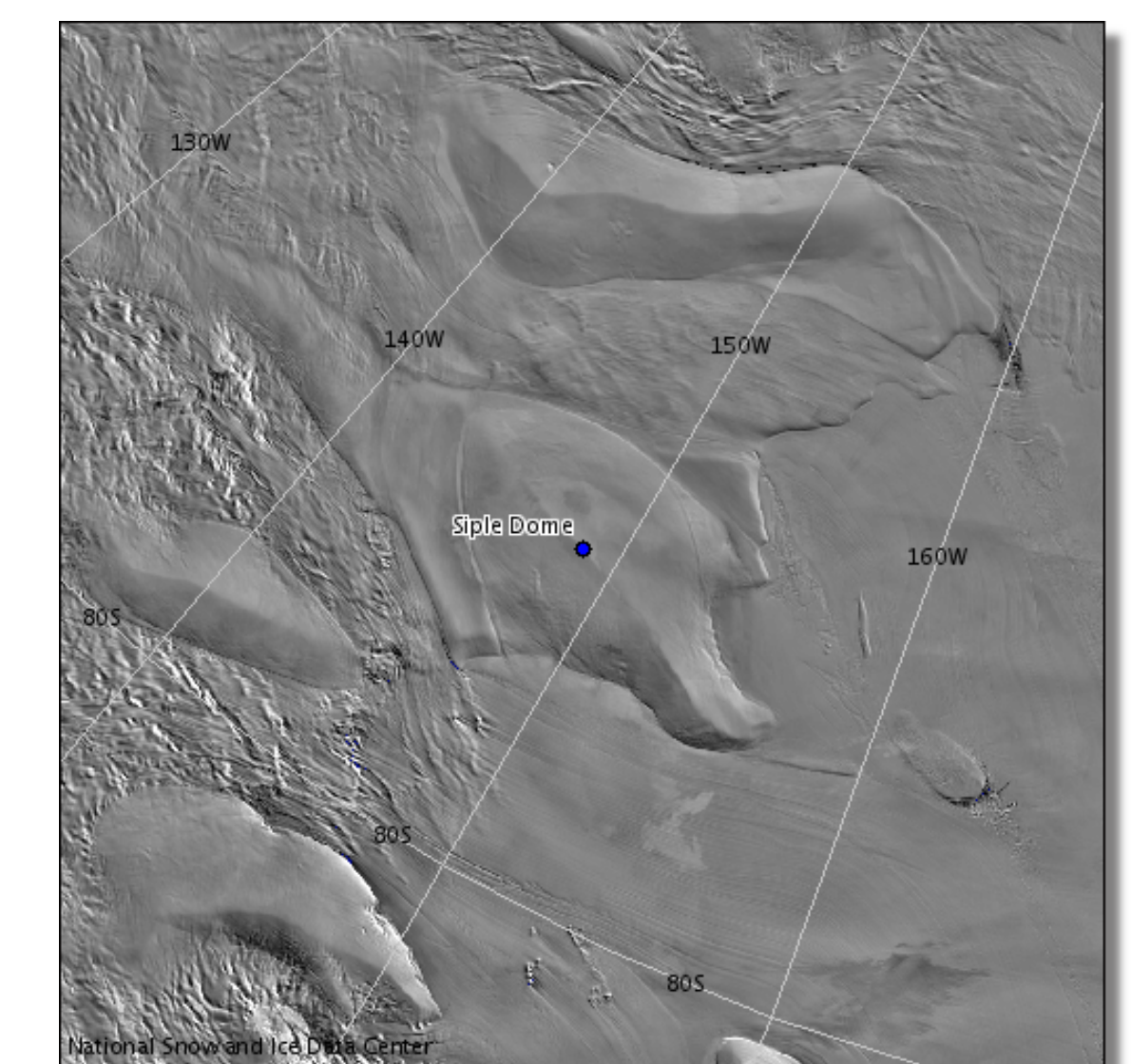
September climatology of Southern Hemisphere sea ice (1979-2003) and snow extent (1967-2002) with South Pole referenced (cross).



Antarctic view of January sea ice concentration climatology (1979-2003); Polar Front (green line); ice sheet surface elevation (greys); ice shelves (light yellow); Antarctic territorial claims; deep ice core locations (blue dots); and various types of South Poles referenced (crosses); geographic (red), geomagnetic (green), magnetic (yellow), cold pole (orange), and pole of inaccessibility (purple).



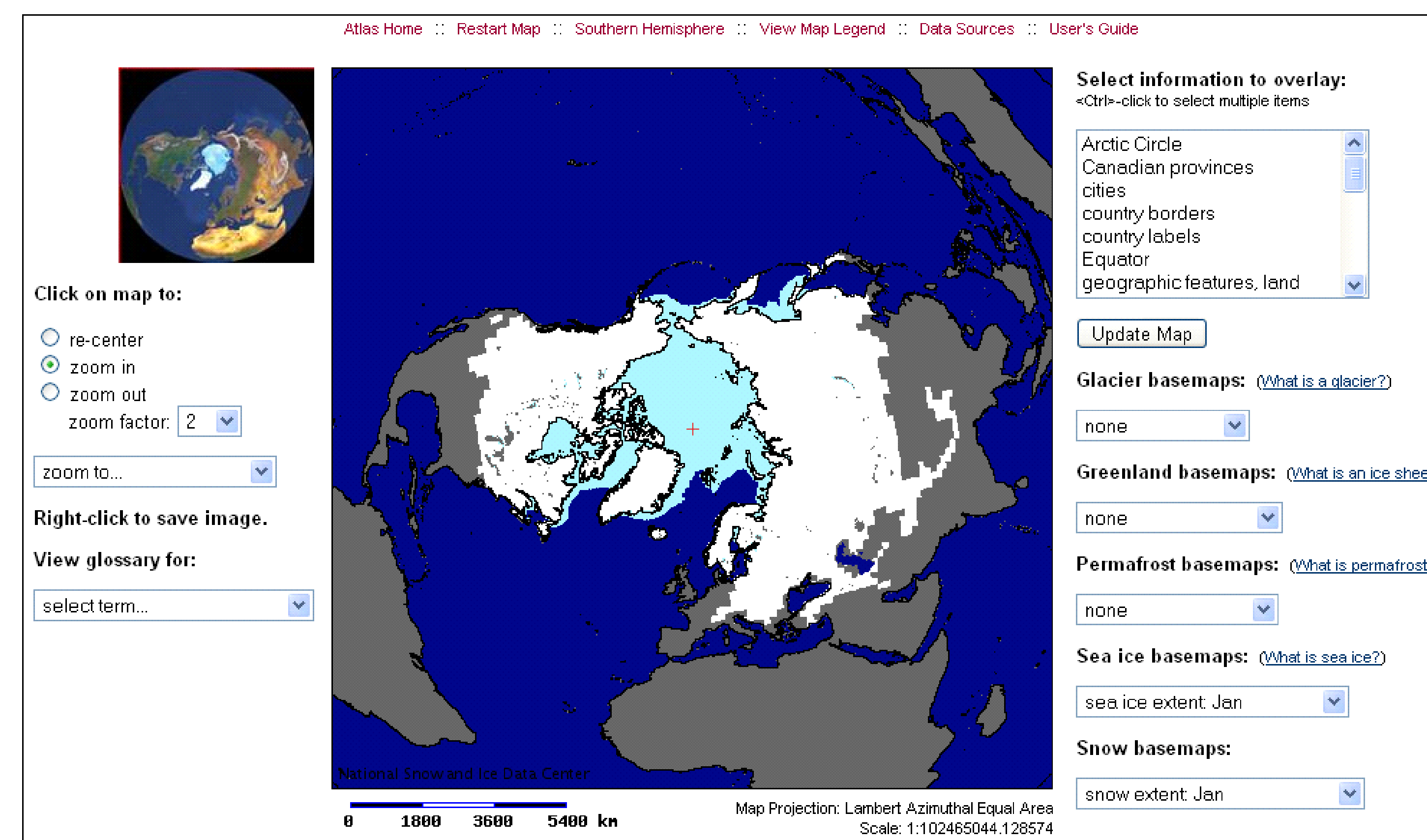
Antarctic Peninsula view of MODIS satellite image of surface features; March climatology of sea ice concentration (1979-2003); and Antarctic Circle (blue line).



Antarctic close-up on MODIS satellite image of surface features on the ice sheet and the Ross ice shelf near the Siple Dome ice core (blue dot) with latitude and longitude referenced.

Audience

The Atlas of the Cryosphere will appeal to a variety of audiences, including the general public and scientists, educators and K-12 students, college and graduate students and professors. Visitors can use the Atlas as a tool to familiarize themselves with the components and annual cycle of the cryosphere. For example, students will find the Atlas helpful in creating maps for reports on snow and permafrost extent in the U.S., and educators can utilize its dynamic visualization features to provide a tour of Antarctic sea ice, ice shelves, topography, research stations, and other features.



Screenshot of the Atlas of the Cryosphere web interface for the Northern Hemisphere. Zoom options, a reference map, and glossary definitions on the left; selectable data layers and basemaps on the right.

International Polar Year (IPY)

The Atlas of the Cryosphere will act as a useful tool in science and education efforts surrounding the IPY 2007-2008 and beyond, providing at a glance the geographical setting for snow and ice on the planet. Dedicated to intense interdisciplinary study of Earth's polar regions, IPY will advance our understanding of the cryosphere and engage the public on polar issues. For more information on IPY, visit <http://ipy.org>.



Importance of the Cryosphere

- Contains a large portion of Earth's freshwater supply:
 - About **77%** of Earth's freshwater is frozen, **91%** of which is contained in the Antarctic ice sheet, **8%** in the Greenland ice sheet, and the remaining **1%** is contained in glaciers
- Covers a substantial area of the planet:
 - Winter snow extent covers **31%** of the Earth's total land area
 - Permafrost underlies **22%** of the Earth's total land area
 - Glaciers and ice sheets cover **10%** of the Earth's total land area
 - Sea ice varies between **4-10%** of the Earth's total ocean area
- Helps cool the planet:
 - Where present, snow and ice can reflect up to **70-90%** of incoming solar radiation
- Helps drive global ocean circulation:
 - Sea ice and cold temperatures form dense, saline water at the poles that sinks to the ocean floor and spreads around the globe
- Impacts global sea level:
 - Greenland and Antarctica hold the potential for **7 m** and **70 m** of sea level rise, respectively
- Impacts human societies:
 - Hydroelectric energy production and freshwater supply from seasonal snowmelt; recreation (skiing); hazards (avalanches); etc.

Atlas Features

- Dynamically visualize snow and ice on the planet
- Explore the planet from a polar perspective for both the Northern and Southern Hemispheres
- Customize your own maps: zoom in and out, select from a variety of different basemaps and overlays
- Save custom maps as image files for inclusion in reports and other publications
- View monthly climatologies of snow and sea ice to see how and where the cryosphere shrinks and grows over the course of a year
- Look up glossary definitions for unfamiliar cryospheric terms
- Access maps and source data via WMS, WFS, and WCS
- Learn more about the Atlas and its available data sources in the provided User's Guide