



# Alaska Mapping Executive Committee

June 9, 2015

# + Agenda

- Member Introductions, Opening Remarks – *Jennifer Gimbel, DOI; Mike Aimone, DOD*
- Executive Committee History, Charter, Membership, Thematic Objectives – *Kevin Gallagher, USGS*
- State of Alaska Update – *Mark Myers, Ed Fogels, AK DNR*
- Alaska Hydrography Update – *Becci Anderson, USGS*
- Alaska IFSAR Status and Plans – *Dave Saghy, USGS*
- GRAV-D and Shoreline Mapping – *Juliana Blackwell, NOAA*
- Alaska IFSAR Celebration Planning – *Ed Fogels, AK DNR*
- Closing Remarks – *Jennifer Gimbel, DOI*
- Adjourn

# + Alaska Mapping Executive Committee - History

- The June 2012 Alaska Mapping Roundtable reviewed the need to improve the state of mapping in Alaska
- The Alaska Mapping Executive Committee (AMEC) was formed as an outcome of the Roundtable
- AMEC held its first meeting in November, 2012



# + Alaska Mapping Executive Committee - Charter

- Charter was approved by AMEC vote in November, 2012
  
- Purpose of Committee: In collaboration with the State, to oversee, prioritize and accelerate the federal role in mapping Alaska
  
- Committee Guiding Principles:
  - Use enterprise approach to enable greatest efficiencies
  - Work in partnership with the State of Alaska to commit and coordinate funding
  - Leverage existing efforts, resources, and relationships
  - Implement FGDC best practices and enable data access through the Geospatial Platform

# +Alaska Mapping Executive Committee Membership

## Broad Federal Bureau and Department Representation:

- BLM, DHS, DOI, DOT, EPA, OMB, OSTP, FAA, FEMA, FWS, NGA, NRCS, NOAA, NPS, USACE, USFS, USDA, USGS

State of Alaska Representation: As determined under the leadership of the Governor's Office, including members of the Alaska Geospatial Council

# + Alaska Mapping and the Arctic

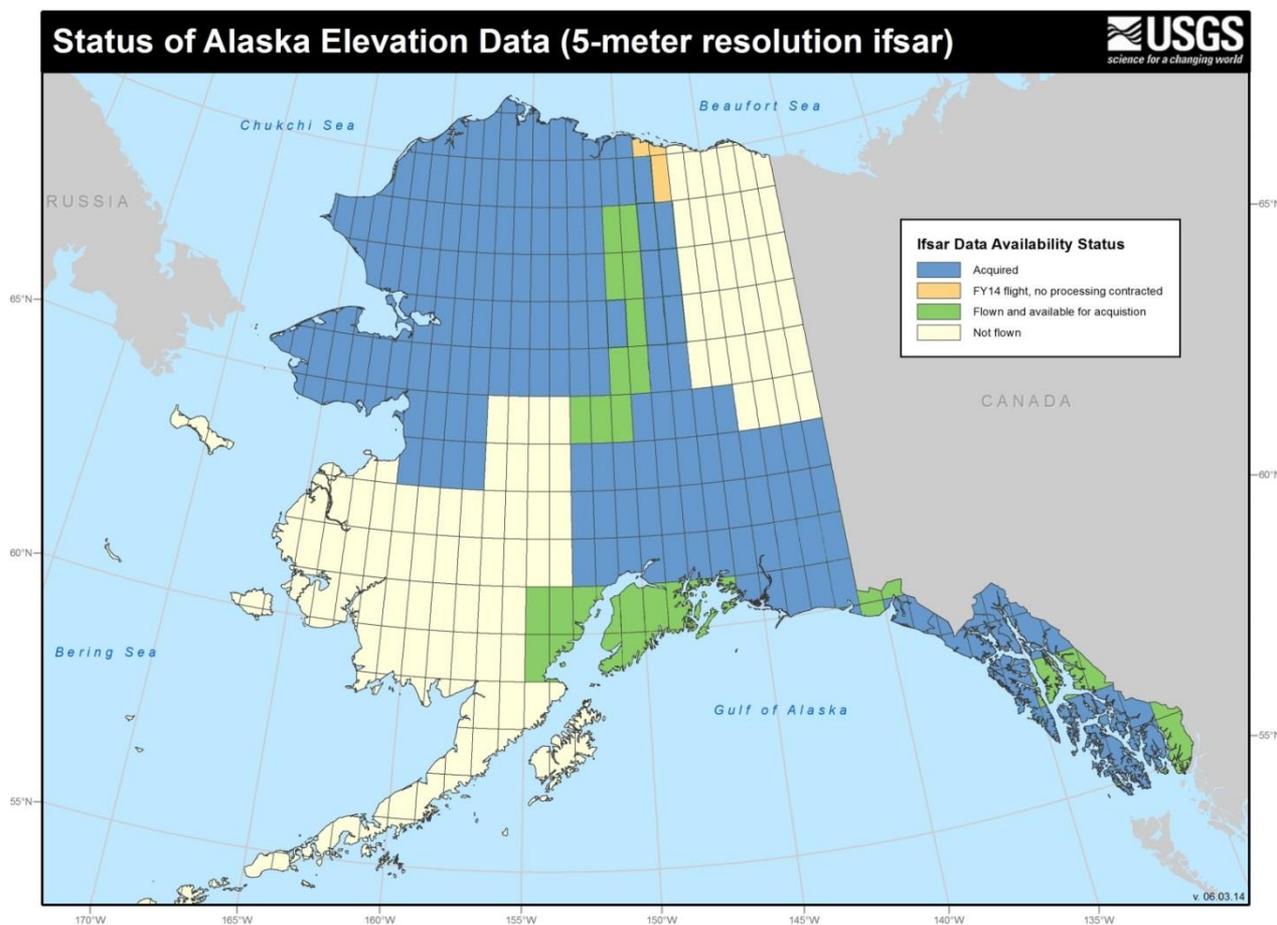
- Mapping provides a foundation for critical Arctic Council Initiatives
- Alaska and Arctic mapping provide a foundational base for Arctic science collaboration
- Alaska mapping is an underpinning element for defined projects of several Arctic Council Working Groups
- Arctic Council is encouraging the development of an 'Arctic Digital Elevation Map' as one of the listed Arctic Council deliverables under the two-year US Chairmanship
- Updated statewide hydrography data are critical to accurate climate studies and modeling – enhanced elevation data are used directly to support hydrography improvements
- *The work of the AMEC is having significant domestic and international impact*

# + Data Acquisition Accomplishments

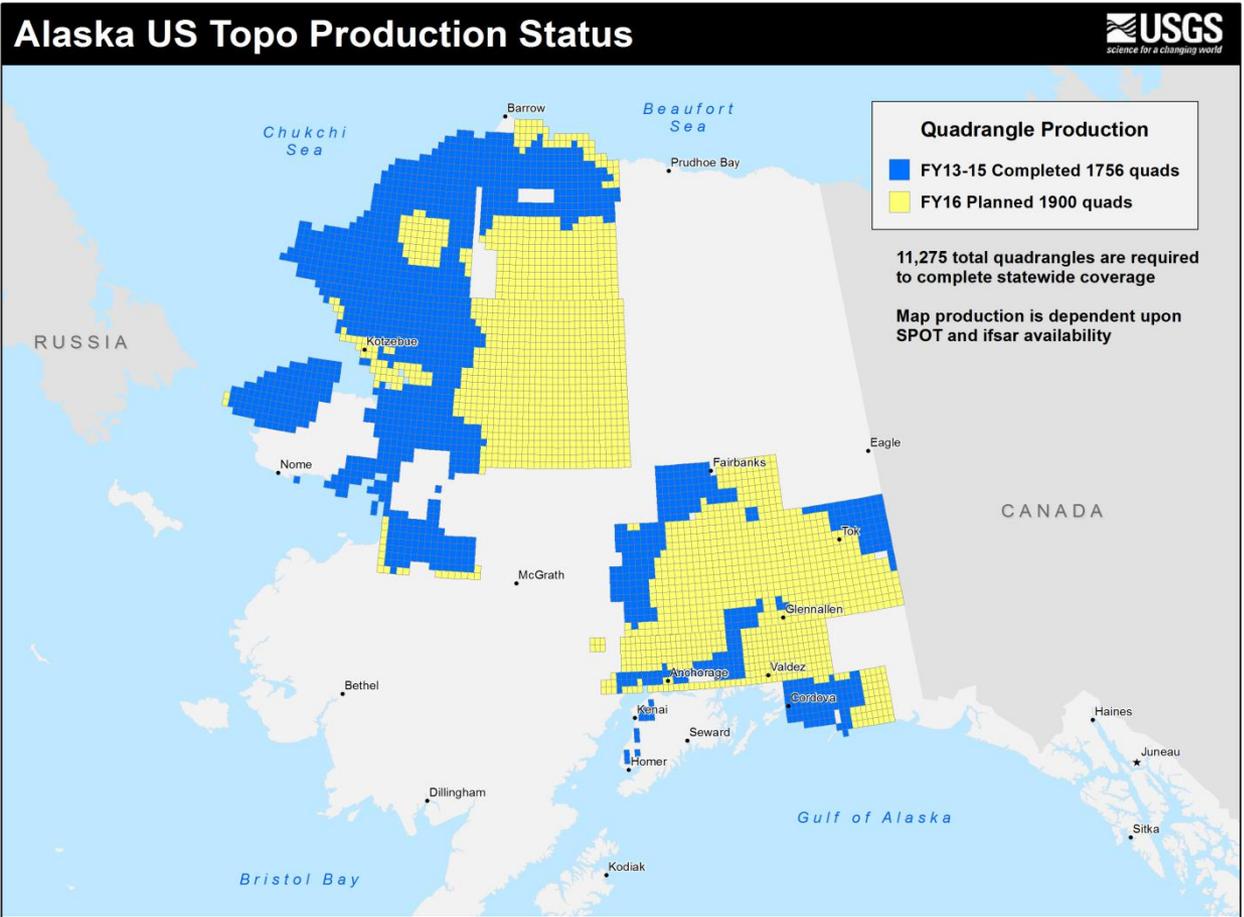
Theme	Metric	2013 Goal	2015 Status
Elevation (Ifsar)	% IFSAR acquired	Complete in 4 years	56.7% statewide coverage achieved
Hydrography	% NHD updated	Complete in 6 years	10.2% updated
Transportation	% of State completed and publicly available	Complete in 5 years	AK DOT is working to complete a statewide baseline dataset
GRAV-D	% GRAV-D acquired	Complete in 2019	42%
Coastal Mapping	% AK shoreline updated	Complete in 5 years with budget increase, longer term if not (avg. 1%/year)	FY14 3.7% FY15 4.1% FY16 2.1%*

# + Alaska Ifsar Acquisition Status

- 53.5% fully funded (blue) through December 2014
- 16% has been collected through End-of-Year funding



# + US Topo Map Production Status

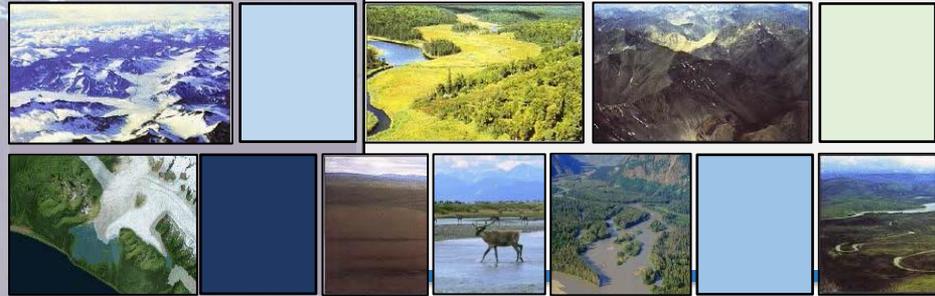
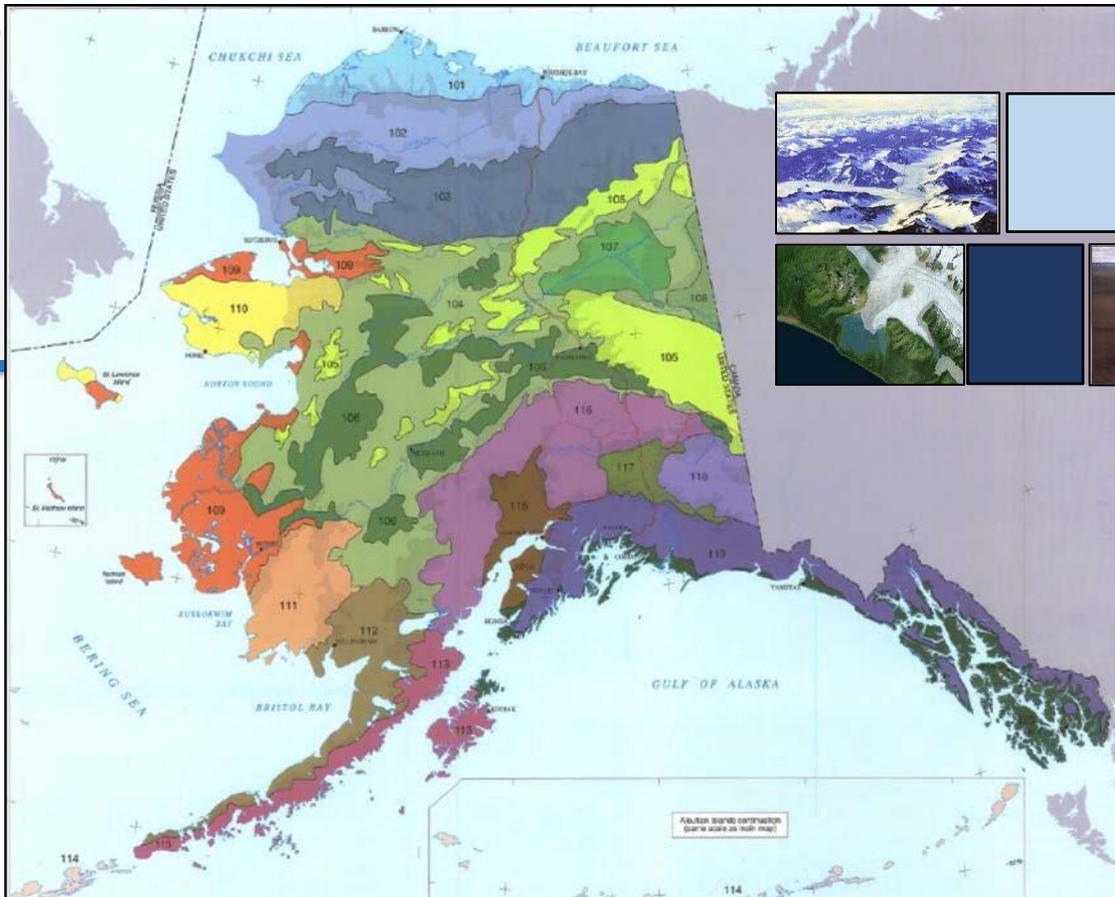


- Blue: 1756 newly published US Topo maps FY13-FY15
- Yellow: 1900 maps potential for FY16
- 11,275 maps Statewide
- Map production requires SPOT imagery and ifsar elevation data

# MAPPING ALASKA



## STATE OF ALASKA UPDATE



- |   |   |   |   |   |
|---|---|---|---|---|
|   |   |   |   |   |
|  |  |  |  |  |
|  |  |  |  |  |
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# State of Alaska Update

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## Alaska Geospatial Council

- MOA in circulation

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## Geospatial Information Officer

- Established within the Dept. of Natural Resources

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## Upcoming fiscal year funding

- Limited FY16 funds for mapping

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## Statewide orthoimagery

- 2.5-meter statewide dataset nearing completion

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## Alaska mapping and Arctic Policy

- Mapping efforts support Arctic objectives



# Alaska Geospatial Council

DNR Comm. Mark Myers, chair

## State Memorandum of Agreement

Natural  
Resources

Environmental  
Conservation

Fish &  
Game

University  
of Alaska

Transportation  
& Public  
Facilities

Military &  
Veterans  
Affairs

Commerce,  
Community &  
Economic  
Development

## Members to be annexed

3 Federal  
agencies,  
inc. USGS

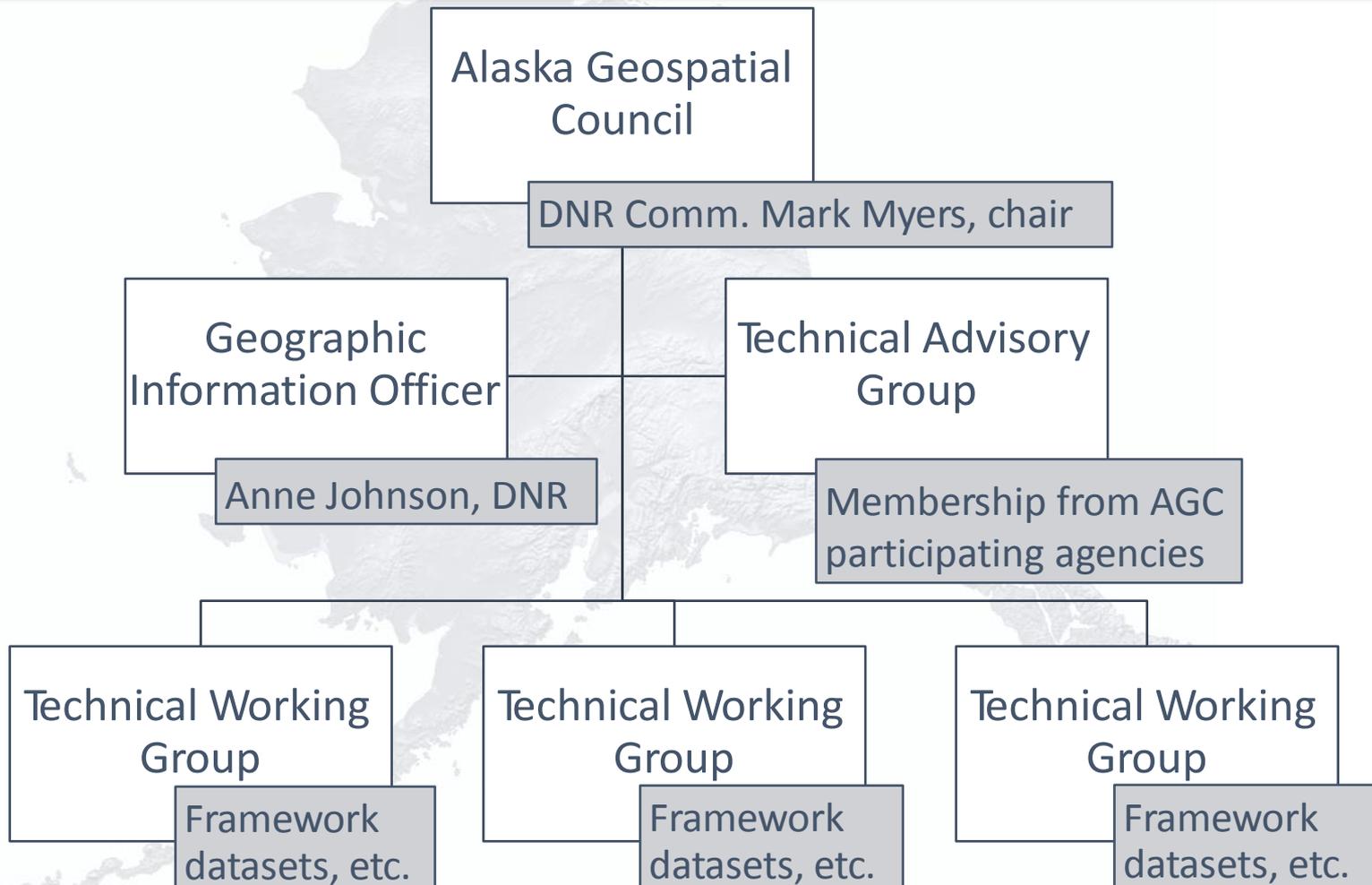
Federal  
agency

Alaska  
Native  
Corporation

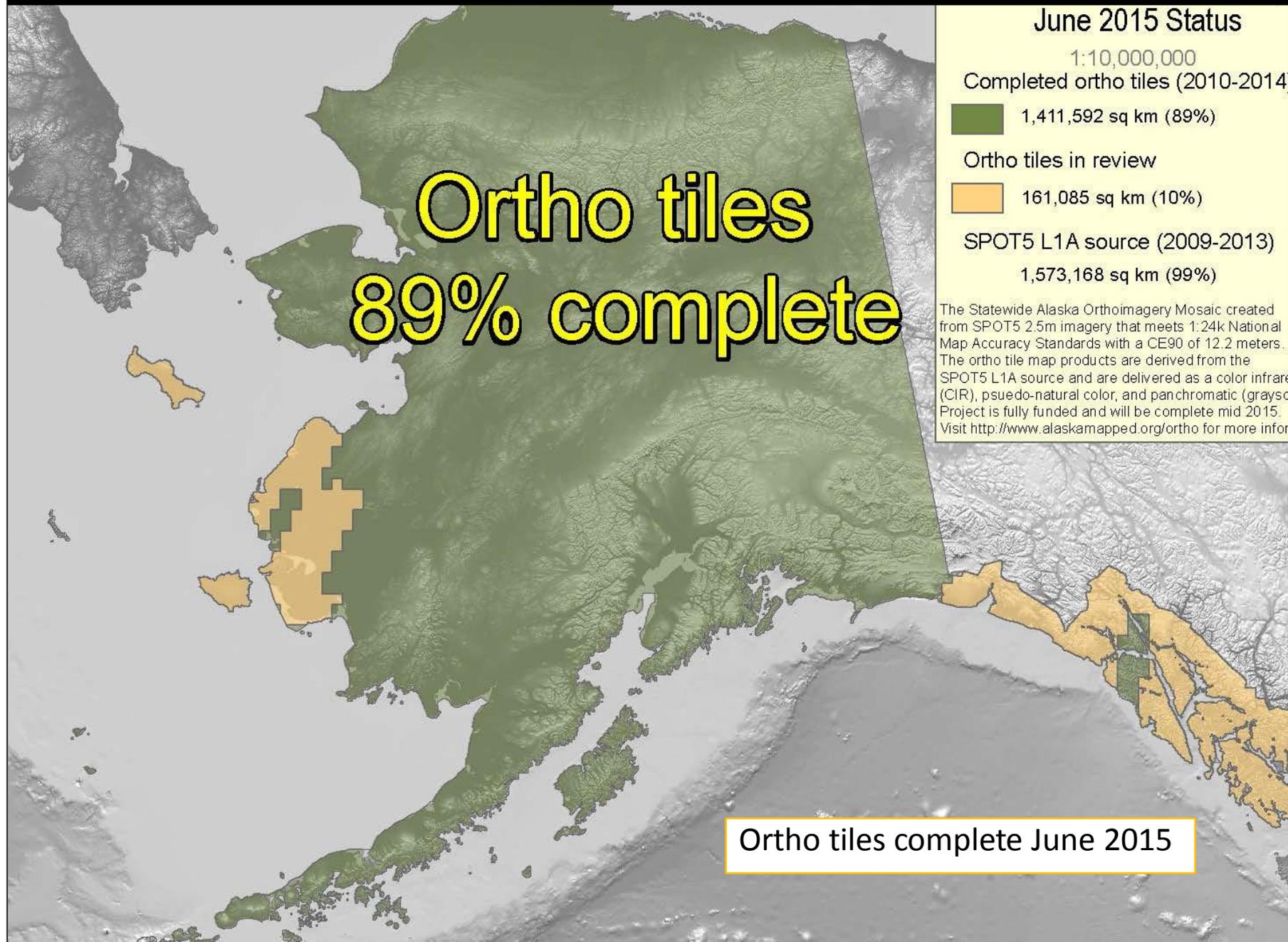
Local  
Gov't



# Alaska Geospatial Council



# Statewide Digital Mapping Initiative Orthoimagery Status



## June 2015 Status

1:10,000,000

Completed ortho tiles (2010-2014)

1,411,592 sq km (89%)

Ortho tiles in review

161,085 sq km (10%)

SPOT5 L1A source (2009-2013)

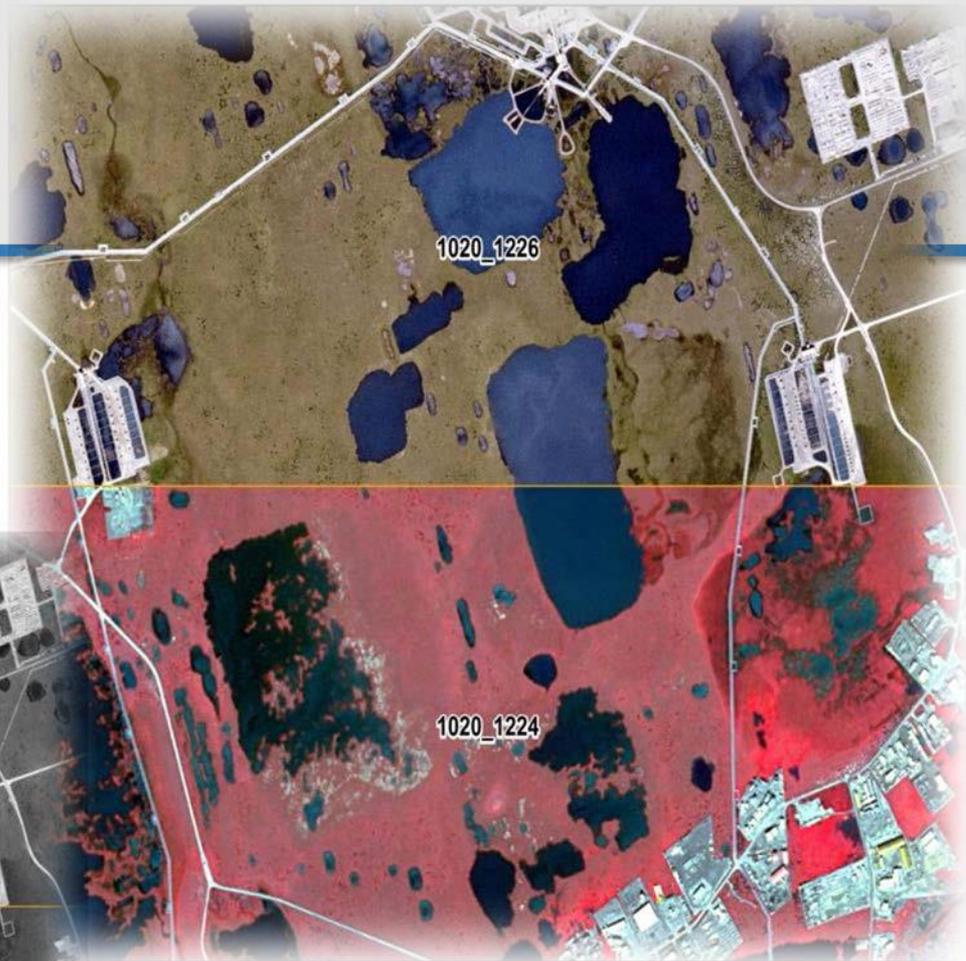
1,573,168 sq km (99%)

The Statewide Alaska Orthoimagery Mosaic created from SPOT5 2.5m imagery that meets 1:24k National Map Accuracy Standards with a CE90 of 12.2 meters. The ortho tile map products are derived from the SPOT5 L1A source and are delivered as a color infrared (CIR), pseudo-natural color, and panchromatic (grayscale) products. The Statewide Alaska Orthoimagery Mosaic Project is fully funded and will be complete mid 2015. Visit <http://www.alaskamapped.org/ortho> for more information.

# Products

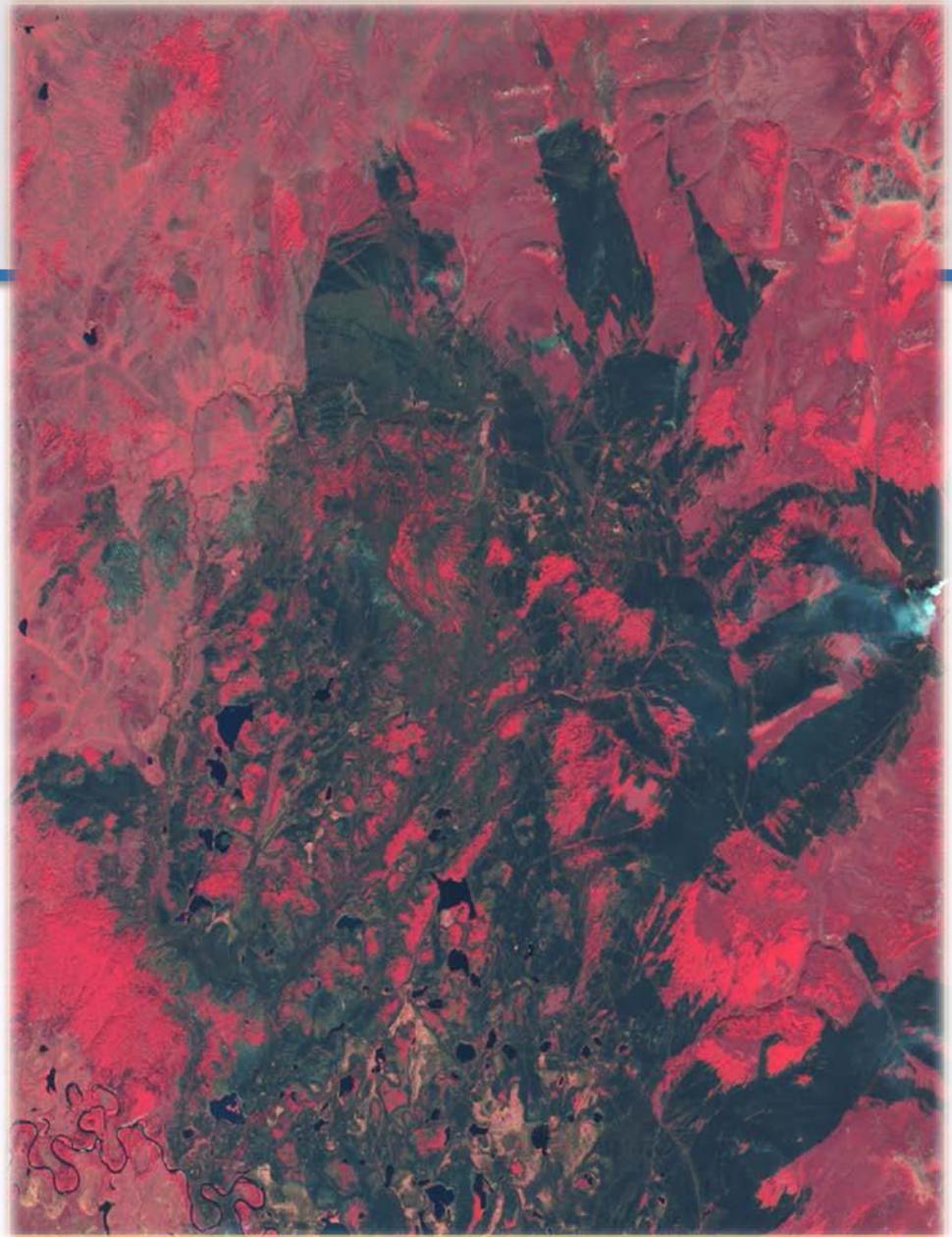
RGB vs CIR

Pan – no stretch



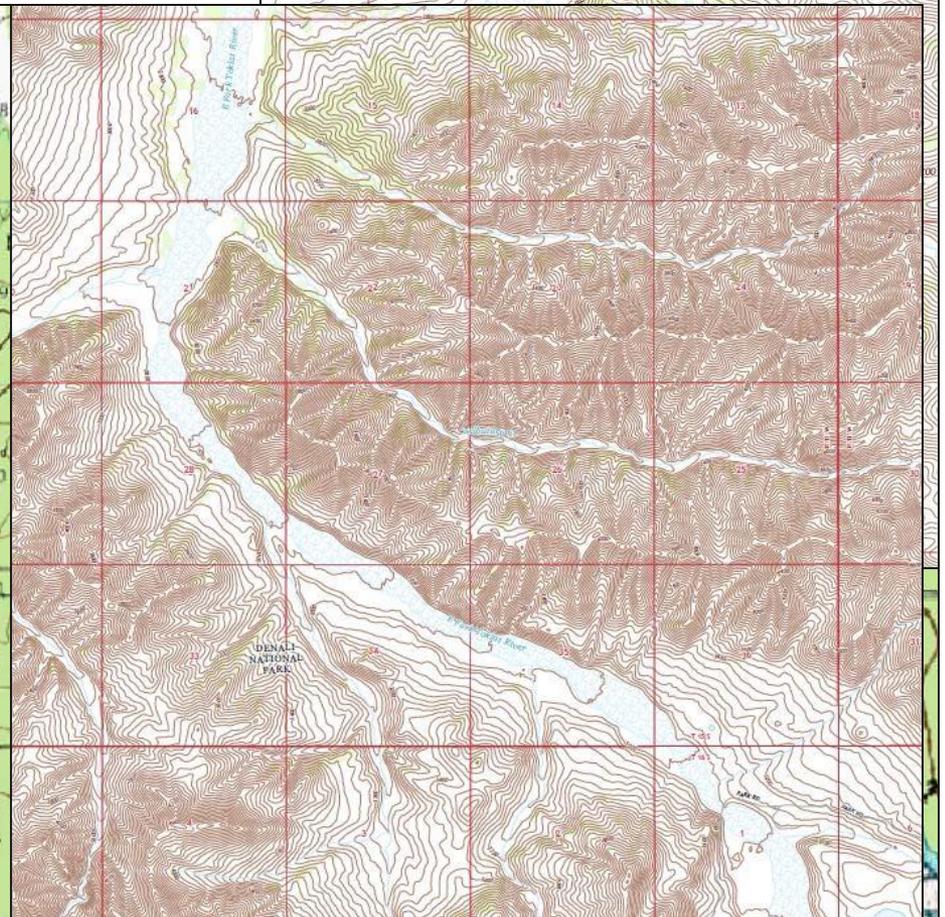
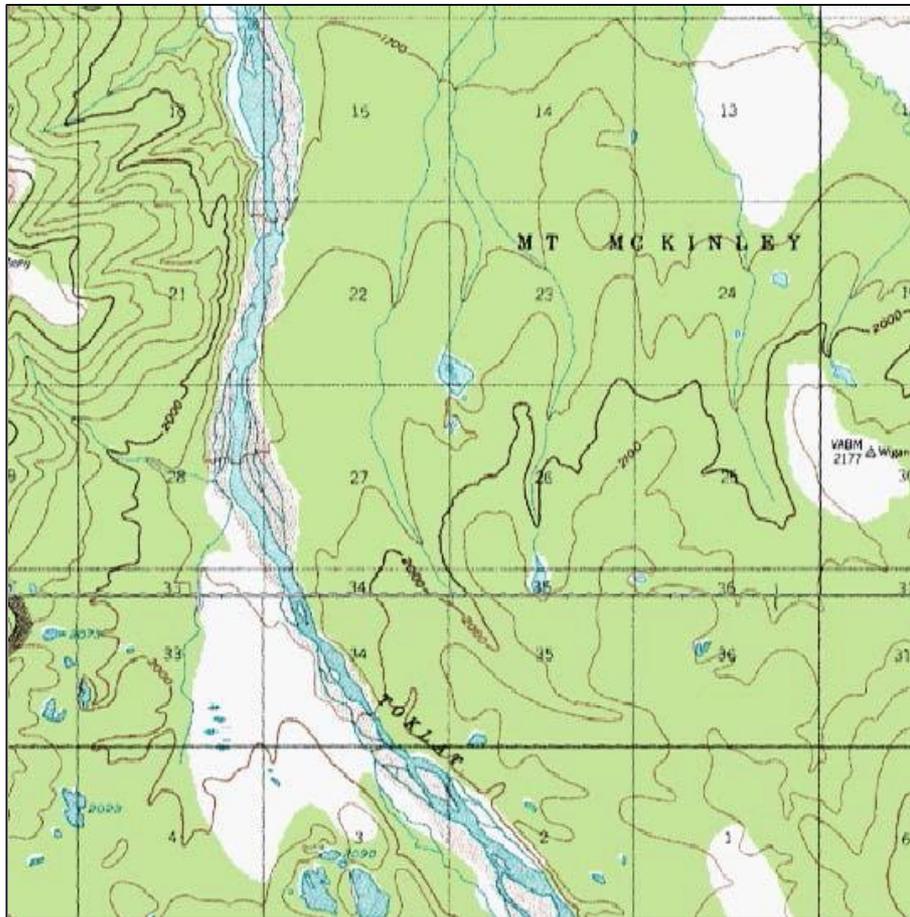
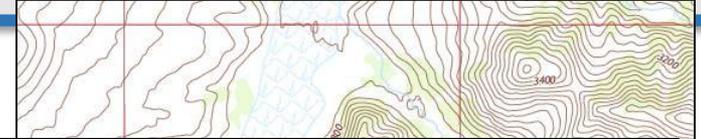
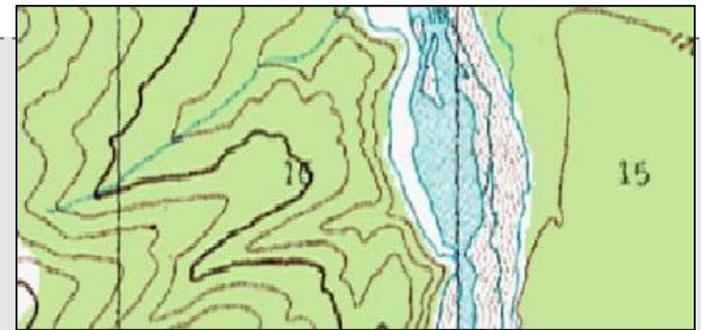
# Sample Tiles

## Wildfire Mapping



# Sample Uses

## Improved maps

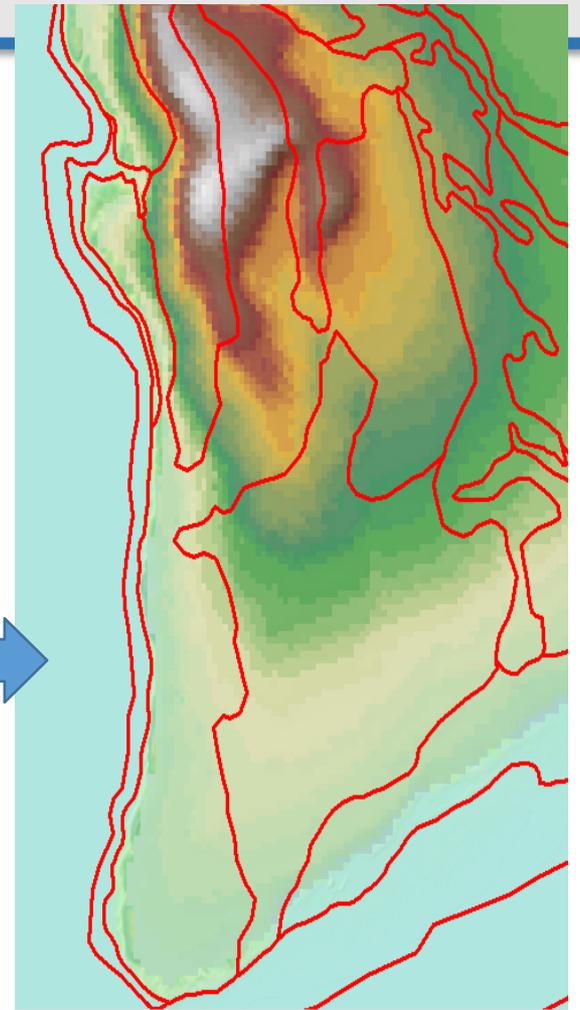


# Clearer delineation of coastlines and landforms

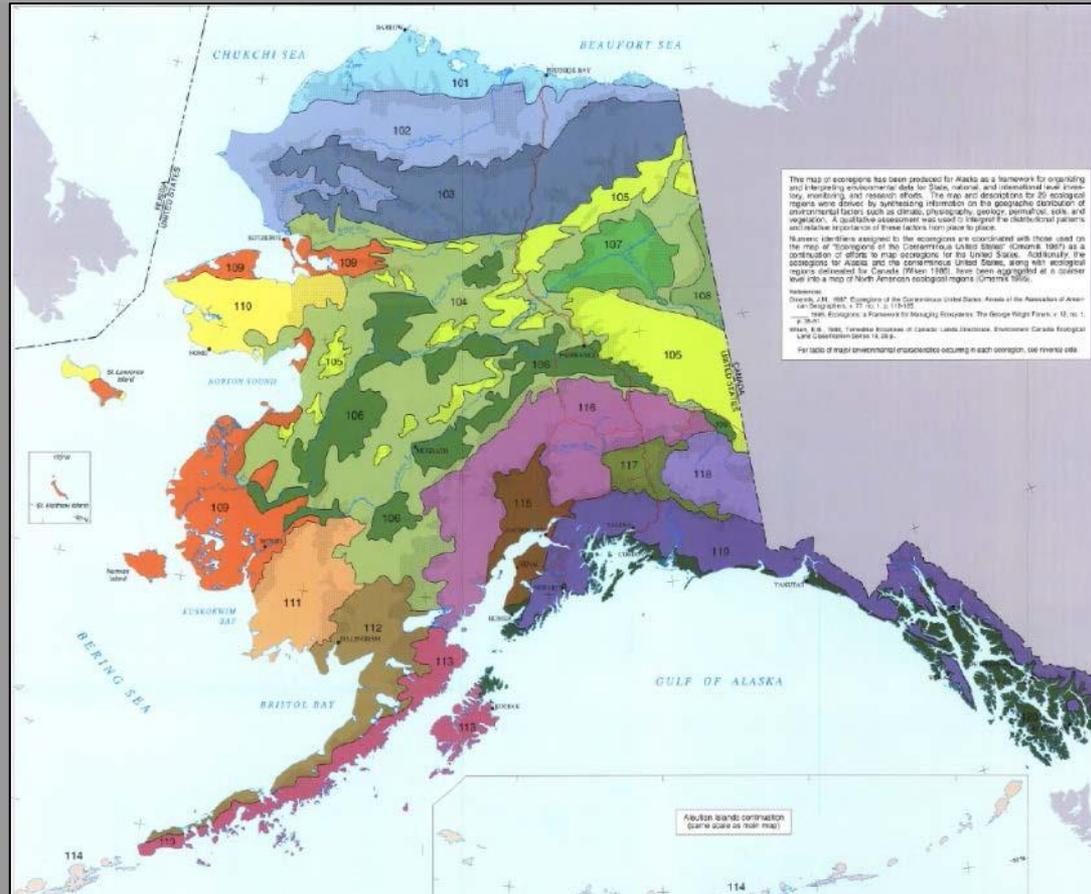


5-meter  
IfSAR  
hillshade

60-meter  
NED  
hillshade

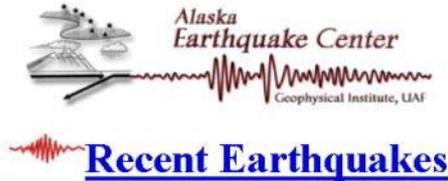


# Ecoregions of Alaska

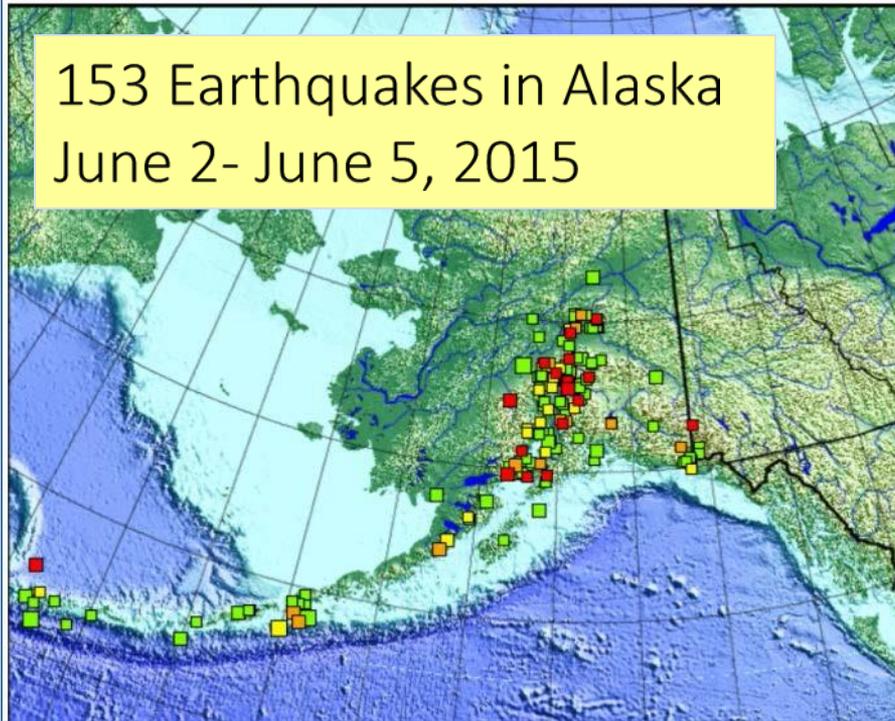


- 101 Arctic Coastal Plain** 50,000 sq km  
 The northern ecoregion is bounded on the east and the south by the Brooks Range and extends westward to the international boundary between Alaska and the Yukon Territory, Canada. The coastal plain extends inland from the coast for 100 to 200 km. The map shows the coastal plain as a single unit, but in reality it is a mosaic of low-lying tundra, shrub tundra, and open tundra. The coastal plain is a mosaic of low-lying tundra, shrub tundra, and open tundra. The coastal plain is a mosaic of low-lying tundra, shrub tundra, and open tundra.
- 102 Arctic Foothills** 124,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 103 Brooks Range** 236,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 104 Interior Forested Lowlands and Uplands** 266,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 105 Interior Highlands** 415,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 106 Interior Bifurcated** 405,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 107 Yukon Flats** 35,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 108 Ogish Mountains** 11,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 109 Subarctic Coastal Plains** 91,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 110 Seward Peninsula** 47,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 111 Arctic Coastal Plain** 50,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 112 Arctic Foothills** 124,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 113 Brooks Range** 236,000 sq km  
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- 114 Interior Forested Lowlands and Uplands** 266,000 sq km  
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- 117 Yukon Flats** 35,000 sq km  
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- 118 Ogish Mountains** 11,000 sq km  
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- 119 Subarctic Coastal Plains** 91,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 113 Aleutian and Kilikuk Mountains** 31,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 114 Bristol Bay-Nushagak Lowlands** 81,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 115 Alaska Peninsula Mountains** 45,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 116 Aleutian Islands** 72,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 117 Cook Inlet** 21,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 118 Aleutian Fringe** 117,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 119 Copper River** 17,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 120 Wrangell Mountains** 28,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 121 Pacific Coastal Mountains** 106,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.
- 122 Coastal Western Hemlock-Tsuga-Cloudberry Forests** 91,000 sq km  
 The ecoregion consists of a broad belt of rolling hills and low mountains that extends from the Brooks Range in the north to the Yukon River in the south. The ecoregion extends from the Brooks Range in the north to the Yukon River in the south.

# Monitoring geologic hazards



153 Earthquakes in Alaska  
June 2- June 5, 2015



# The Use of Elevation Data (IFSAR & Lidar) at the Alaska Division of Geological & Geophysical Surveys

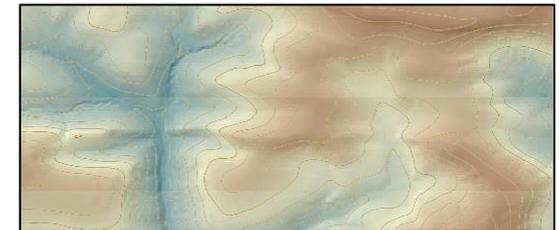


*Elevation Data & its Derived Products are Critical to Geologic Analysis*

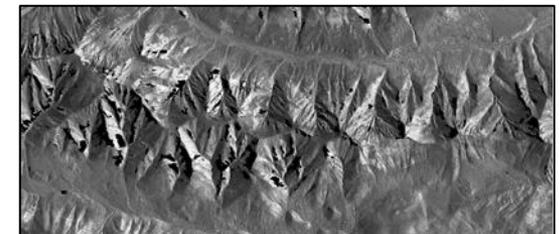
Serving Elevation (IFSAR & Lidar) Datasets for download and direct use to the Public via **DGGS's *Elevation Datasets of Alaska*** custom built map based web interface



Base Map and Elevation Contour Line Generation for Geologic Mapping



Geologic Analysis with the Orthorectified Radar images (ORIs) & other derived IFSAR products



# Alaska Mapping and Arctic Policy

- Alaska mapping efforts tie directly to Arctic Policy
  - National Strategy for the Arctic Region
  - Alaska Climate Change Executive Roundtable (ACCER)

# MAPPING ALASKA'S WATER

ALASKA HYDROGRAPHY UPDATE



June 9, 2015

AMEC Meeting

**Kacy Krieger**

[kacy.krieger@uaa.alaska.edu](mailto:kacy.krieger@uaa.alaska.edu)  
Alaska Hydrography Coordinator  
Co-Chair AHTWG

**Becci Anderson**

[rdanderson@usgs.gov](mailto:rdanderson@usgs.gov)  
USGS Alaska Region  
Co-Chair AHTWG



# ALASKA'S WATER

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> 3,000,000  
Mapped Lakes and Ponds

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> 847,000  
Length of Mapped Streams and Rivers in miles

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47,000  
Length of Mapped Coastline in miles

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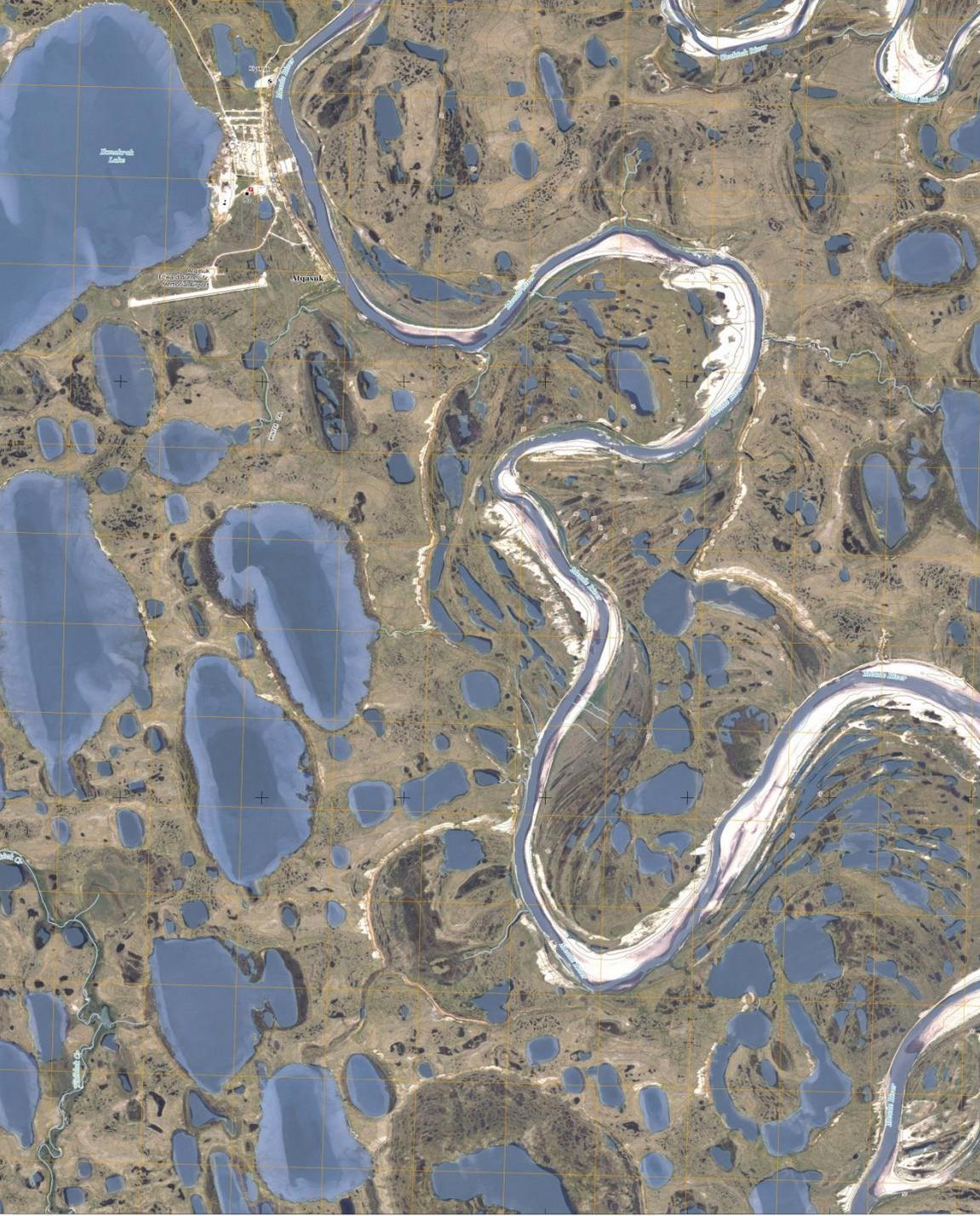
1,980  
Length of the longest river, the Yukon, in miles

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616  
Named Glaciers

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**40%**  
Share of the Nation's Surface Water



# HYDROGRAPHY APPLICATIONS

Cartography

Fisheries Management

Environmental Protection

Pollution Monitoring

Transportation

Resource Management

Emergency Preparedness

Flood Mitigation

Forestry

Water Quality

Scientific Analysis

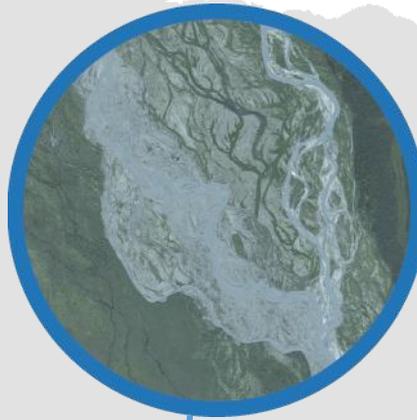
Agriculture

Planning and Development

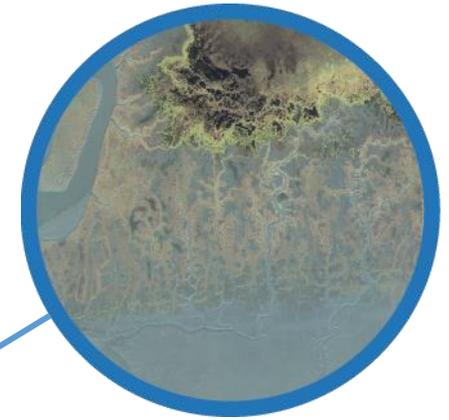
# WATER MAPPING CHALLENGES IN ALASKA



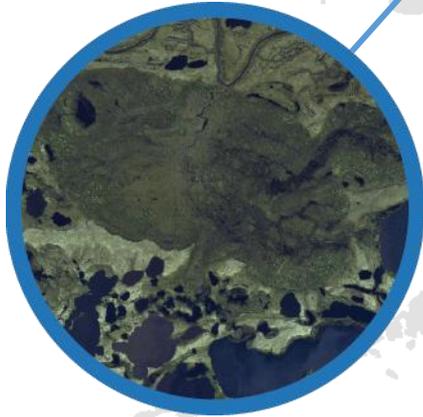
Rapidly Changing Environments



Complex Channels



Extreme Tidal Ranges



Expansive Wetlands



Remote Locations

# BACKGROUND

why we need to update Alaska's hydrography

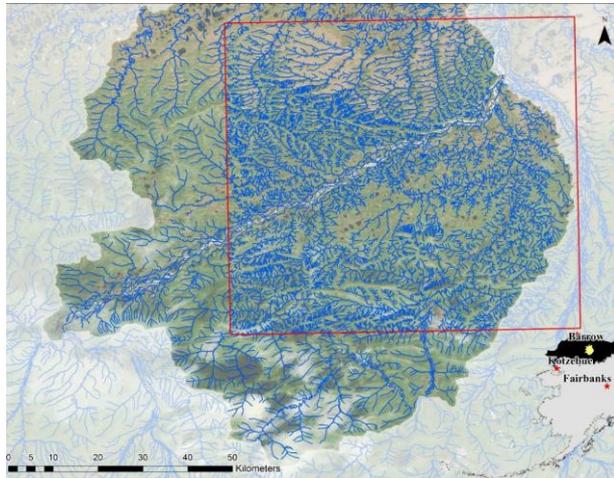
The National Hydrography Dataset (NHD) represents the surface water of the United States

Out of date for Alaska- source data from 1940s era aerial photos

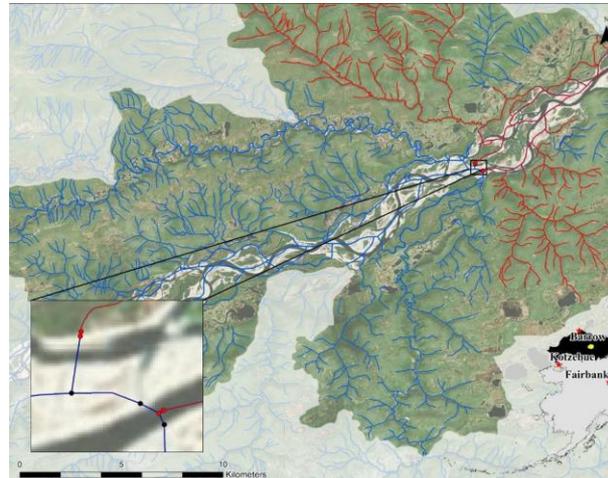
In Alaska, contains a variety of errors and misrepresentations

Separate agencies also hold a variety of hydrography datasets

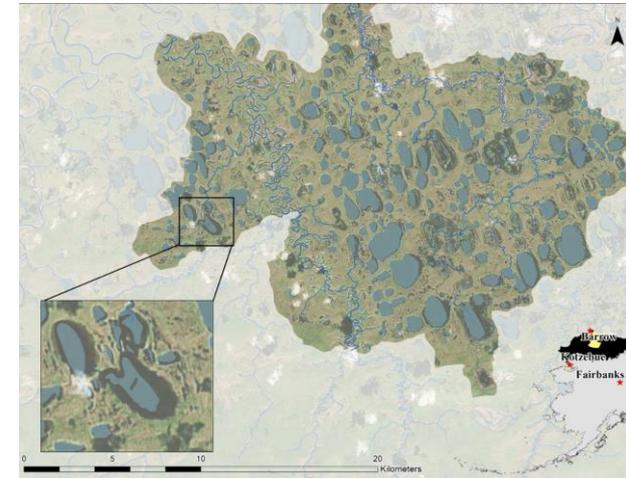
# EXISTING DATASET ISSUES



Different levels of mapping

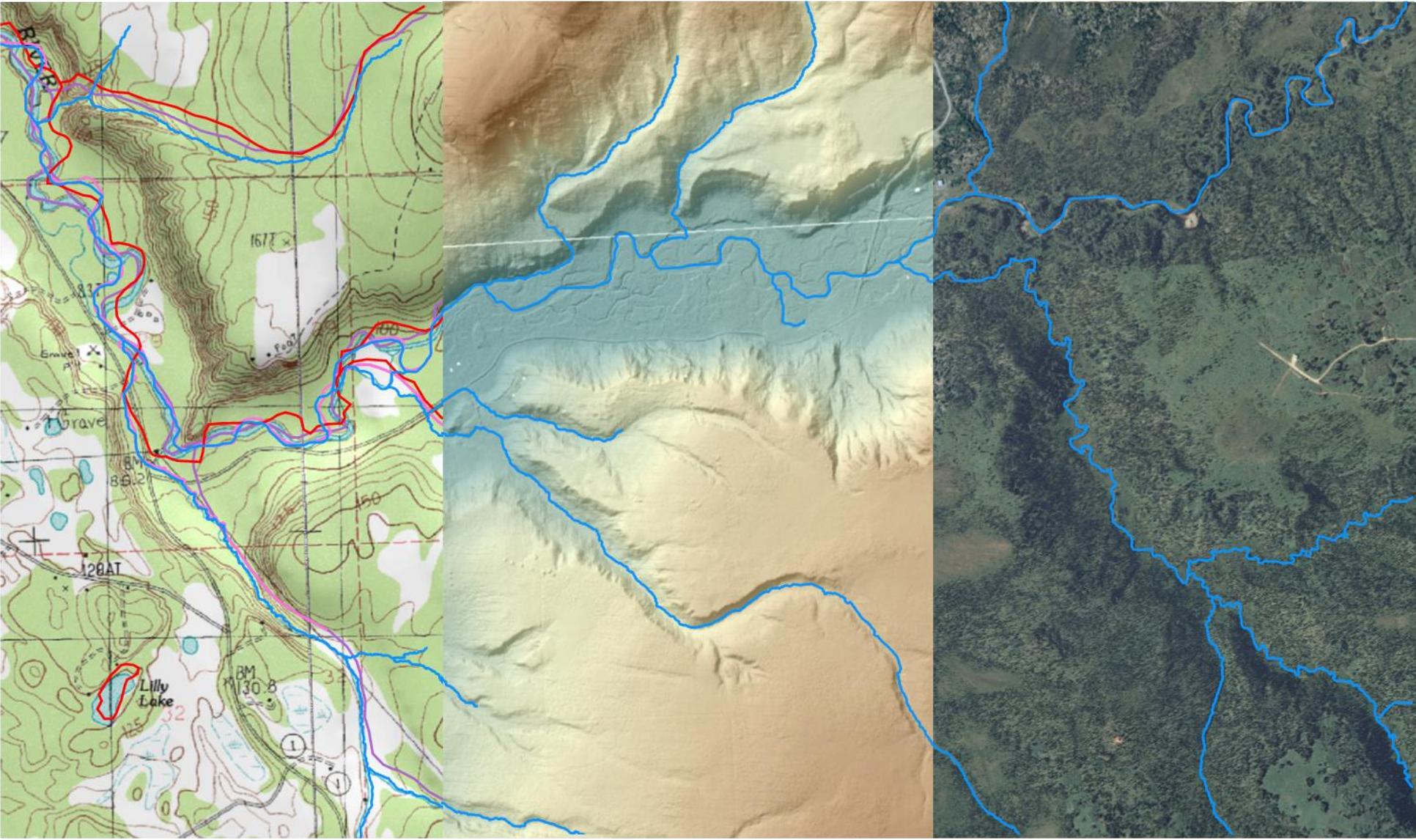


Does not support stream flow modeling



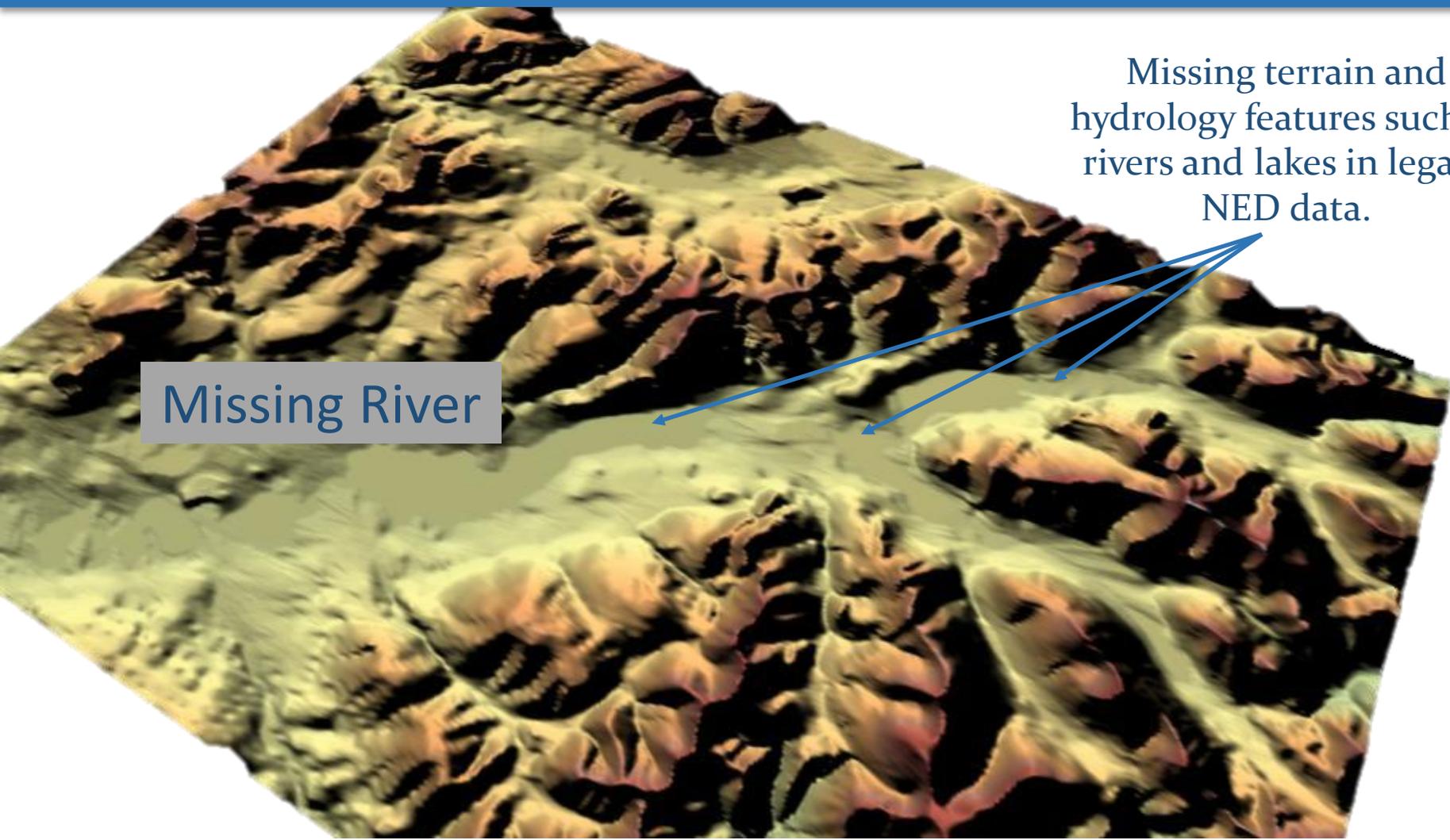
Poorly mapped features

# FIXING HYDROGRAPHY



# LEGACY 60 M ELEVATION

Cutler River, Noatak NP

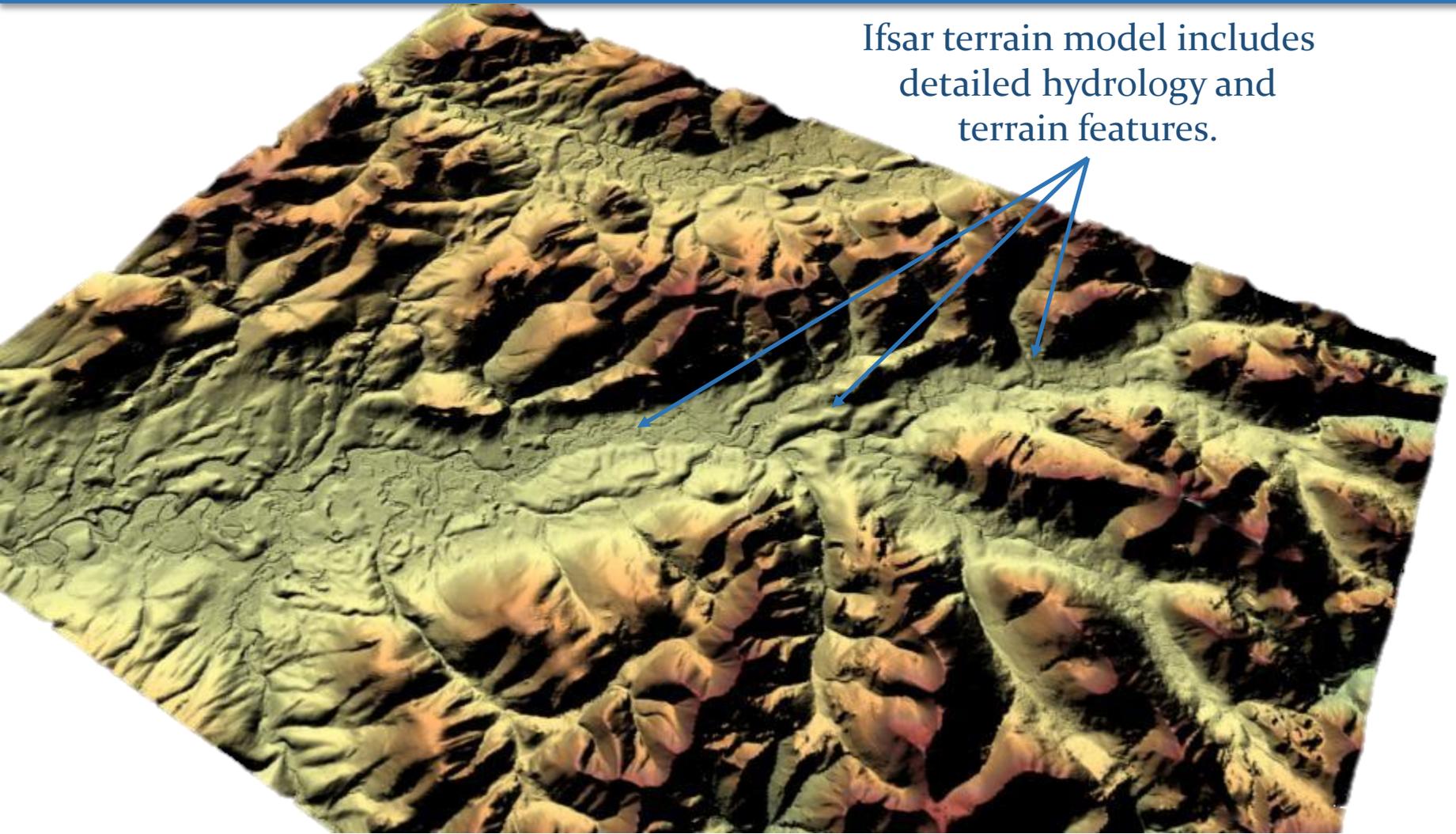


Missing terrain and hydrology features such as rivers and lakes in legacy NED data.

Missing River

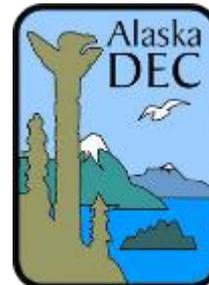
# IFSAR 5 M ELEVATION DATA

Cutler River, Noatak NP



# ALASKA HYDROGRAPHY TECHNICAL WORKING GROUP

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# ALASKA HYDROGRAPHY TECHNICAL WORKING GROUP

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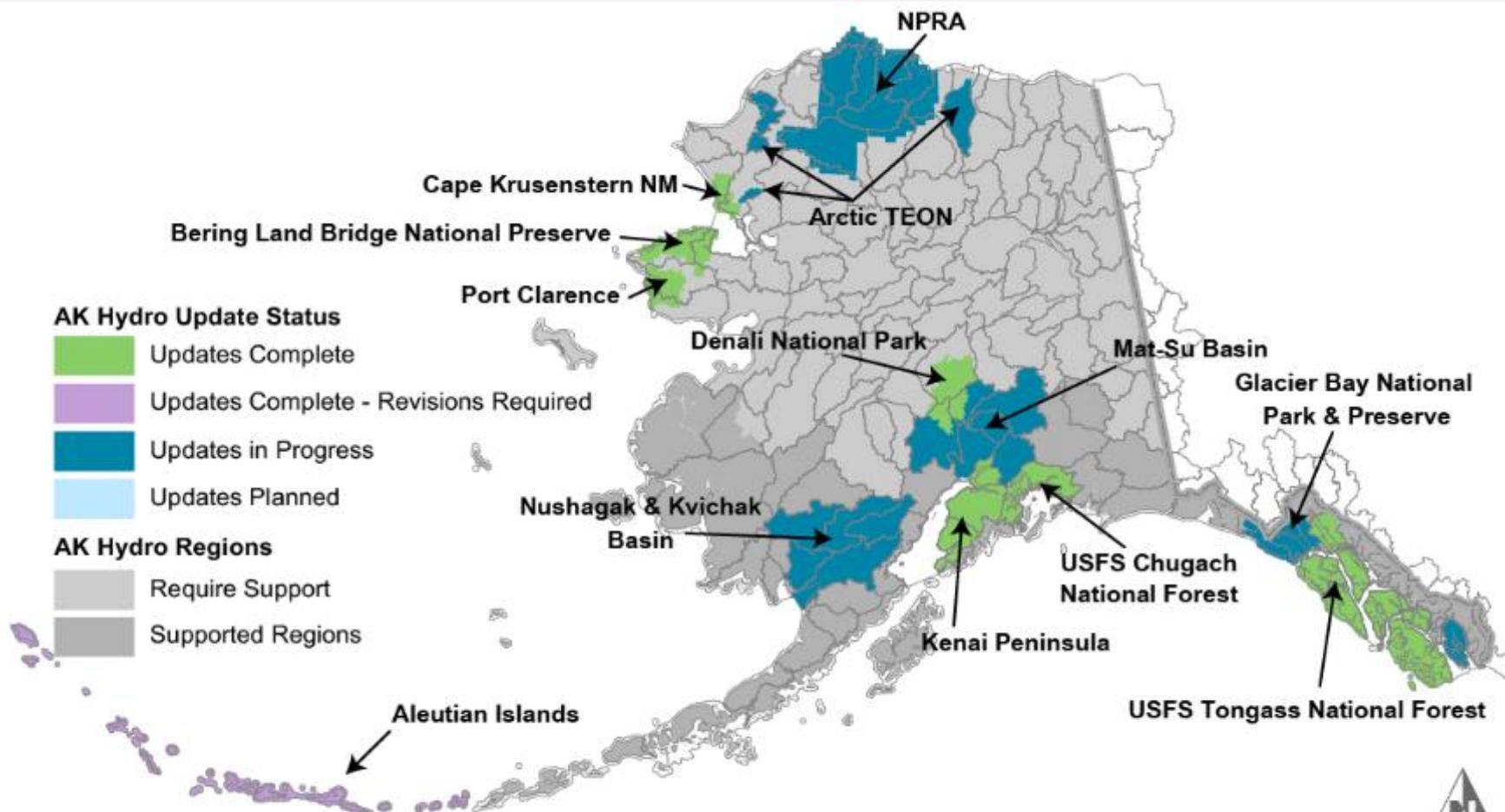
**Mission:** Supports the maintenance, stewardship, and use of common hydrography datasets for the benefit of all users

Coordinate on editing and data standards, funding, training, coordination of updates, strategic planning, etc.

Oversees the Alaska Hydrography Database (AK Hydro), a collaborative data editing and updating system

# PROJECT STATUS

complete • ongoing • planned



\* Update status current as of March 16, 2015. Does not include ongoing maintenance and support from USGS NHD program. For questions, contact Kacy Krieger, Alaska Hydrography Coordinator, (907) 786-7749, [kacy.krieger@uaa.alaska.edu](mailto:kacy.krieger@uaa.alaska.edu)



# UPDATE STATUS

goal of full hydro update

**Incomplete**

No improvements 57.1%

NHD QA/QC and network improvements 5.5%

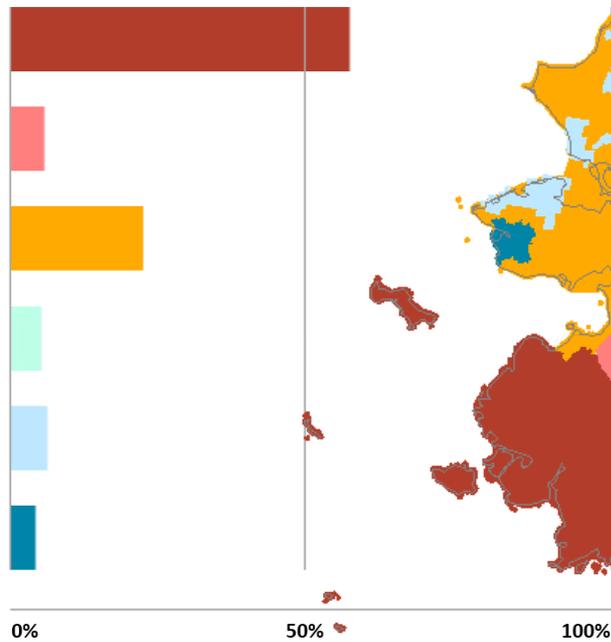
Minor improvements, edits and updates 22.4%

Partial updates 4.9%

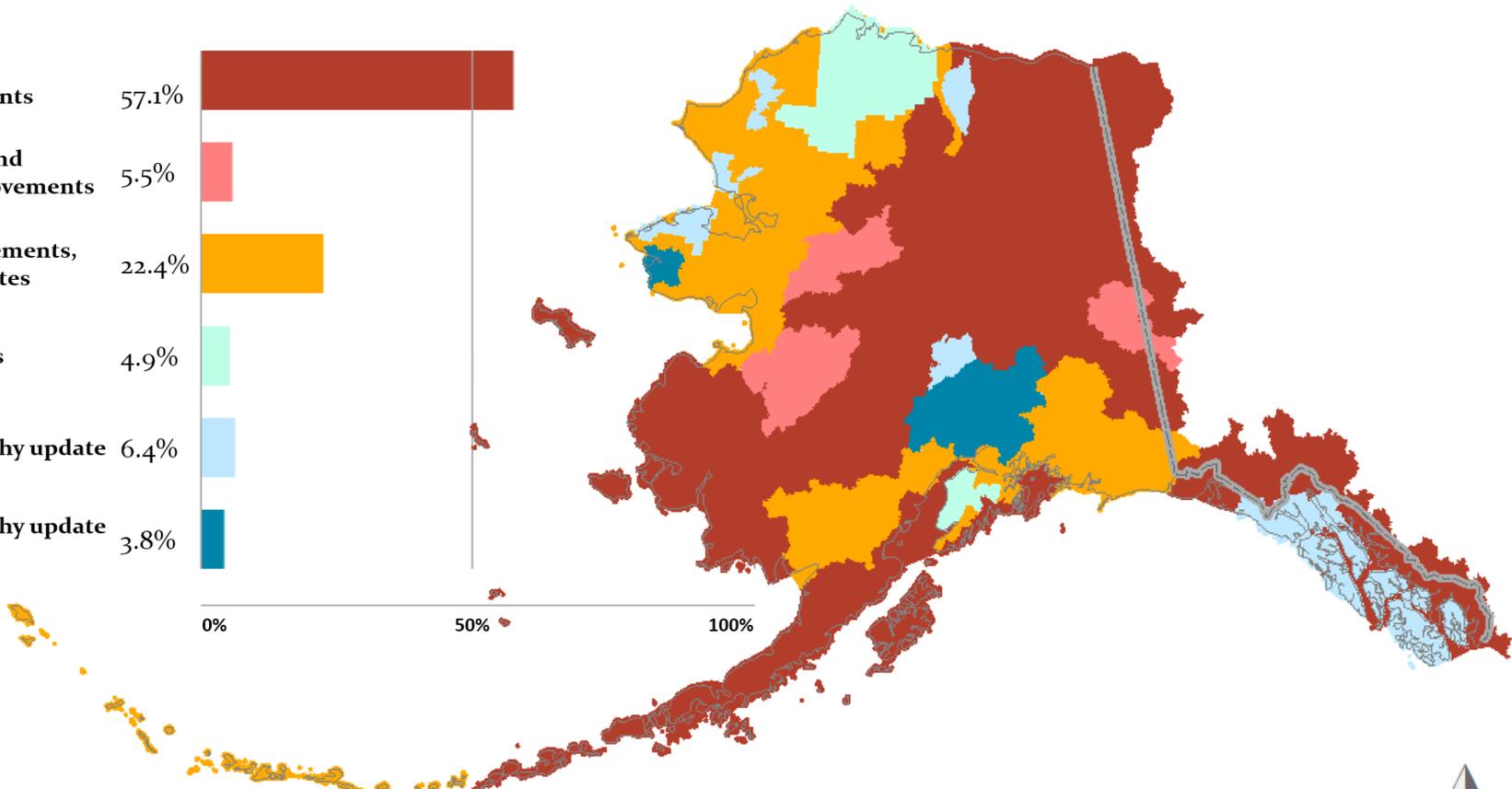
**Complete**

Full hydrography update 6.4%

Full hydrography update plus 3.8%



(2015-02-17)



# Alaska Hydrography

# UPDATE OPTIONS

## Option 1

### Statewide Contract

- Full hydrography update
- **based on elevation data**
- 2D features updated from existing datasets and IfSAR hydro masks
- Work performed by contracted vendor
- Partner support through AK Hydro
- Updates at \$55.00/mi<sup>2</sup>

Total Est. Cost **\$36,800,000 ±**

## Option 2

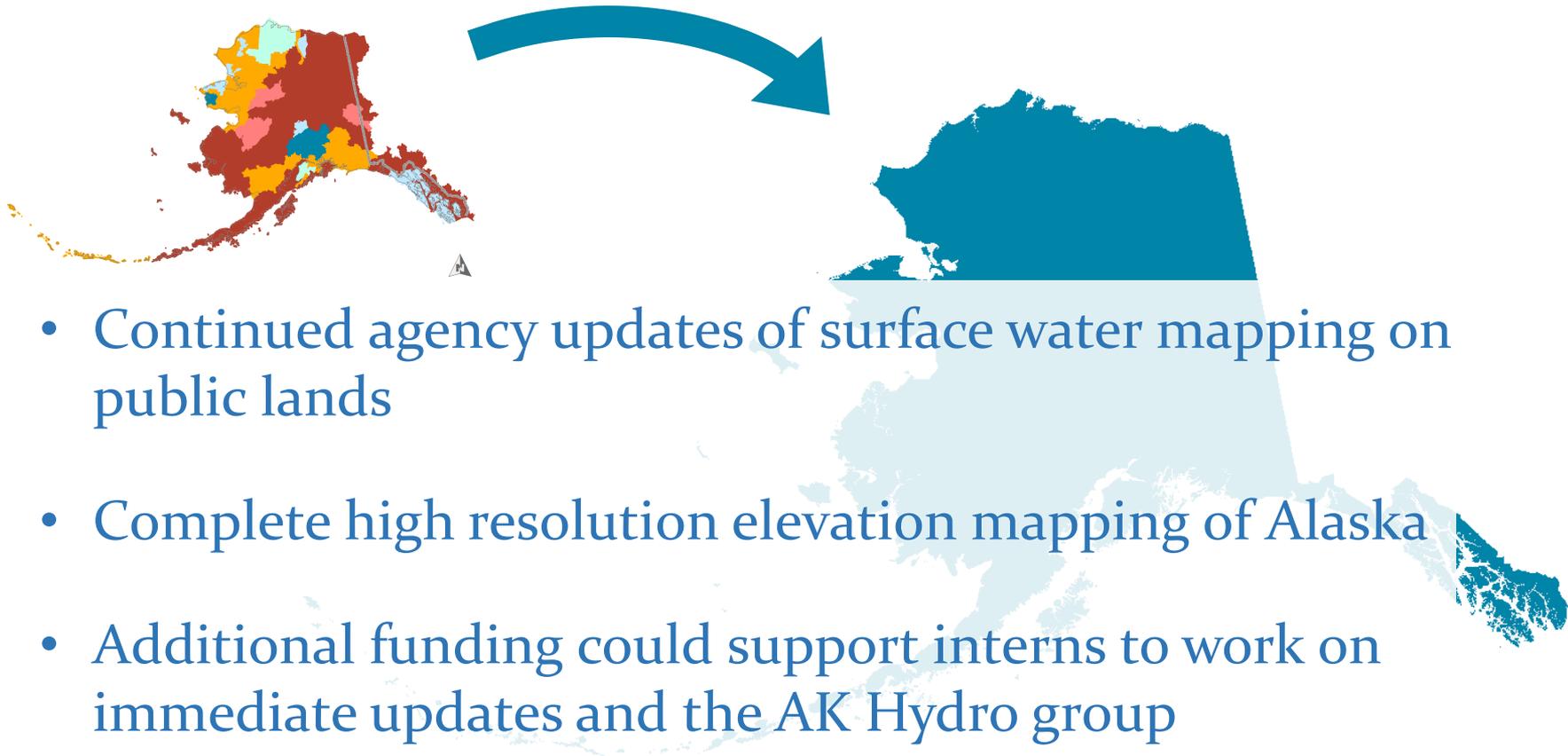
### Collaborative Updates

- Full hydrography update
- **based on elevation data**
- 2D features updated from existing datasets and IfSAR hydro masks
- Attributes from models, partners, and editors
- Edits, updates and validation work performed by Universities and partners through AK Hydro with support from USGS
- Costs cover AK Hydro Staffing and updates (bonus of AK Hydrography Coordinator covered)
- Updates at \$13.00/mi<sup>2</sup>

Total Est. Cost **\$10,300,000 ±**

# ALASKA HYDROGRAPHY SUPPORT

how you can help



- Continued agency updates of surface water mapping on public lands
- Complete high resolution elevation mapping of Alaska
- Additional funding could support interns to work on immediate updates and the AK Hydro group

# MAPPING ALASKA'S WATER

ALASKA HYDROGRAPHY UPDATE



June 9, 2015

AMEC Meeting

**Kacy Krieger**

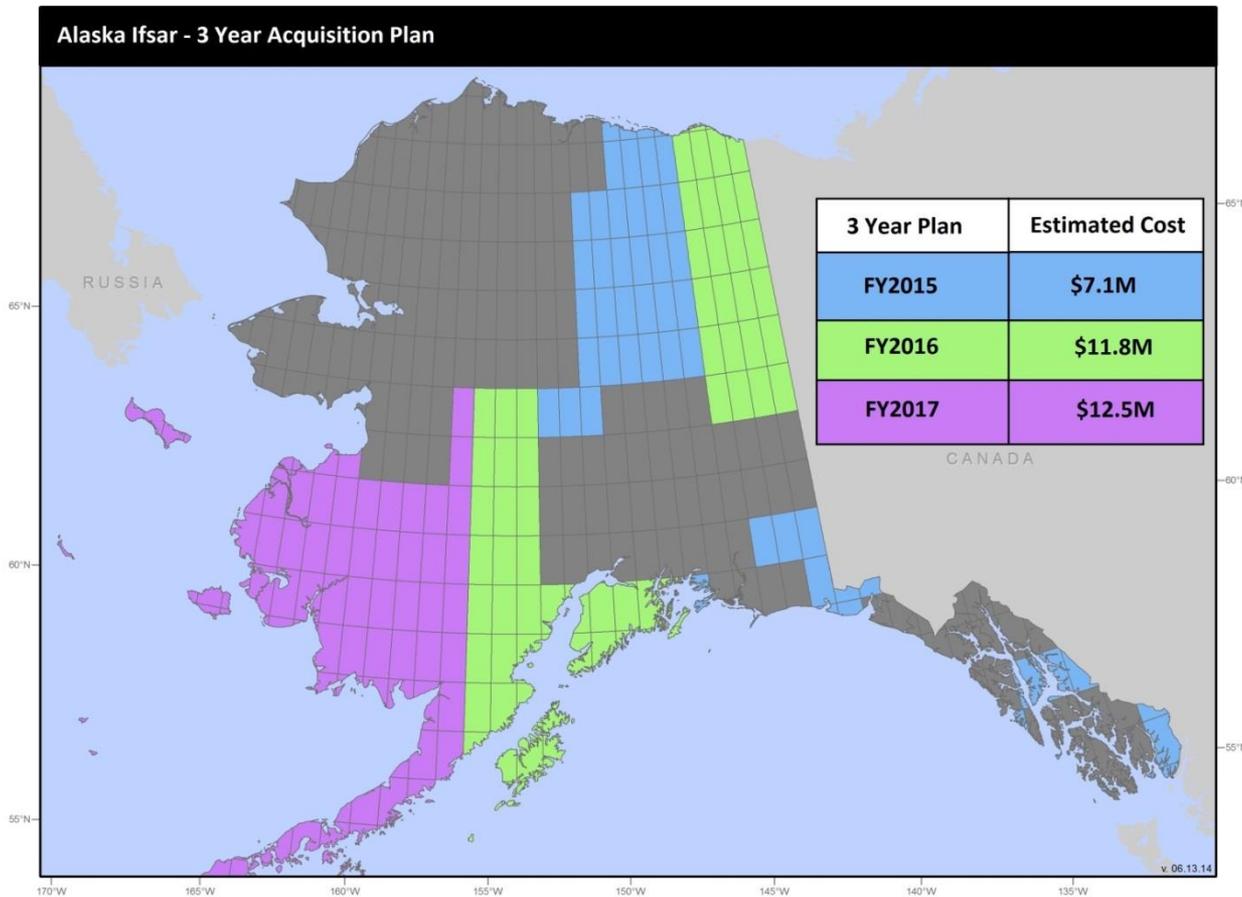
kacy.krieger@uaa.alaska.edu  
Alaska Hydrography Coordinator  
Co-Chair AHTWG

**Becci Anderson**

rdanderson@usgs.gov  
USGS Alaska Region  
Co-Chair AHTWG

# + 3-Year Ifsar Acquisition Plan

- Idealized Plan approved July 2014 – funding dependent
- Would complete ifsar acquisition in 2017
- Budget Cross Cut was based on this plan



# + FY2015 Ifsar Planned Contributions

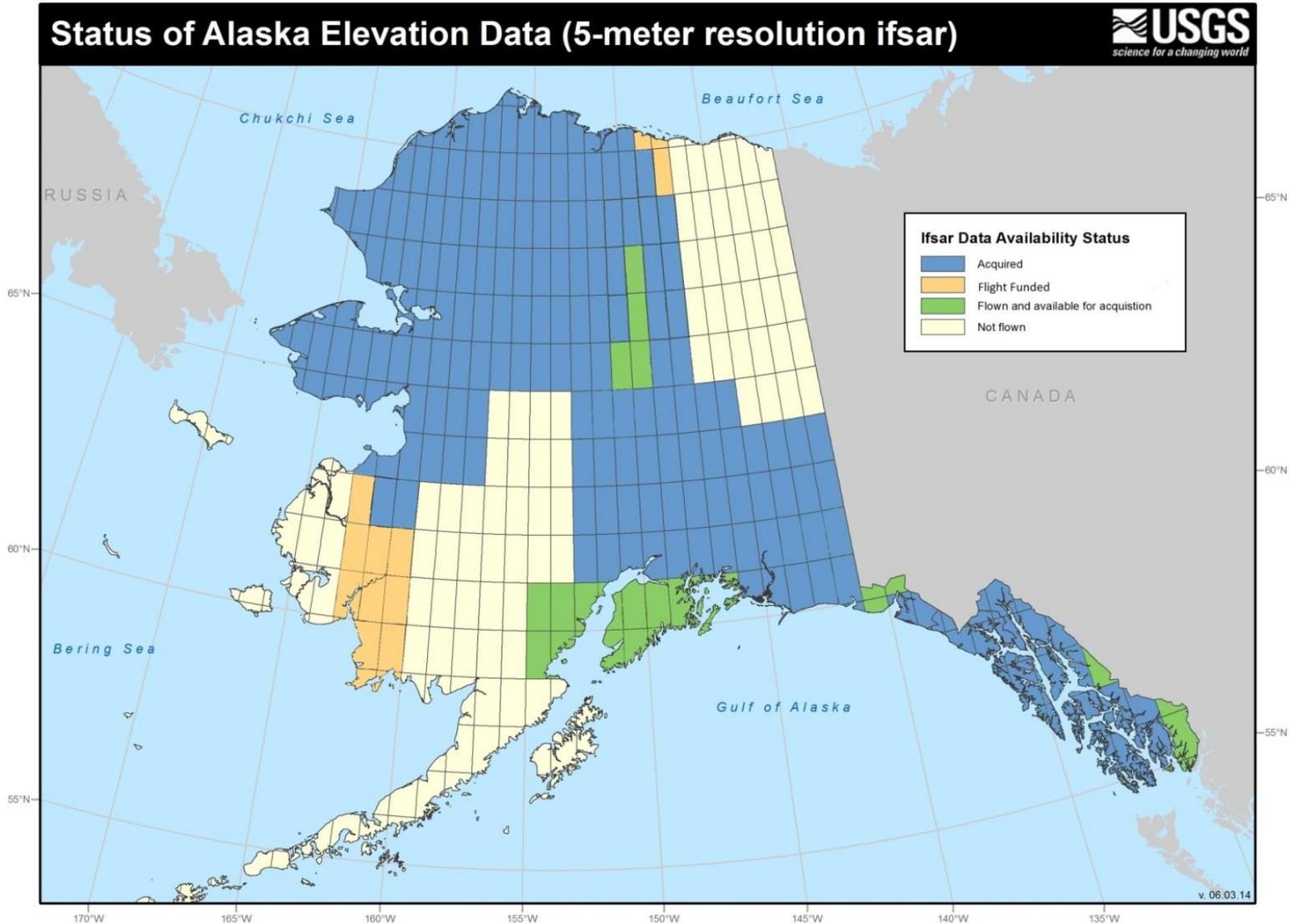
- Funds will acquire:
  - A large block of Arctic cells partially funded in 2014
  - A new collection in SW Alaska covering BLM and NRCS priorities
  - Priority overcollect cells in central, northern and southeast Alaska to cover NPS, USFS and USGS priorities

<b>Contributor</b>	<b>Amount (so far)</b>
USGS	\$3,451,361
BLM	\$692,000
NPS	\$450,000
NRCS	\$200,000
USFS	\$150,000
<b>TOTAL</b>	<b>\$4,943,361</b>

# + FY2015 Ifsar Status

- With summer 2015 task order:
  - \$4.9M spent on ifsar acquisition
  - Resulting **\$2.2M funding gap for FY2015** in meeting the approved 3-year acquisition plan
- Year-end funding can play a critical role in addressing this funding gap, and can address near-term critical priorities:
  - FWS, NPS, BLM, USFS lands
  - USGS and NRCS AOIs
- NGA investigating Aleutian DEM options

# + FY2015 Ifsar Status Map - Planned

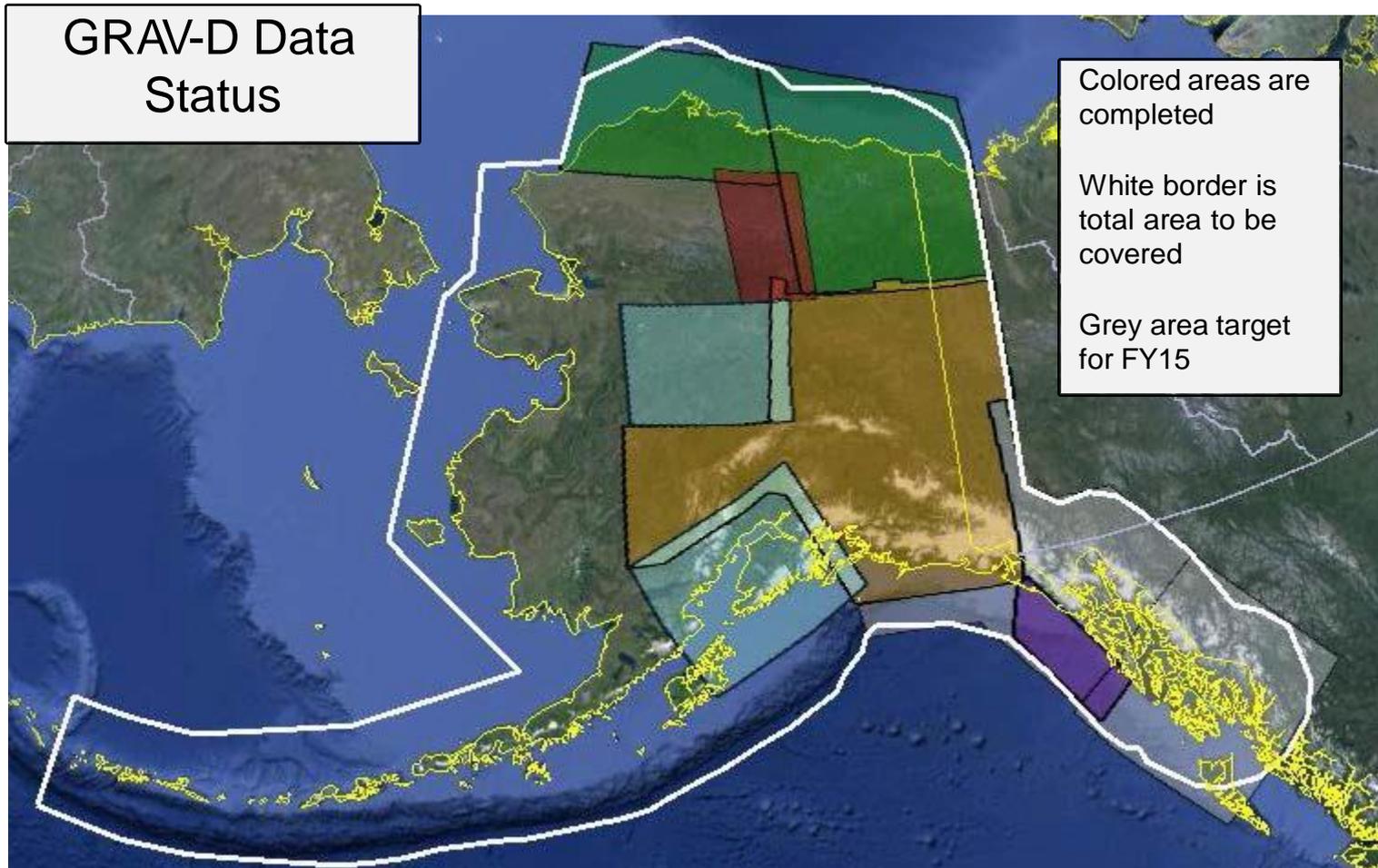


# Total Ifsar Funds Contributed FY2010-FY2015

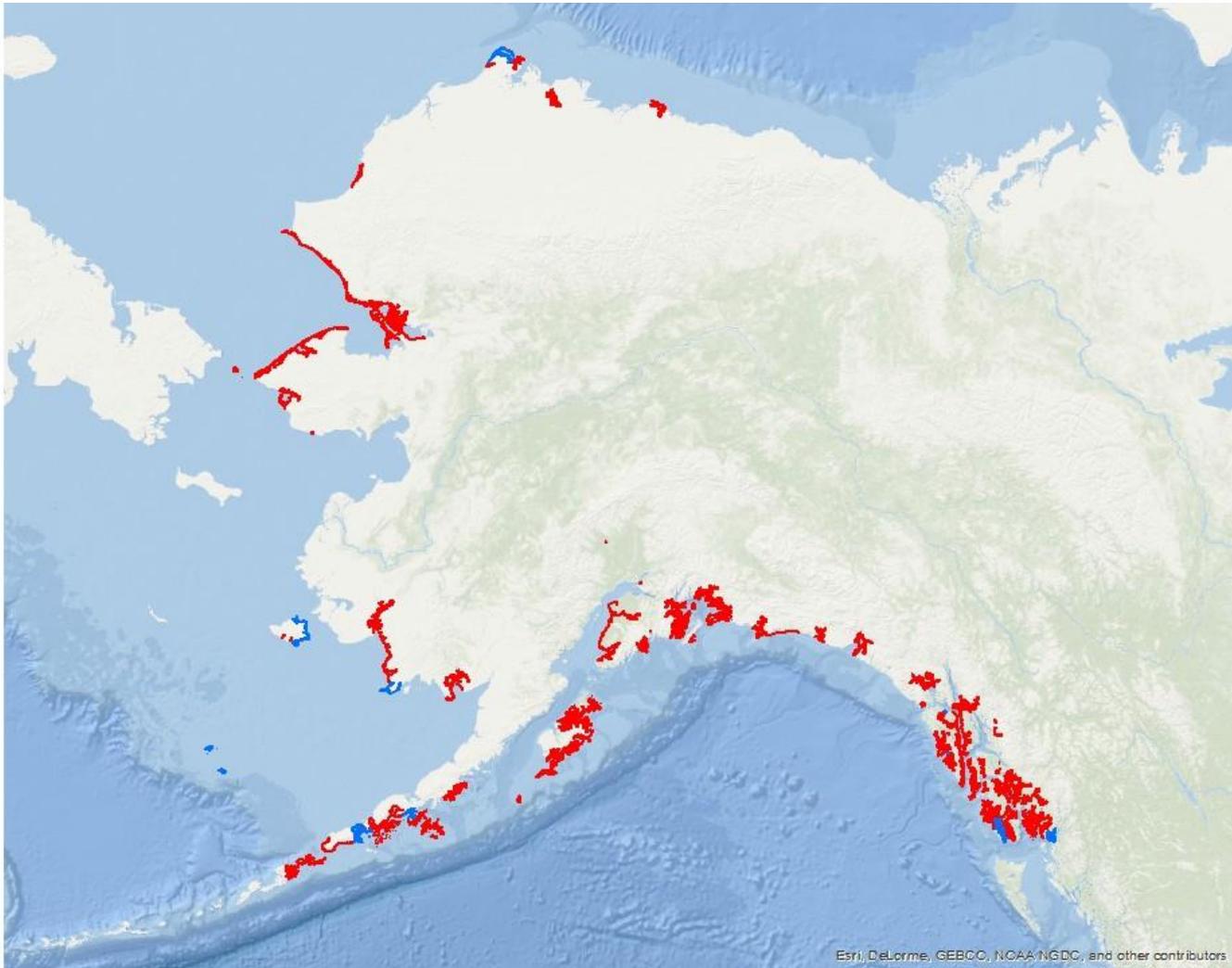
<b>Agency</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015 (planned)</b>	<b>TOTAL</b>
<b>BLM</b>	216,230	20,000	0	141,139	262,000	692,000	1,331,369
<b>FWS</b>	0	250,000	300,000	0	0	0	550,000
<b>NGA</b>	2,399,895	0	0	0	0	0	2,399,895
<b>NPS</b>	98,091	147,143	178,533	30,000	0	450,000	903,767
<b>NRCS</b>	98,090	227,287	728,095	450,000	450,000	200,000	2,153,472
<b>USFS</b>	0	0	354,310	50,000	547,292	150,000	1,101,602
<b>USGS</b>	999,995	870,276	3,066,402	3,608,512	2,893,166	3,451,361	14,889,712
<b>Federal Total</b>	<b>3,812,301</b>	<b>1,514,706</b>	<b>4,627,340</b>	<b>4,279,651</b>	<b>4,152,458</b>	<b>4,943,361</b>	<b>23,329,817</b>
<b>State Total</b>	<b>1,874,918</b>	<b>0</b>	<b>4,998,388</b>	<b>2,550,000</b>	<b>2,617,285</b>	<b>0</b>	<b>12,040,591</b>
<b>Combined Total</b>	<b>5,687,219</b>	<b>1,514,706</b>	<b>9,625,728</b>	<b>6,829,651</b>	<b>6,769,743</b>	<b>4,943,361</b>	<b>35,370,408</b>

# + NOAA GRAVD Update

- GRAVD is currently collecting data in southeast AK

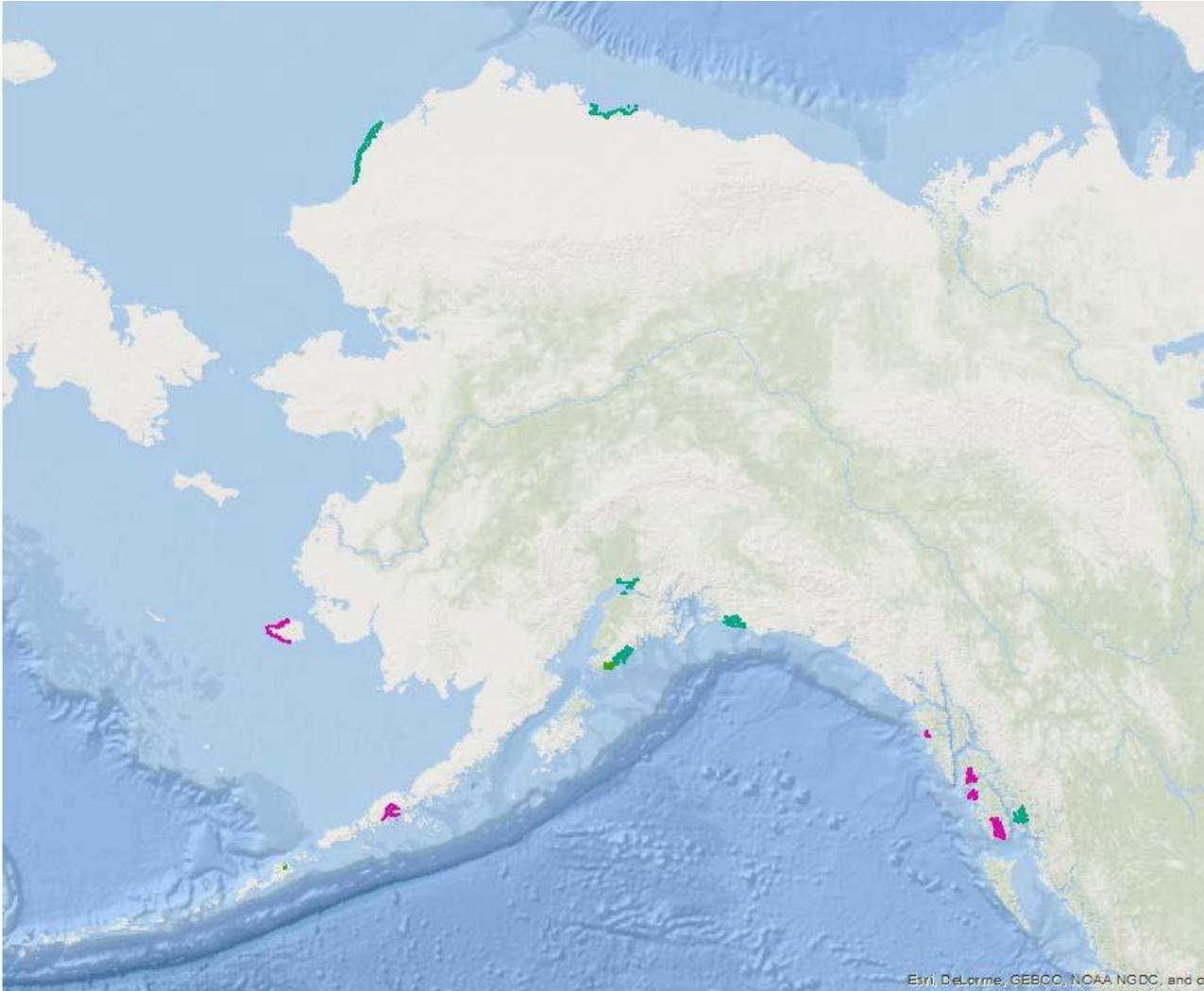


# + Current status of NOAA Shoreline



Areas updated in **Fy14**

# + NOAA Planned Shoreline Updates



Areas planned to be updated in **FY15** and **FY16**

# + FY2015 Ifsar Acquisition Celebration

- Proposed Celebration: State of Alaska host celebration in Anchorage the week of August 18, 2015 at FedEx hanger
- Celebrate surpassing 50% ifsar acquisition
- Discussion
  - Potential Speaker(s): Senator Murkowski invited as keynote
  - Potential Invitees: Secretary/Deputy Secretary of the Interior, Alaska Governor and Lt. Governor, Senator Murkowski, Fugro/Intermap/Dewberry Officers
  - Activities: Ifsar use-case demos, planes/sensors exhibit



# + Adjourn

- Review action items
- Discuss date for next meeting – propose February 10, 2016
- Adjourn until next meeting

