



United States Department of Agriculture



ALASKA

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Statewide Alaska High Altitude Photography (AHAP) Project

November 15, 2022 – Denise Miller, Alaska NRCS

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Alaska High-Altitude Photography Overview

- State and Federal partnership to acquire consistent aerial coverage over Alaska
- NASA Johnson Space Center and NASA Ames Research Center aircraft were used to photograph the state between 1978 and 1986 at 10 percent or less cloud cover.
- Approximately 70,000 frames of images were taken using two cameras with different focal lengths and film types
- Two types: black-and-white images at approximately 1:120,000 and color infrared images at approximately 1:60,000
- AHAP concepts learned were used to build the National High Altitude Photography (NHAP) Program and National Aerial Photography Program (NAPP)



Geospatial Enterprise Operations (GEO) Branch of USDA

- As part of the USDA, Farm Production and Conservation, Business Center - GEO Branch's goal is to provide high quality geospatial data for all regions of the United States and affiliated territories.
- USDA has collaborated with imagery acquisitions with other Federal Agencies (USGS, USFS, etc...) since the early 1980's.
- USDA provided additional funding to allow publishing of the internal Image Server Service to the general public.



NHAP-AHAP Contract for FY 2022-2023



REQUEST FOR QUOTE

For

National High-Altitude Photography (NHAP)
and
Alaska High Altitude Photography (AHAP)

RFQ Number 12FPC221Q0046

- USDA-GEO has a two-year contract for NHAP-AHAP Orthorectification services (FY22 – 23)
- An RFQ was issued. Contract award was to Aero-Graphics with support from Bohannon-Huston and the University of Arkansas.
- Contract specifications were created after consulting with ESRI and USGS-EDC.
- There were separate delivery specifications for both NHAP and AHAP since they are different programs.
- However, the goal is the same – to orthorectify historical aerial photography.



Area of Interest

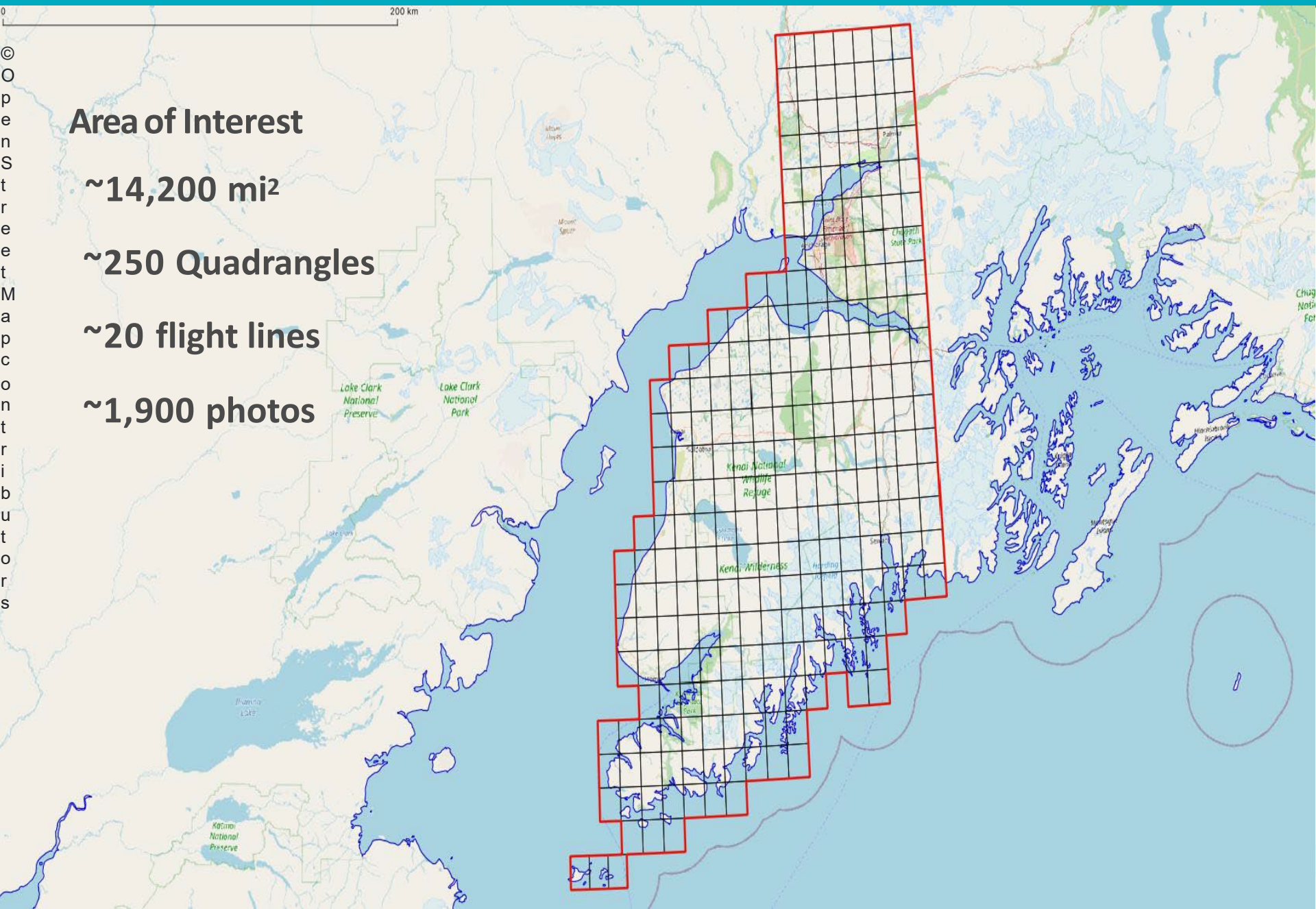
~14,200 mi²

~250 Quadrangles

~20 flight lines

~1,900 photos

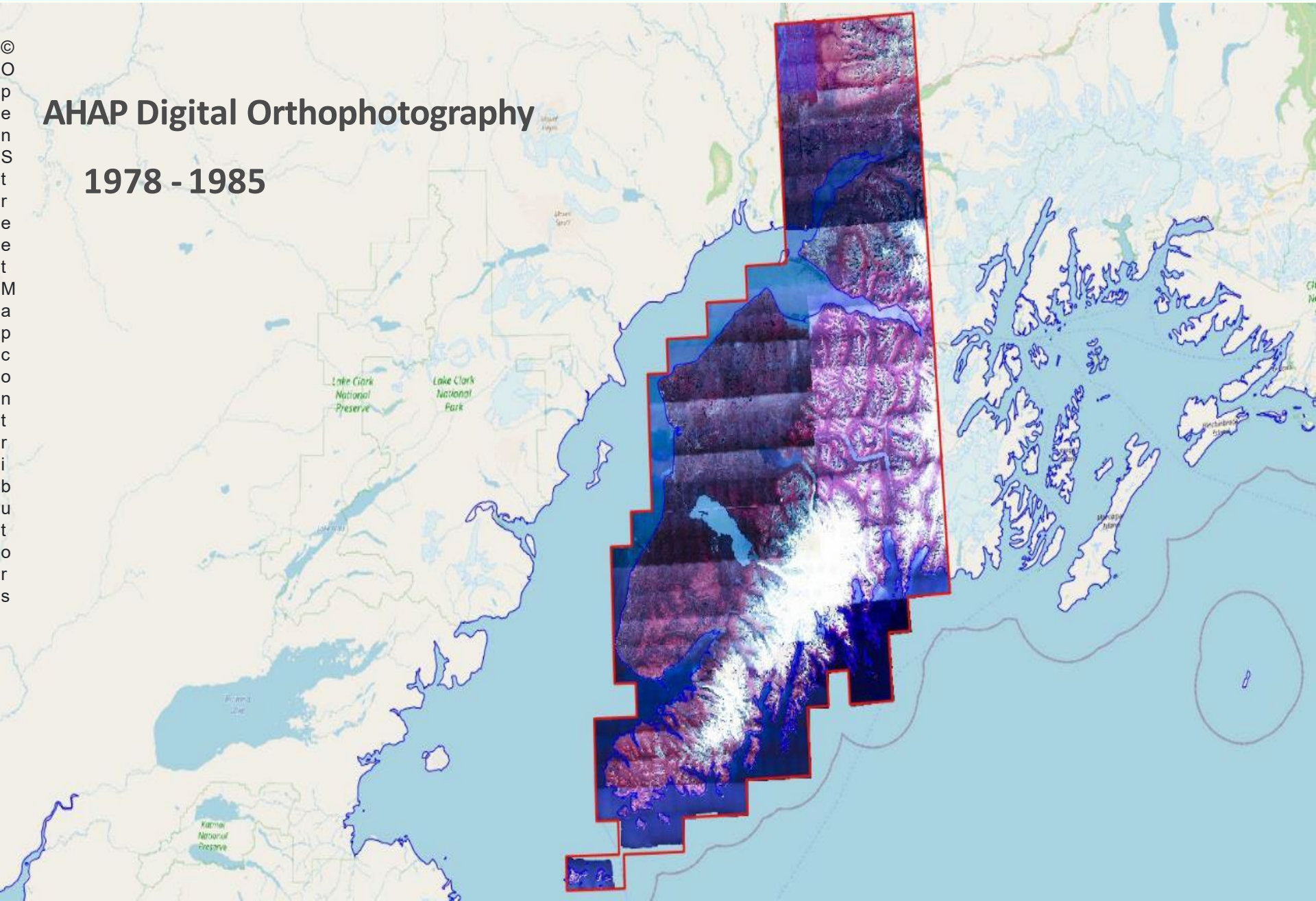
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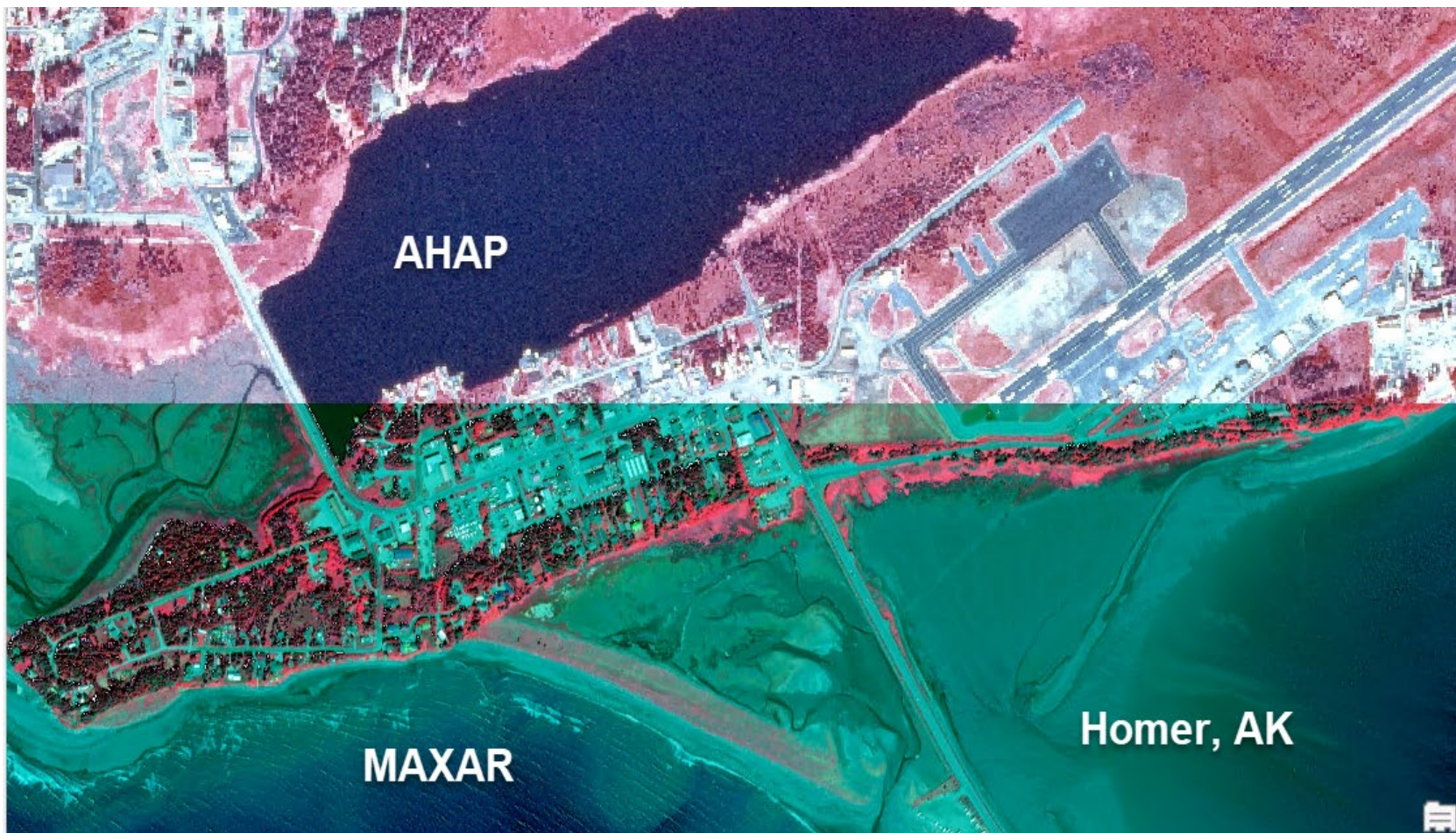
AHAP Digital Orthophotography

1978 - 1985

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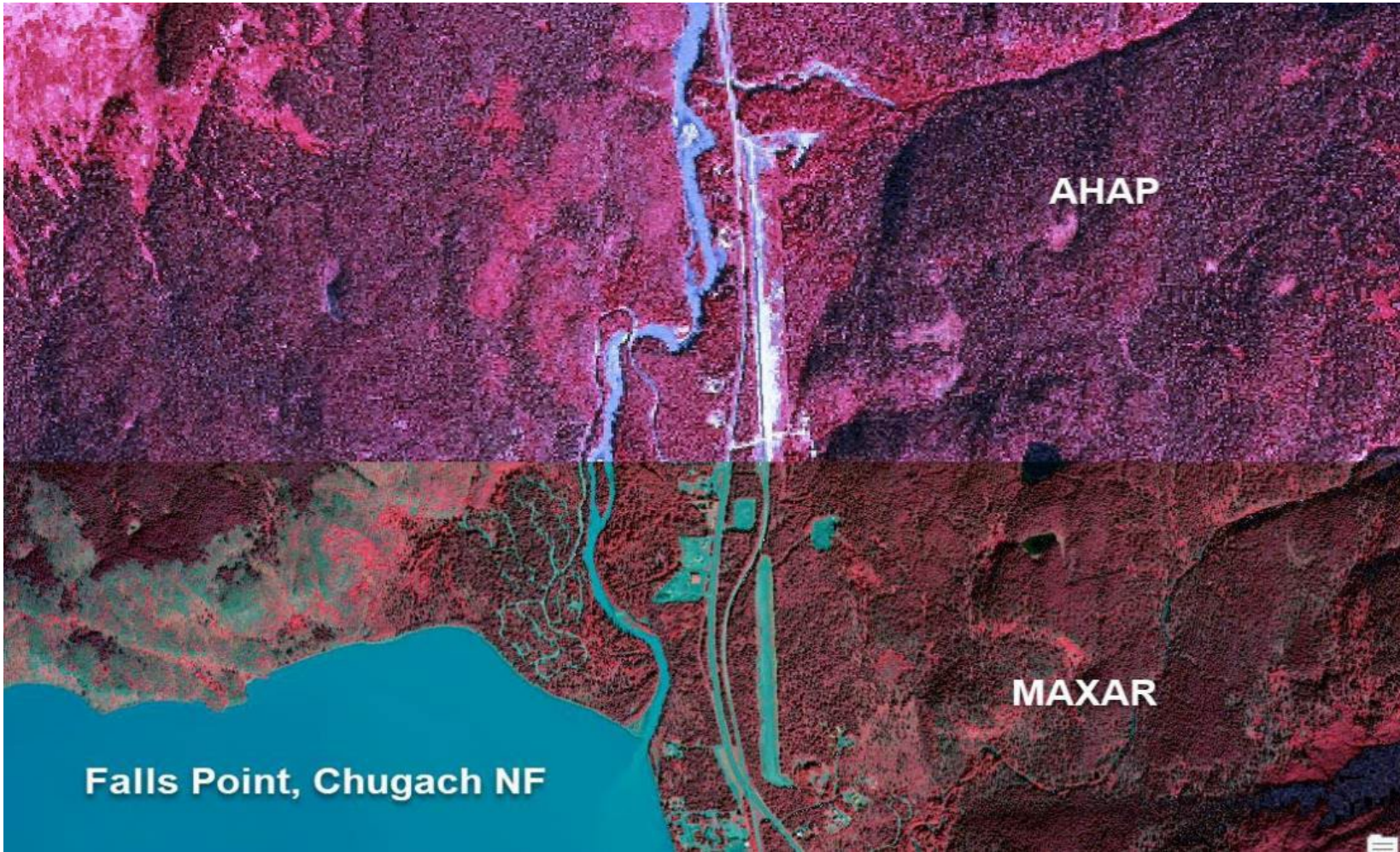
AHAP Test Area 2022 - Homer, AK



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AHAP Test Area 2022 - Chugach NF



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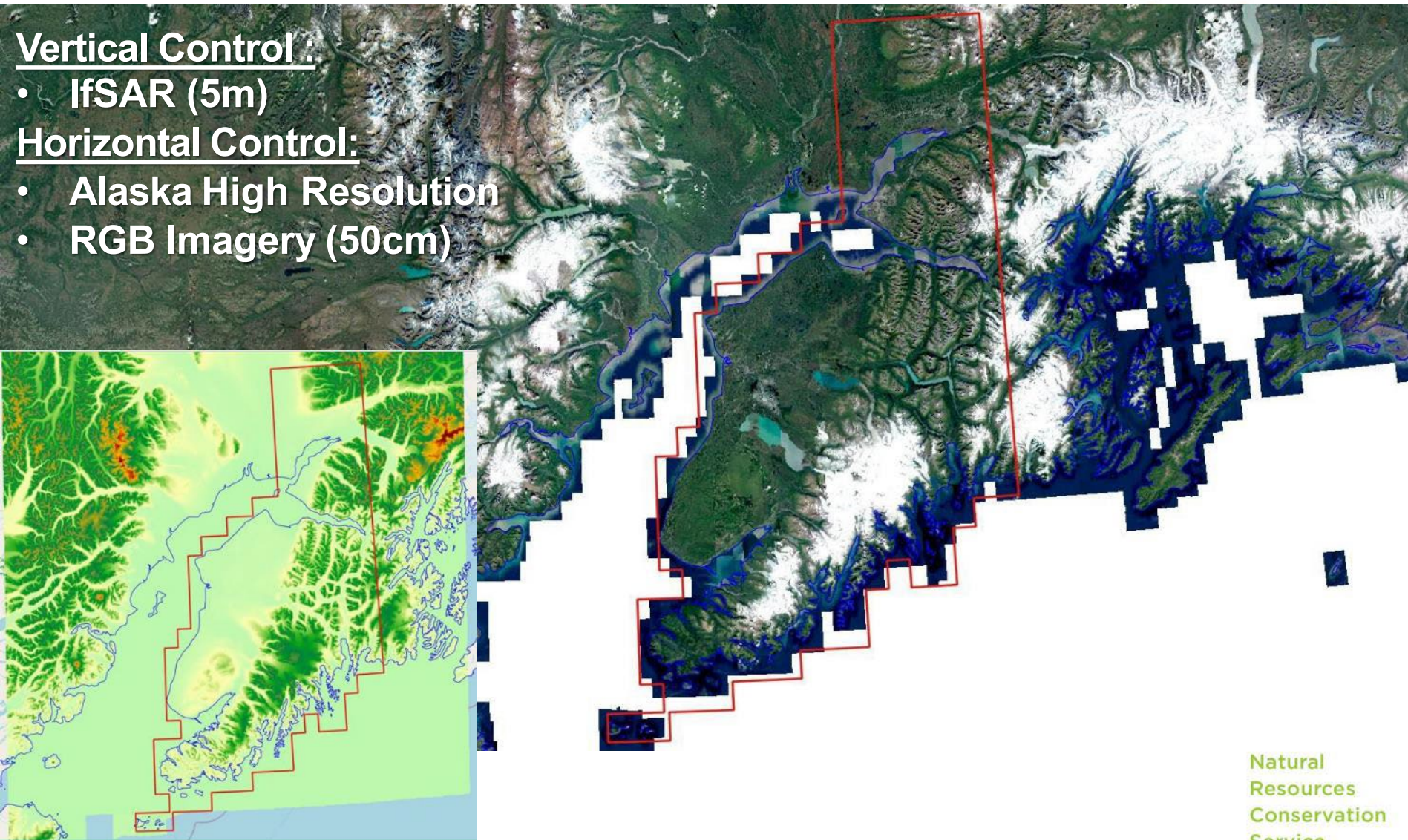


Vertical Control:

- IfSAR (5m)

Horizontal Control:

- Alaska High Resolution
- RGB Imagery (50cm)



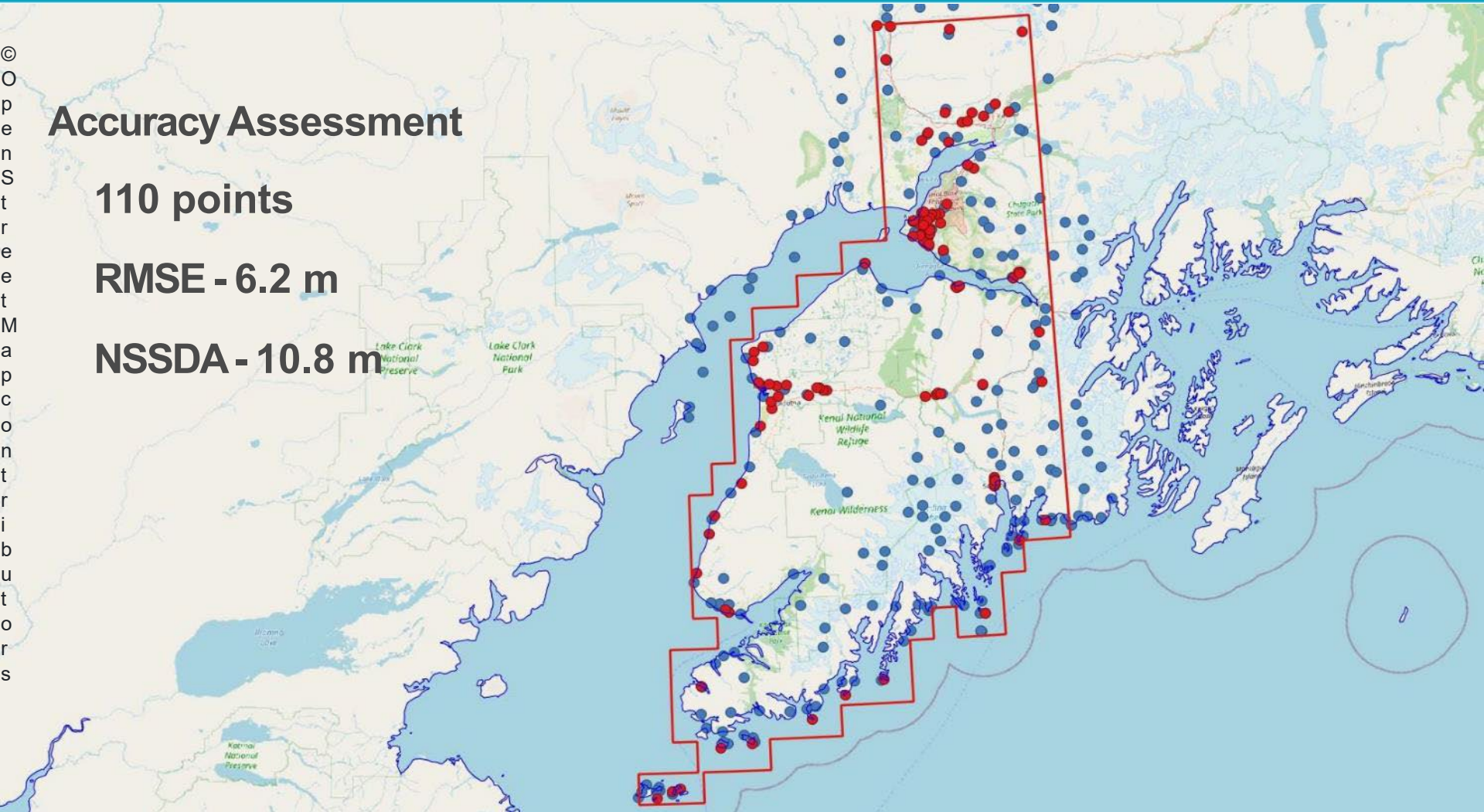
Accuracy Assessment

110 points

RMSE - 6.2 m

NSSDA - 10.8 m

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AHAP Project Information 2022



Alaska High-Altitude Aerial Photography (AHAP) Program
Orthorectified Color Infrared (CIR) Photography

Project Sponsor

Tony Kimmel
National Imagery Leader
Geospatial Technology Coordination and Project
Execution Section
Geospatial Enterprise Operations Branch (GEO)
Information Solutions Division
Farm Production and Conservation Business Center
U.S. Department of Agriculture
Fort Worth, TX

Alaska AHAP CIR Project Report Kenai Peninsula Pilot Area

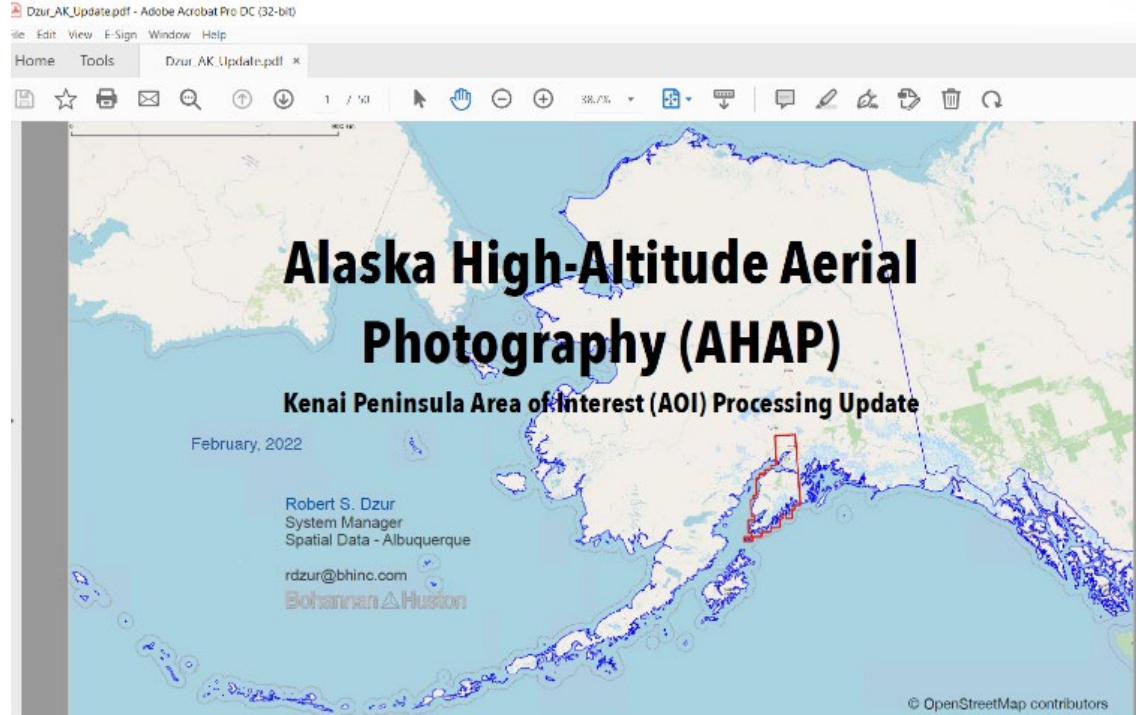
Submitted to:

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March 4, 2022

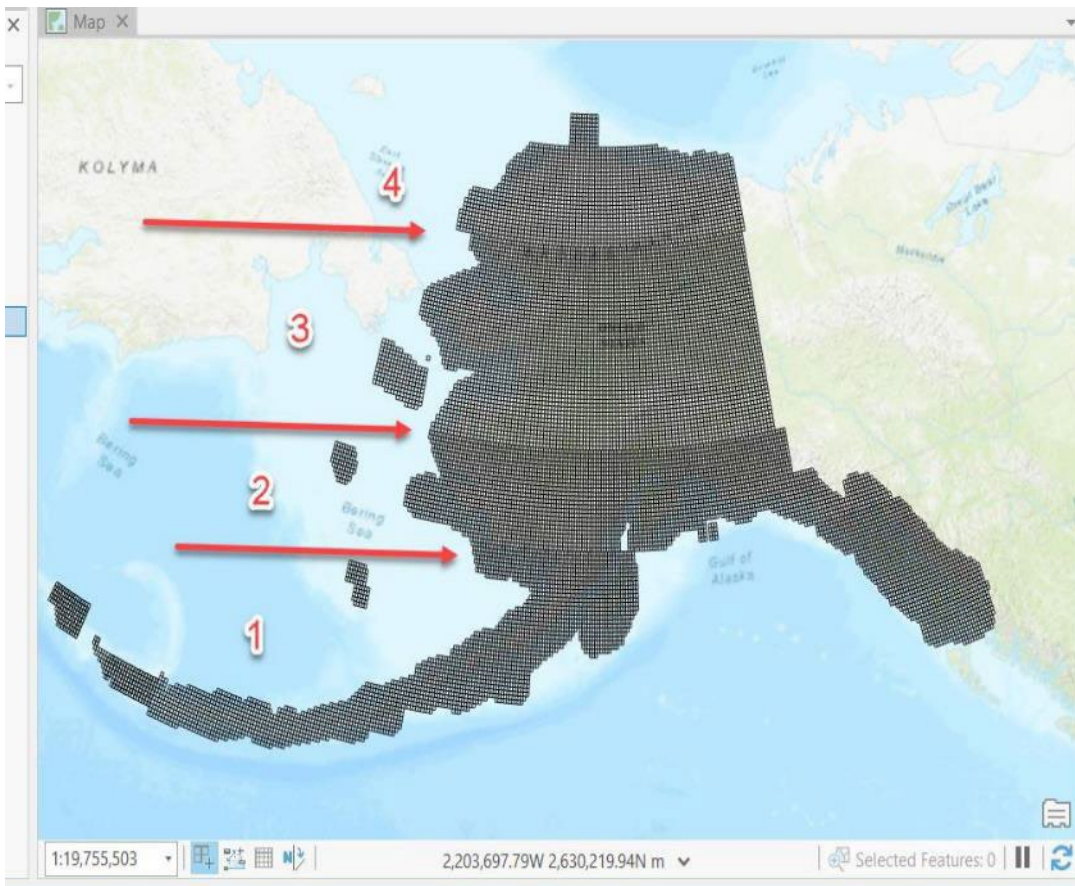
AHAP Project Folder – Box Cloud Services
<https://nrcs.box.com/s/rpm95wen54g6tjflari2utvioxj6nx4e>

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AHAP 2023



- Due to the success of the AHAP orthorectification pilot in 2022, USDA (NRCS/GEO) will fund a much larger area for FY 2023.
- USDA will fund approximately \$470,000 for AHAP in FY 2023.
- Alaska 15,214 tiles at 1:25,000

	Sq. km
Zone 1:	133
Zone 2:	150
Zone 3:	146
Zone 4:	175

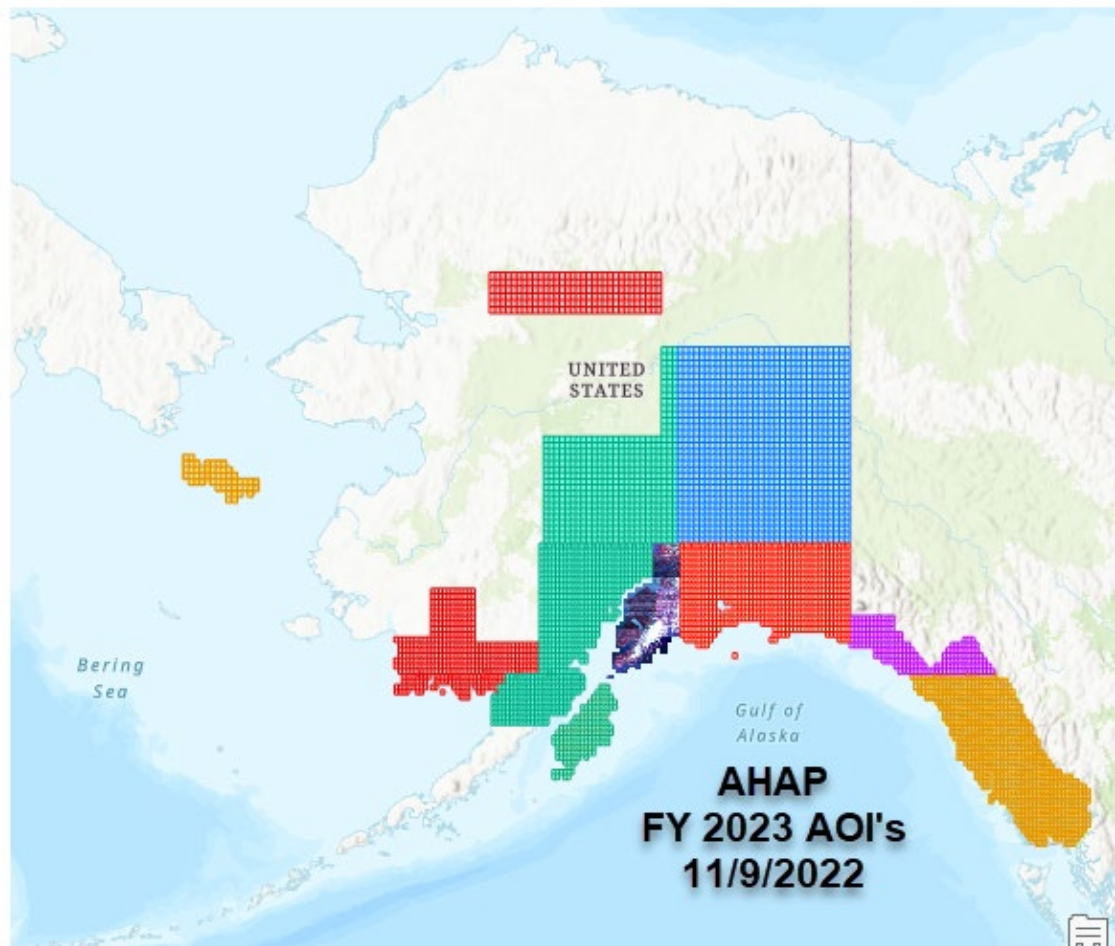
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AHAP 2023

- USDA-GEO NHAP-AHAP contract will be for approximately 4,700 tiles.
- AHAP will split up areas to be orthorectified into 6-8 AOI's.
- This map indicates areas that will likely be orthorectified in FY2023, but are subject to change.



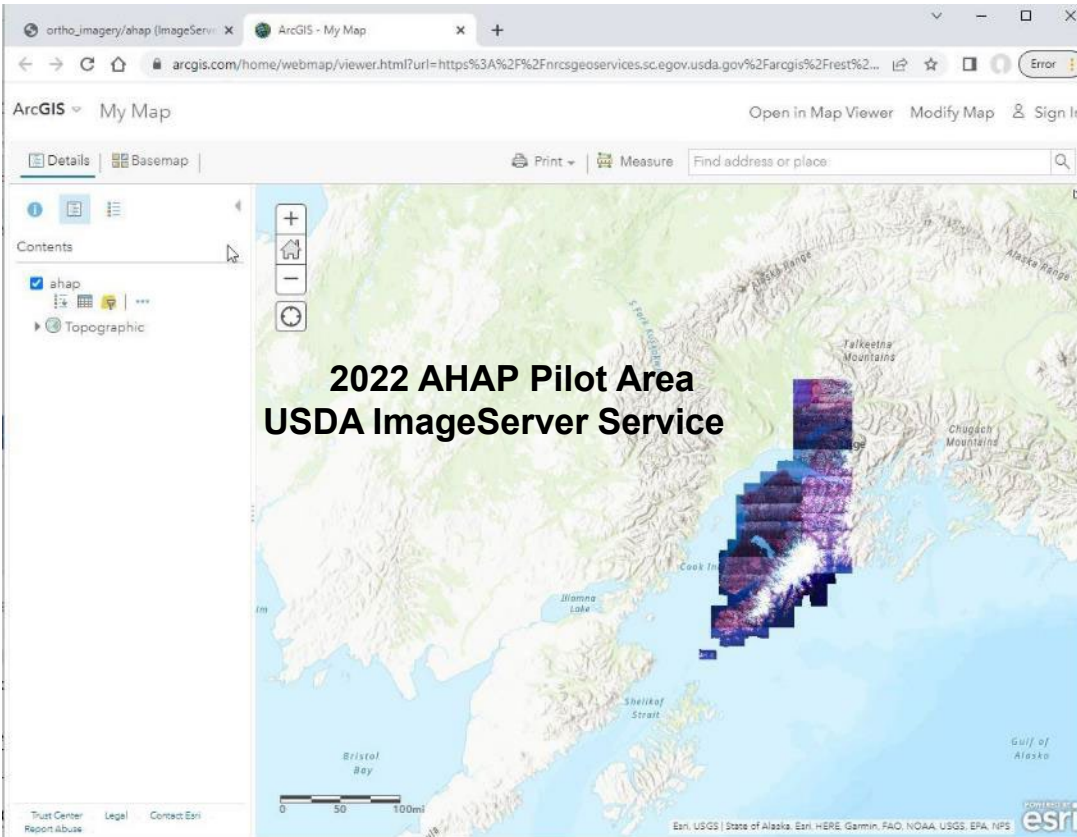
Requirements for AHAP Orthorectified Files (Partial List)

- Orthorectified imagery delivered in GeoTIFF format at 1 meter ground sample distance by 7.5' x 15' DOQ's (1:25,000) tiling scheme.
- Image buffer or overlap of at least 40 pixels (40 meters) on all sides.
- Projection: Decimal Degrees, Spheroid-WGS 1984, Datum-WGS 1984.
- **Require use of Alaska IfSAR 5-meter DEM's** for vertical control for orthorectification process.
- Data Available: <https://earthexplorer.usgs.gov/>
- Description of IfSAR Data for Alaska:
https://www.usgs.gov/centers/eros/science/usgs-eros-archive-digital-elevation-interferometric-synthetic-aperture-radar?qt-science_center_objects=0#qt-science_center_objects
- **Require Alaska Maxar Vivid datasets** (50 cm resolution, 4 MS bands) for horizontal control.
<https://soadnr.maps.arcgis.com/home/item.html?id=13dd1ccf165845eea5db36465e7d565c>
- Horizontal accuracy of 10 meters at 95% confidence in lower elevation areas with cultural landmarks (urban areas) and 20 meters confidence in Glaciers/Mountains.
- Perform a quality assurance and quality control (QA/QC) on the final orthorectified tiles before delivery.
- Create FGDC compliant metadata to be delivered with final products.
- Provide project deliverables through electronic transfer (Internet).
- Use file naming standards as listed below in section "AHAP File Naming Specifications".





ImageServer Service Location URL:



URL: https://nrcsgeoservices.sc.egov.usda.gov/arcgis/rest/services/ortho_imagery

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Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW
Washington, D.C. 20250-9410;
- (2) fax: (202) 690-7442; or
- (3) email: program.intake@usda.gov.





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