# Washington Geological Survey Lidar Program and Data Portals

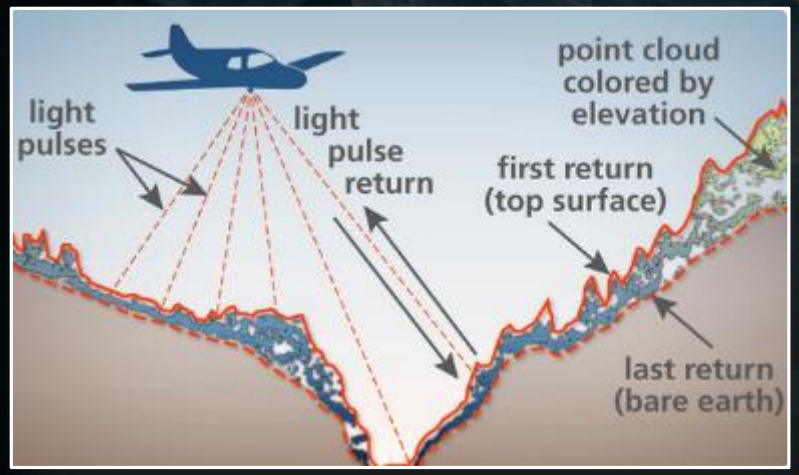
## Department of Natural Resources

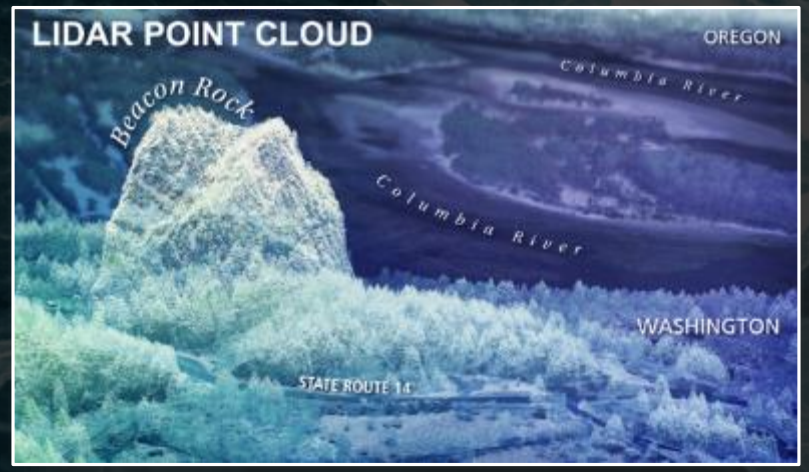
# Agenda

- Lidar Program overview and collection priorities
- Lidar Portal tour
- Geological Information Portal tour

# WGS Lidar Program – What is Lidar?

- Light Detection and Ranging (lidar) utilizes a pulsed laser to measure distance, typically from a sensor on a plane to the ground
- Measurements are highly accurate, within 10-15cm or better, and create a dense “point cloud” from the laser returns
- The returns can be filtered for ground or vegetation information, used to derive highly detailed digital elevation models




*Images taken from the WGS Story Map “The Bare Earth”

# WGS LiDAR Program Background

RCW 43.92.025, 2015: The geological survey must acquire and process new lidar data or update deficient data and create and maintain an efficient, publically available database of Lidar data

Goals:

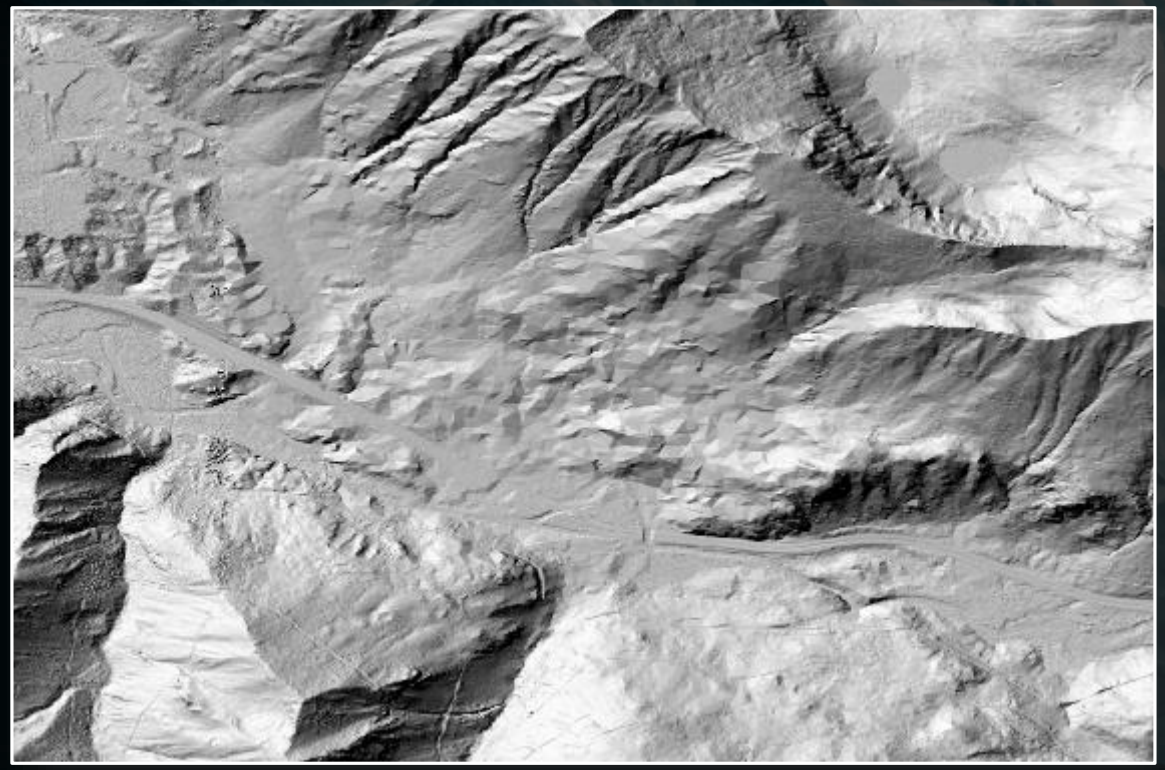
- Overall, help improve understanding of geologic hazards from lidar data
- Coordinate, manage, and support high quality lidar acquisitions for all applications
- Complete quality assurance for new collections
- Create a standardized collection of publically available lidar and provide mechanisms for public distribution

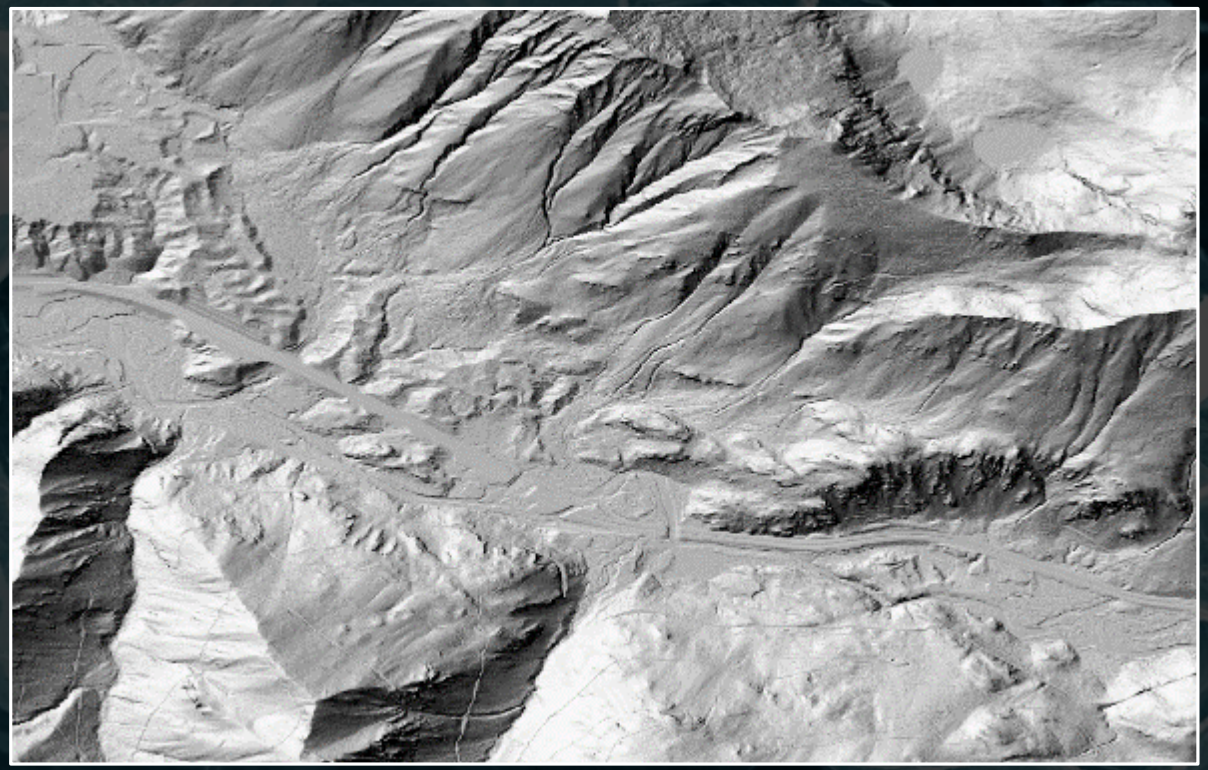
# Available Lidar Around the State

Current lidar coverage in Washington, collected from 1999 - 2017

- Quality and resolution vary over time, but in general raster data is 3ft resolution
- Several areas have repeat coverage – great for change detection (examples: Toutle River and Elwha River)
- Publically Available

# Quality and Technology Changes Over Time





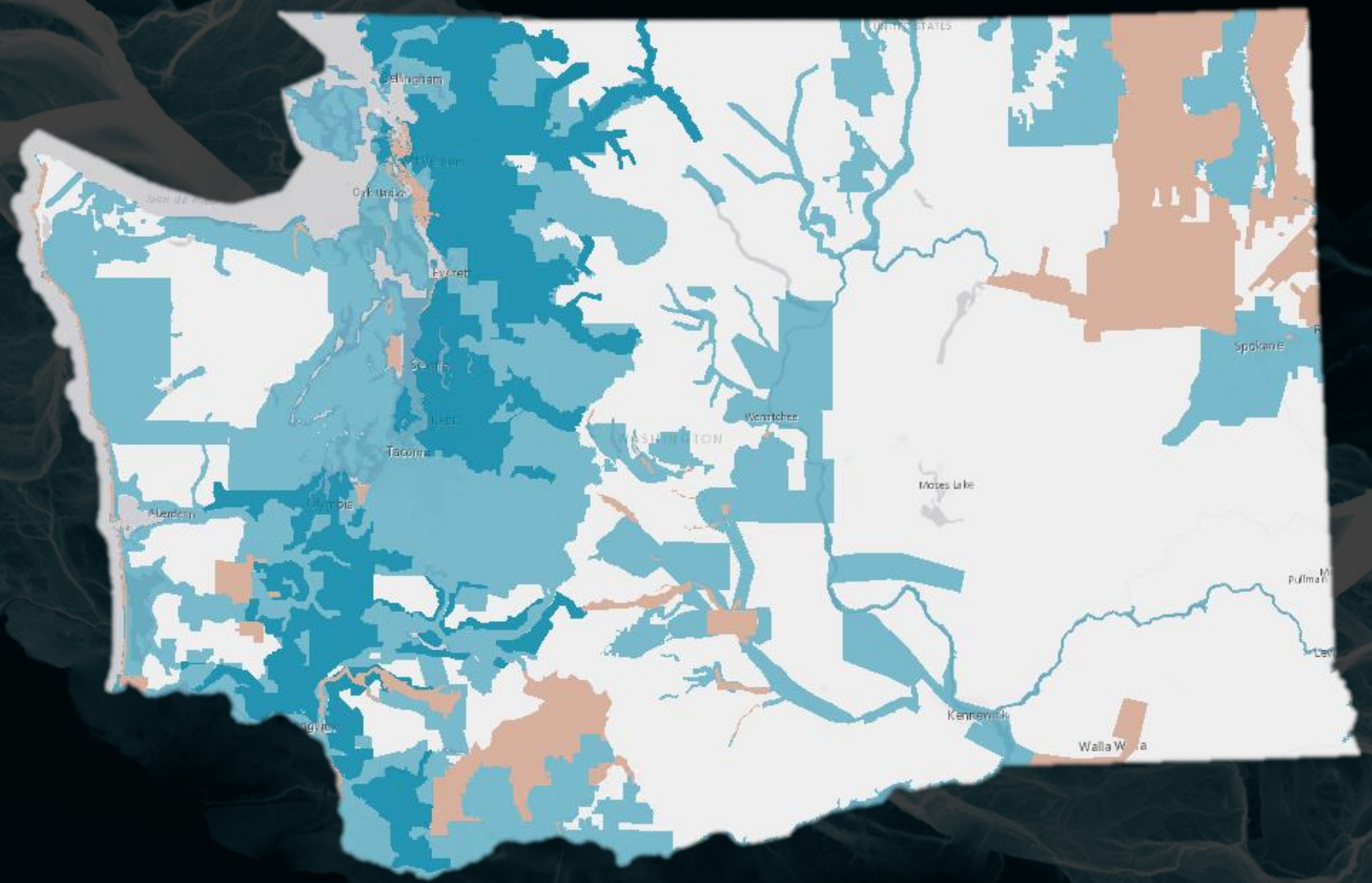
# WGS 2016-2017 Collections

Over 6,400 square miles covered through:

- Local Partnerships through PSLC
- USGS 3D Elevation Program
- Private and Tribal partnerships

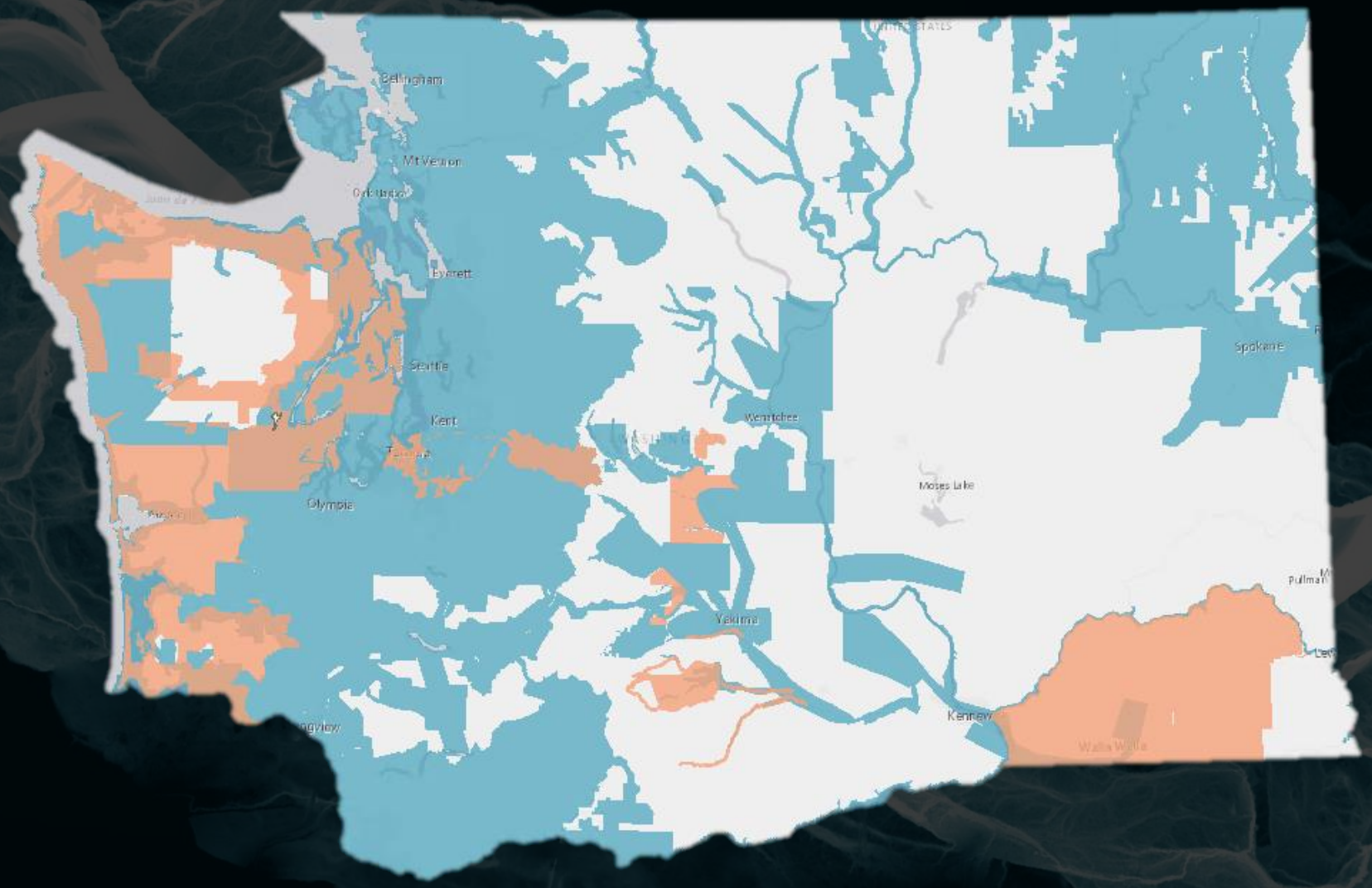
# Other Collections Recently Added

WGS also works with the USGS, other DNR divisions, local, Tribal, Federal and state agencies to add data to the lidar inventory and to help distribute this data publically

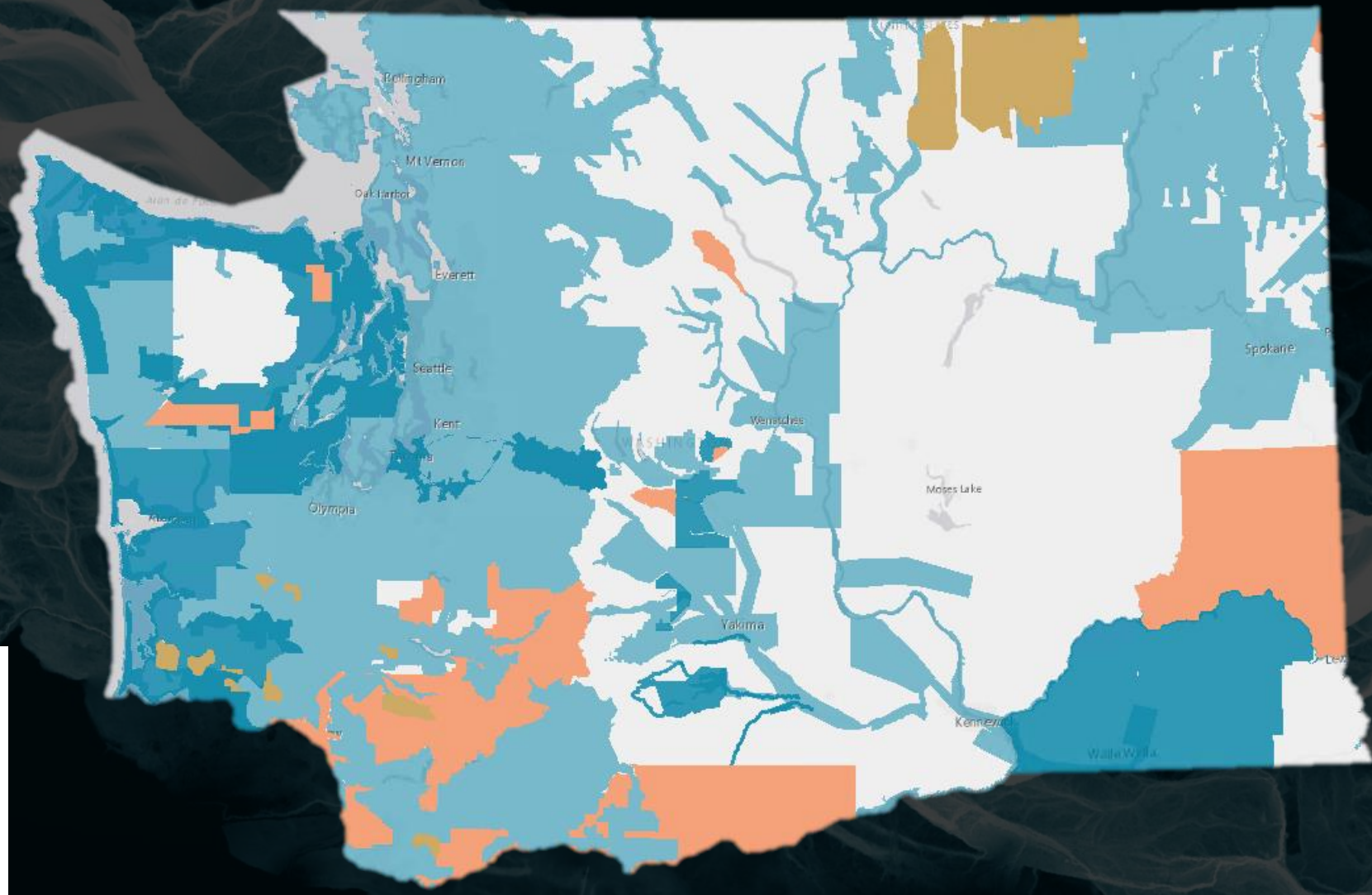


# WGS New Collection 2017-2018

- Together, over 8,000 square miles of new data
- Collection done through Federal grants, local partnerships, and state funding
- WGS contract available, QA and public distribution done by WGS



# Other Agency Collection 2017-2018




- Incoming to DNR
- Other agecy planned collection (area subject to change)
- DNR collection for 2017/2018

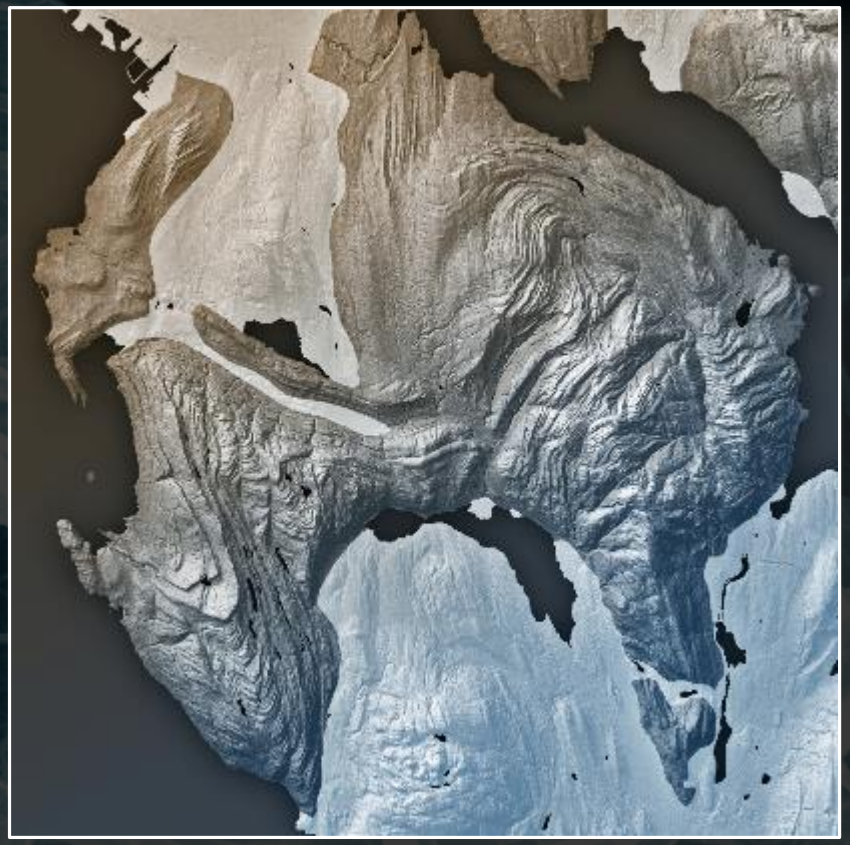
# Future Collections

Statewide collection – broad plan, subject to change and opportunities

- Focused on Western Washington 2016-2019
- Hope to focus on Eastern Cascades in 2019-2021
- Collaboration helps expand areas

# WGS Lidar Contract

- Quantum Spatial, Inc. was chosen as vendor in a competitive bid process
- Any Federal, state or local agency, tribe or private company can use this contract, so long as they work with a DNR POC and data can be made public
- By default, ≥ 8 ppsm aggregate density, 50% swath overlap, Washington State Plane South projection
- Bathymetric LiDAR and orthophoto options
- Three projects using this contract starting Fall 2017



# WGS Lidar Contract

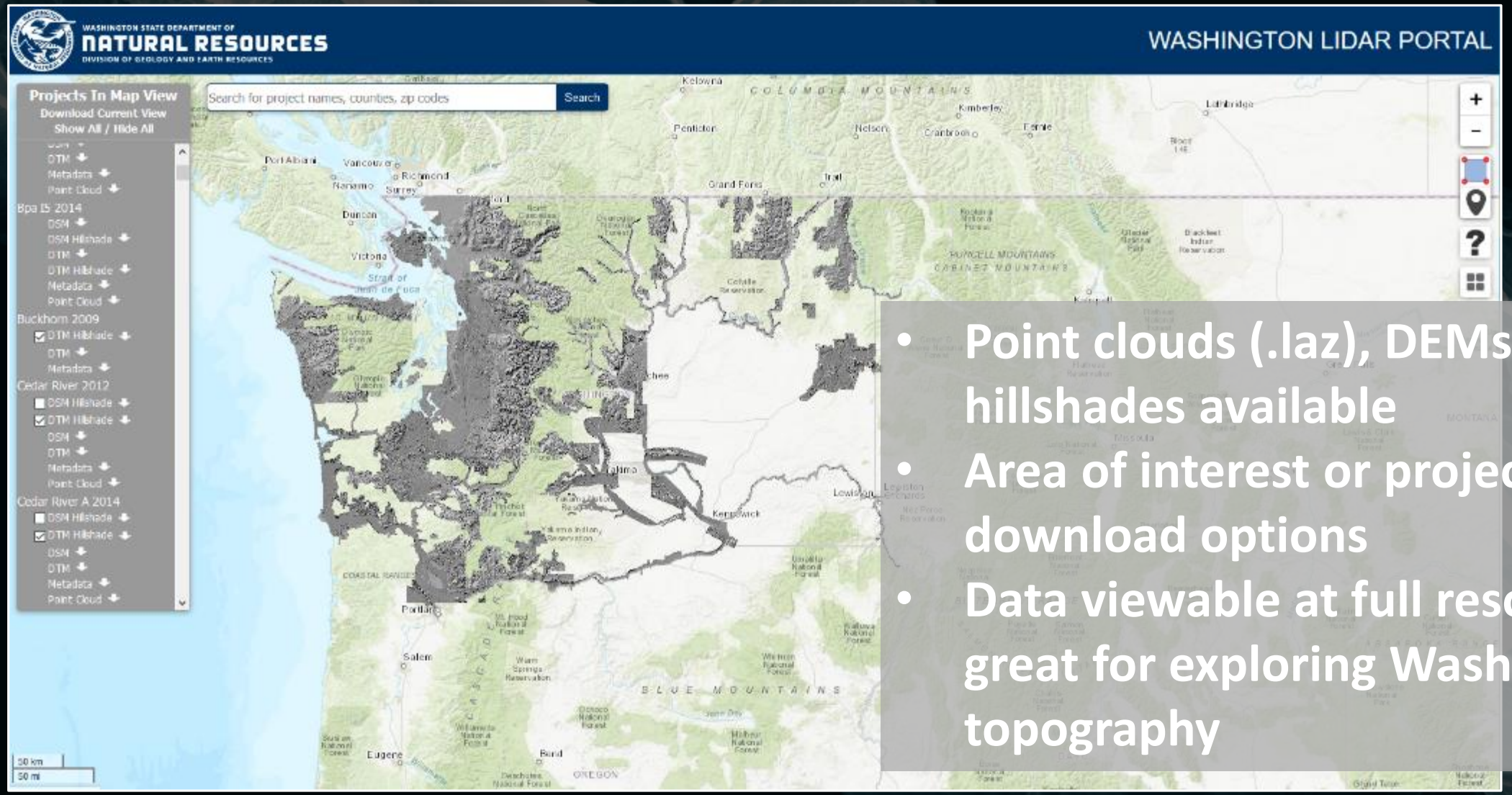
- Currently, the program is funded, so no overhead charged to use the contract
- QA done by WGS (no need for independent QA)
- Current vendor is a nation-wide company – increased capacity, but with local expertise
- Offers increased value when combined with WGS projects
- A large focus on high quality for a ground model, with the idea that that can serve all needs and applications. Therefore, does require greater control and accuracy, managed through WGS

# Collaboration

State-wide collection is a huge goal that benefits all stakeholders in Washington, but it cannot be done without collaboration. There are a few ways to accomplish this:

- Collaboration within a project and pooling funding resources
- Synchronizing project areas to extend a collection area
- Sharing project extents and intents early to facilitate decision making
- Coordinated communication
- Annual ‘consortium’ type meeting?

# Washington Lidar Portal




- Point clouds (.laz), DEMs, hillshades available
- Area of interest or project wide download options
- Data viewable at full resolution, great for exploring Washington's topography

http://lidarportal.dnr.wa.gov

# Accessing Washington Lidar Data

There are several ways to access lidar data:

1. Connect to GIS services (updated ~once a year)

   Great option if you need to do analysis or create a wide area map

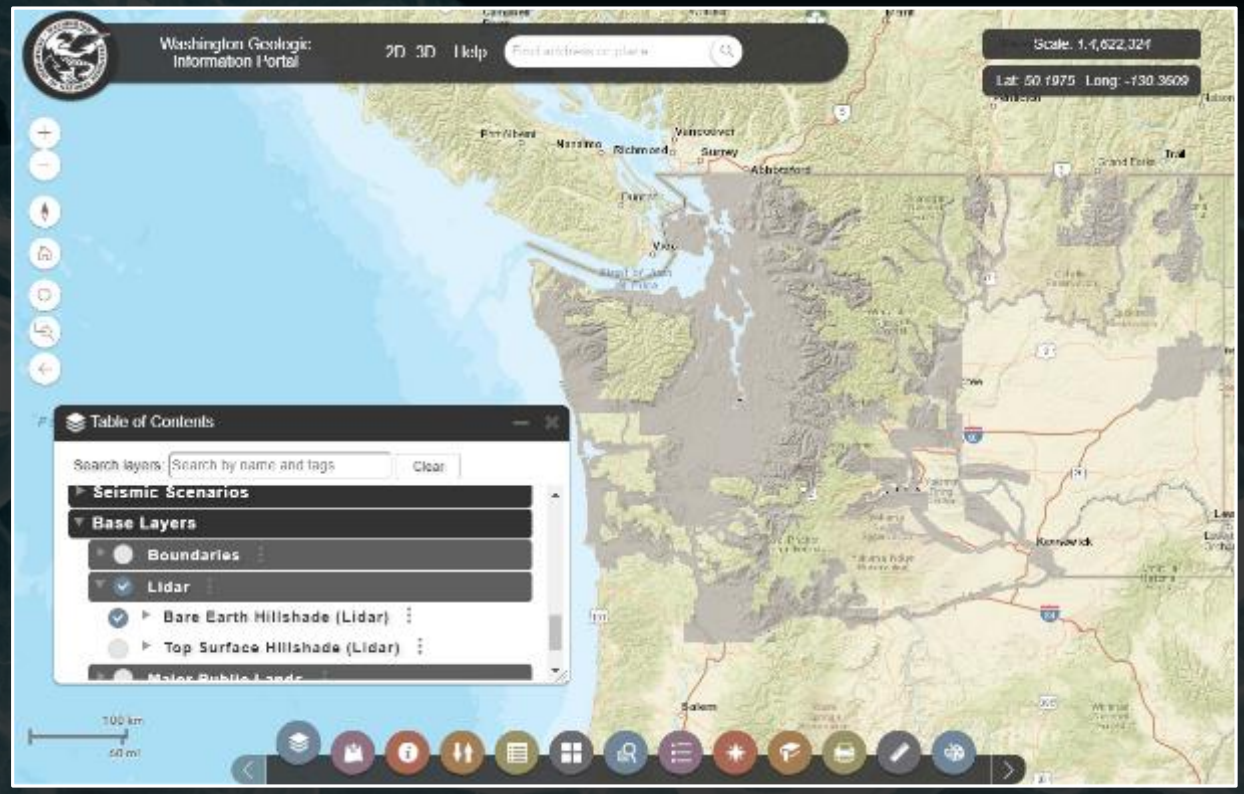
https://fortress.wa.gov/dnr/arcgisext/weba_ext_prod3/rest/services

# Accessing Washington Lidar Data

There are several ways to access lidar data:

2. View a “best of” mosaic through the Geologic Information Portal (updated ~once a year)

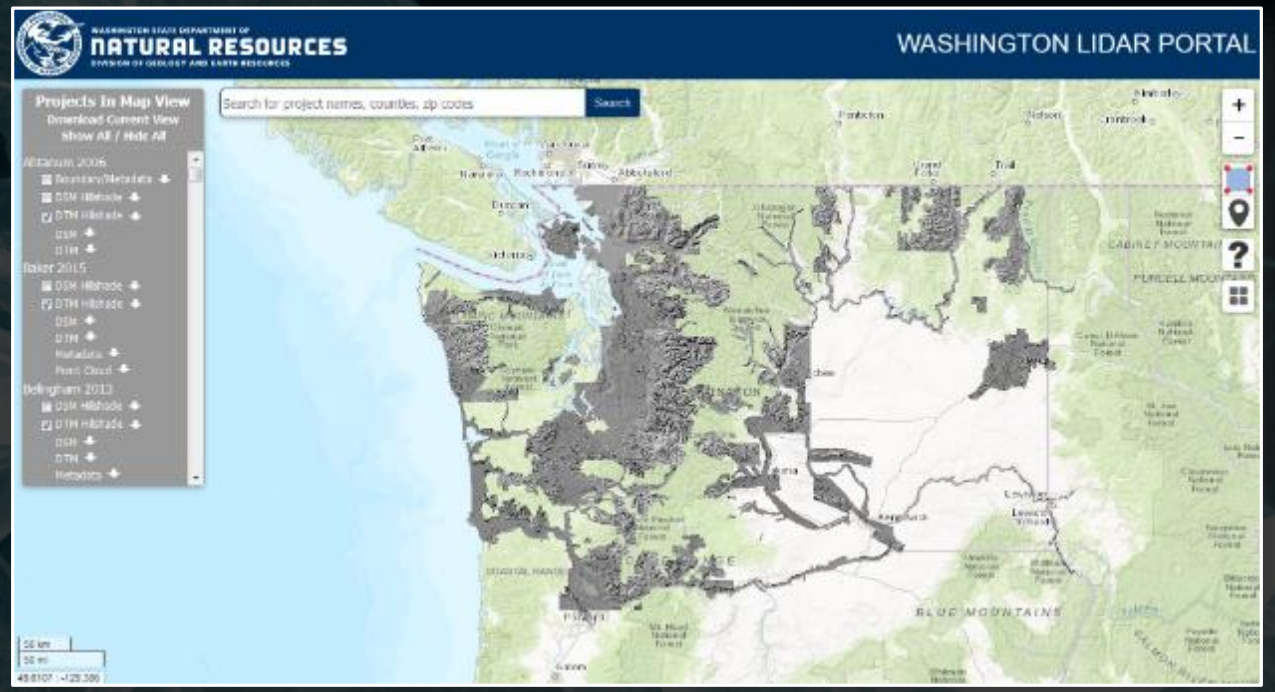
   Great option for exploring the data



# Accessing Washington Lidar Data

There are several ways to access lidar data:

3. Download project data or all datasets over a region from the Washington Lidar Portal (working toward quarterly updates, and then as each project is delivered)




http://lidarportal.dnr.wa.gov

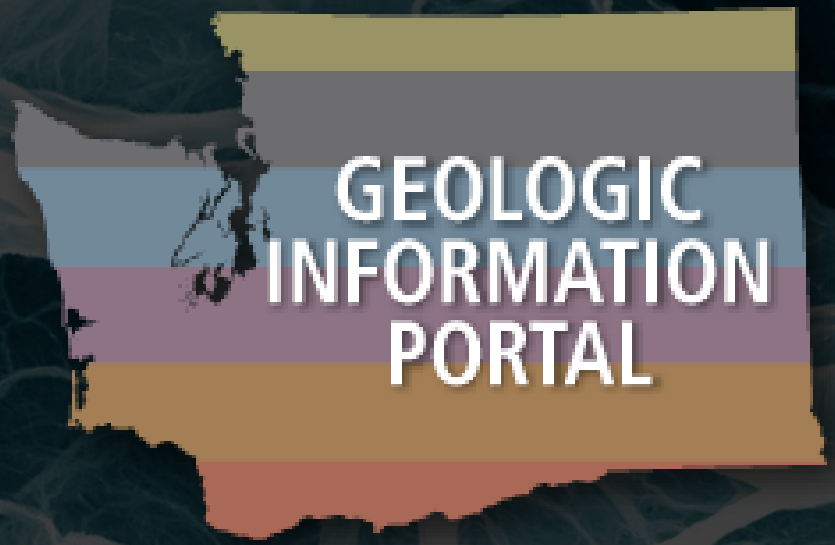
# The New and Improved Geologic Information **Portal!**

# Geologic Information Portal

The Geologic Information Portal serves a wide range of users: geotechnical firms, engineers, local planners, emergency management, and the public to name a few

Necessary capabilities include:

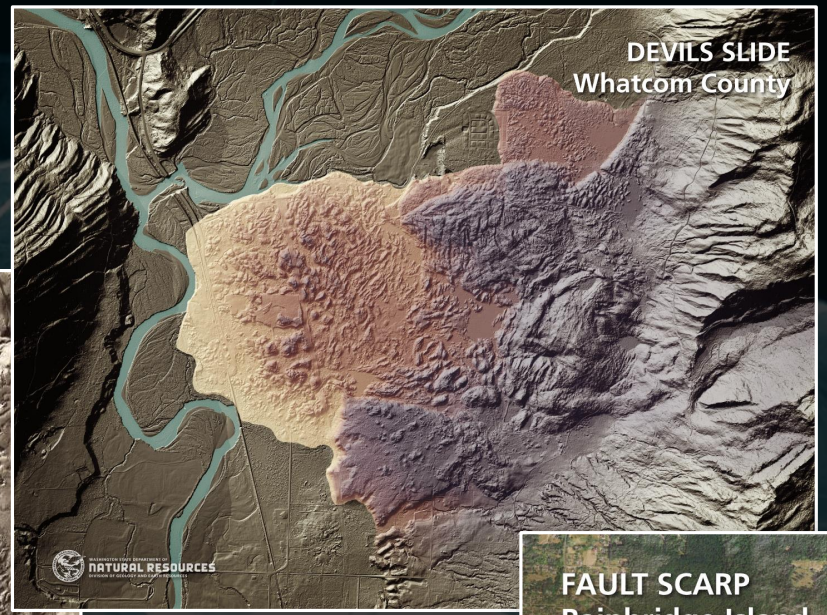
- Intuitive and easy to operate
- Has all of the geologic data in one place
- Offers utility to users without GIS software access

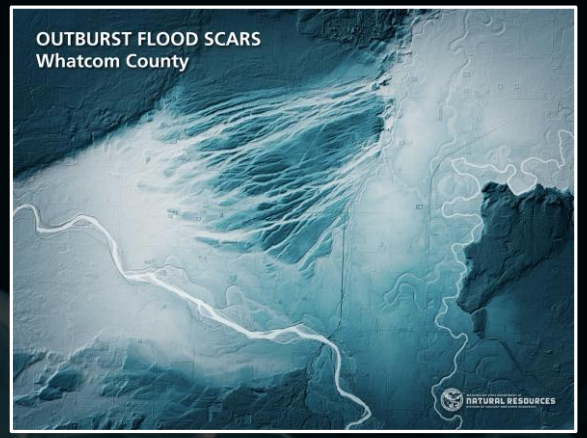


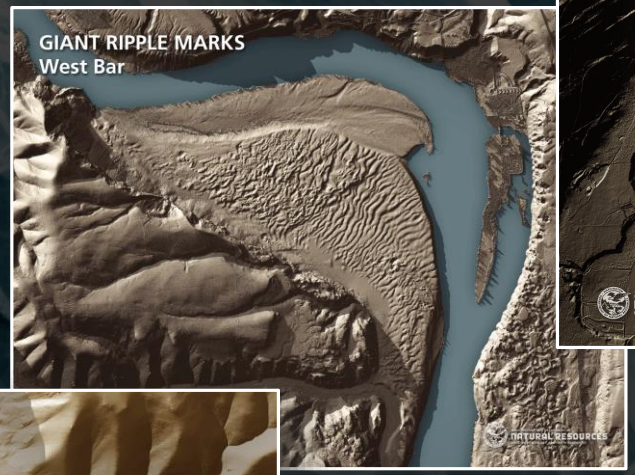

https://www.dnr.wa.gov/geologyportal

# Thank You!

## Questions?







Lidar resources and images at:
http://www.dnr.wa.gov/lidar