Dewberry®

Coastal Data Merge

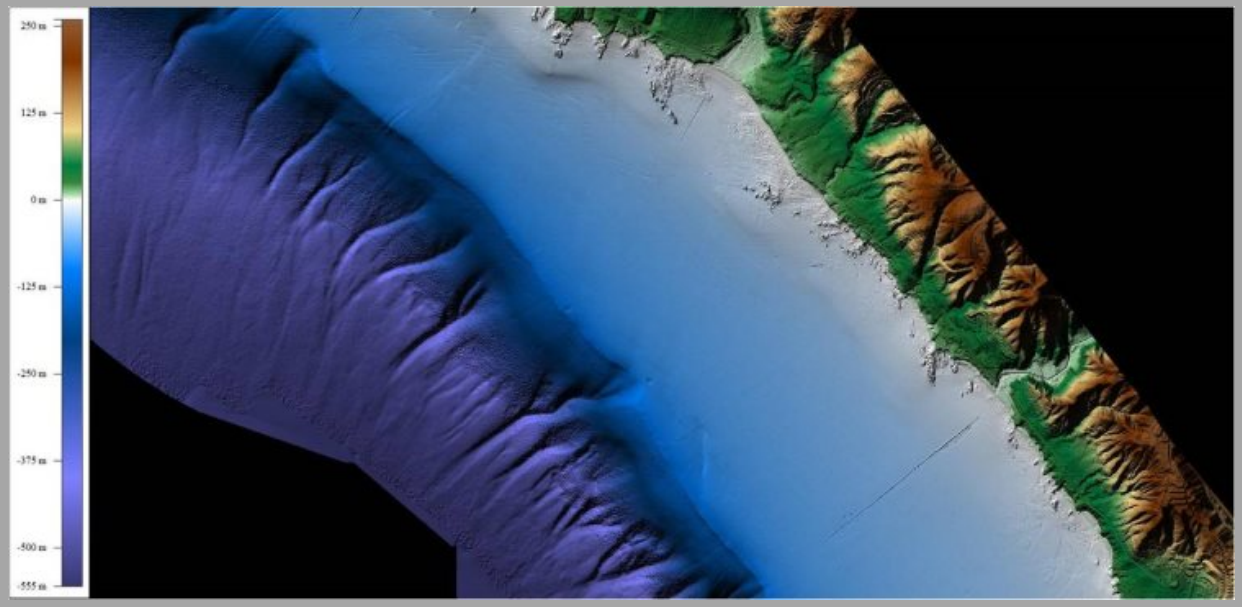
Integrating Bathymetry and Topography for Alaska's Coast

3rd Alaska Coastal Mapping Summit – December 10, 2020

Presented by Josh Novac

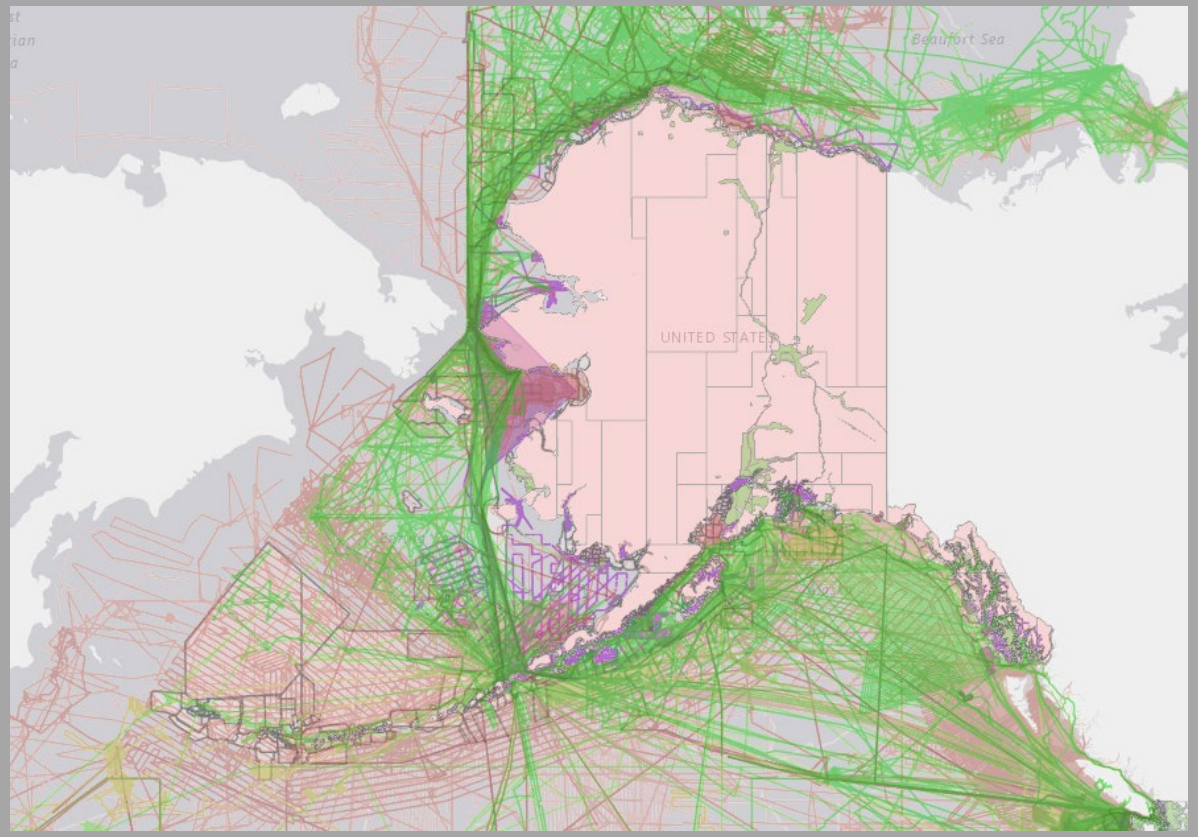
Introduction

- Provide an overview for how elevation data across multiple collections, agencies, and sensor types can be integrated to form a continuous product for the State of Alaska



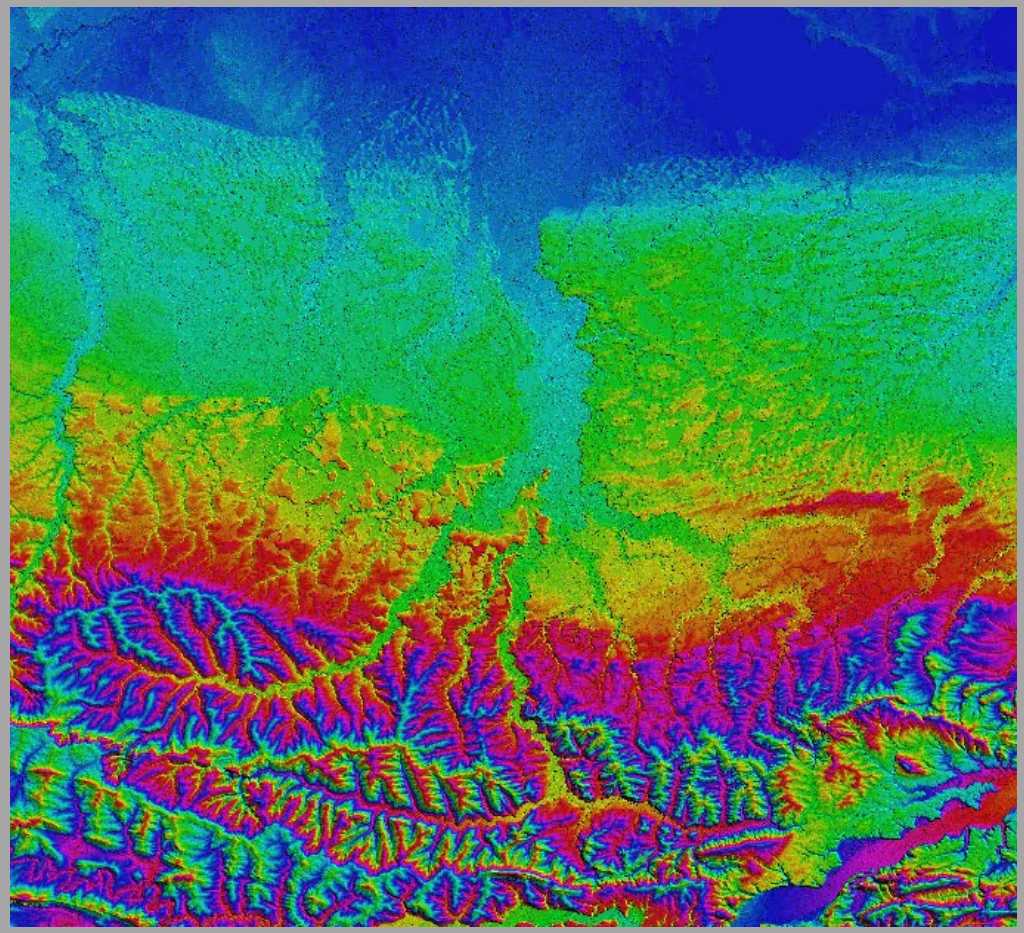
Identification of Existing Data

- US Interagency Elevation Inventory and other data repositories
  - 100’s of projects covering both topographic and bathymetric domains
  - Some data is easier to access than others
    - DGGS Elevation Portal
    - NOAA Digital Coast



Identification of Existing Data

- Data is typically broken up by project for download (or by cell for most of the IfSAR products)
- Can be cumbersome for those who want to select an AOI to determine the best available source for the data.
  - Additionally, how do we define what is “best”.



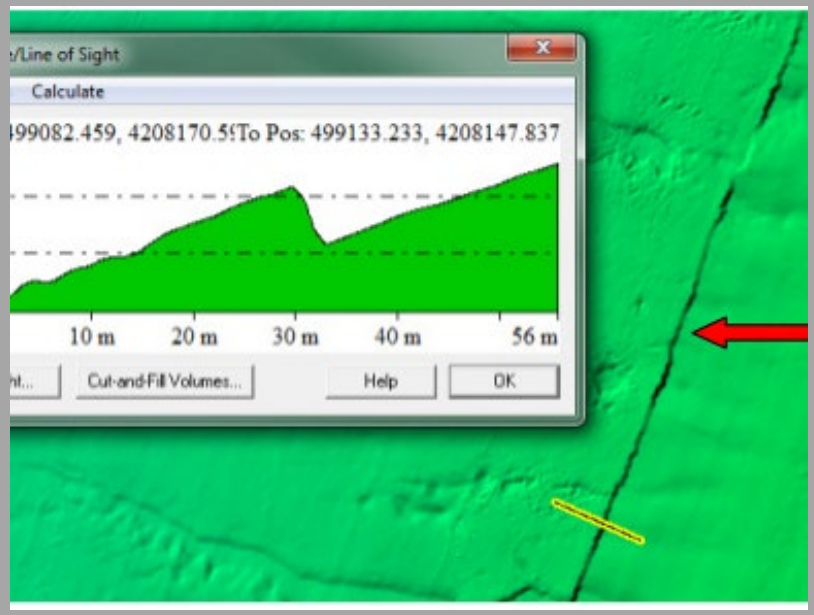
Data Integration

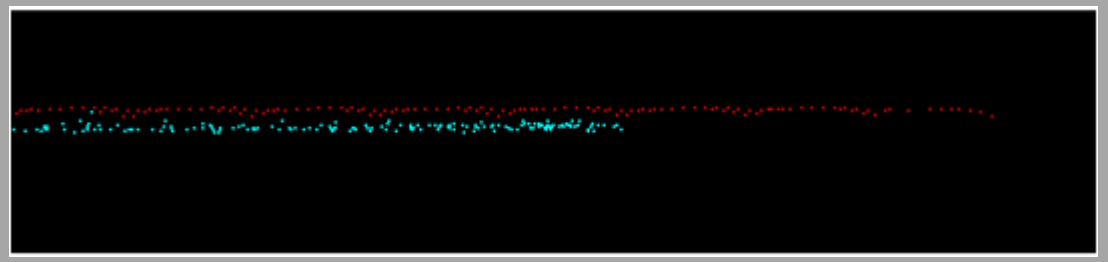
- Goal: Integrate disparate data into a single product.
  - Community engagement defines what sources are used and how those sources are prioritized.
  - Community determines what products will have the biggest impact.
    - Point Cloud
    - DEM
    - DSM/DTM
    - Vectors

- What is the cut off for currency?
- Would single beam surveys be included?
- What accuracy levels should be integrated?
- How are data prioritized (date of collect, density, accuracy, etc.)?
- What datum/projection should be used for the final products?

Data Integration - Challenges

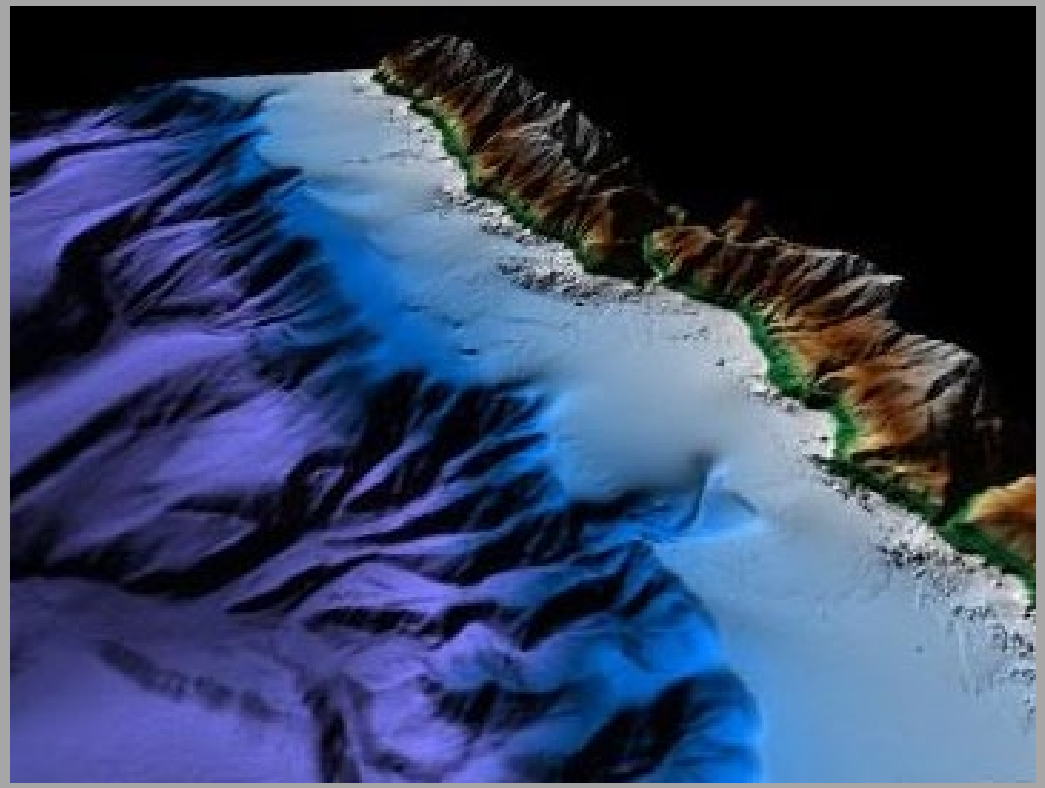
- Data will not always line up well due to differences in collection, control, accuracy, and just temporal change.
- Many of these challenges can be addressed early through defining a consistent approach.
  - Converting Datums/projections
  - Handling vertical/horizontal offsets between projects through best fit approaches or standardized smoothing.





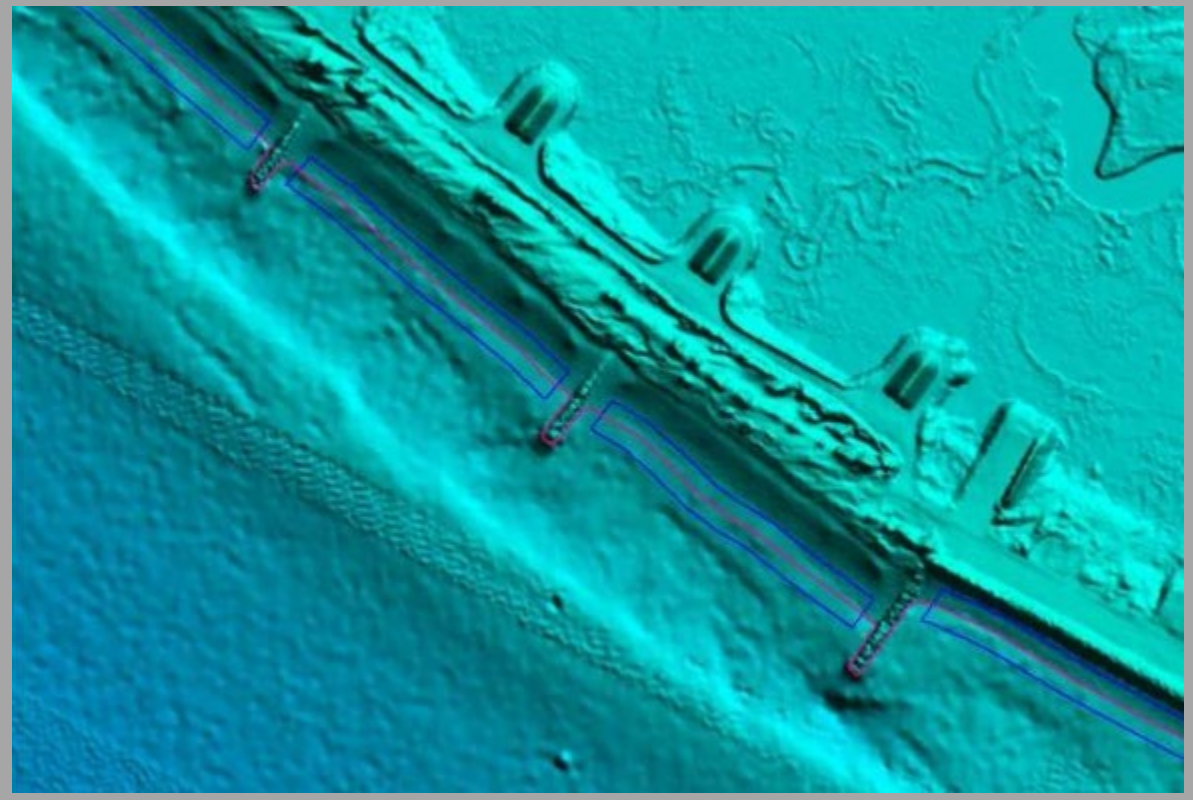
Data Integration - Challenges

- Spatial Metadata is key to enabling end users to identify where each pixel came from and it's associated attributes.
  - Collection Date
  - Sensor Type
  - Accuracy
  - Spatial Resolution
- Spatial Extents of approved data are also useful in identifying where voids exist to aid in prioritization.
  - Additionally by segmenting those extents by the data type, collection date, accuracy, or resolution you can ID where data updates are also needed.



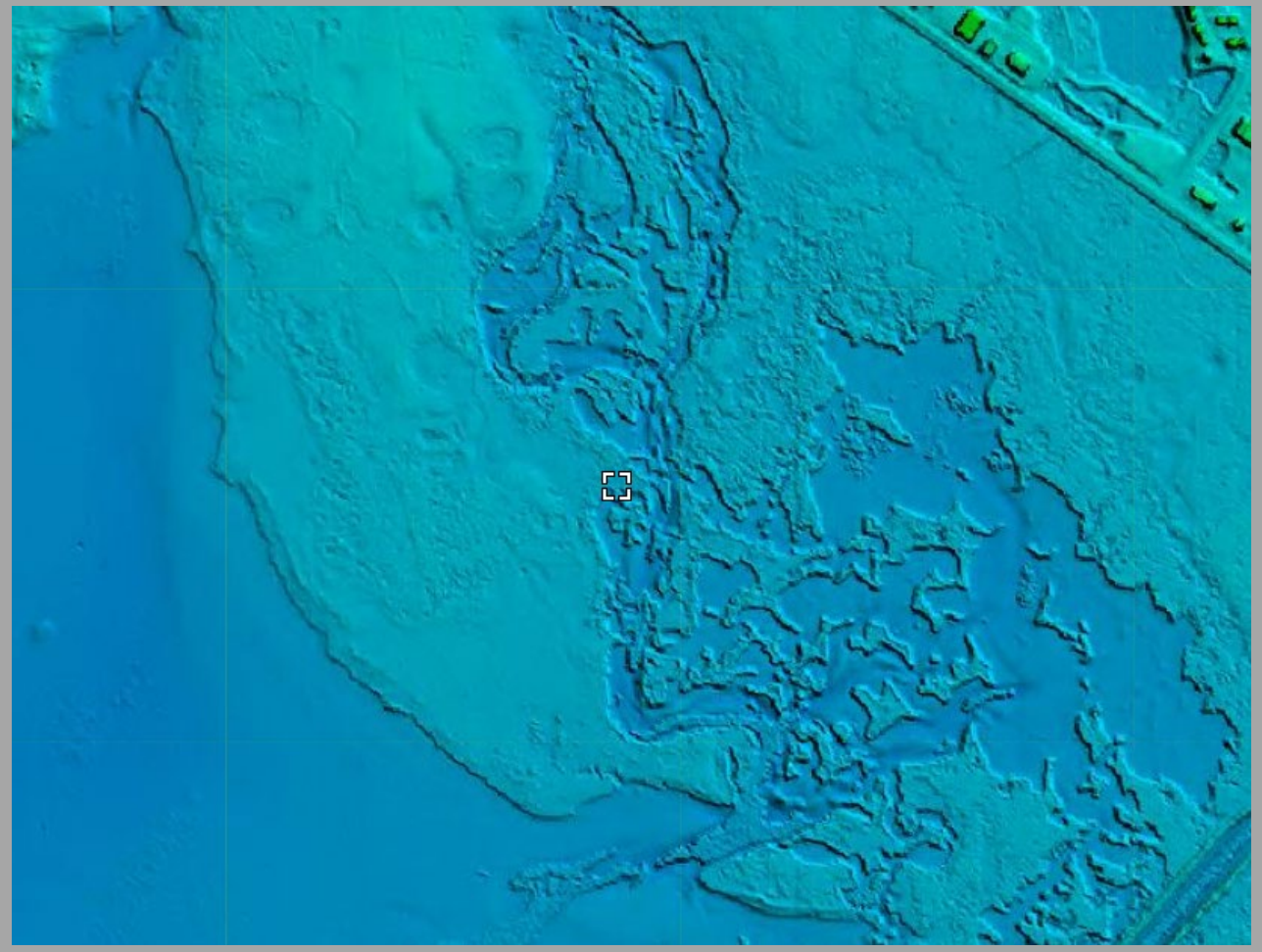
Maintaining the dataset

- Maintenance of the dataset can be managed by the agency/organization that owns the portal with completed projects being incorporated into the dataset on an as needed basis.



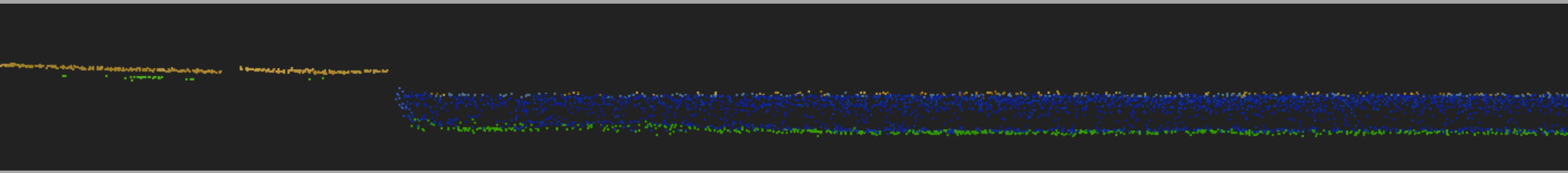
Empowering Users

- Once the difficult task of determining what goes into the datasets is complete how do we empower end users to leverage these data?



Empowering Users

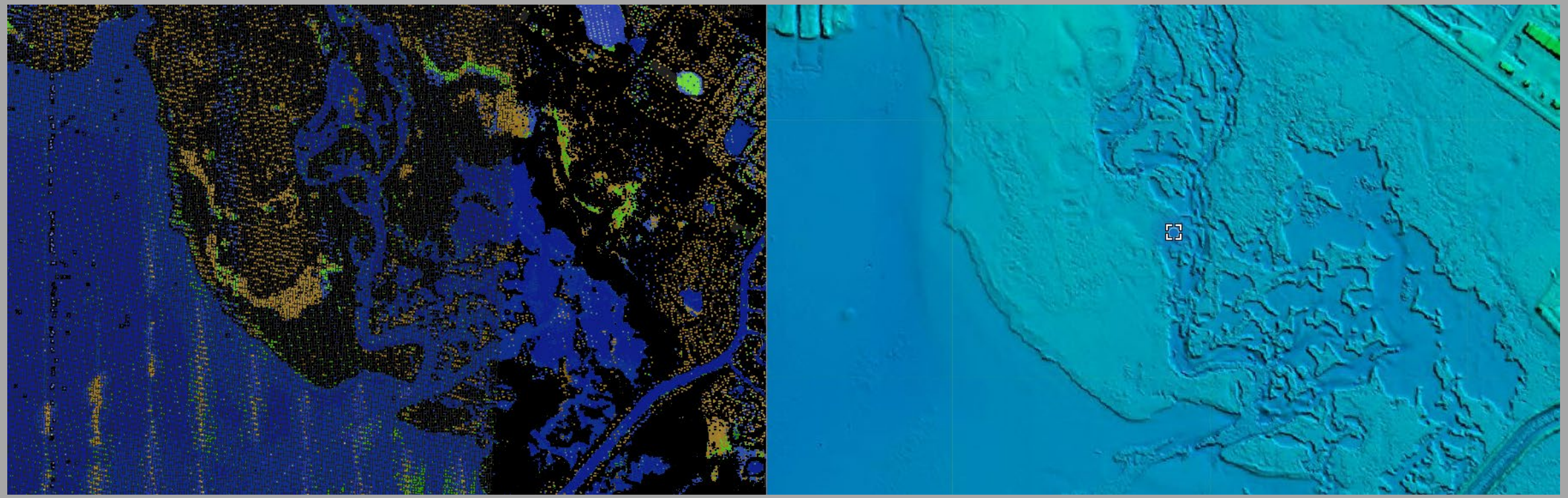
- Online visualization of the point cloud, raster, and vector products.
- Ability to perform some limited analysis (cross sections, height measurements, etc.)
- Identify and clip areas of interest and download the data and associated spatial metadata.
- Change detection when multiple data sources are present



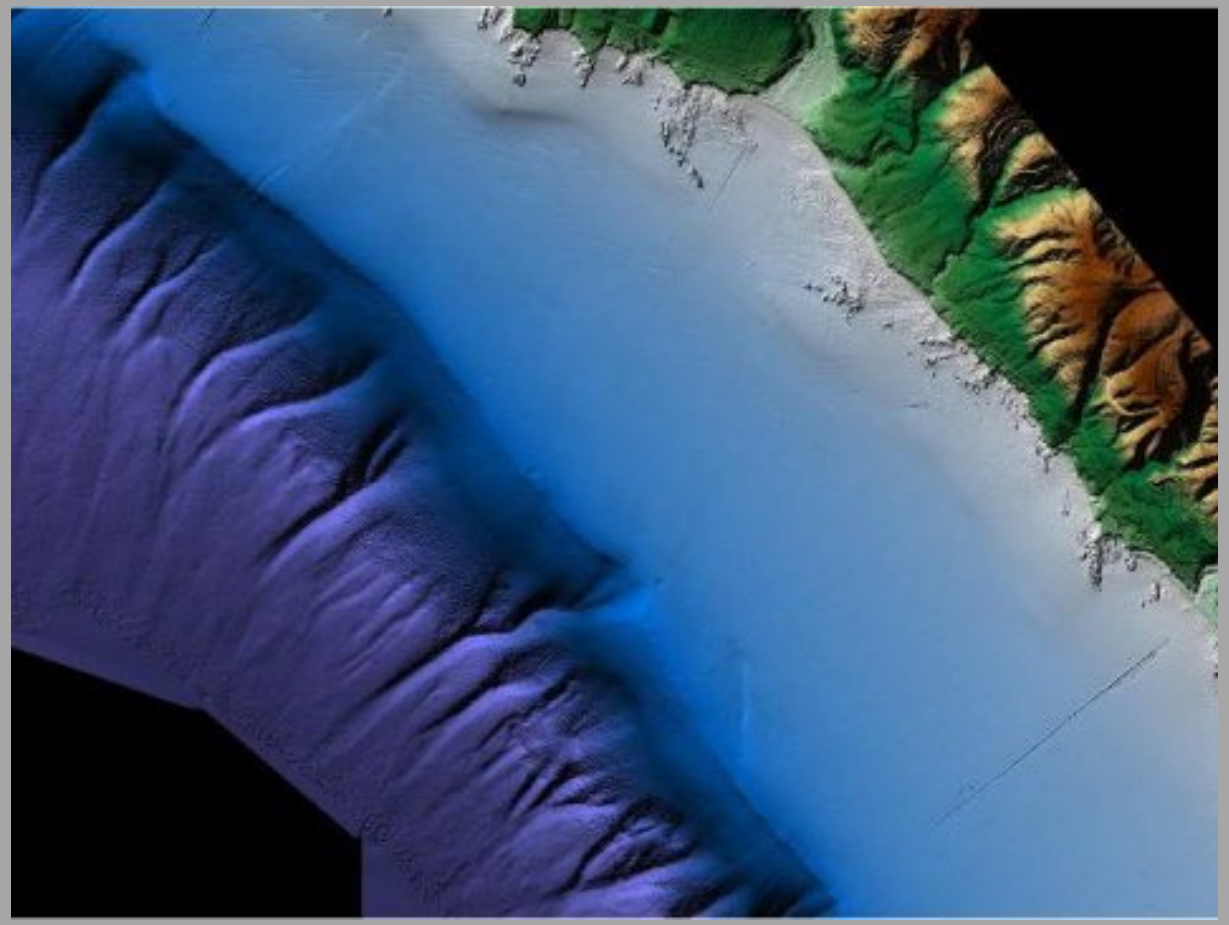
Empowering Users

- If desirable different collects can be managed so that change detection is possible and can be measured within online tools.

Empowering Users



Thank You!

- Questions

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