Alaska Division of Geological & Geophysical Surveys: Director Introduction and Agency Update

Dr. Erin Campbell
Director and Alaska State Geologist

Alaska Miners Association Convention 2025
Anchorage, Alaska

Director Introduction

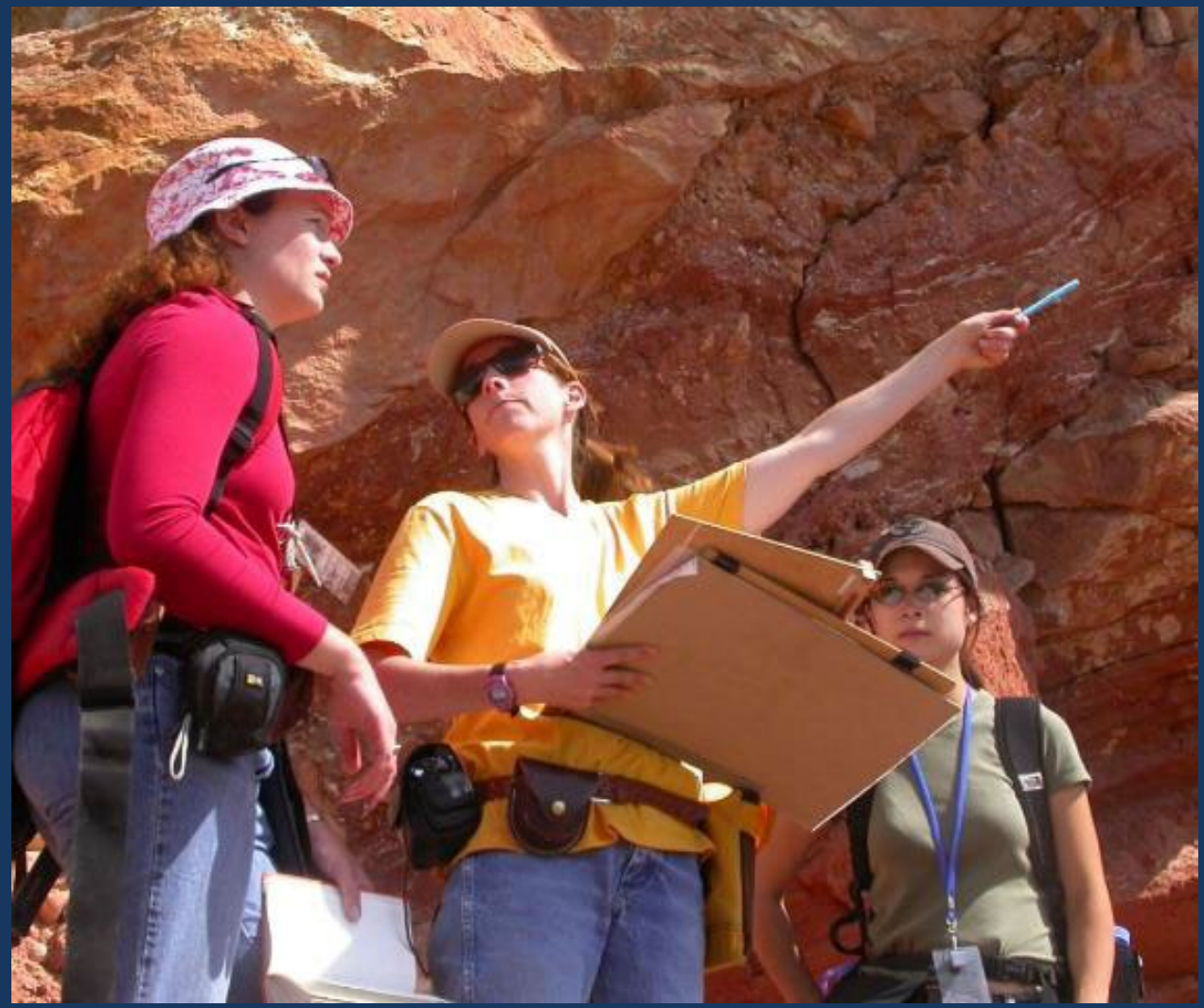
Occidental College
- BA Geology, Minor Math

University of Wyoming
- PhD Structural Geology, Minor Geophysics
- Dissertation: Low-angle normal faulting and magmatism in SE California

Chevron Corporation

University of Wyoming

Wyoming State Geological Survey



Director Introduction

Wyoming State Geologist

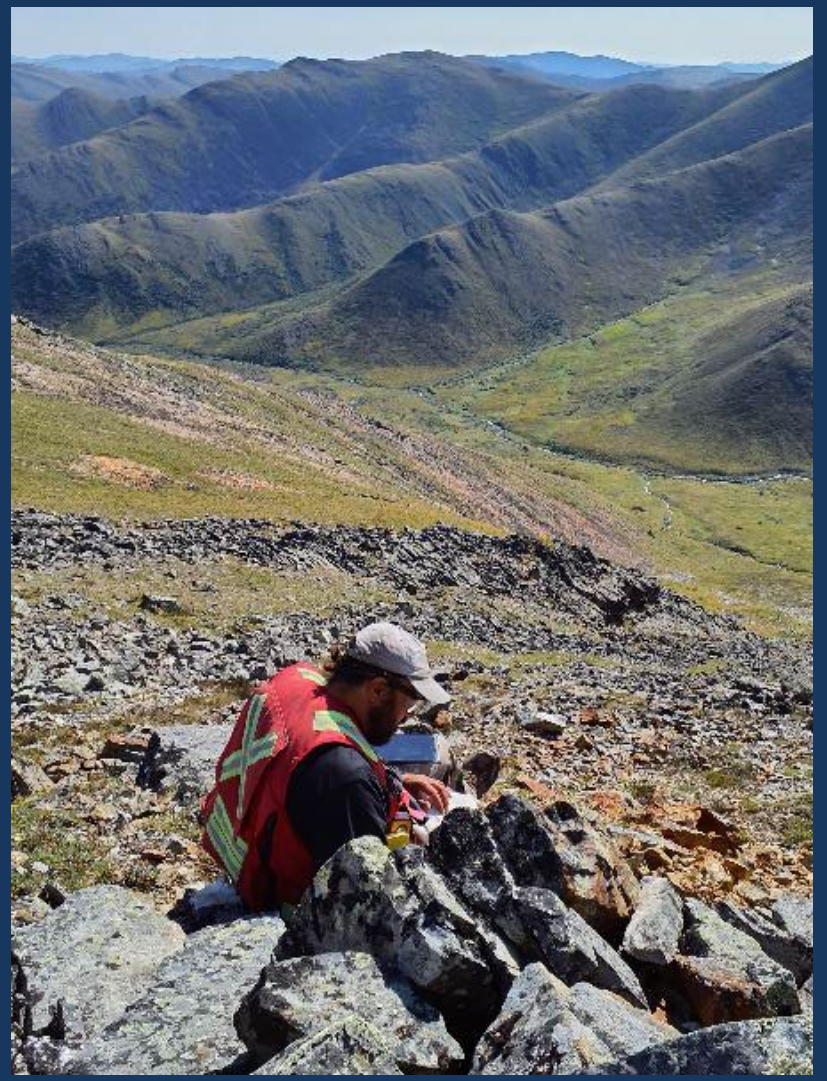
- Governor's Cabinet
- WOGCC
- Consensus Revenue Estimating Group
- Yellowstone Volcano Observatory

Alaska Division of Geological & Geophysical Surveys (DGGS)

- Statutory Mission:

  Determine the potential of Alaskan land for production of metals, minerals, fuels, and geothermal resources; the locations and supplies of groundwater and construction materials; and the potential geologic hazards to buildings, roads, bridges, and other installations and structures.

  (AS 41.08.020)



DGGS Sections

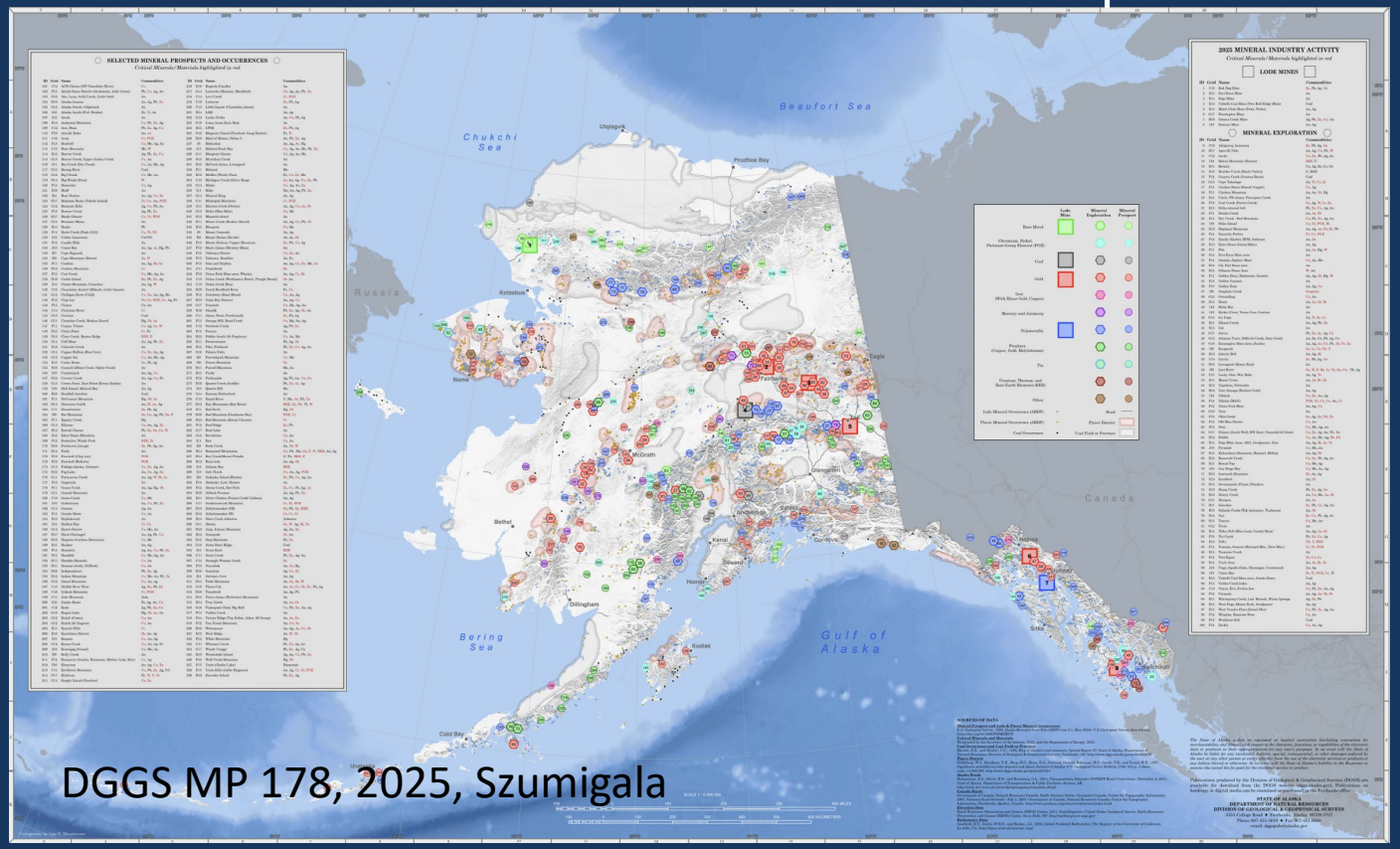
- Minerals
- Oil and Gas
- Hydrology and Surficial Geology
- Geologic Hazards
- Geologic Materials Center
- Alaska Geospatial Office
- Geologic Information Center

Minerals

- Earth MRI Projects
  - Geologic Mapping
  - Geophysics
- Survey—What do you need from DGGS?

Open Section Chief Position in Mineral Resources—
See “Workplace Alaska”

Alaska’s Mineral Resources Map



DGGS MP 178, 2025, Szumigala

Energy Resources

- North Slope and Brooks Range Foothills
- Cook Inlet Basin Analysis
- Interior Basins (In-State Gas and Rural Energy)
- Carbon Ore Rare Earth Elements and Critical Minerals (CORE-CM)
- Carbon / Hydrogen Storage and Geologic Hydrogen
- Geothermal Energy

DGGS/USGS Coring project, Nanushuk Formation, Slope Mountain, North Slope

Hydrology and Surficial Geology

ASTAR Sand and Gravel Mapping

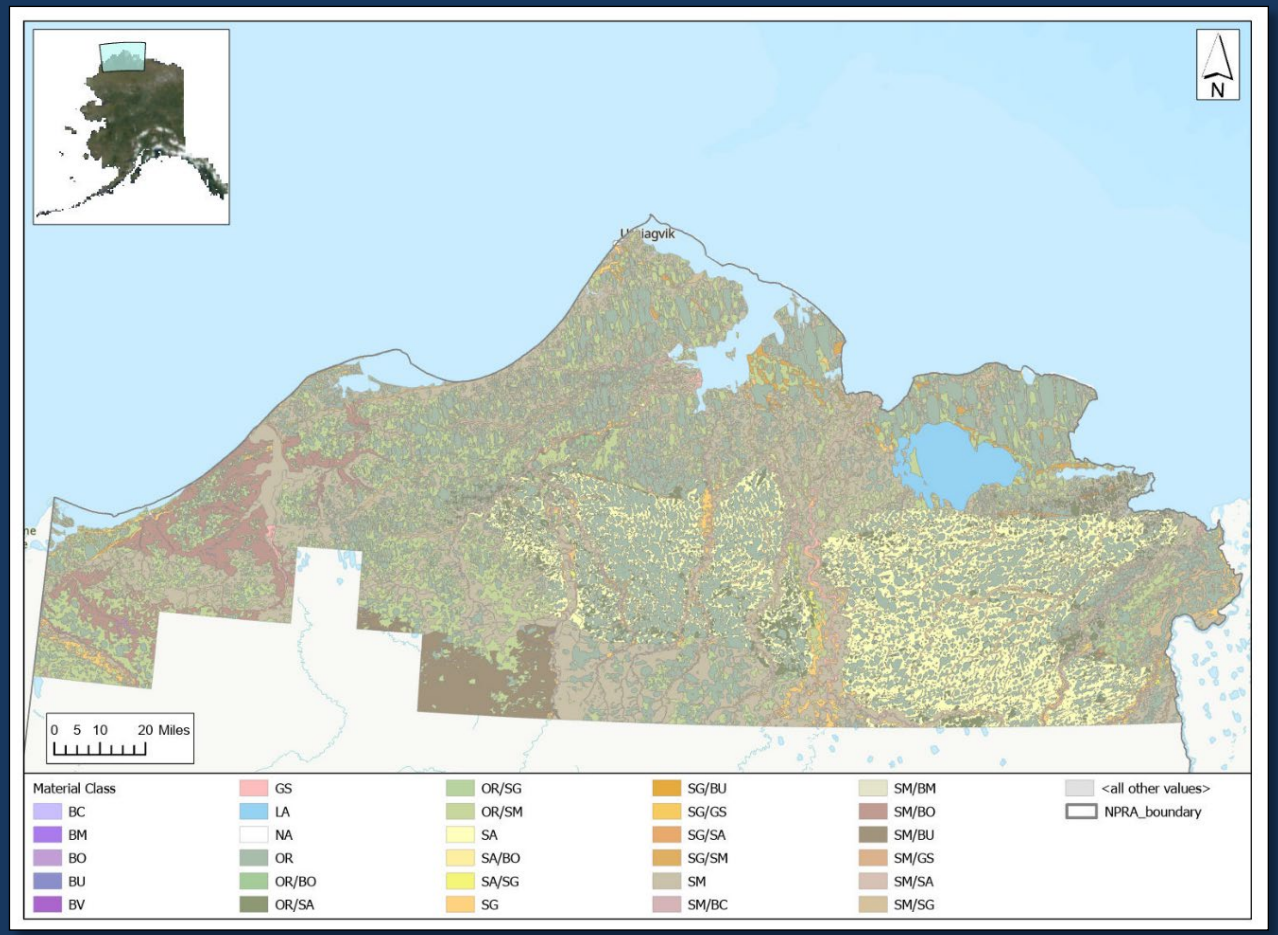
- Material resource on the North Slope

ASTAR Hydrology

- Triangle Road Studies on the North Slope

Lidar

- Supports many DGGS projects
- Supports emergency response- Landslides



Geologic Hazards

Programs

- Coastal Hazards
- Climate and Cryosphere Hazards
- Earthquake and Tsunami Hazards
- Geologic Health Hazards
- Landslide Hazards
- Volcano Hazards

Ketchikan landslide, August 2024

Geologic Hazards

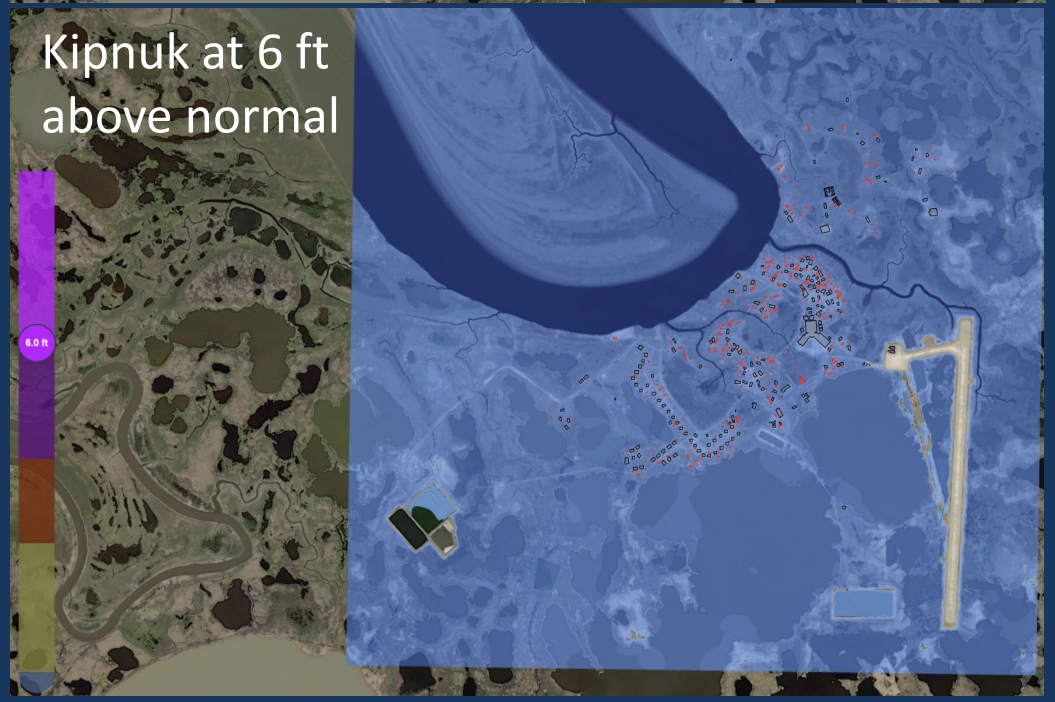
Coastal Hazards-Typhoon Halong

Pre-Storm

- Flood Assessments
- Alaska Flood Inundation Tool (AK FIT) *maps.dggs.Alaska.gov/akfit/*

During Storm

- Added 24 communities to Flood Inundation Tool—32 total
- Coordinated Geospatial Data (AGO)
- Gathered Direct Reports on Flood Impacts



Geologic Hazards

Coastal Hazards-Typhoon Halong

Post Storm

- High water mark data
- Coastal Erosion
- Planning lidar data collection
- Assessments to assist with damage determination, community rebuilding, and updated flood inundation models

Geologic Hazards

Climate and Cryosphere Hazards

- Glacier- and permafrost-related landslides
- High-elevation climate observations
- Local- and regional-scale snow distribution mapping and modeling
- Local- and regional-scale snow avalanche mapping and modeling

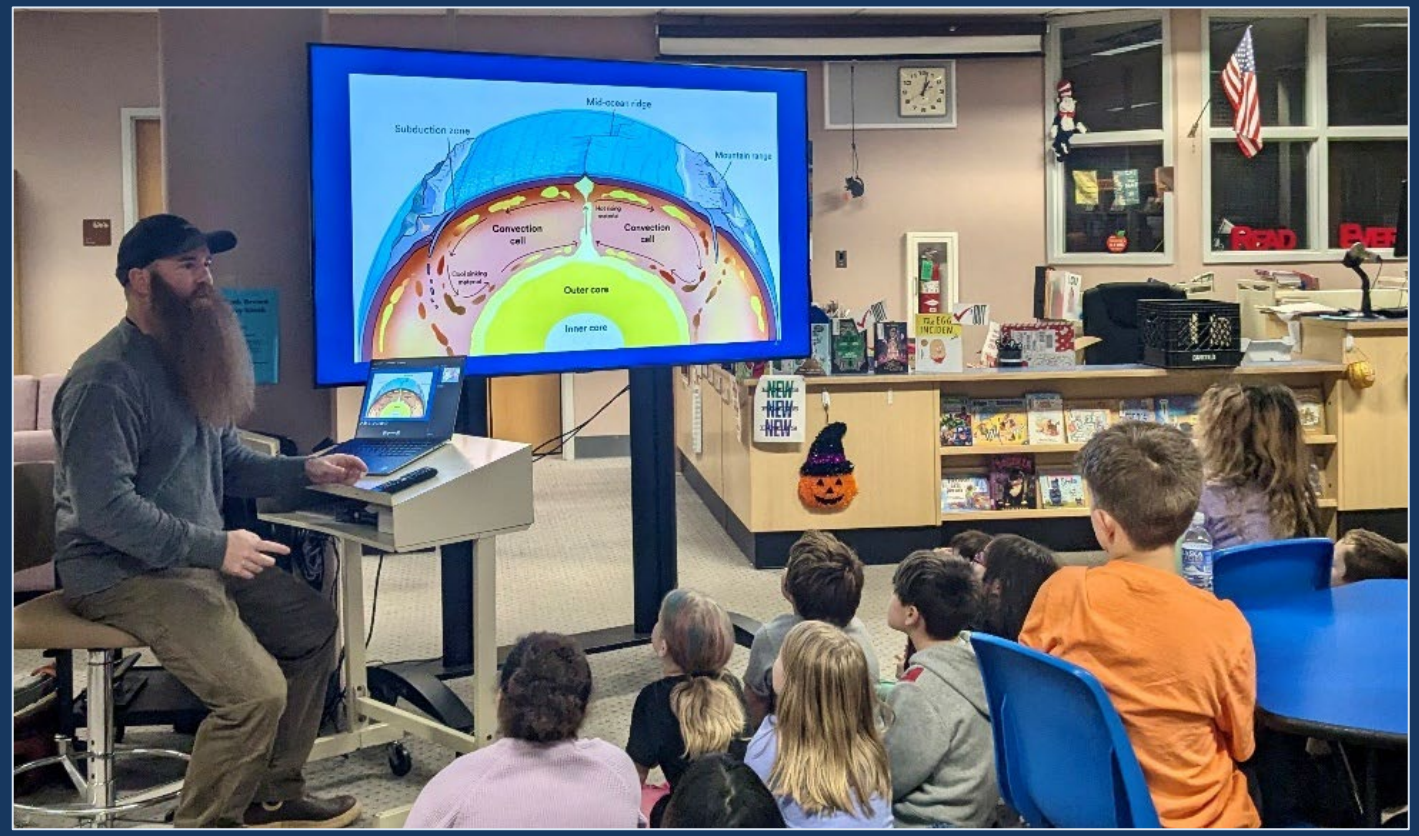
Ice-penetrating radar survey, Barry Arm

AK CASC

Alaska Climate Adaptation Center

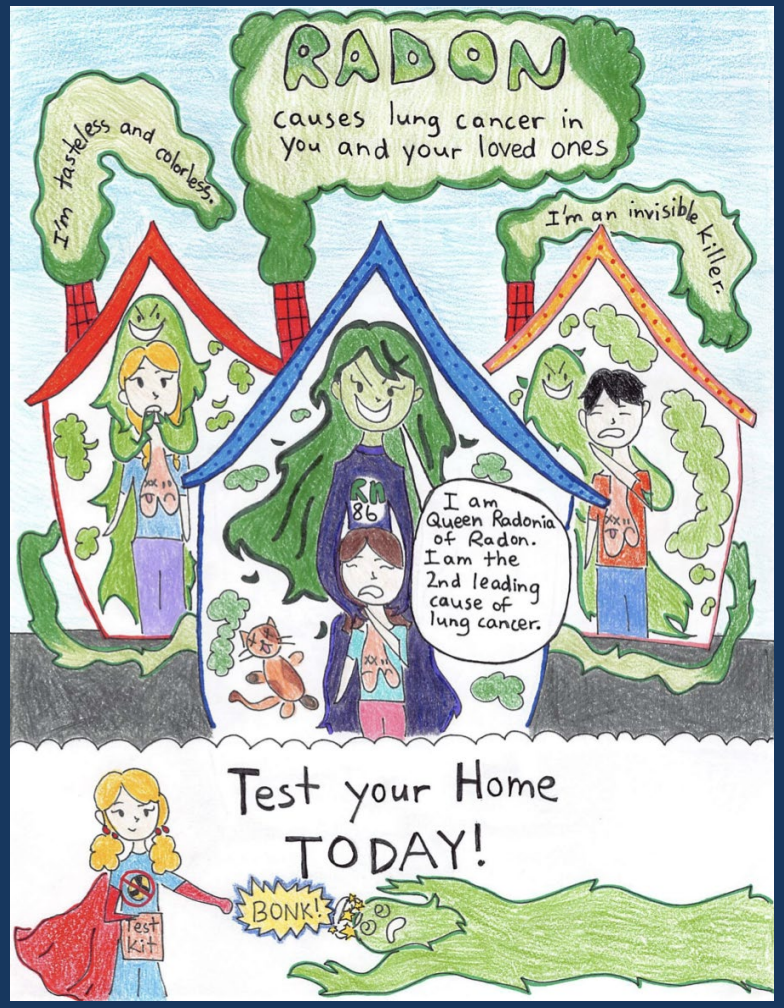
Geologic Hazards

Earthquake and Tsunami Hazards



Teaching elementary school students about earthquakes and related geohazards for the 2024 Great Alaska ShakeOut

Geologic Health Hazards



Geologic Hazards

Landslide Hazards

- Landslide hazard assessments, mapping, and monitoring
- Development and management of the Alaska Landslide Inventory
- Technical aid and services to communities impacted by landslide events
- Remote sensing to evaluate known and unknown landslide hazards

Beach Road landslide, Haines, photo in 2023

Geologic Hazards

Volcano Hazards

- AVO mission: Monitor, warn of activity, and study Alaska's active volcanoes
- DGGS role
  - AVO website
  - Geologic Database of Information on Volcanoes in Alaska (GeoDIVA)
  - Helicopter contracting/logistics
  - Hazard studies
  - Community engagement

RDDF station maintenance

USGS science for a changing world

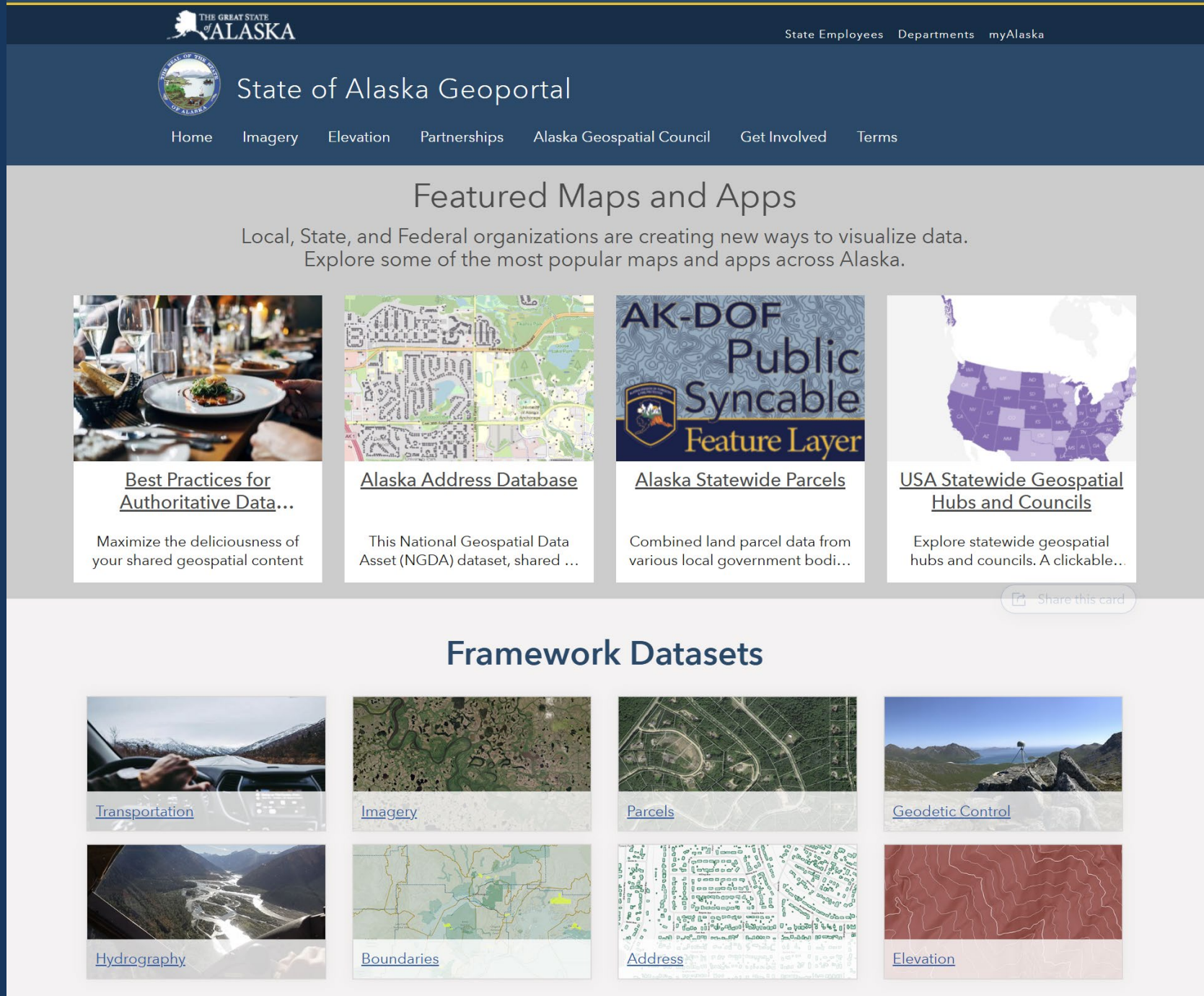
STATE OF ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

GEOPHYSICAL INSTITUTE University of Alaska Fairbanks

Geologic Materials Center

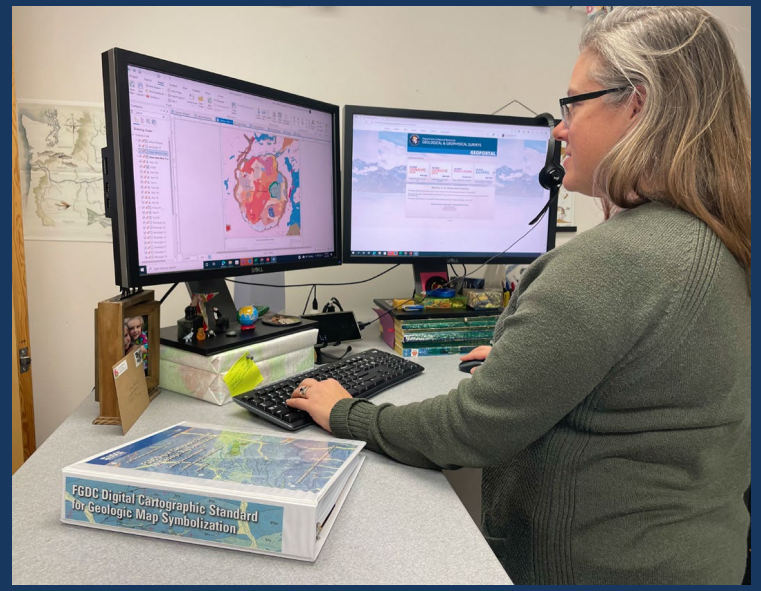
- 3096 Alaska energy wells
- 26,500,000 feet of energy strata drilled
- 16,700,000 representative feet of energy core and cuttings
- 76,000 linear feet of energy core
- 22,000 Alaska minerals boreholes
- 766,000 feet of mineral rock drilled
- 617,000 representative feet of mineral core and cuttings
- 354,000 linear feet of mineral core
- 250,000 processed slides and thin sections
- 507,000 surface samples

Alaska Geospatial Office



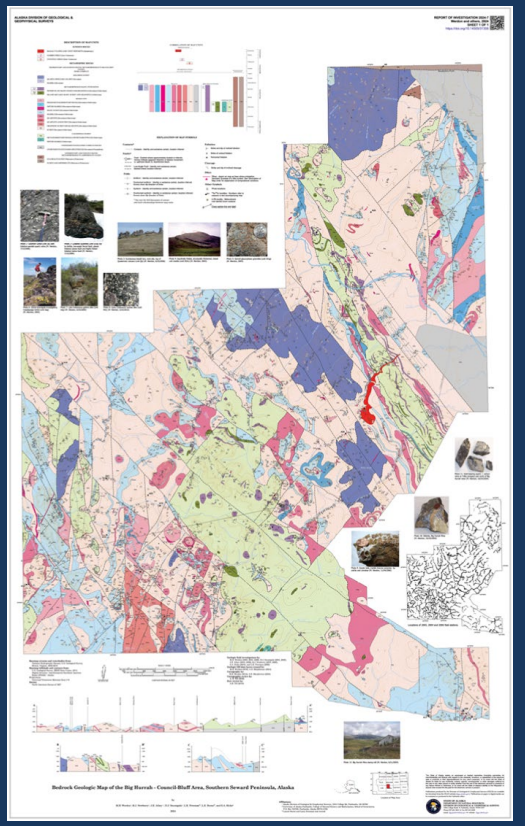
Geologic Information Center

- Publications
- IT
- GIS
  - Cartography
  - Geoportals
  - Web App development
  - Quality Control



Sample Web Apps:

- AK Elevation Portal
- Geologic Materials Center Inventory
- Geologic Photos of Alaska
- Alaska Geochemistry
- Palynology Database
- Alaska Geologic Data Index (AGDI)
- Weather Stations
- Geothermal Sites of Alaska Web App
- Alaska Radon Web App
- STATEMAP Projects Web App
- Map Index Web App
- Exploration Geochemistry Web App
- Airborne Geophysics



AK DGGS Mineral Research Survey