



Alaska Science Center

Providing Timely, Relevant, and Impartial Study of the Landscape, Natural Resources, and Natural Hazards for Alaska and Our Nation

The mission of the Alaska Science Center is to provide objective and timely data, information, and research findings about the earth and its flora and fauna to Federal, State, and local resource managers and the public to support sound decisions regarding natural resources, natural hazards, and ecosystems in Alaska and circumpolar regions.



Redoubt Volcano



Polar Bears

The U.S. Geological Survey (USGS), the Nation's largest water, earth, and biological science and civilian mapping agency, has studied the natural features of Alaska since its earliest geologic expeditions in the 1800s. The USGS Alaska Science Center (ASC), with headquarters in Anchorage, Alaska, studies the complex natural science phenomena of Alaska to provide scientific products and results to a wide variety of partners. The complexity of Alaska's unique landscapes and ecosystems requires USGS expertise from many science disciplines to conduct thorough, integrated research.



Alaska Facts

Alaska is the largest state in the U.S. (656,425 square miles), more than twice as large as Texas, the next largest State.

Alaska is larger in area than all but 18 of the world's nations.

Alaska has more than 40 active volcanoes. On average, one or two Alaskan volcanoes erupt each year.

Alaska has more coastline than the rest of the U.S. combined.

Eighty-eight percent of all National Wildlife Refuge lands and 65 percent of all National Park lands of the U.S. are in Alaska.

Eight of the ten largest earthquakes recorded in the U.S. occurred in Alaska.

The strongest earthquake recorded in North America occurred in Alaska in 1964.

Alaska has the world's largest zinc producing mine.

More than one-third of the Nation's stream runoff is from Alaska.



Mapping Alaska's Geology



Tracking Animal Migration

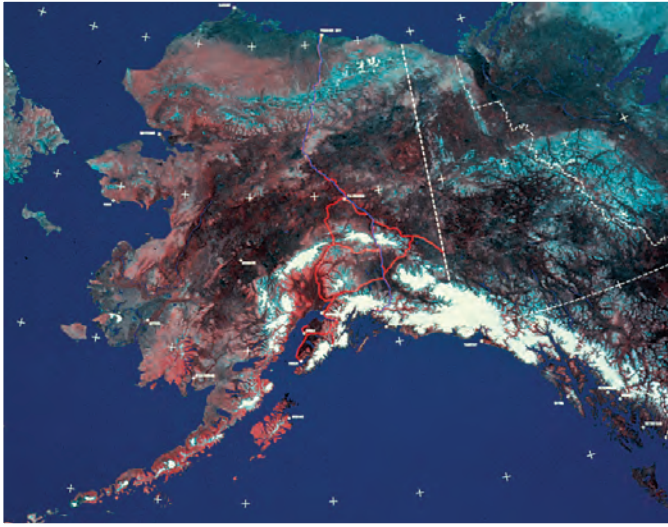


Research and Monitoring



Flood Damage

SCIENCE FOR STATE, NATIONAL, AND CIRCUMPOLAR ISSUES



Alaska contains many of the most important biological, hydrological, mineral, and energy resources of the Nation and is subject to a wide variety of natural hazards, particularly earthquakes, volcanic eruptions, and landslides. Alaska has large intact ecosystems, rich in natural resources with enormous pressures for development or preservation. Federal, State, and local managers often are at the center of national debate about reaping Alaska's natural resources and preserving its large-scale natural and wilderness integrity. The USGS ASC provides high-quality scientific information necessary for these resource decisions as well as for monitoring long-term change and human-induced effects on the environment.

IDENTIFYING NATURAL AND EMERGING HAZARDS

In Alaska each year, natural hazards may cause deaths and can cost millions of dollars due to the disruption of commerce, and the destruction of critical infrastructure. The USGS ASC science helps forecast and mitigate disasters and build resilient communities through cutting edge science, research, and monitoring tools and techniques pioneered here for Alaska's diverse and challenging landscape.

Monitoring programs that address natural and emerging hazards include:

- Monitoring volcanoes through the Alaska Volcano Observatory, a cooperative program of the USGS, University of Alaska Fairbanks Geophysical Institute, and the Alaska Division of Geological and Geophysical Surveys.
- Operating a streamflow monitoring network for flood warning and mitigation.
- Tracking emerging wildlife diseases, such as Avian Influenza (Highly Pathogenic H5N1) in migratory birds.

Volcanoes



Earthquakes



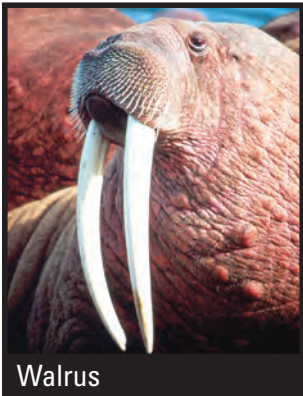
Stream-Channel Erosion



Floods



Wildlife Diseases



Walrus

PROVIDING THE SCIENCE FOR CONSERVATION AND MANAGEMENT OF TRUST LANDS AND TRUST SPECIES

Agencies of the Department of the Interior (DOI) manage more than 200 million acres of trust lands in Alaska. These include the lands and waters of National Parks, National Wildlife Refuges, Bureau of Land Management units, and Federal offshore areas. The USGS ASC provides the science for the management of Alaska's Federal trust lands and waters, including:

- Long-term inventory and monitoring
- Focused scientific study
- Digital elevation models
- Landcover and geological maps
- Studies of wildlife-habitat interactions
- Effects of climate change



Tundra Swan

The USGS ASC provides research on DOI trust species including:

- Marine mammals, including polar bears, walrus, and sea otters, protected by the Marine Mammals Protection Act
- Migratory birds, subject to Federal laws and International Treaties
- Anadromous fish
- Species assessed under the Endangered Species Act
- Wildlife and fish of key importance to Alaska Natives and rural subsistence harvest
- Recovery of sea otters and their ecosystem from the Exxon Valdez Oil Spill.



Sockeye Salmon



North Slope Lands and Water



Coastal Parks and Refuges

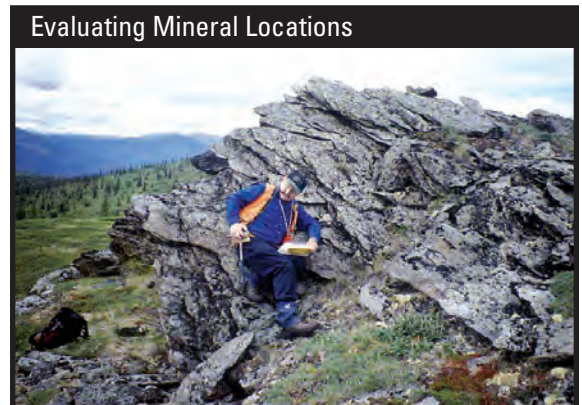


Interior Refuges & Parks

ASSESSING MINERAL RESOURCES

The USGS ASC conducts studies to gain a better understanding of the mineral-resource and mineral-environmental potential of all public lands in Alaska to provide information for land planners and decision makers about where mineral commodities are known and suspected in the Earth's crust and about the environmental consequences of the presence of those commodities. Studies focus on:

- Bedrock and surficial geologic mapping
- Rock and stream sediment geochemical surveys
- Airborne and ground geophysical investigations
- Mineral resource assessments



Evaluating Mineral Locations

WATER AND FISHERIES

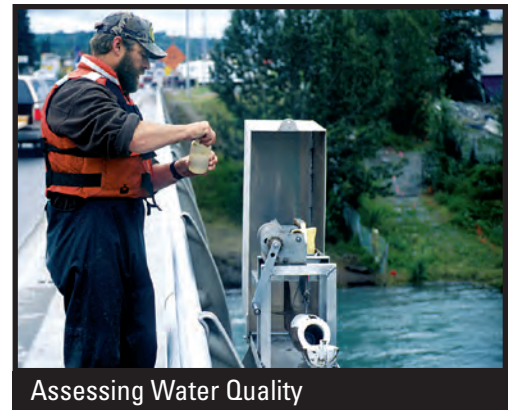
The USGS ASC monitors streamflow at more than 170 locations to:

- Monitor and forecast flooding and streambed scour
- Predict the magnitude and frequency of extreme events
- Provide hydrological assessments for water resources development
- Describe the status and trends in the quality of water resources
- Assure minimum instream flows for fisheries

Monitoring and modeling stream-channel erosion and morphology is critical for communities located on the banks of unstable rivers. Hydrological assessments and ground-water modeling can assist in evaluating water availability for communities and natural resource development.

USGS ASC provides research support for the protection of the health of Alaskan waters and their inhabitants. USGS ASC conducts fisheries research on public lands and waters. National parks, refuges, and preserves are homes of lakes, rivers, estuaries, bays, and marine waters that provide recreation, commercial uses, and subsistence. Topics include:

- Fish and other aquatic species for subsistence, commercial, and sport harvest
- Environmental conditions that affect aquatic populations
- Habitat use in rivers, estuaries and coastal areas
- Communities and human health
- Water temperature
- Changes in sea ice extent
- Coastline erosion



Assessing Water Quality



Streamgaging



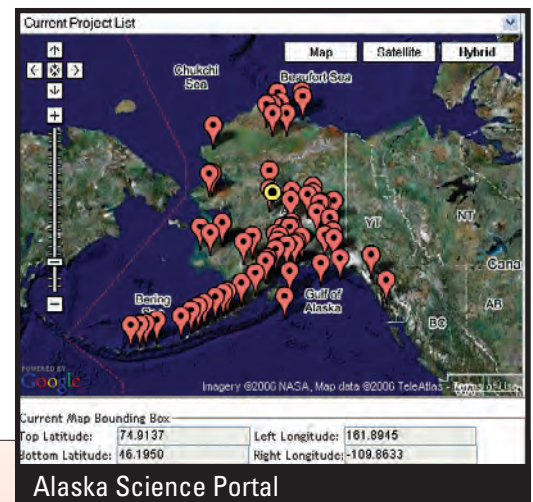
Measuring Streamflow



Investigating Aquatic Ecology

Juvenile Salmon

Whitefish



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Getting the Information Out!

<http://alaska.usgs.gov/portal>

The portal is a searchable, web map-based tool to facilitate public and partner access to information on nearly 150 subjects under USGS study in the Nation's largest State. It also provides access to more detailed information available in USGS web pages across the Nation.

*All photos taken by USGS Alaska Science Center employees.