

Research & Operations At the Geophysical Institute



- **Created by Congress in 1946**
 - “establishment of a geophysical institute at the University of Alaska...dedicated to the maintenance of geophysical research concerning the arctic regions...”
- **Today: 375 Employees (~65 Faculty; 100 PhDs); ~80 Graduate Students & ~30 Affiliated Undergraduates)**
 - **7 Research Groups, 9 Operational Programs + 10 Other Facilities**
 - **~\$43M Annual Budget (including \$6M/yr General Fund)**

GI Research Groups

Volcanology



Seismology



Snow, Ice & Permafrost



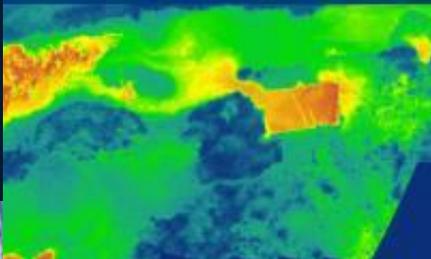
Tectonics & Sedimentation



Atmospheric Science



Remote Sensing

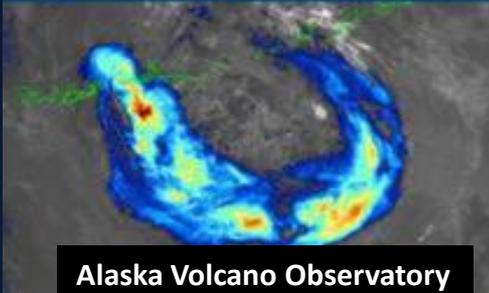


Space Physics & Aeronomy



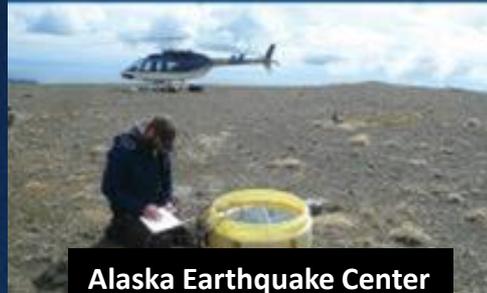
GI Operational Programs

AVO



Alaska Volcano Observatory

AEC



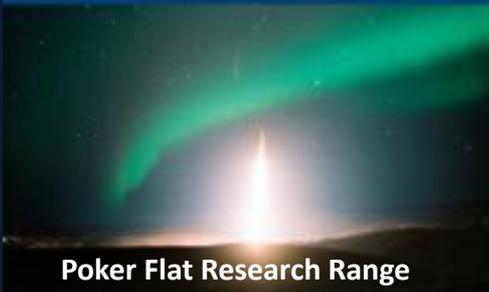
Alaska Earthquake Center

ASF



Alaska Satellite Facility

PFRR



Poker Flat Research Range

HAARP



High frequency Active Auroral Research Program

Wilson Observatory



Wilson Alaska Technical Center

ACUASI



Alaska Center for Unmanned Aircraft System Integration

RCS



Research Computing Systems

GINA



Geographical Information Network for Alaska

Other GI Facilities

Mather Library



SuperDARN Radar



Alaska Space Grant



Alaska Climate Research Center



Lidar Research Lab



Geochronology Lab



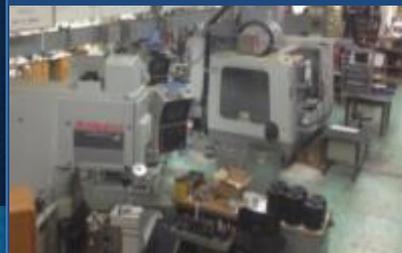
GeoData Center



Petrology Lab



Machine Shop



College International Geophysical Observatory



ACUASI's UAS Fleet

ScanEagle, Nanook, SeaHunter, Responder, Scout, Ptarmigan, and others



Mostly catapult, hand, or vertical launch



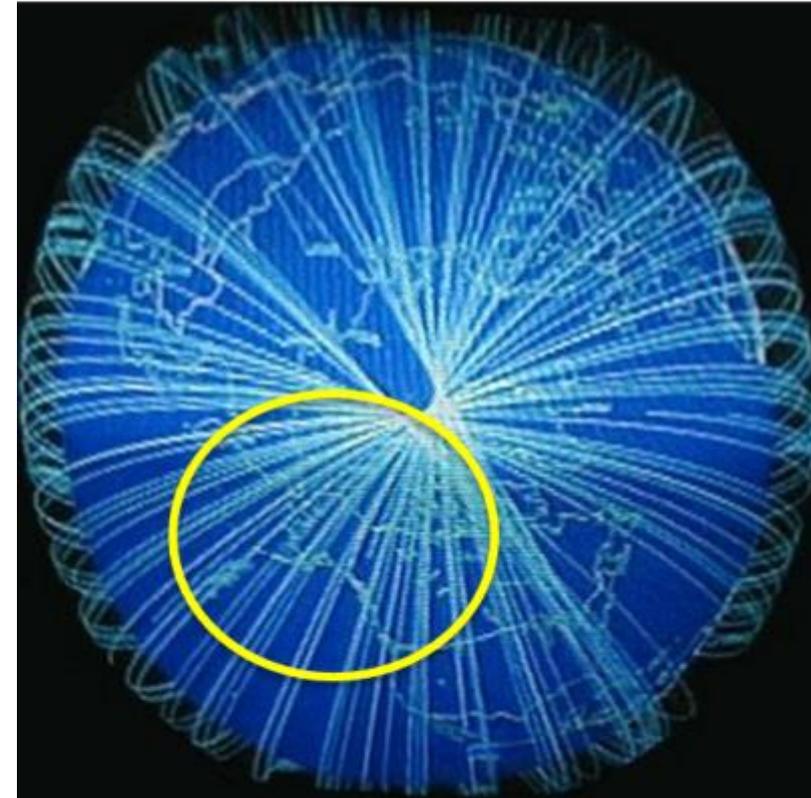
Counter-rotating propellers, heated pitot tubes, fuel injected engines, or battery-powered



New auto pilot and control station for communication via satellite

Alaska Satellite Facility

Polar Orbits



11/14 Orbits/day

Nettie La Belle-Hamer, Director

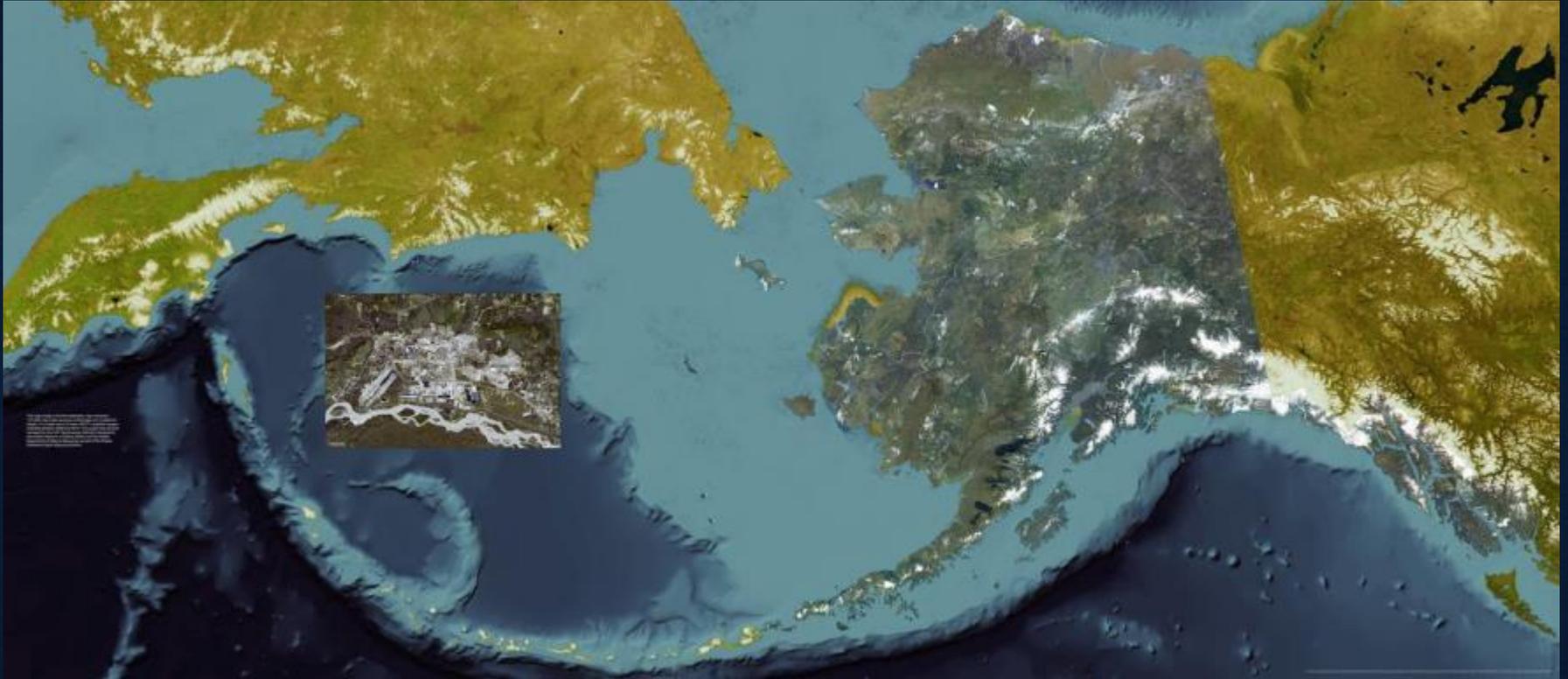
ASF's growing capacity



AS1 (11m), AS2 (10m), AS3 (11 m)

Photo by Jeff Beiderbeck.

GINA Map



- **First statewide, high resolution, 1:24,000 mapscale accuracy orthoimage for Alaska**
- **2.5-meter SPOT 5 satellite imagery (2009-2014)**
- **GINA & Alaska DNR - part of the Alaska Statewide Digital Mapping Initiative**

RCS

Research Computing Systems

HPCC



Cray XK6m Series 200, +
Multiple Linux clusters

Storage



7 Petabytes + 2 PB spinning disk

Formerly the DoD Arctic Region Supercomputing Center (ARSC)

Decision Theater North (DTN)



- **GI supported the Alaska NSF EPSCoR program to launch the Decision Theater North, a new visualization facility designed to facilitate dialogue and decision-making by agencies, industry, communities and academia.**
- **Seven 4K screens provide over 30 million pixels for immersive data display.**
- **Design Services, GINA, RCS, & others in the GI contributed to DTN**

A New Life & a New Operating Business Model for the High Frequency Active Auroral Research Program (HAARP)



- **Gakona AK - 62.39 deg, 145.15 deg (West)**
- **33 acre phased HF transmitter array;**
- **2.8 to 10 MHz;**
- **Multiple beams & transmission to 30 elevation angle**
- **5 x 3600 hp diesel engines; 3.6 MW;**
- **\$290M (half Congressional earmarks + half AFRL, ONR & DARPA)**

Thank you, Questions?



EL: -19.7

AS: 99.6

AS: 177.0

