



Aerospace Research and Operations at the Geophysical Institute

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Alaska is an Aerospace State



Proposed UAS
site

PFRR
Rocket
Range



Fairbanks

Suborbital

Satellite
Downlink



HAARP



UAS

PSCA Spaceport

Orbital

Alaska Aerospace Corp



UAF & AAC Aerospace Facilities

Poker Flat Research Range

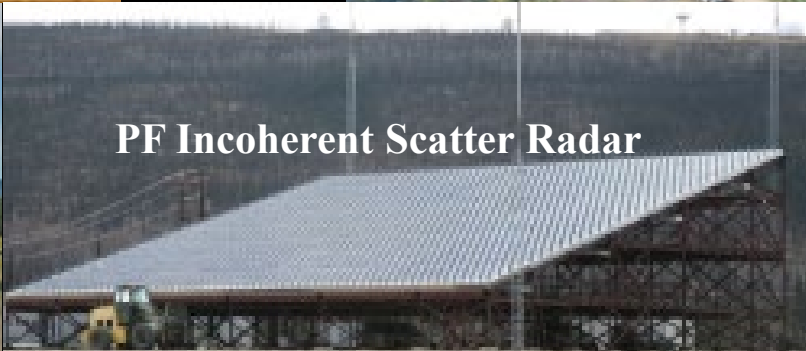
Largest land-based rocket range

Only rocket range owned by a university

35 miles from campus



PF Incoherent Scatter Radar



PAYLOAD BUILDUP



1/27/2020



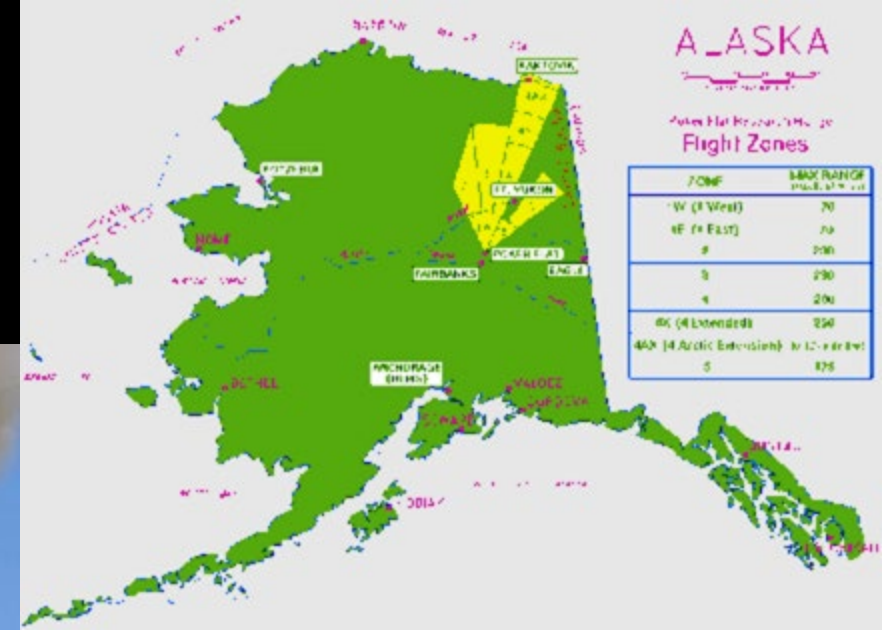
EXTENDED HOLD





Yuma Proving Ground (YPG)
Army Futures Command

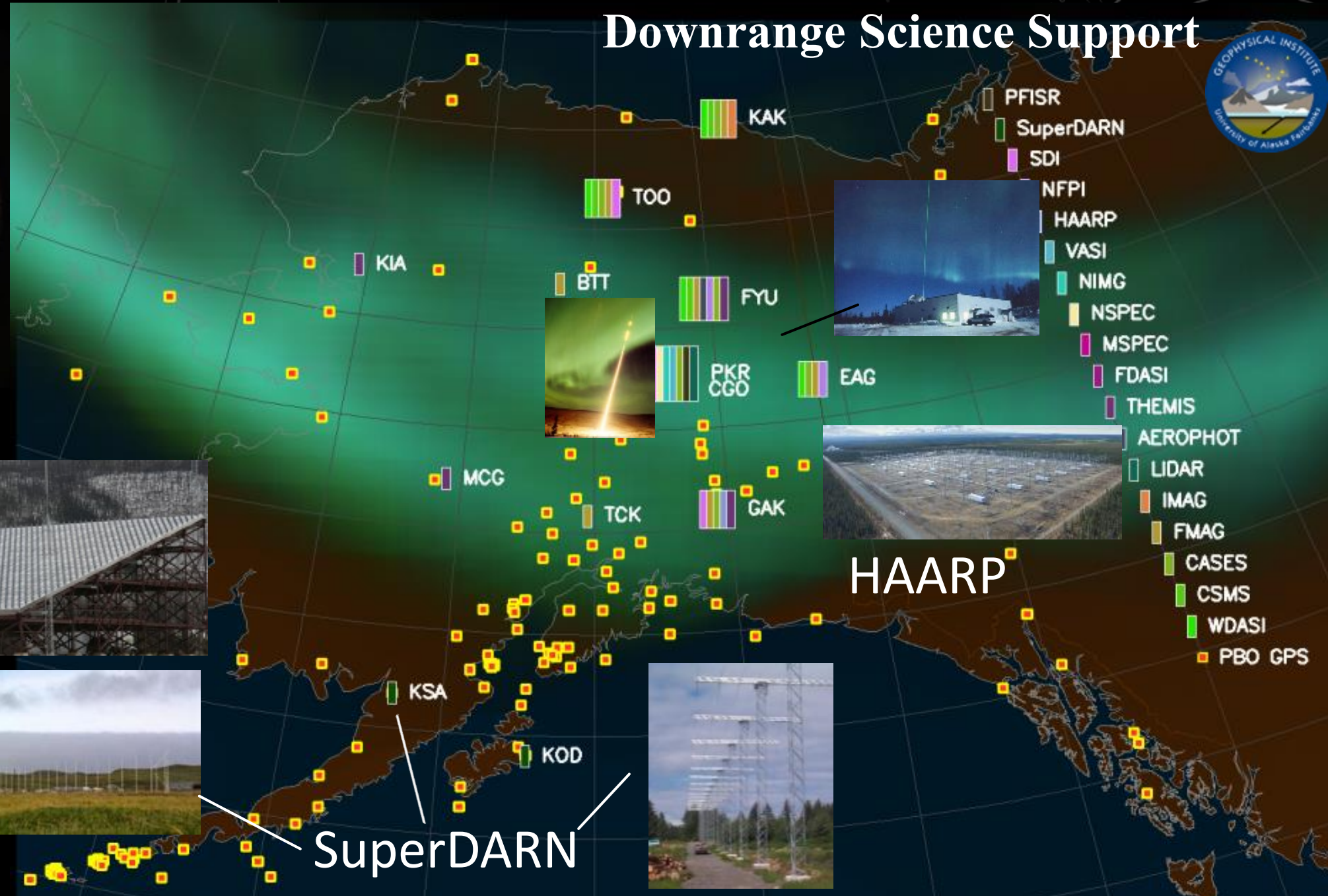
**Army Self-Propelled Howitzer – Shoot 70+ km
Rocket-Hybrid**



Downrange Science Support



All-Sky



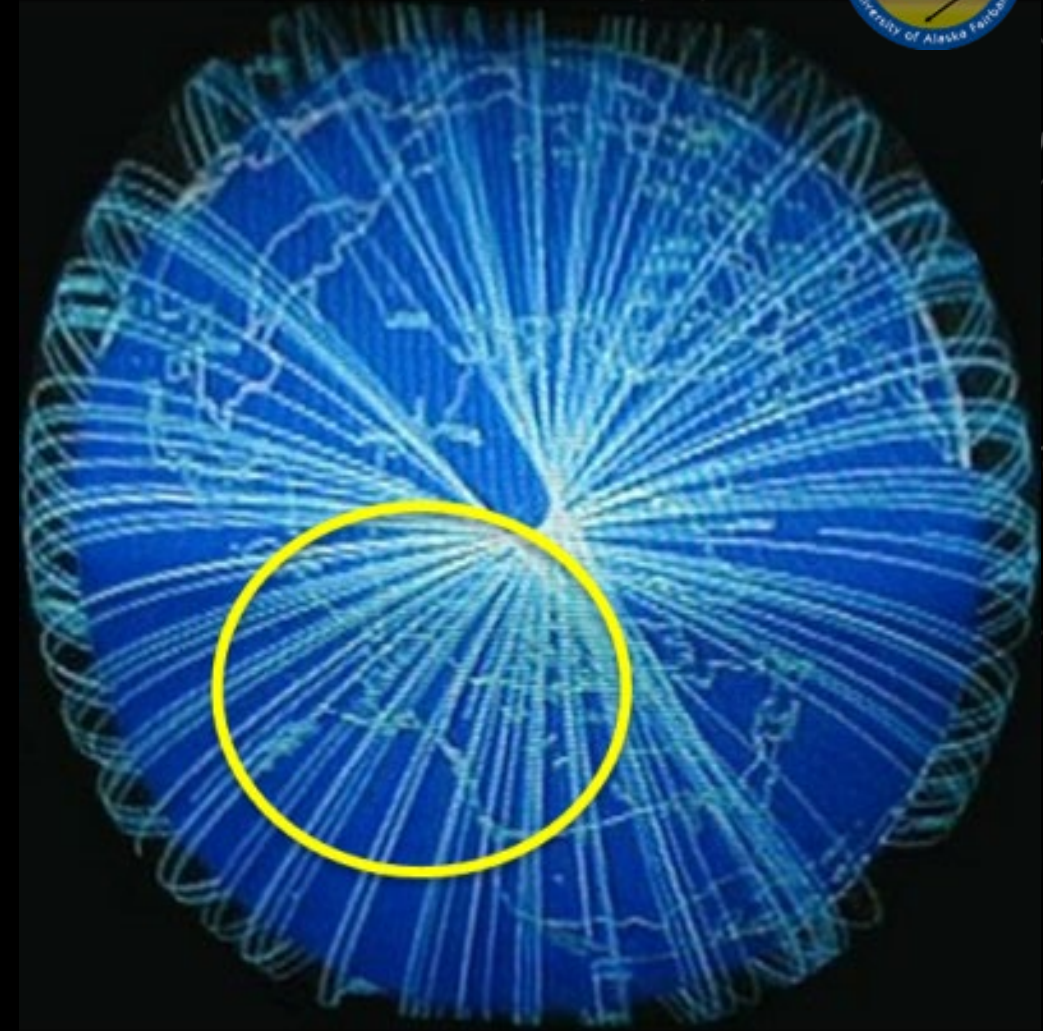
PFISR



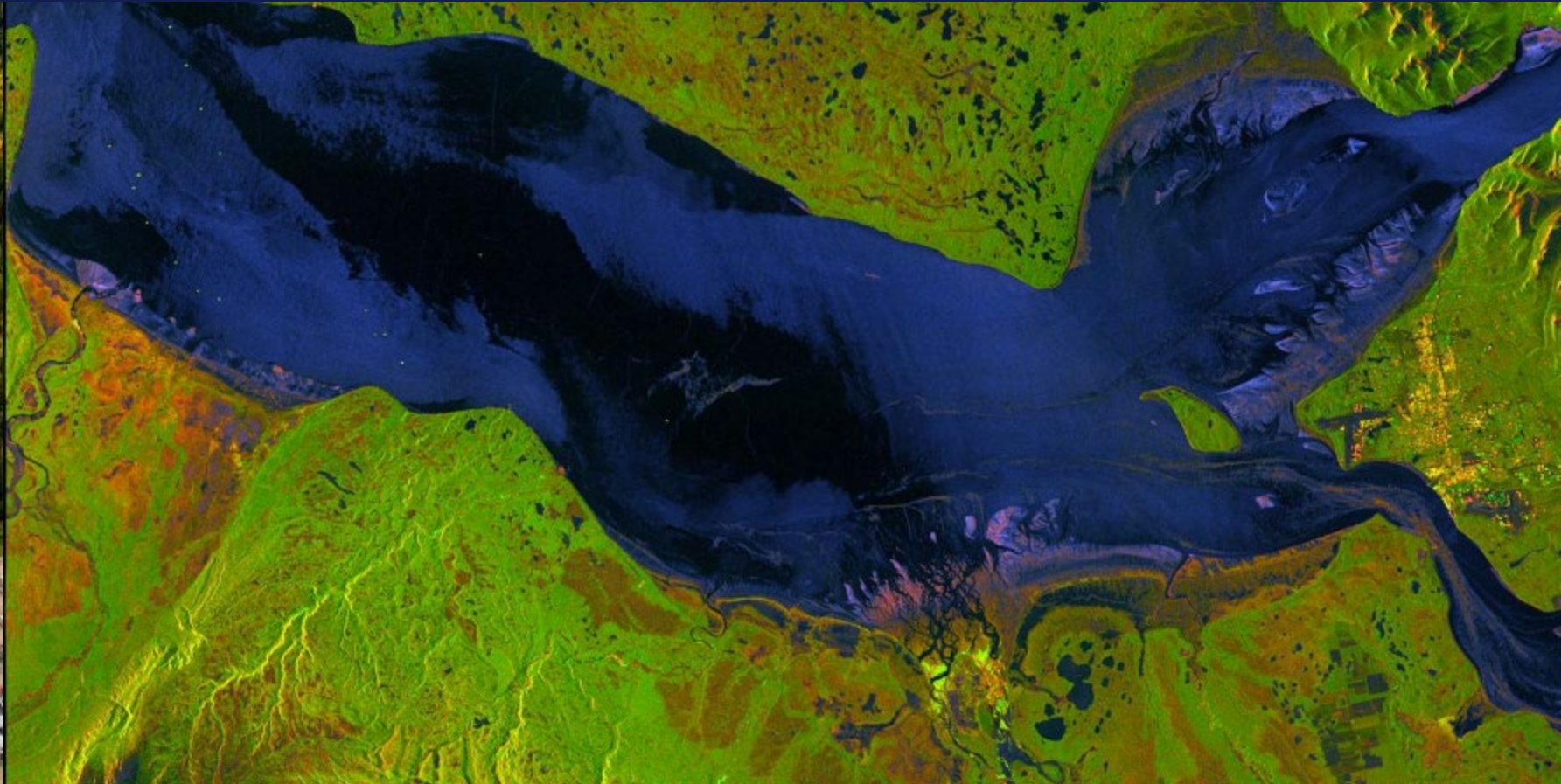
SuperDARN

HAARP

ALASKA SATELLITE FACILITY



ALASKA SATELLITE FACILITY (ASF)



ASF operates 5 (~11m class) dish antennas to downlink data, primarily synthetic aperture radar (SAR) data, day or night, though clouds. ASF downlinks, processes, and distributes all of NASA's satellite SAR data from polar orbiting satellites.

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)

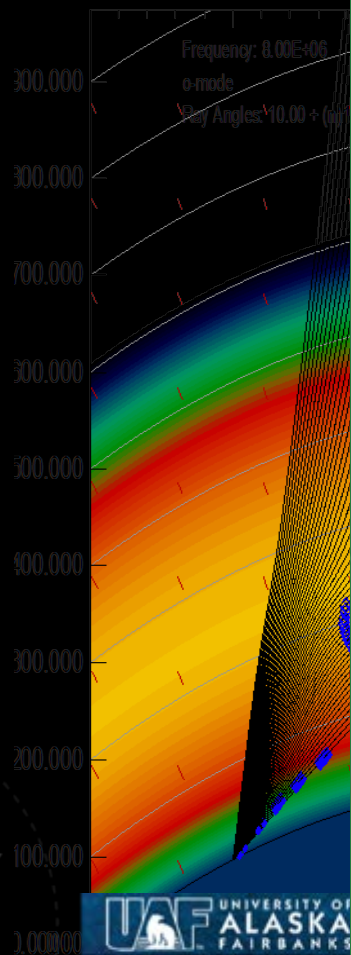


HAARP Powerplant



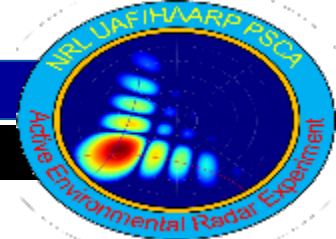
O

8 MHz; C
to ~1



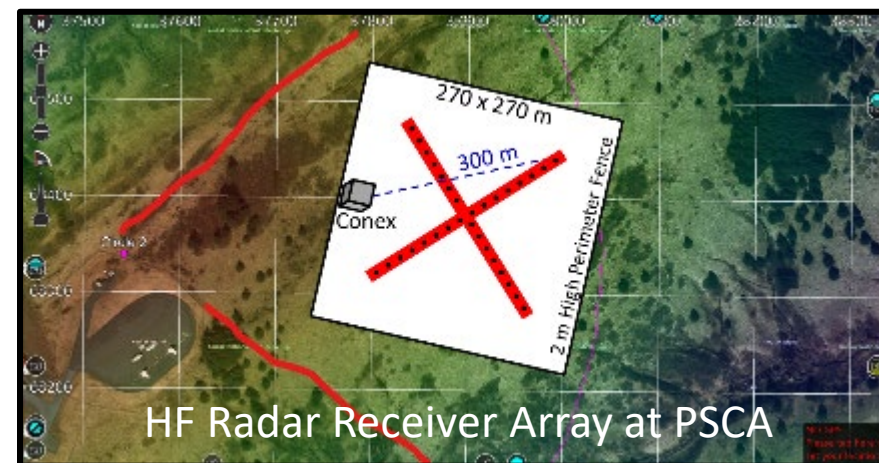
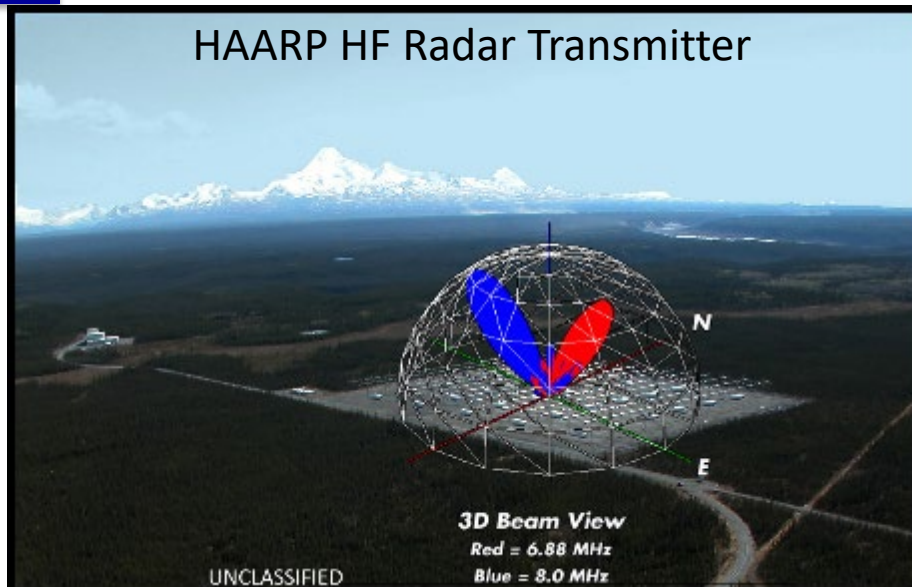
Potential Over the Horizon Radar Coverage
with HAARP Phased Array



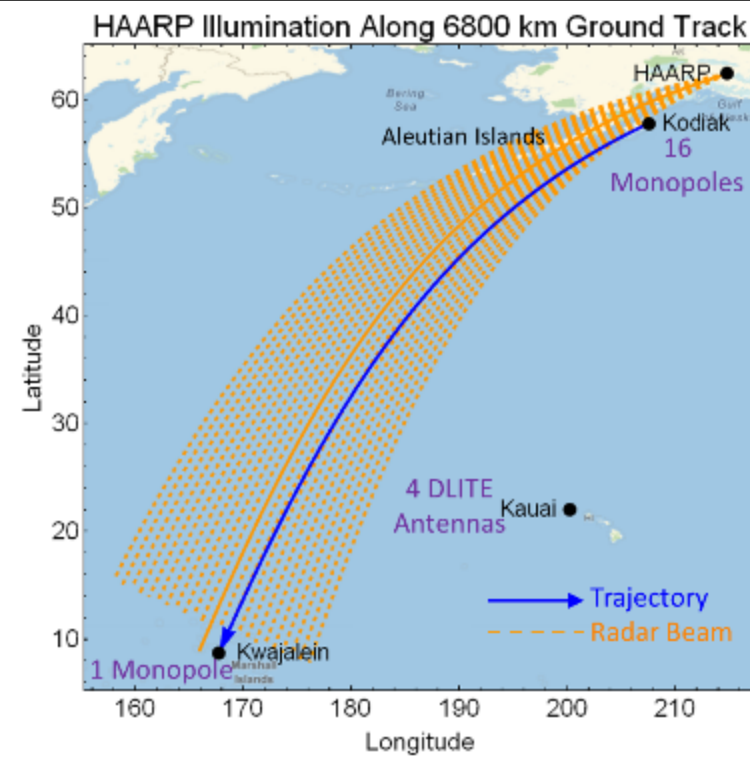
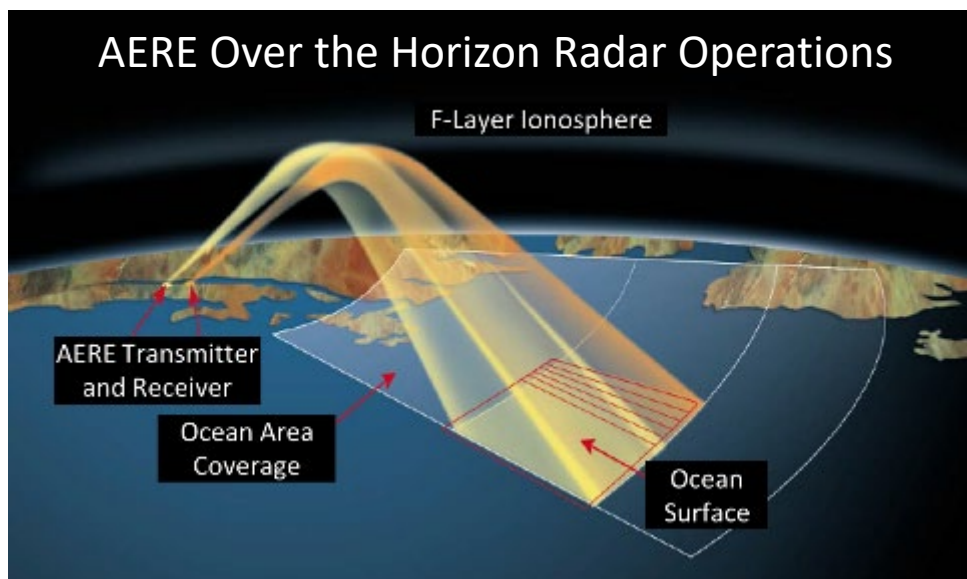


NRL Active Environmental Radar Experiment (AERE) HAARP and Kodiak HF Array Observes Great Circle Radar Paths

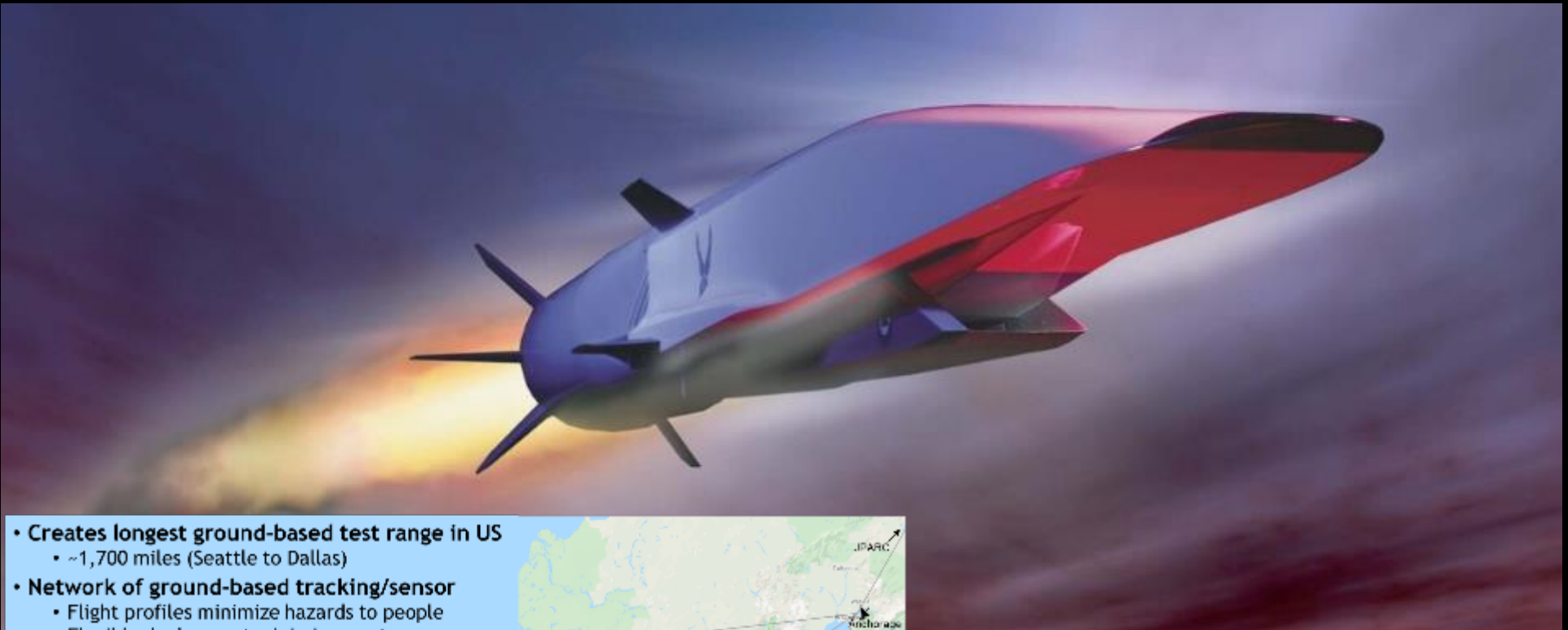
HAARP HF Radar Transmitter



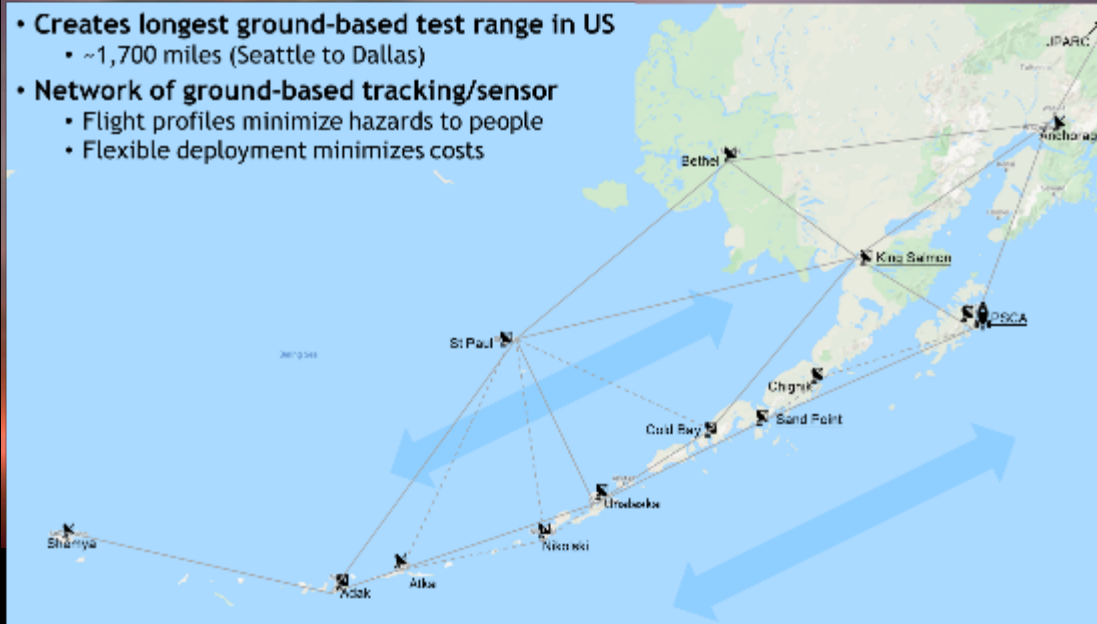
AERE Over the Horizon Radar Operations



Hypersonic Vehicles



- Creates longest ground-based test range in US
 - ~1,700 miles (Seattle to Dallas)
- Network of ground-based tracking/sensor
 - Flight profiles minimize hazards to people
 - Flexible deployment minimizes costs



ALEUTIAN ISLANDS TEST RANGE FOR HYPERSONICS



