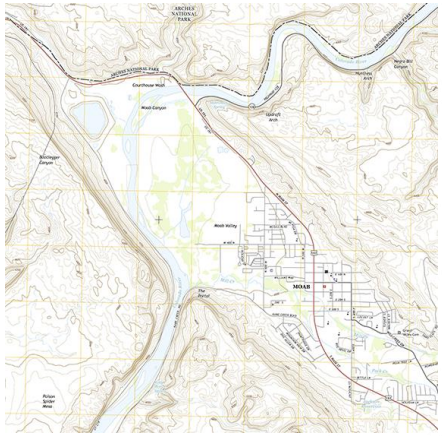
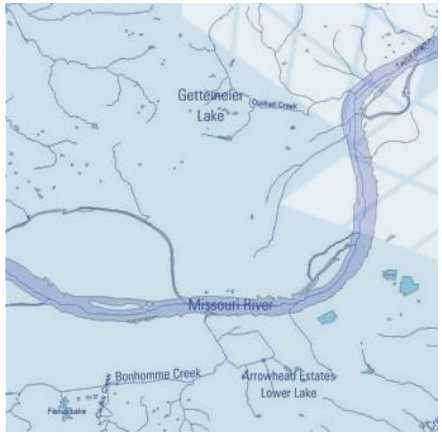
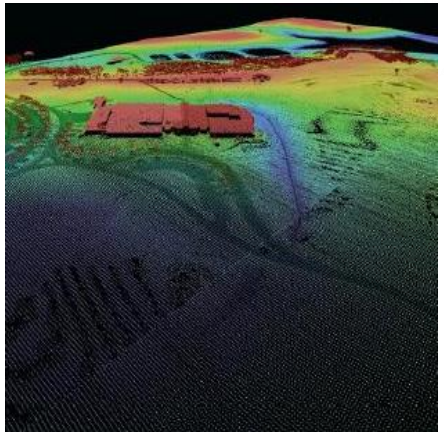
National Geospatial Program







Dr. Mike Tischler
Director
National Geospatial Program
United States Geological Survey

North American Mapping Meeting
U.S. Geological Survey
May 9-10, 2018

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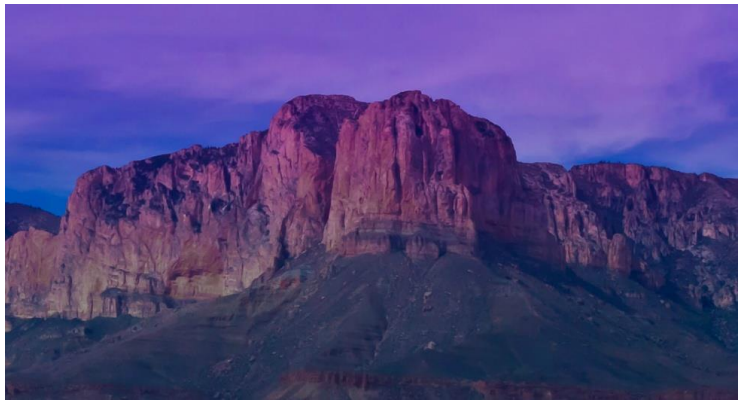
North American Mapping Meeting

- Introductions
- Review Agenda
- Review Goals
  - Understand how the N.A. mapping agencies are currently working together
  - Discuss current hydrography program directions, multi-national harmonization efforts, and future opportunities
  - Introduce and review Integrated Map of the Americas efforts and discuss current products and services that may be reasonable to include
  - Meet and better communicate with N.A. counterparts to improve mapping efforts across the continent
- Thoughts from colleagues
- Brief overview of USGS and NGP

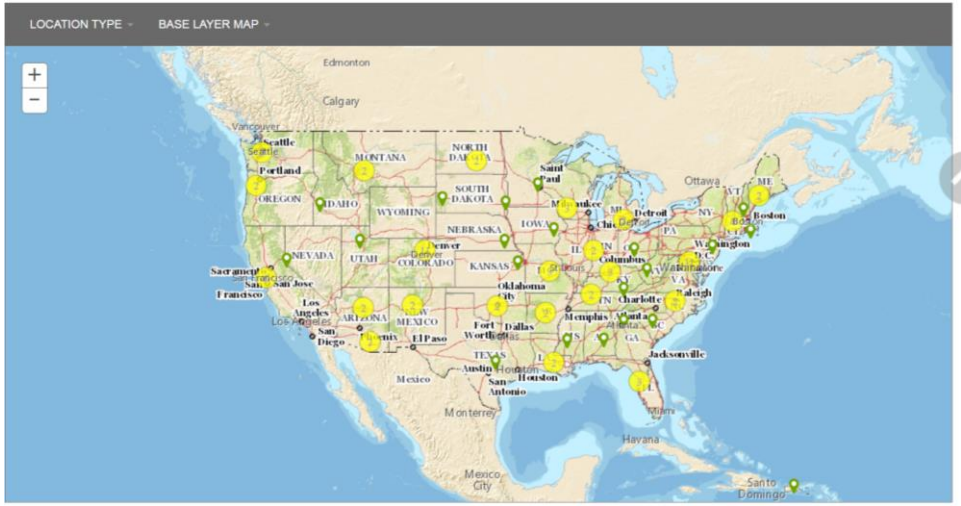
Where is USGS?

- Inside Department of Interior
  - 70,000 Employees
  - 280,000 Volunteers
  - 2,400 Locations
- One of several bureaus
  - Bureau of Indian Affairs
  - Bureau of Land Management
  - Bureau of Ocean Energy Management
  - Bureau of Reclamation
  - Bureau of Safety and Environmental Enforcement
  - National Park Service
  - Office of Surface Mining Reclamation and Enforcement
  - U.S. Fish and Wildlife Service
  - U.S. Geological Survey



What does USGS do?

- We monitor, assess, and conduct targeted science research so that policy makers and the public have the understanding they need to enhance preparedness, response, and resilience
- Mission Areas
  - Land Resources
  - Core Science Systems
  - Ecosystems
  - Energy and Minerals
  - Environmental Health
  - Natural Hazards
  - Water
- Science Centers



Purpose of the NGP

Provides data to the public that is:

- ***Authoritative*** - data we can stand behind as the mandated federal agency
- ***Accurate*** - QA/QC, specs, and due-diligence to ensure the data is accurately representing the desired natural phenomena
- ***Accessible*** – Customers/clients are able to reach and properly leverage NGP data products
- ***Available*** - NGP produces the data our customers expect for their needs

NGP data and services:

- Advance the scientific understanding of our natural world
- Inform critical decisions within private sector, Federal government agencies, State and Local government, and Tribes

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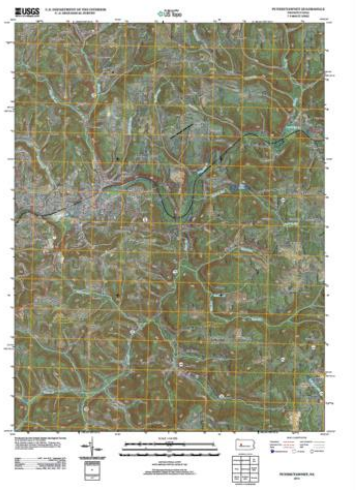
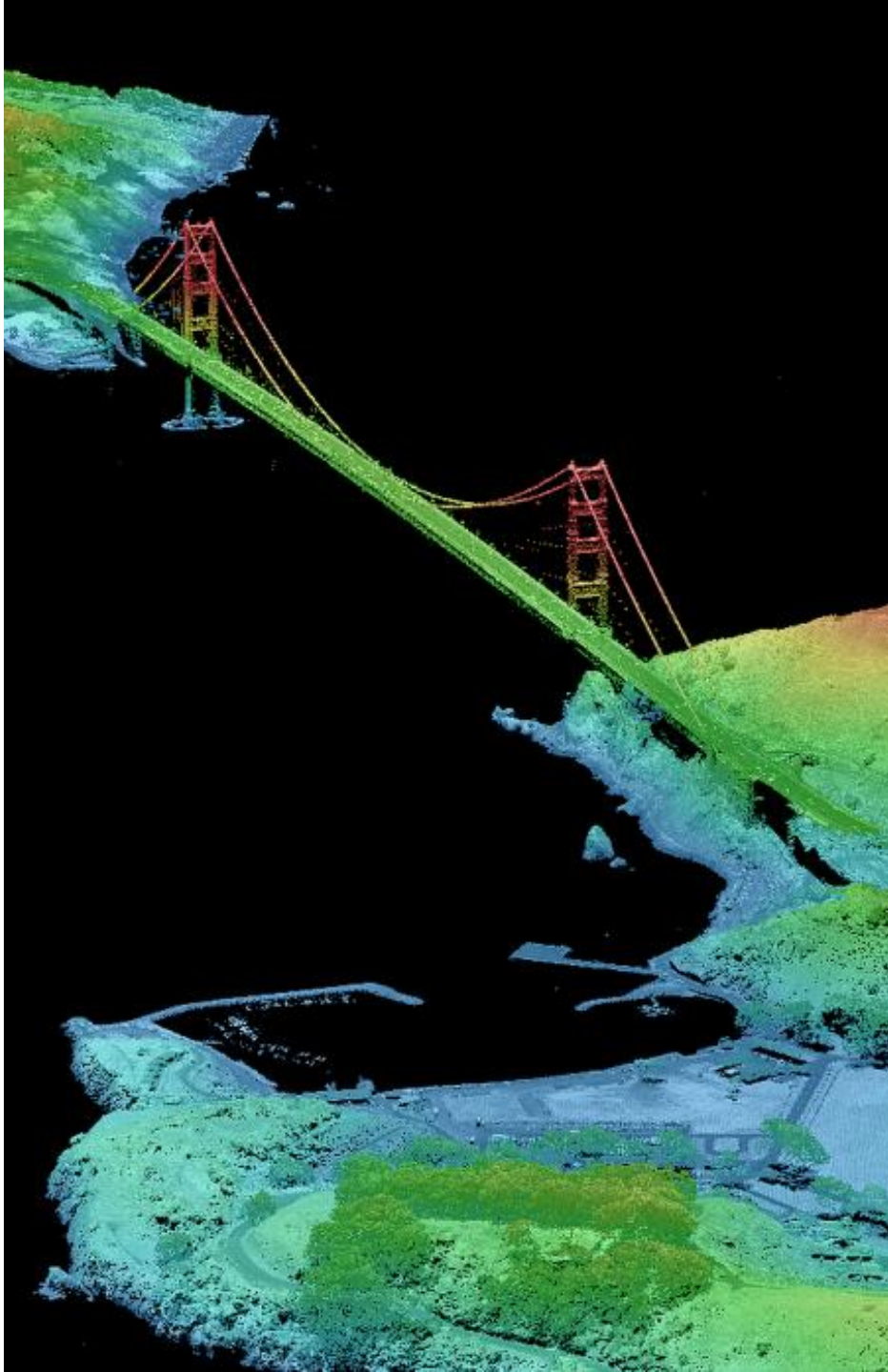
Area of National Leadership	Program Emphasis
A-16 Lead for Terrestrial Elevation	3D Elevation Program (3DEP)
A-16 Co-Lead for Inland Waters (Hydrography)	National Hydrography Dataset (NHD) Watershed Boundaries Dataset (WBD)
National Coverage of Topographic Maps	US Topo and Alaska Mapping



3D Elevation Program (3DEP)

Collect enhanced elevation data in the form of high-quality light detection and ranging (lidar) data over the conterminous United States, Hawaii, and the U.S. territories, with data acquired over an 8-year period.



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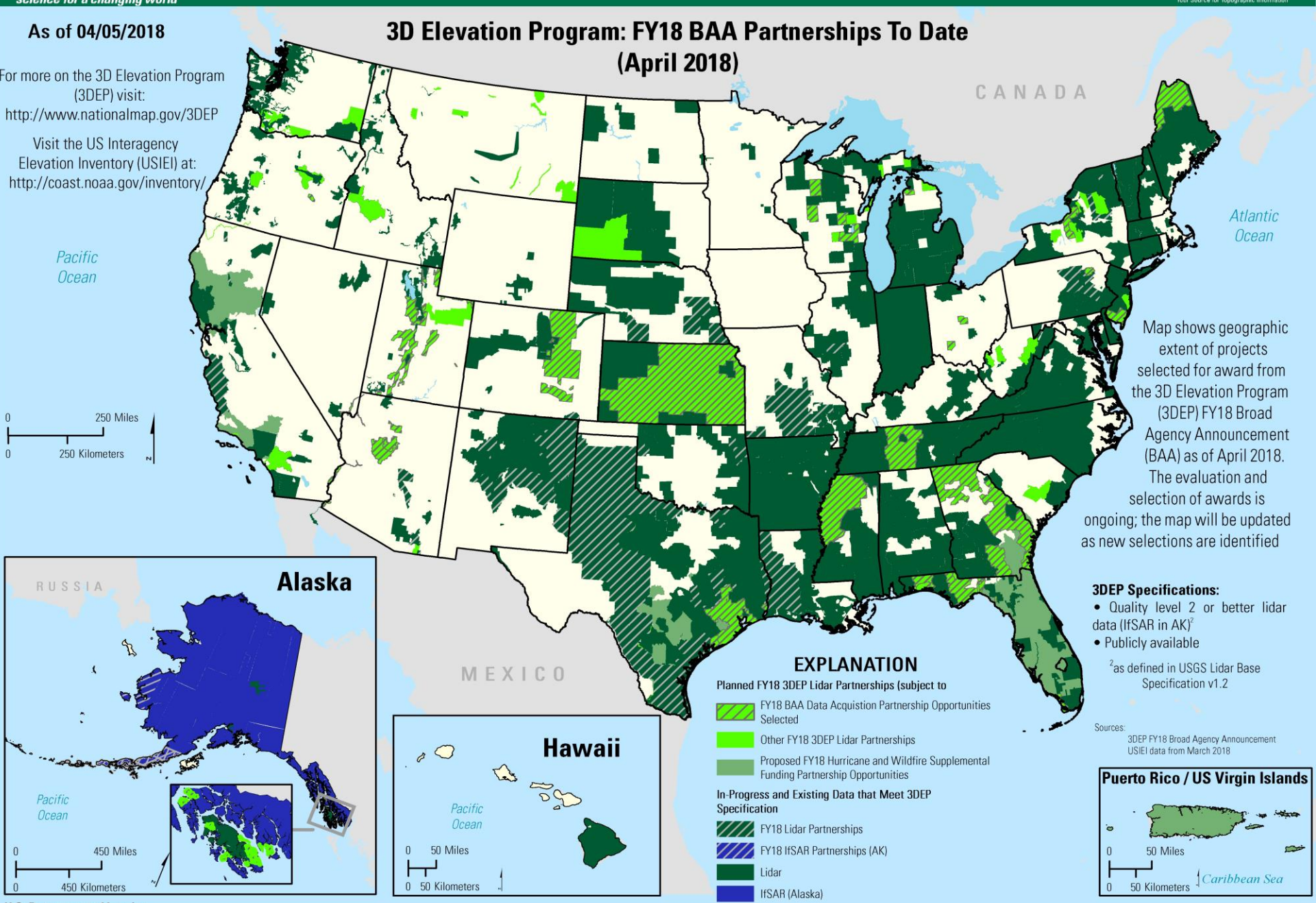
3D Elevation Program: FY18 BAA Partnerships To Date (April 2018)

As of 04/05/2018

For more on the 3D Elevation Program (3DEP) visit:
http://www.nationalmap.gov/3DEP

Visit the US Interagency Elevation Inventory (USIEI) at:
http://coast.noaa.gov/inventory/



Map shows geographic extent of projects selected for award from the 3D Elevation Program (3DEP) FY18 Broad Agency Announcement (BAA) as of April 2018. The evaluation and selection of awards is ongoing; the map will be updated as new selections are identified

EXPLANATION

Planned FY18 3DEP Lidar Partnerships (subject to

- FY18 BAA Data Acquistion Partnership Opportunities Selected
- Other FY18 3DEP Lidar Partnerships
- Proposed FY18 Hurricane and Wildfire Supplemental Funding Partnership Opportunities

In-Progress and Existing Data that Meet 3DEP Specification

- FY18 Lidar Partnerships
- FY18 IfSAR Partnerships (AK)
- Lidar
- IfSAR (Alaska)

3DEP Specifications:

- Quality level 2 or better lidar data (IfSAR in AK)[2]
- Publicly available

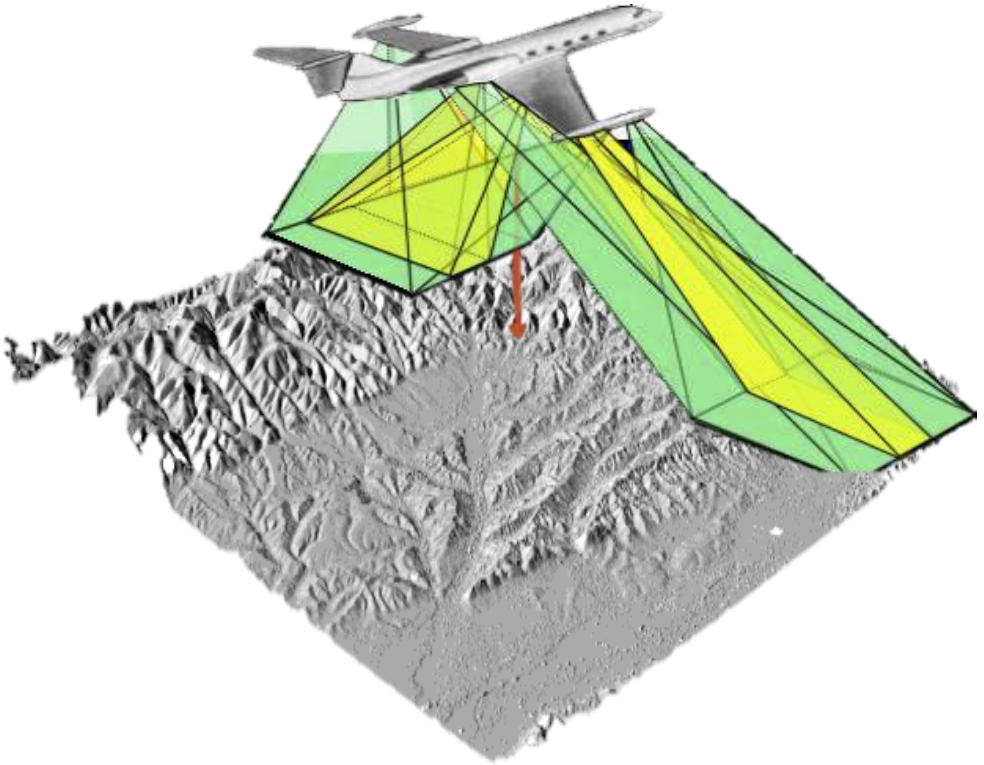
[2]as defined in USGS Lidar Base Specification v1.2

Sources:
3DEP FY18 Broad Agency Announcement
USIEI data from March 2018

U.S. Department of Interior
U.S. Geological Survey

Alaska Mapping Initiative

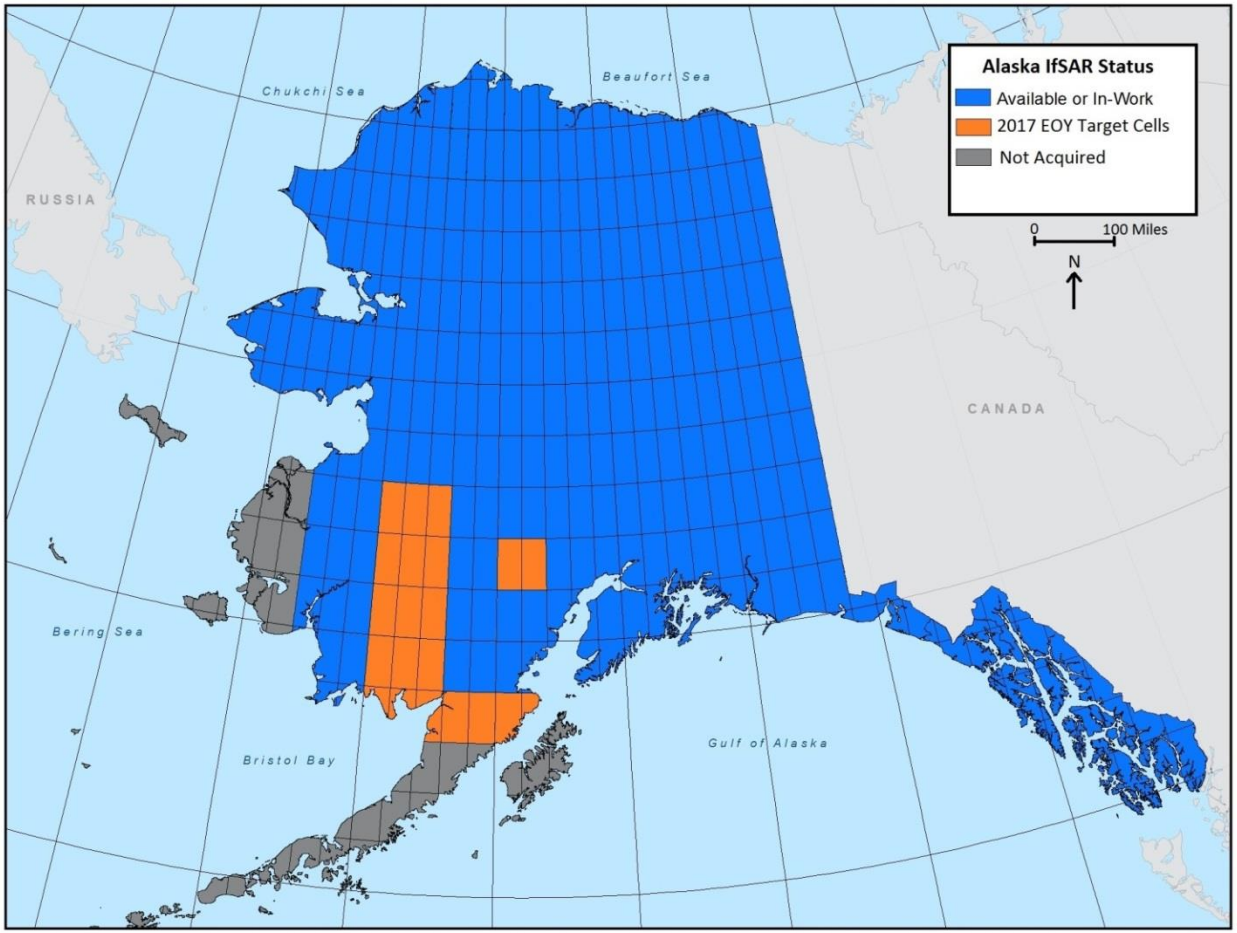
- Airborne radar technology called IfSAR, short for *Interferometric Synthetic Aperture Radar*, is being used to collect *5-meter* resolution elevation data for Alaska almost statewide.
- Radar penetrates clouds, smoke, and haze. Alaska IfSAR is collected at the height of summer to avoid non-perennial snow.
- IfSAR data collected through the Alaska Mapping Initiative are also being used as a source to update the National Hydrography Dataset for Alaska
- Alaska mapping priorities are governed through the Alaska Mapping Executive Comittee



Alaska IfSAR Status

- 92% by Oct 1
- 7% *planned* for FY2017 acquisition
- 15% *acquired* acquisition by EOY 2017

***Thanks NPS and Sen. Murkowski!**



Status – Aug 2017

National Hydrography Datasets

NHD represents the nation's drainage networks and related features, including rivers, streams, canals, lakes, ponds, glaciers, coastlines, dams, and streamgages

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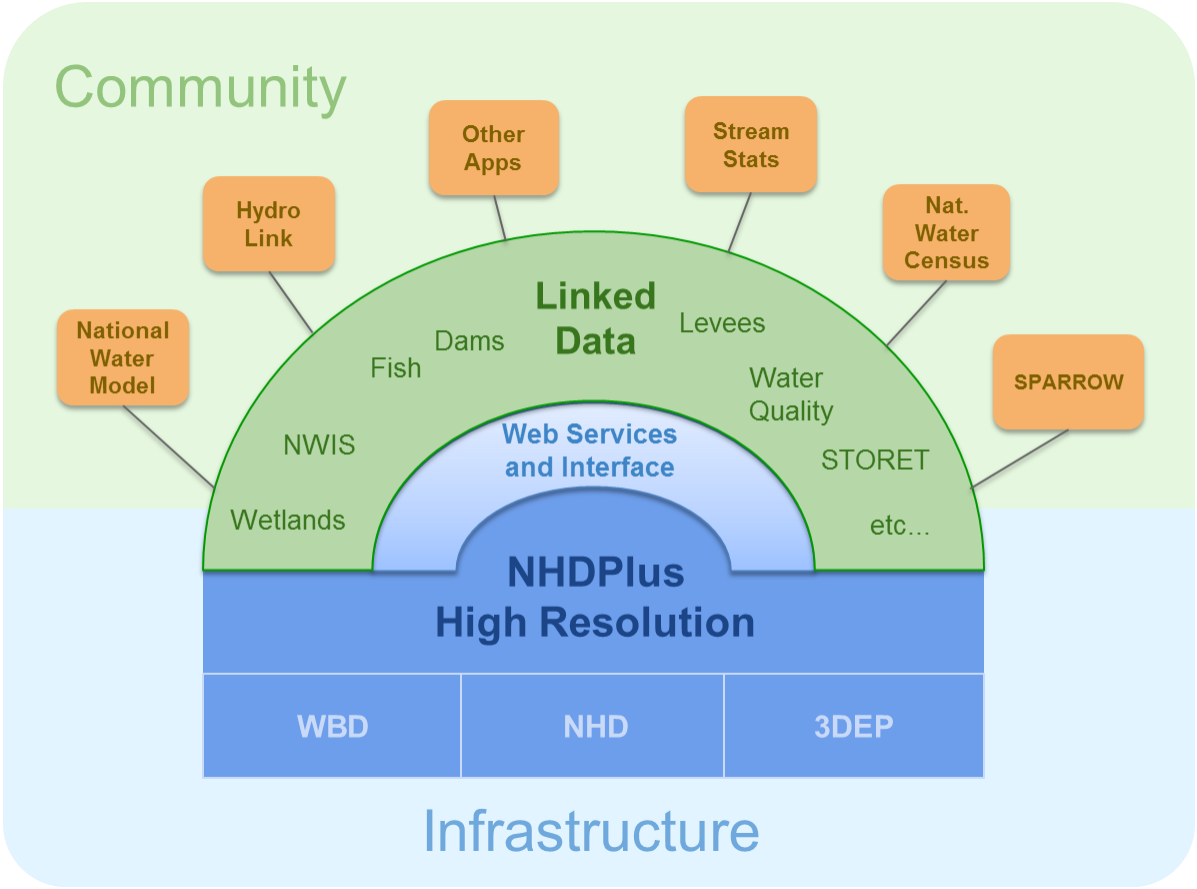
NHDPlus Applications

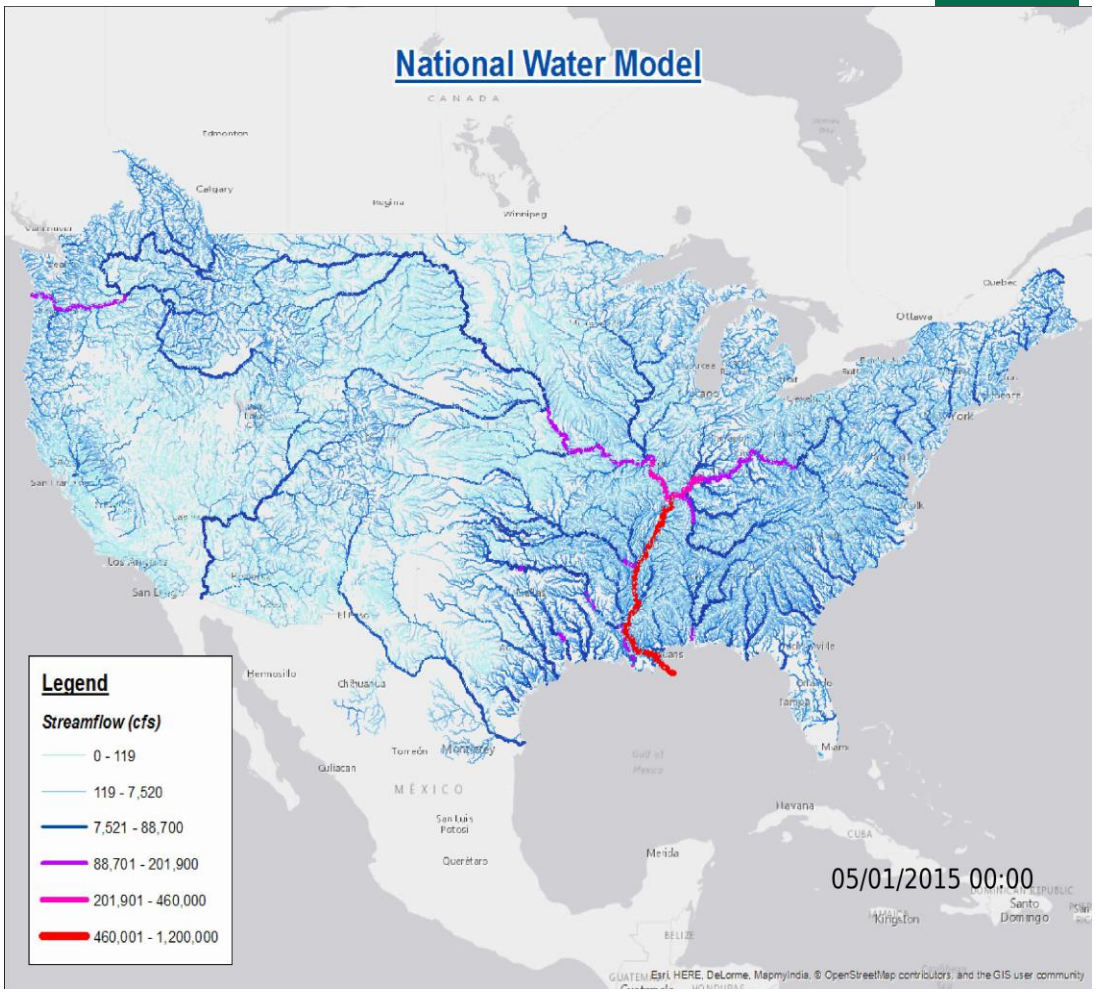
Intelligent Network for Water

- Observational data can be linked to NHDPlus HR to support a limitless range of applications:
  - Predicting the risk, timing, and magnitude of flood events
  - Estimating when and where an event such as a toxic spill will affect downstream populations and ecosystems
  - Enabling property owners to better understand upstream water availability impacts
- Enables complex models such as the National Water Model to bring flood forecasting down to the street level



USGS Hydrography Data Underpin Critical Applications
Flood Forecasting with NOAA's National Water Model

- The National Water Model is a new forecasting tool that simulates conditions for 2.7 million stream reaches in the NHD, representing ***the biggest improvement in flood forecasting ever***
- The model *generates* ***hourly forecasts for the entire network*** - previously, NOAA was only able to forecast streamflow for 4,000 locations every few hours
- Better meets the needs of emergency managers, reservoir operators, first responders, recreationists, farmers, barge operators, and floodplain managers with more accurate, detailed, frequent and expanded water information



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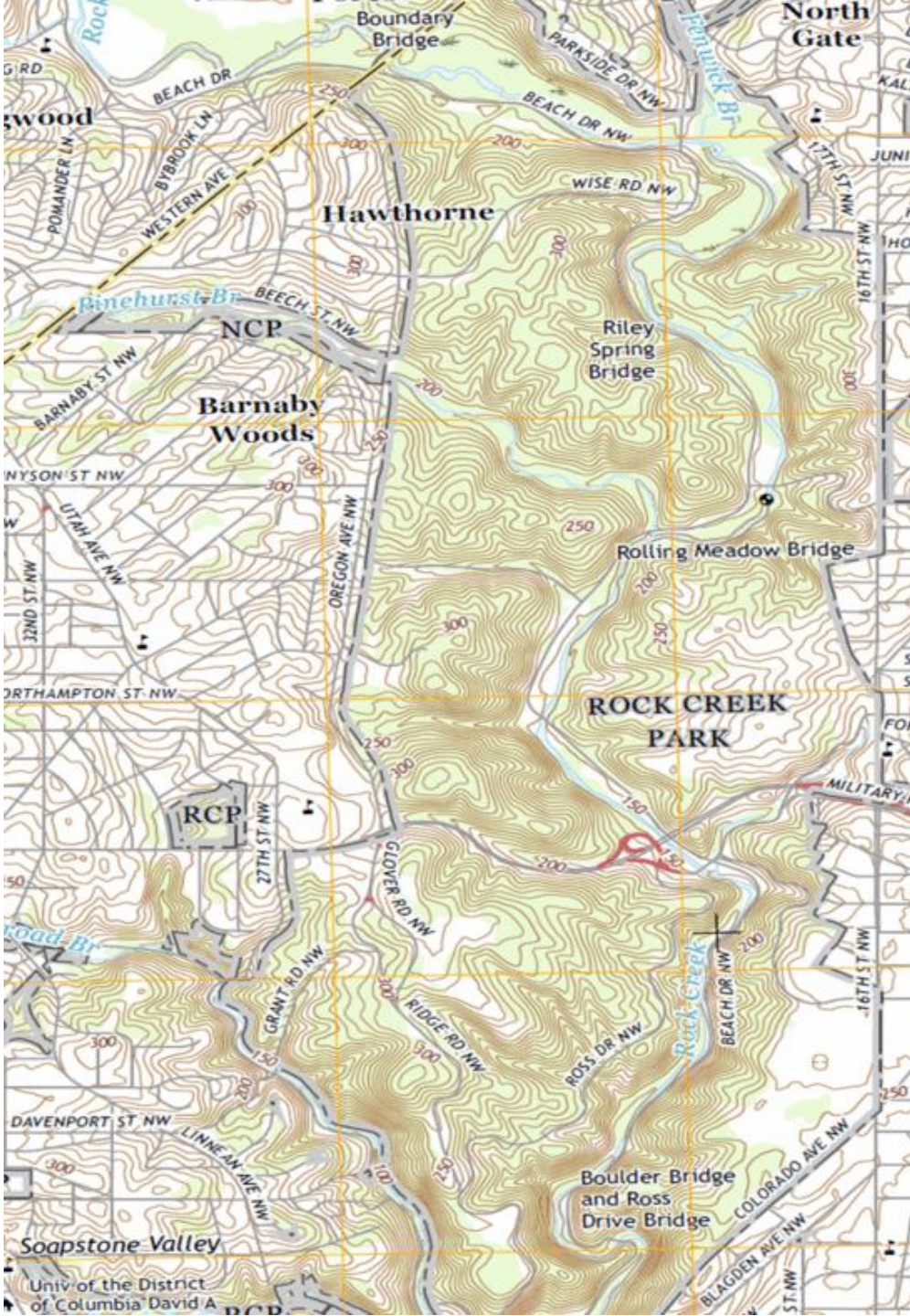
US Topo

US Topo series is a new generation of all-digital maps of the American landscape



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Data Sources

Data are aggregated from USGS, federal, and other partner sources and provided to the public through NGP products

Source	Theme	Provider
USGS	Names	Geographic Names Information System
	Elevation	3D Elevation Program
	Hydrography	National Hydrography Dataset
	Woodland	National Land Cover Dataset
Federal Government	**Orthoimage**	**NAIP (FSA/NRCS/USFS/DOI)**
	Public Land Survey System	Bureau of Land Management
	Transportation	Census, Federal Railways, FAA, USFS
	Trails	NPS, FRA, USFS
	National Wetland Inventory	US Fish and Wildlife
	Boundaries	National Boundaries Dataset (Census, many others)
	Structures	**National Structures Dataset (TNM Corps, many others)**
Commercial Partnership	Alaska Imagery	SPOT Image Corporation (through State of AK)
	Hawaii Imagery	Digital Globe (through NGA)
	Trails	International Mountain Bike Assoc.

Modernization of US Topo Production System

- Production System Modernization – 2017/18
  - New system - Product on Demand (POD) produces maps in the geospatial PDF format compliant with open community standards (ISO 32000 (PDF 1.7))
    - Adheres to the US Topo product standard for scale, extent, projection, datum, coordinate system and grid information
    - Reproduces cartography, page layout, marginalia, layering, Table of Contents, metadata and other characteristics
    - POD application is completely Cloud based
  - Enables future dynamic mapping capability - supporting multiple map scales, multiple map formats, custom footprints, and custom content from TNM and other sources

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