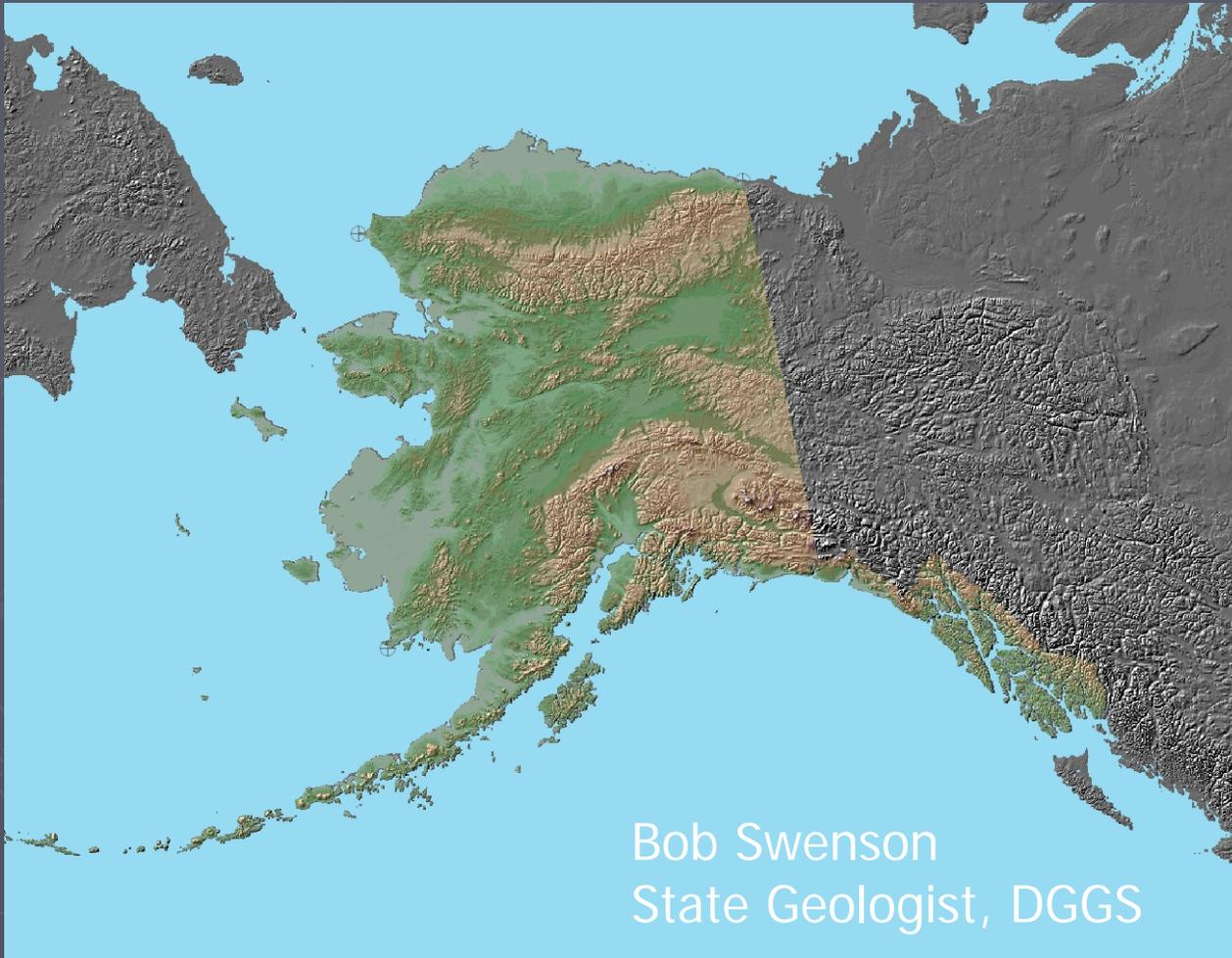




Division of Geological & Geophysical Surveys Program



Mission: Determine the potential of Alaskan land for production of metals, minerals, fuels, and geothermal resources, the locations and supplies of groundwater and construction material; and the potential geologic hazards to buildings, roads, bridges, and other installations and structures (AS 41.08.020)

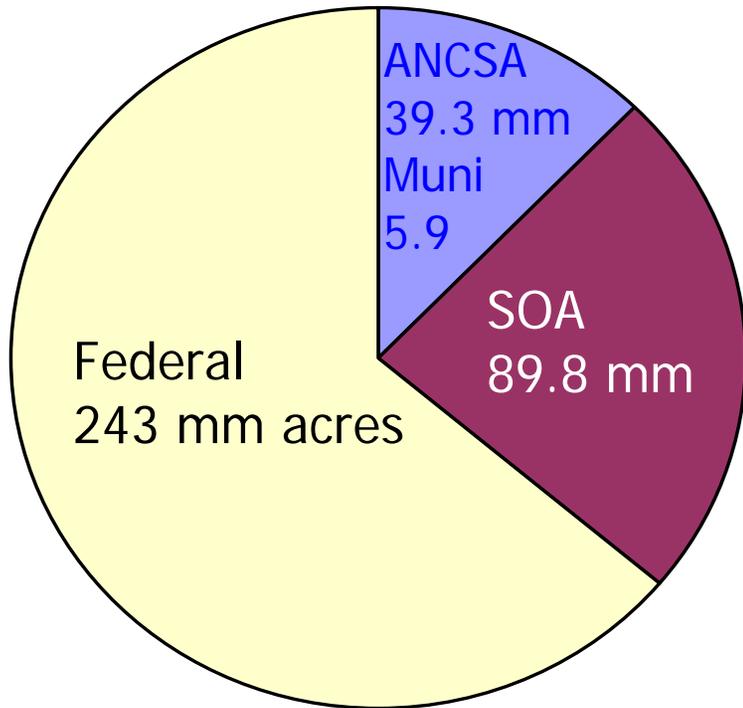


Bob Swenson
State Geologist, DGGS

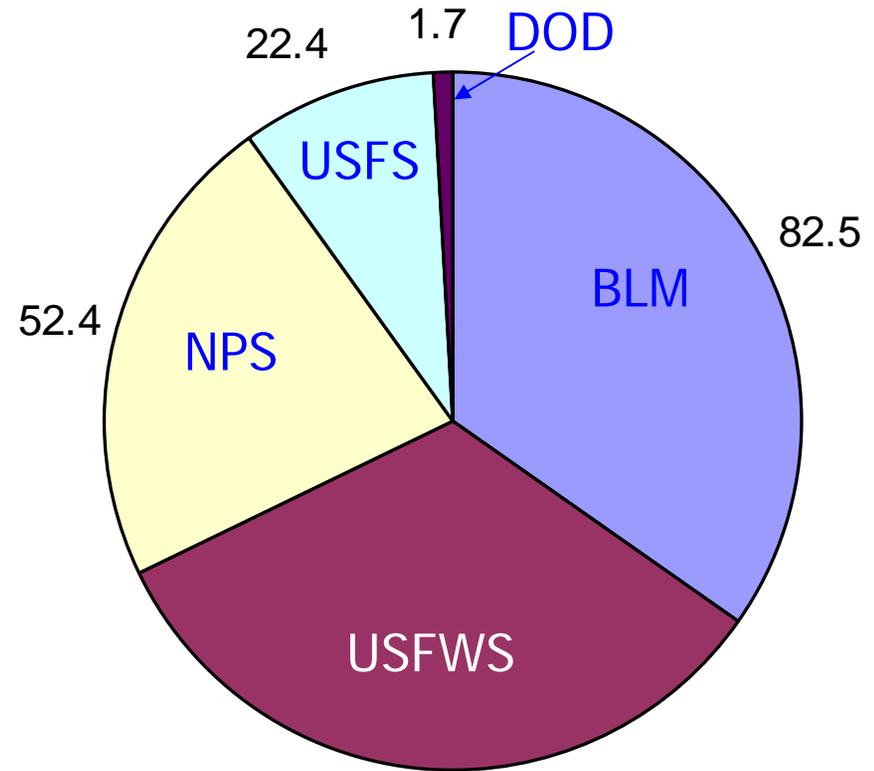
Interesting facts

- ▶ Alaska's natural resource endowment unequaled in US
- ▶ Alaska has more seismicity, volcanoes, and geologically hazardous areas than any other state in the US.
- ▶ On 156,000 sq mi. (~100 mm acres) State land
 - Only about 10,000 sq miles mapped at 1:63,360 or better
 - DGGs averages between 600 to 1000 sq mi / year
 - To date only 6.5 million acres of the 40 million acres of State land with minerals potential has been mapped @ 1" = 1 mile
 - Only 2.1 million acres of the 22 million state acres with energy potential has been mapped
- ▶ SOA has spent over \$ 31 million dollars over the last 10 years on geologic assessment of state resources
 - An additional \$18 million Federal money spent through DGGs alone
 - DGGs involved in collaborative programs with over 10 other agencies and organizations
 - Federal natural resource programs being O'ed out or significantly reduced
 - ▶ BLM solid minerals group; DOE fossil fuels; USGS minerals and Energy groups

Land Ownership in Alaska

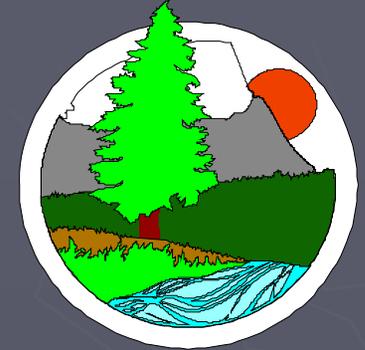


Acreages Conveyed



Federal Breakdown

Engineering Geology Section Ongoing Projects



Tsunami Inundation Mapping for Alaska Coastal Communities

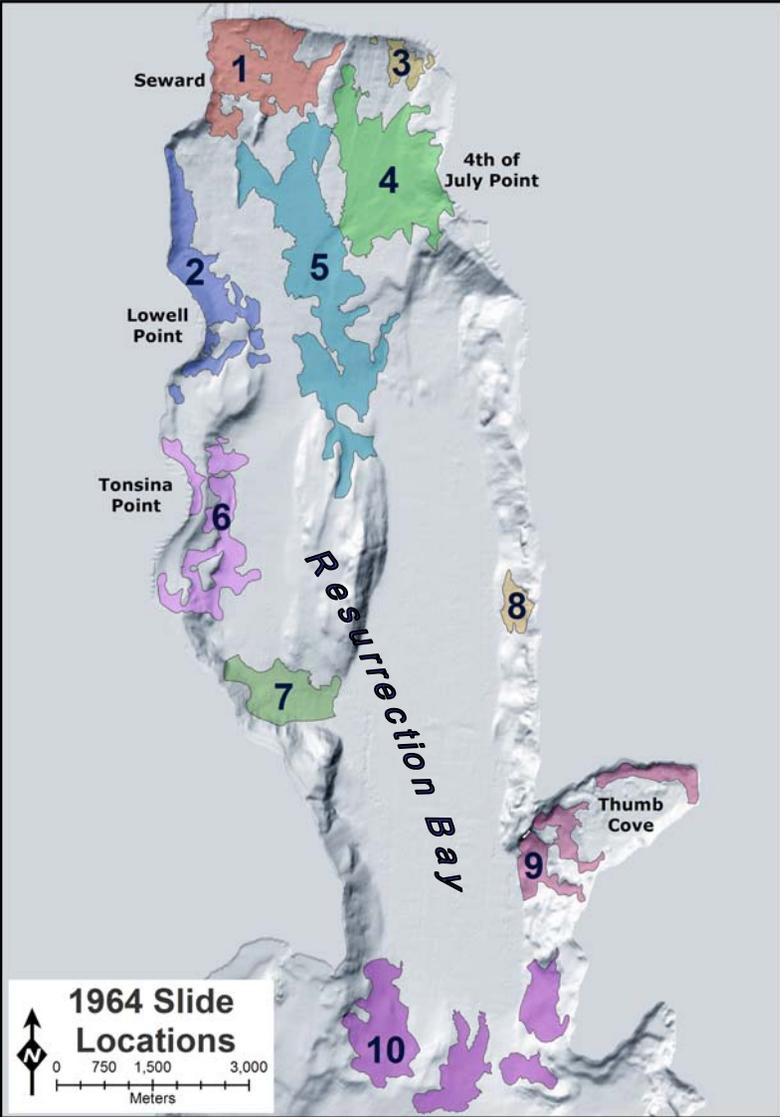
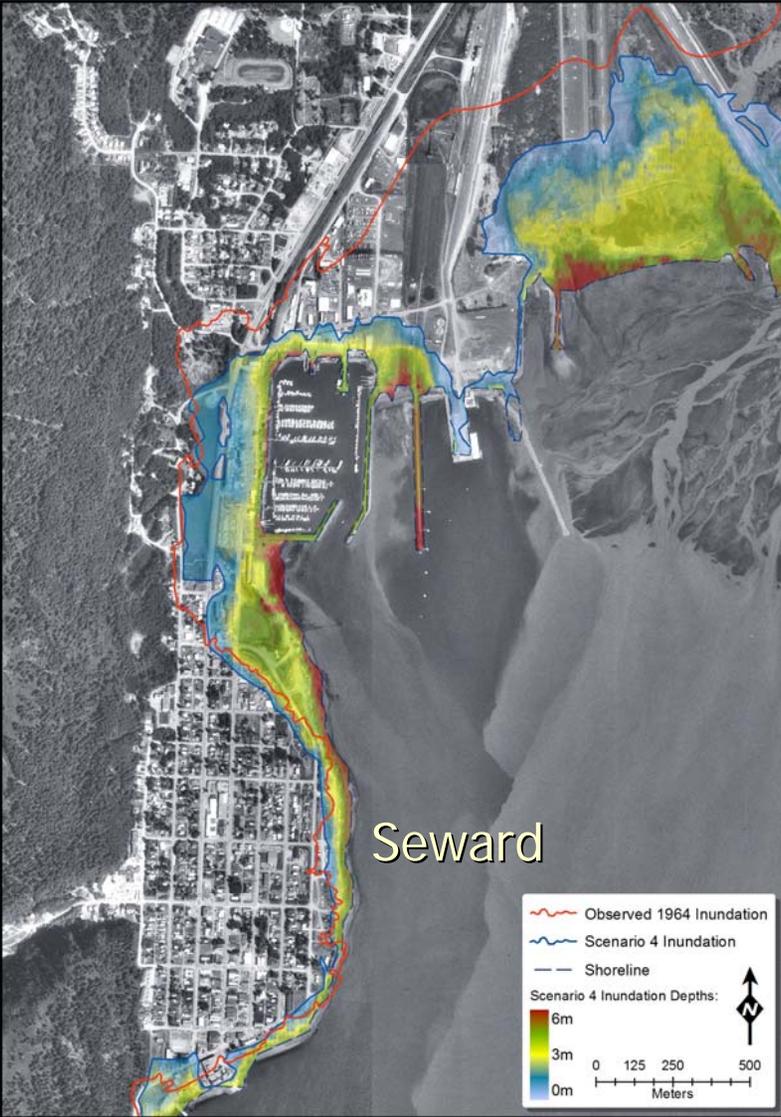
Alaska Coastal Management Program: Natural Hazards

MapTEACH: Field-Geoscience Outreach and Education in Rural Alaska

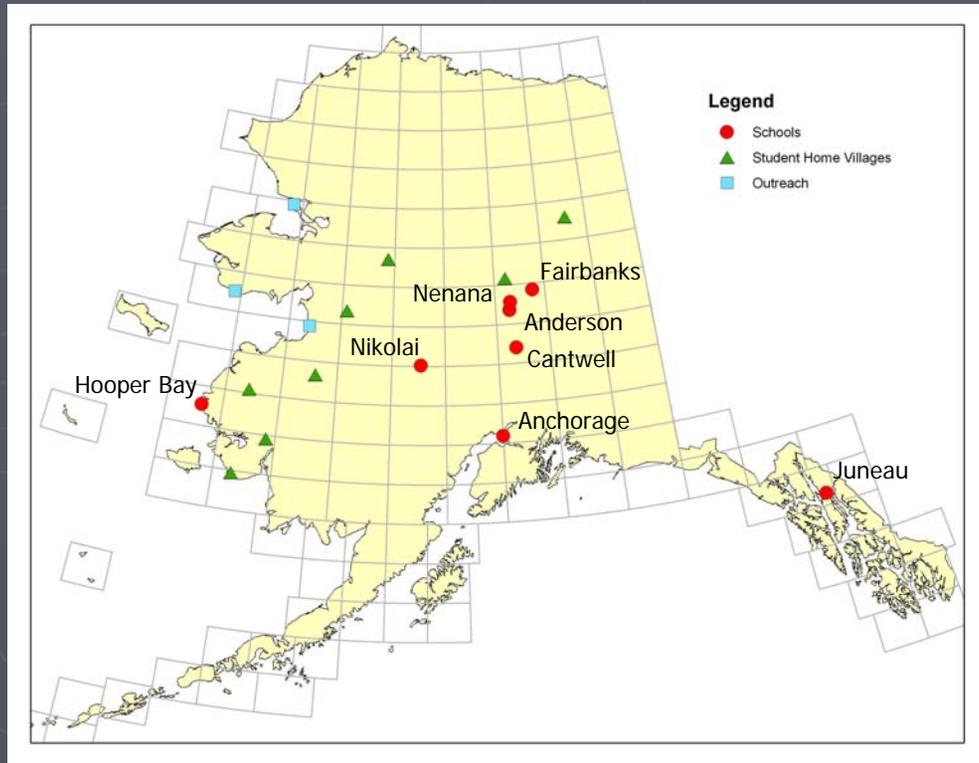
Other Projects:

- Pending and Legacy
- Seismic Hazards Safety Commission

Tsunami Inundation Mapping for Alaska Coastal Communities

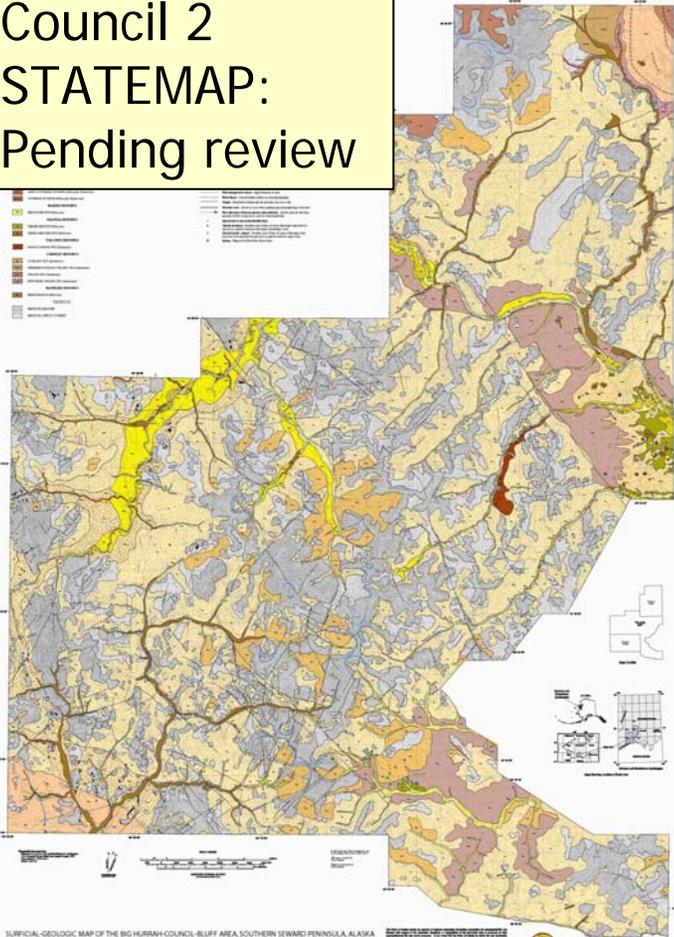


MapTEACH: Field-Geoscience Outreach and Education in Rural Alaska

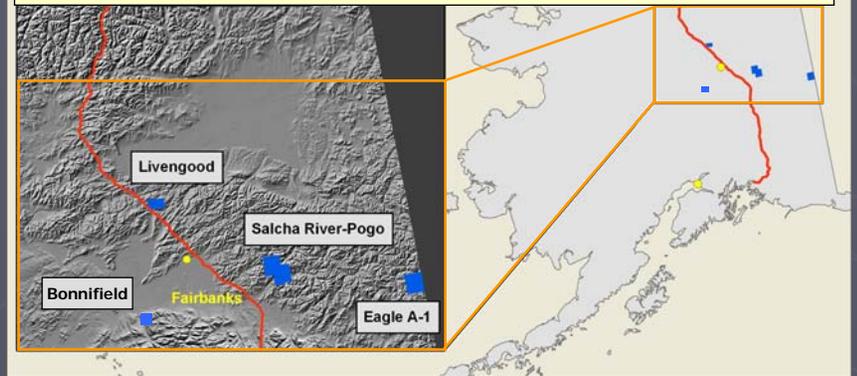


Other Projects

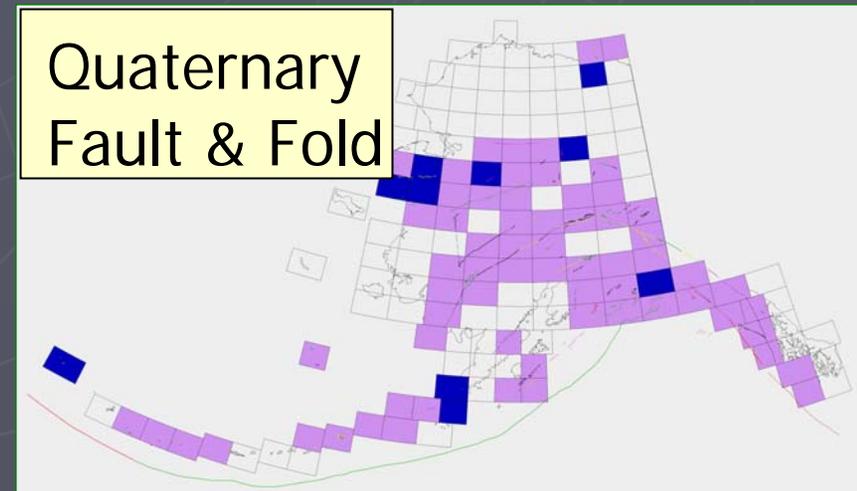
Council 2
STATEMAP:
Pending review



Legacy Surficial Maps



Quaternary
Fault & Fold



Alaska Seismic Hazards Safety Commission



[State of Alaska](#) > [Office of the Governor](#) > [Boards and Commissions](#)

MISSION

The Alaska Seismic Hazards Safety Commission is charged by statute (AS 44.37.067) to recommend goals and priorities for seismic risk mitigation to the public and private sectors and to recommend policies to the governor and legislature to reduce the state's vulnerability to earthquakes. The Commission consists of eleven members appointed by the Governor from the public and private sectors for three-year terms. It is administered by the Department of Natural Resources, Division of Geological & Geophysical Surveys (DGGGS).

EARTHQUAKE RISK IN ALASKA

Scientists have long recognized that Alaska has more earthquakes than any other region of the United States ...[\[more\]](#)

ALASKA EARTHQUAKE STATISTICS

Alaska is the home of the second largest earthquake ever recorded (1964 Great Alaska Earthquake, magnitude 9.2)...[\[more\]](#)

2007 REPORT TO THE GOVERNOR AND STATE LEGISLATURE

This second report to the Governor and Legislature from the Alaska Seismic Hazards Safety Commission reiterates the priority issues and goals...[\[more\]](#)

MEDIA RELEASES

- › [New state advisory commission tackles earthquake risk](#)
- › [State seismic commission releases report on centennial of San Francisco quake](#)

OTHER LINKS

- › [Alaska Earthquake Information Center](#)
- › [West Coast & Alaska Tsunami Warning Center](#)
- › [Alaska Div. of Emergency Services & Emergency Management - Mitigation Page](#)
- › [Pamphlet: Are you prepared for the next big earthquake in Alaska?](#)



Upcoming

Meeting - Teleconference, January 31, 2008, 9 a.m. to 11 a.m

Meeting Agendas

- › [December 6, 2007](#)
- › [October 25, 2007](#)
- › [September 18, 2007](#)
- › [August 23, 2007](#)
- › [May 30 & 31, 2007](#)
- › [April 25, 2007](#)
- › [Agenda archive](#)

Meeting Minutes

- › [September 18-20, 2007](#)
- › [August 23, 2007](#)
- › [May 30 & 31, 2007](#)
- › [April 25, 2007](#)
- › [March 23, 2007](#)
- › [Minutes archive](#)

More Information

- › [Reports/Presentations](#)
- › [Resolutions](#)
- › [Rules of Procedure](#)
- › [ASHSC Charter](#)

Membership:

Alaska Seismic Hazards Safety Commission

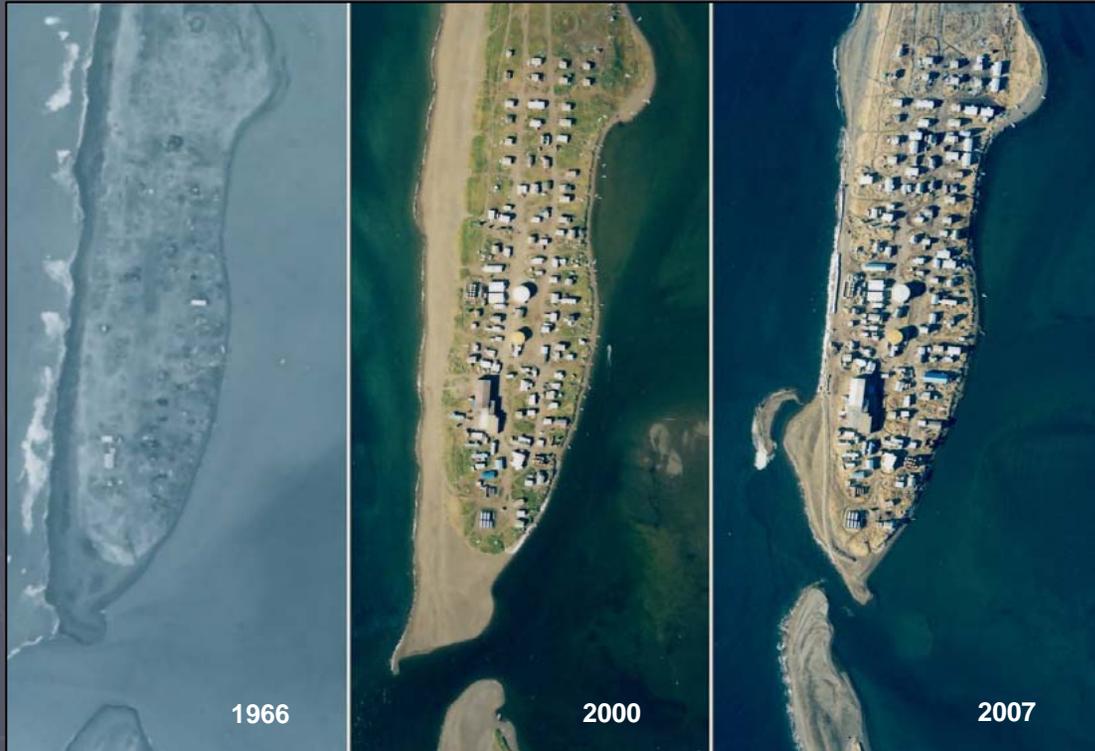
Report to the Governor and State Legislature
March 16, 2007



Concerned residents of Mentasta, Alaska listen to a briefing after on-site surveys by damage investigators immediately following the 2002 Denali fault earthquake. Concern over potential damage from aftershocks and future large earthquakes brought the community together as never before. This was the first earthquake since 1964 after which damage investigation teams in Alaska were sent to survey damage and report their findings. This event also showed the value of having teams previously trained in post-earthquake damage investigation techniques. The usefulness of this information for public information and future earthquake planning is a true example of the value of seismic-risk mitigation efforts. Photo by John L. Aho.

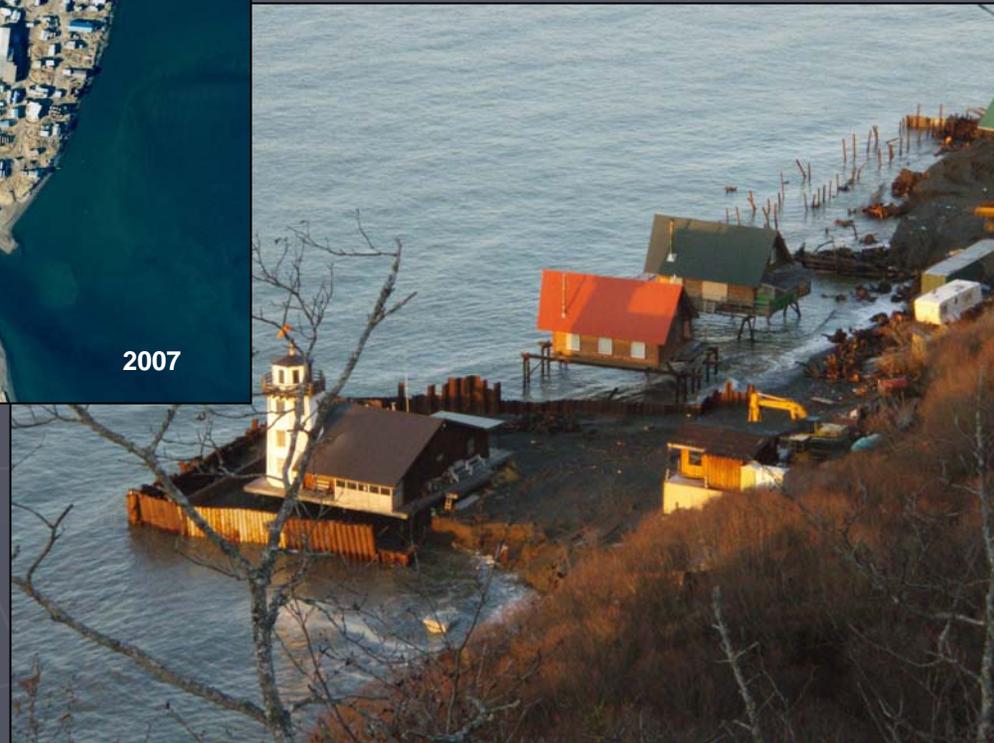


Alaska Coastal Management Program: Natural Hazards



*"Development in a **natural hazard area** may not be found **consistent** unless the applicant has taken appropriate measures in the siting, design, construction, and operation of the proposed activity to protect public safety, services, and the environment from potential damage caused by known natural hazards."*

Kivalina



Hawk's Beach, Kenai Peninsula



Alaska Division of Geological & Geophysical Surveys Geologic Mapping Advisory Board Winter 2008 Meeting



VOLCANOLOGY

New section – 2007

5 PFT staff + interns

Geologist / manager / petrologist

Geologist / field geologist

Geologist / GIS specialist

Geologist / database design & construction

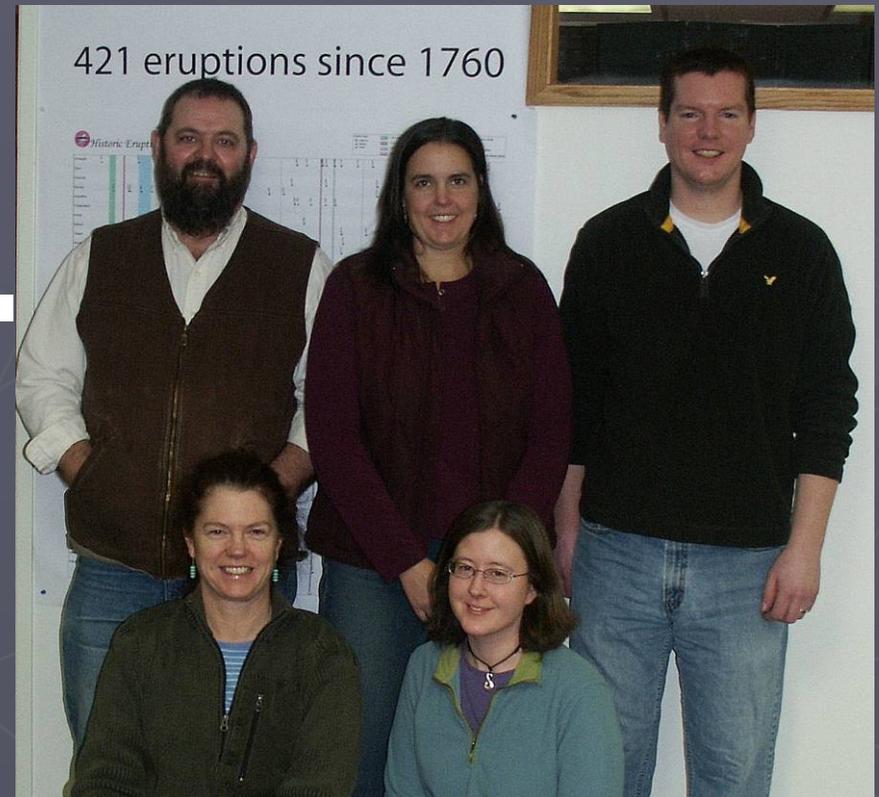
Programmer-analyst / webmaster & programmer

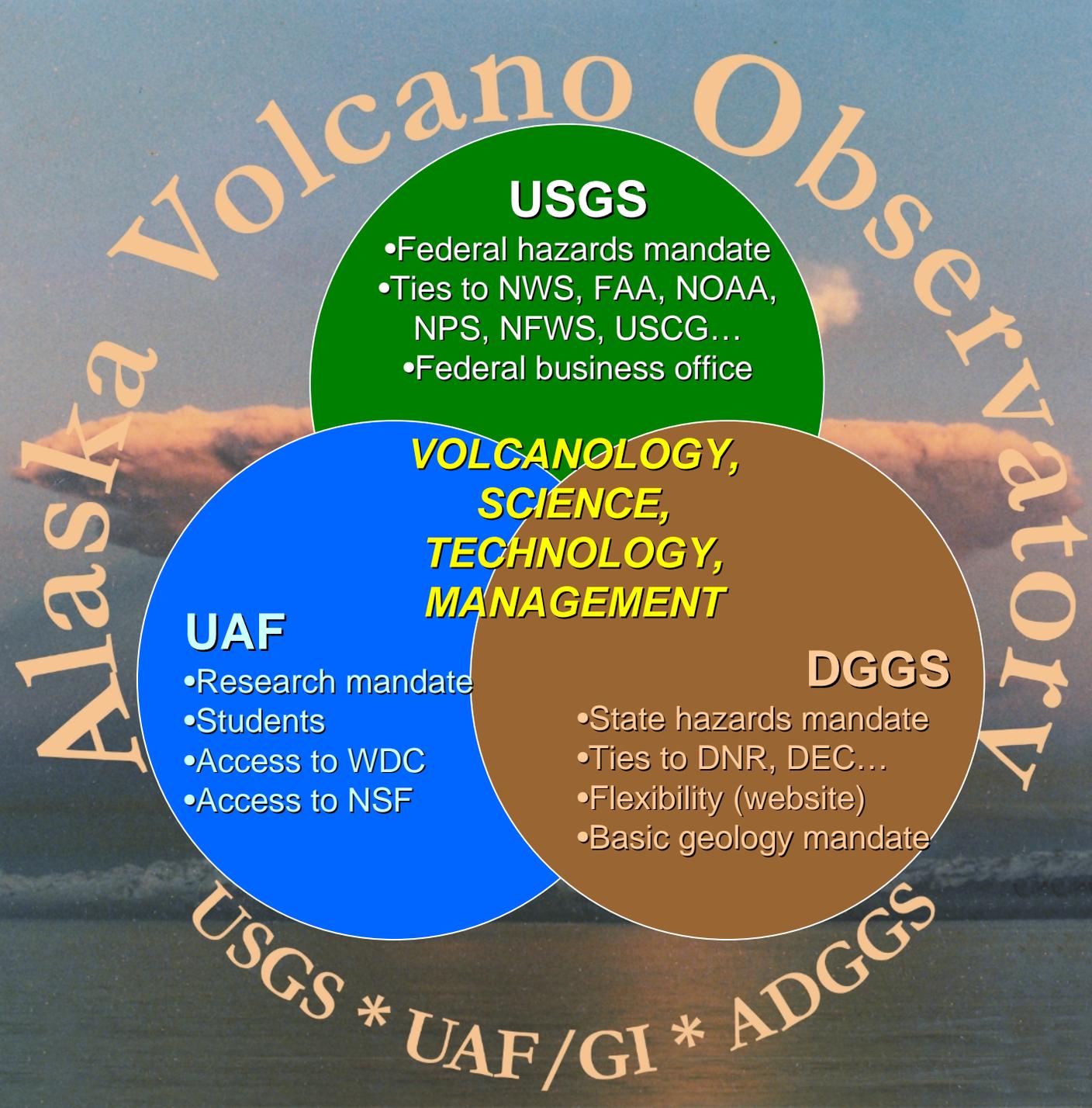
Externally funded

Cooperative agreements with USGS

Alaska Volcano Observatory

DGGS portion of Interagency program





AVO -- a cooperative program of the USGS, UAF/GI, and ADGGS

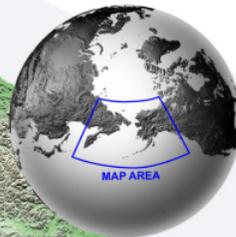
Program strength from differences as well as similarities



Active volcanoes of Kamchatka and the northern Kurile Islands

Ksudach	Karymsky (6)	Komarov	Sheveluch (1)
Zheltoivsky	Dzenzursky	Gamchen	Ushkovsky
Iliyinsky	Zhupanovsky	Kronotsky	Klyuchevskoy (2)
Koshelev	Koryaksky (7)	Krashenninnikov	Bezymianny (3)
Kambalny	Avachinsky (8)	Uzon	Plosky Tolbachik (4)
Alaid (11)	Gorely (9)	Kikhpinych	Ichinsky
Ebeko	Opala	Bolshoi Semiachik	New Tolbachik
Chikurachki	Mutnovsky (10)	Maly Semiachik	Kizimen (5)
Fuss Peak			
Karpinsky Group			

(Volcanoes in **bold-underline** are seismically monitored.)



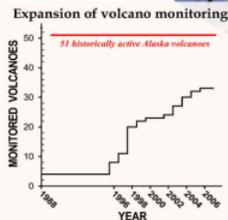
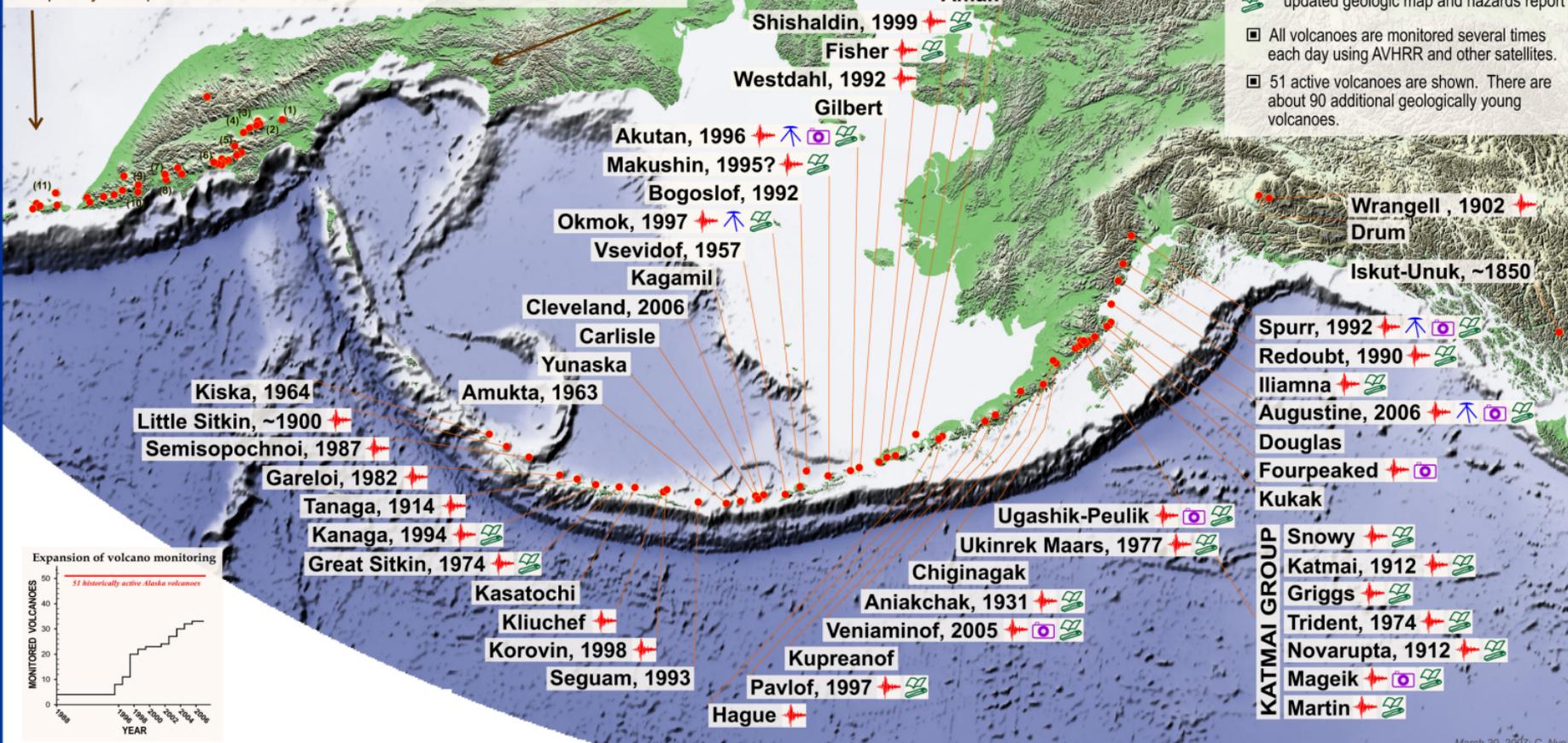
Active volcanoes of Alaska

monitoring status

EXPLANATION

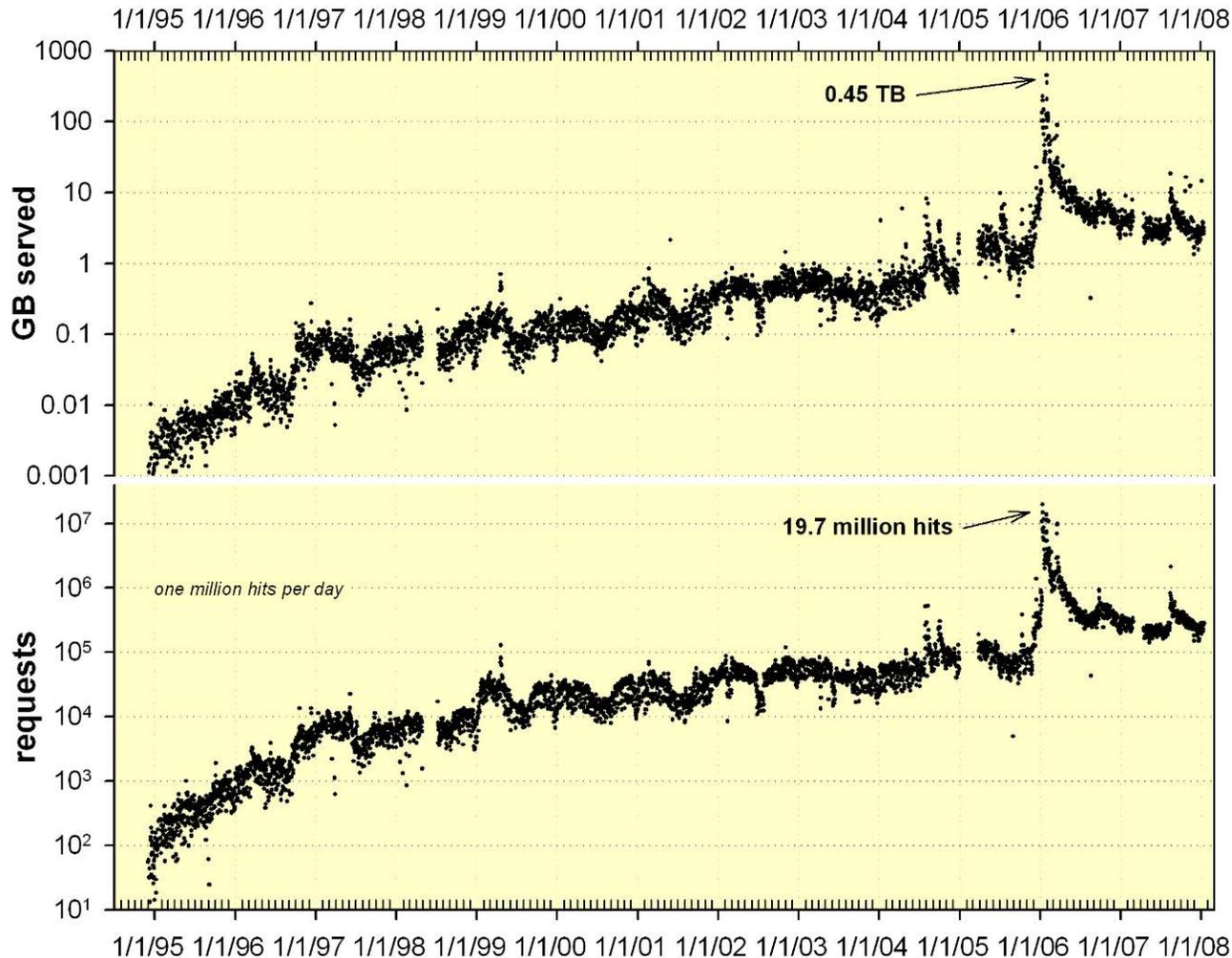
- 1952 year of most recent major eruption
- ↗ seismic network
- ↕ continuous deformation network (GPS)
- 📹 telemetered remote camera (webcam)
- 📄 updated geologic map and hazards report

- ☑ All volcanoes are monitored several times each day using AVHRR and other satellites.
- ☑ 51 active volcanoes are shown. There are about 90 additional geologically young volcanoes.



KATMAI GROUP	Snowy ↗ 📄
	Katmai, 1912 ↗ 📄
	Griggs ↗ 📄
	Trident, 1974 ↗ 📄
	Novarupta, 1912 ↗ 📄
	Mageik ↗ 📄 📹
	Martin ↗ 📄

daily AVO web traffic -- 12/14/1994 - 1/16/2008



1,000x increase in traffic since site first launched

~250x increase in traffic during Augustine eruption

~5x increase in "base" traffic since Augustine eruption

~200 dbase tables, 60,000 records, 186 GB of data.

Alaska's Fossil Energy Exploration Frontiers



Sedimentary Basins of Alaska

Alaska Division of Geological & Geophysical Surveys

www.dggs.dnr.state.ak.us



Energy Section Programs/Projects:

Basin Scale Projects

- Cook Inlet Geology Program
- Brooks Range Foothills North Slope Program
- Gas Hydrates
- Bristol Bay-Alaska Peninsula Frontier Basin Studies

Regional Efforts

- Alaska Coal Database
- Energy Data Inventory

Base Map Source: David Hóuseknecht, USGS

Cook Inlet Geology Program

Objective

Provide relevant new data to catalyze exploration for oil and gas and promote informed land use decisions

Focus

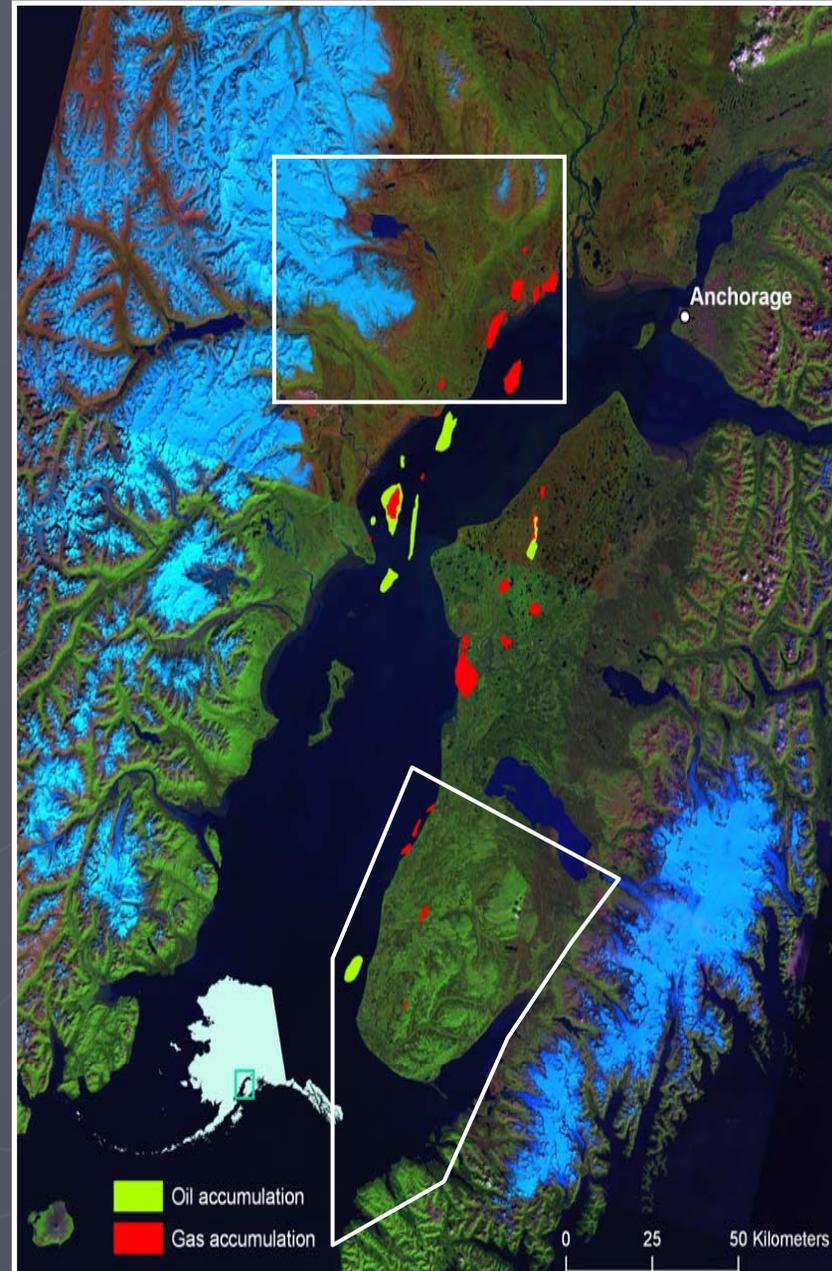
Initial focus on Tertiary strata

- 1.Reconstruct depositional systems
- 2.Evaluate reservoir potential
- 3.Evaluate compositional parameters controlling reservoir quality
- 4.Subsidence/uplift history

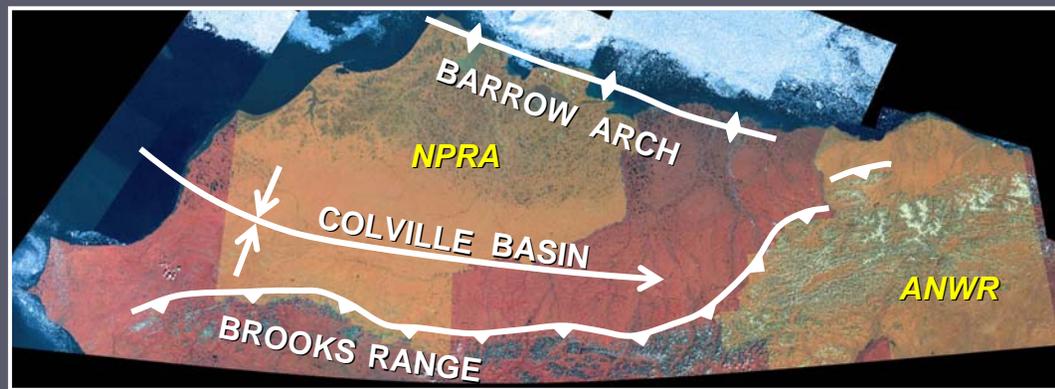
Future focus on Mesozoic?

Funding

- 1.SOA - general fund and CIPs
- 2.Industry consortium



North Slope Program



The Colville Basin of Alaska's North Slope represents one of the most promising onshore exploration frontiers in North America

Program Objective

- ▶ Provide high quality, publicly available geologic data to stimulate exploration

Program Focus

- ▶ Stratigraphic and structural studies of economically significant units
- ▶ Characterization of the regional petroleum system
- ▶ Detailed 1:63,360-scale geologic mapping of economically significant areas

Primary Investigators

- ▶ Program is directed by DGGS in close collaboration with DOG
- ▶ Geologists also work closely with the USGS and UAF

Data Distribution & Products

- ▶ Topical publications (i.e. stratigraphy, structure, etc.)
- ▶ Periodic 1:63,360 geologic maps
- ▶ Numerous public presentations (AAPG, GSA, AGS, etc.)
- ▶ Technical review meeting (Anchorage)
- ▶ Lead annual 2-day field trip on North Slope

Funding Sources

- ▶ DGGS general fund
- ▶ State CIP
- ▶ Federal StateMap
- ▶ Industry consortium

Hydrocarbon Systems, Basin Analyses: Bristol Bay - Alaska Peninsula DGGS map advisory board 2008/1/22

Rocky Reifenstuhl
AKDGGS

Paul Decker * & Ken Helmold *
Bob Gillis & Andrea Loveland
Robert Blodgett

* AKDOG



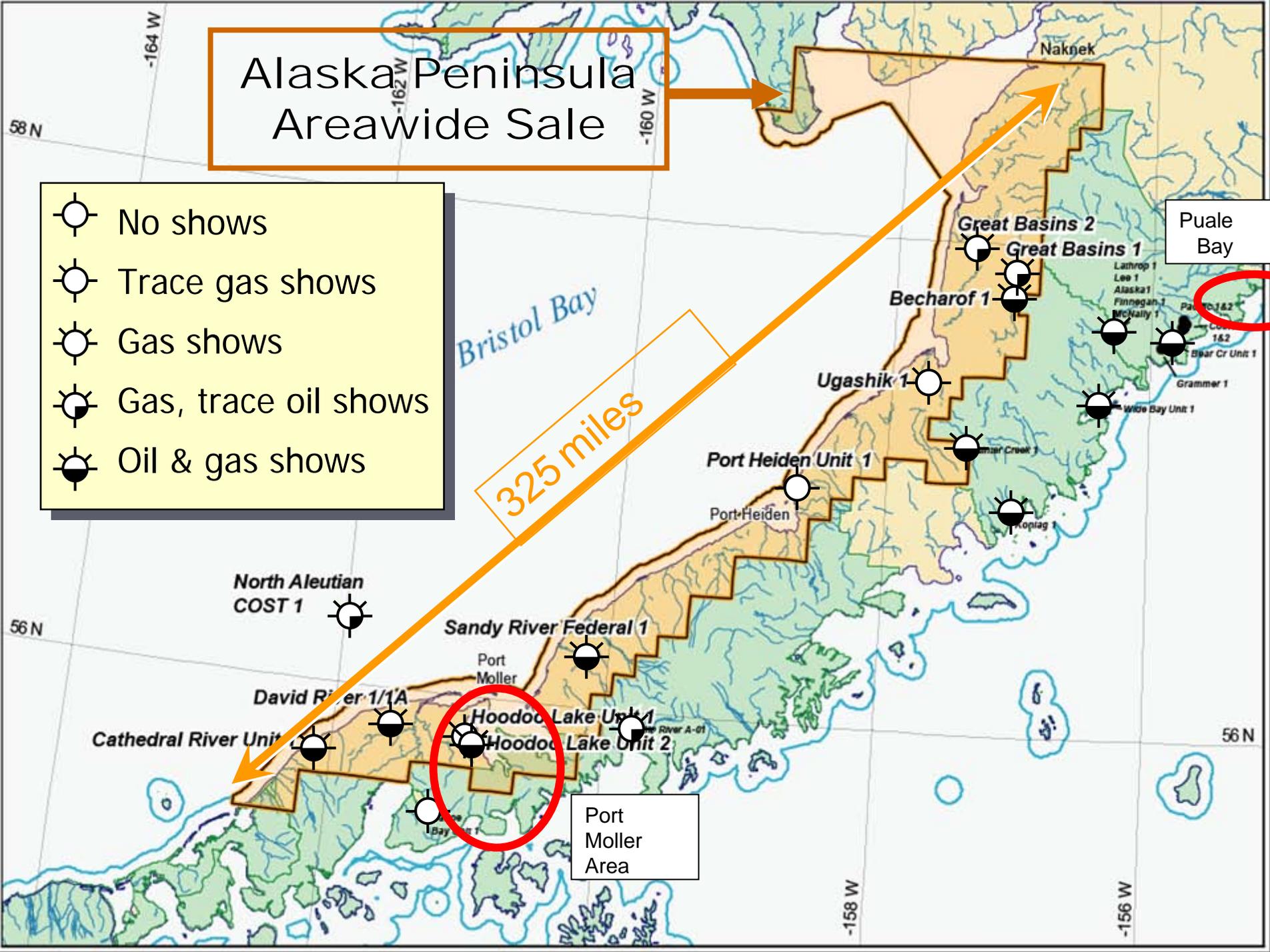
Alaska Peninsula Areawide Sale

- ☉ No shows
- ☉ Trace gas shows
- ☉ Gas shows
- ☉ Gas, trace oil shows
- ☉ Oil & gas shows

325 miles

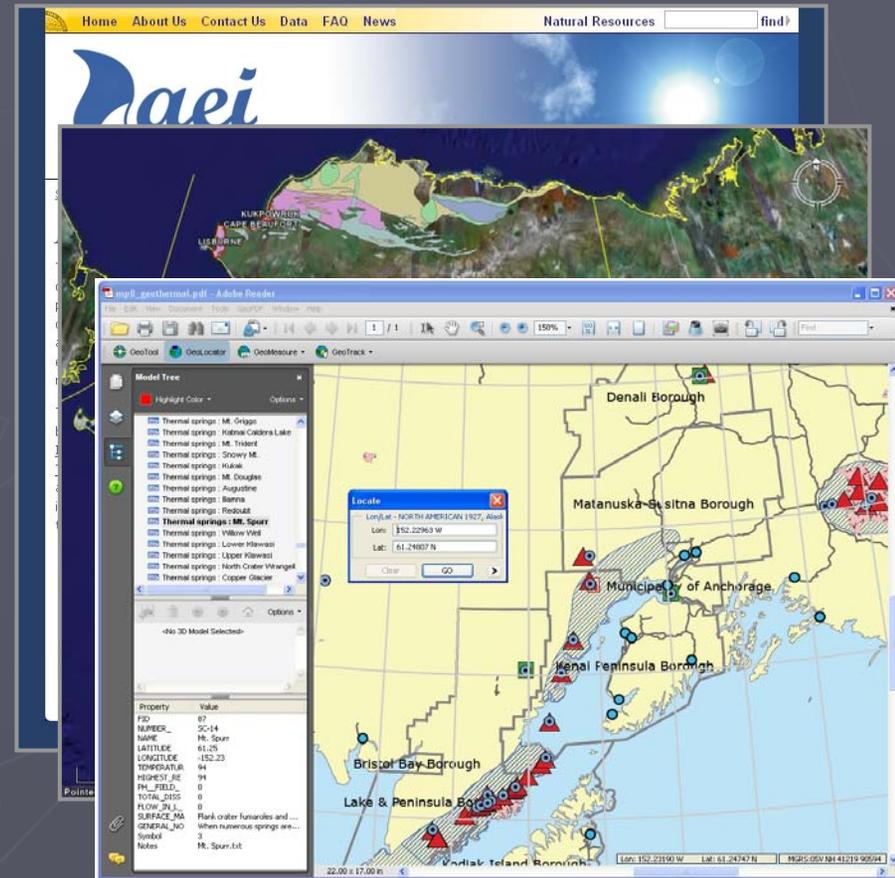
Puale Bay

Port Moller Area



Alaska Energy Inventory

- ▶ Consolidating Alaska's energy resources data
 - Resource data suitable for electrical power generation and space heating needs
 - Natural gas, coal, coalbed and shalebed methane, gas hydrates, geothermal, wind, hydro, and biomass
 - Available energy meeting local needs?
- ▶ Making the data accessible
 - Alaska Mapper, Google Earth, and Terrago Technologies' GeoPDF format
 - <http://energyinventory.alaska.gov>
 - Query and download data; view data with existing infrastructure
- ▶ Involvement
 - DGGS, Alaska Energy Authority, DNR Division of Forestry, DNR LRIS, UAF/GINA
 - CCHRC, USGS, USDOE, DNR DOG, BLM, DMLW, Div. Agriculture, DEC



Geologic Communications

▶ We get the data out the door

▶ 10 staff members

- Public outreach
- Information management
- Publications and website



▶ The “multitalented” section

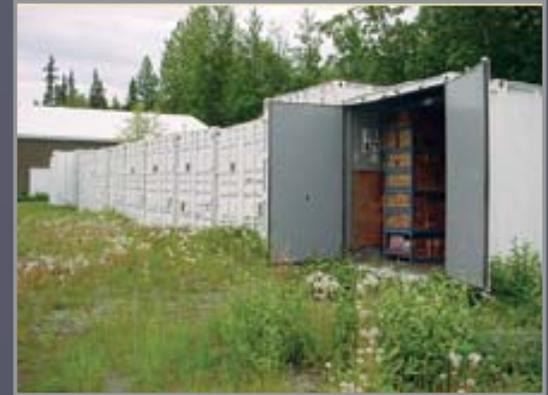
- GIS, programming, computer/network support, data preservation, web design, sales, publications, and public outreach



GEOLOGIC MATERIALS CENTER ONLINE SAMPLE CATALOG

► Project goals

- 1) Provide a secure, reliable catalog of the geologic materials
- 2) Provide tools for searching for the appropriate materials
- 3) Assess sample availability and condition



Converting the sample "pile" into a catalog is a difficult task.

► Agency Integration

- Oil and gas industry samples
- Catalog of U.S. Bureau of Mines
- U.S. Bureau of Land Management mineral and coal samples

...into the same database and online search engine

DGGS Website

- ▶ Powerful means of distributing data
 - Primary mechanism for publication and information distribution
 - 7,000 text reports, 9,000 oversize sheets and 30+ GIS datasets
 - Searchable map index, interagency bibliography, geochemistry, publications and data ■
- ▶ Website overhaul
 - W3C (World Wide Web Consortium) web accessibility guidelines
 - Usability
 - Analysis of web page logs

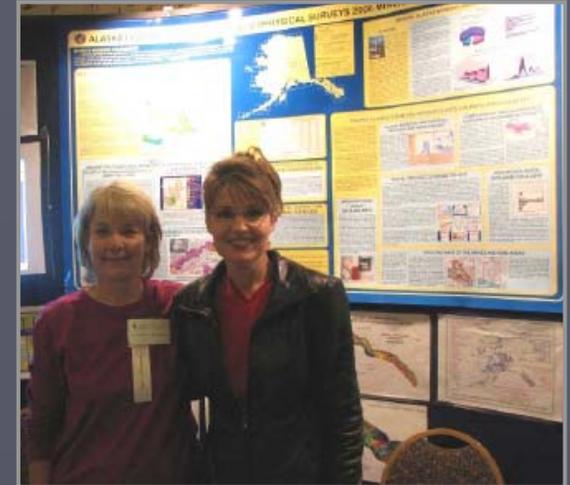


The 1990s: Life in the "fast lane" on the WWW

PUBLICATIONS AND OUTREACH PROJECT

- ▶ Managing the data...with a smile
 - Data collected, analyzed, and assembled by all other sections
 - Annual report
 - Communicate DGGs progress and announce the latest publications
 - Represent the division
 - Manage sales and distribution of reports, maps, and digital data
 - Outreach activities

- ▶ Distributing Digital Data
 - Make DGGs geospatial data available to the widest possible audience
 - Consistent, quality, well-documented data
 - Quickly implemented into other projects and used appropriately



Natural Resource Tech., Joyce Outten, with Governor Palin. Joyce should also be featured in *Vogue*.



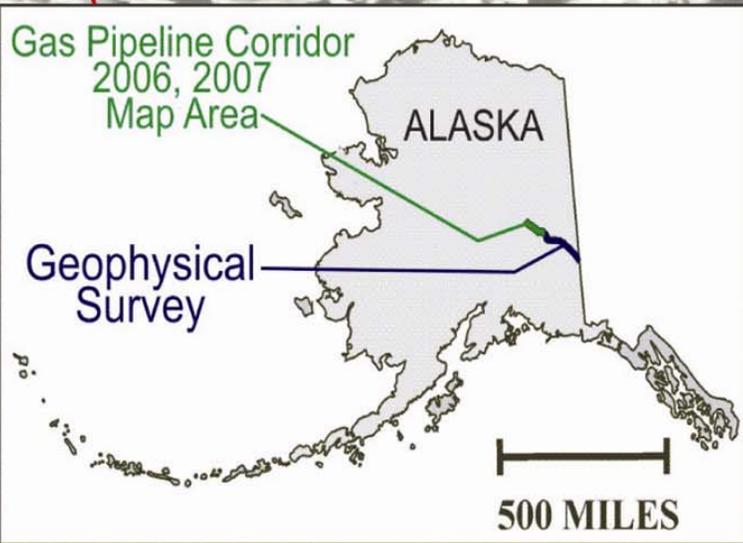
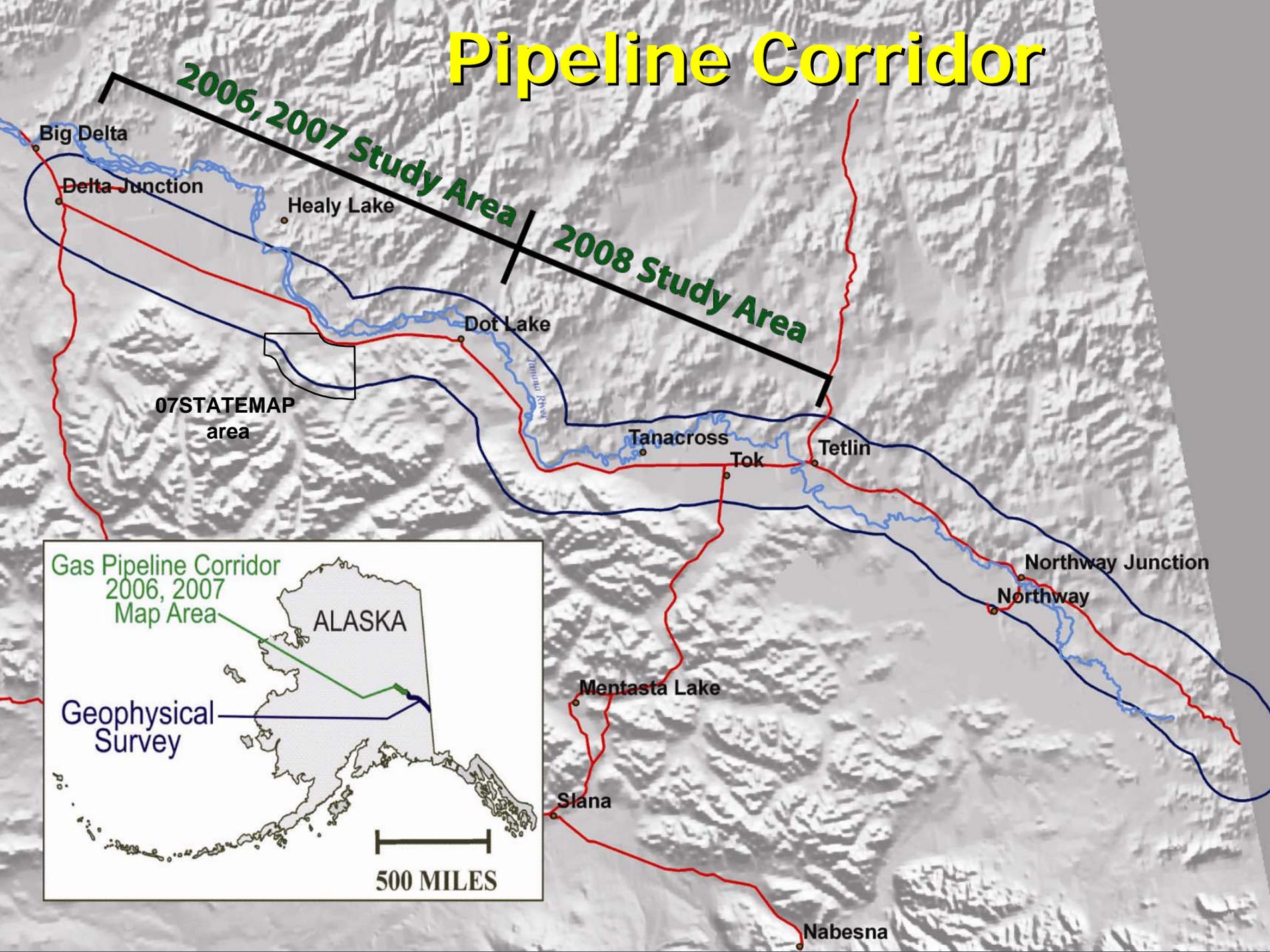
FY07 STATEMAP Pipeline Corridor



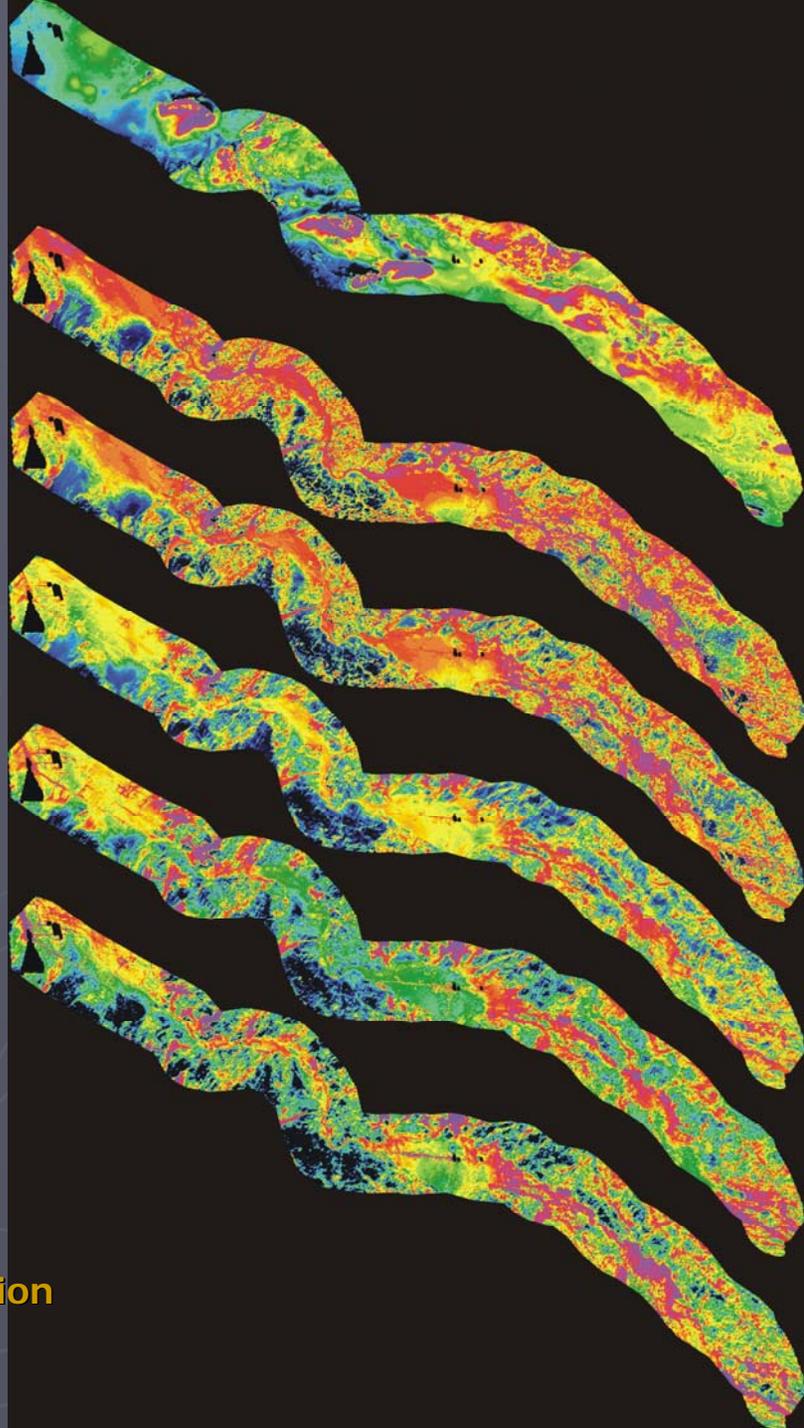
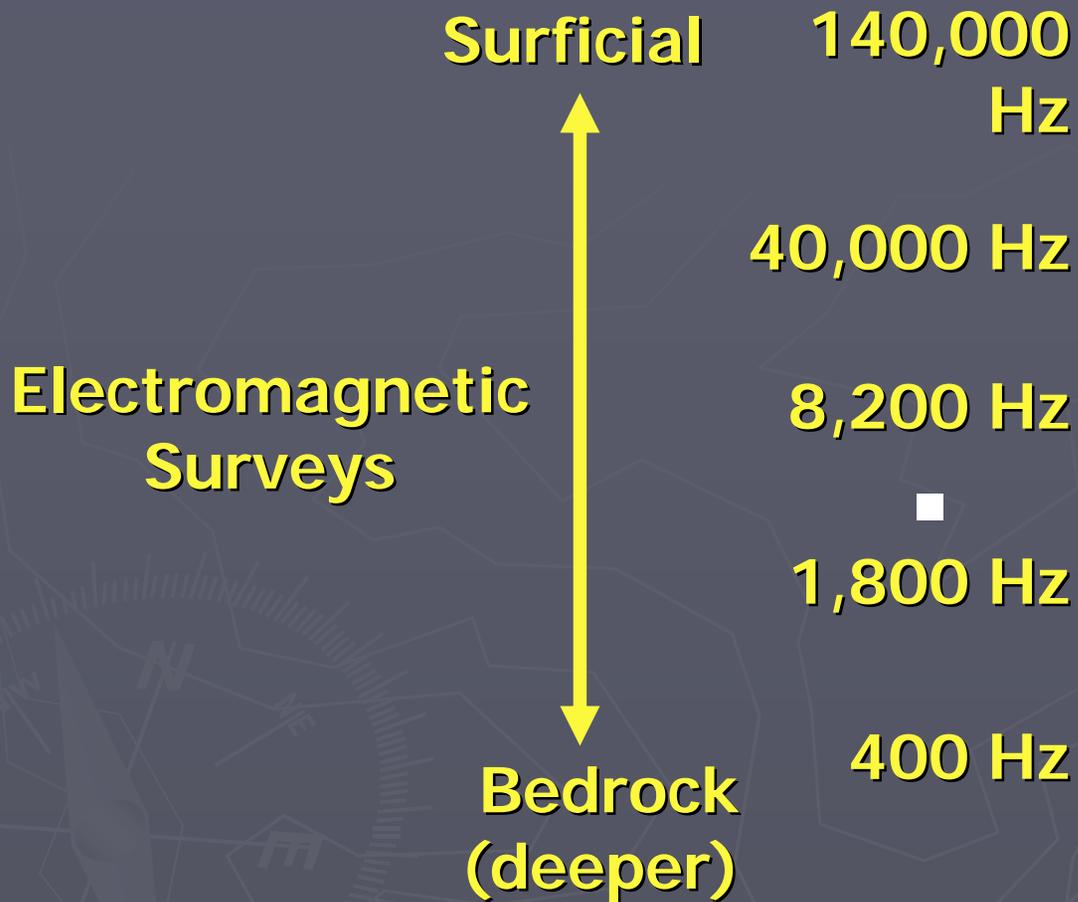
- Geologic Mapping
 - Bedrock
 - Surficial
- Geohazards
 - Active faulting
 - Permafrost
- Resources
 - Mineral
 - Material



Pipeline Corridor



Total Field Magnetic Survey



Reference:
Burns, L.E., Fugro Airborne Surveys, and Stevens Exploration Management Corp., 2006, Alaska Division of Geological & Geophysical Surveys Geophysical Report 2006-6, 1 disk.

Corridor age data

- 2006, ArAr Age Dates
b=Biotite, h= Hornblende
- FissionTrack Age
- 2007, ArAr Submitted
- Bedrock Faults

