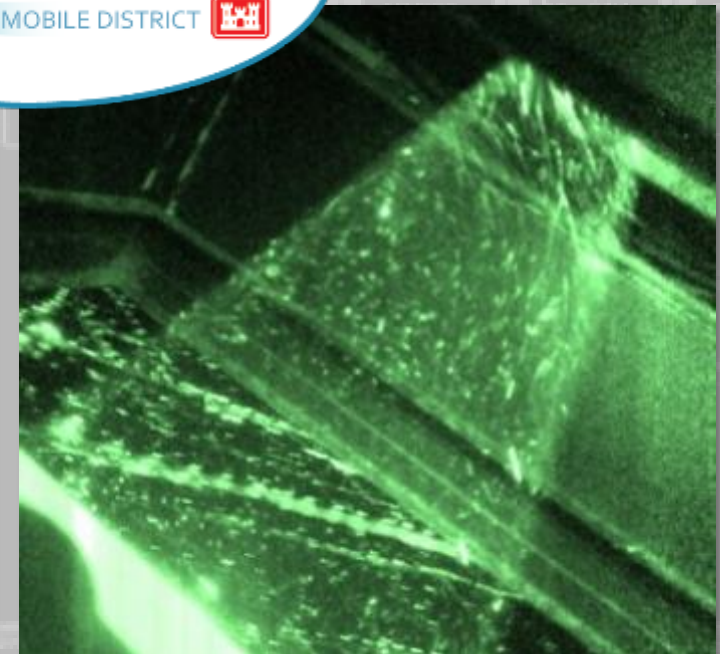
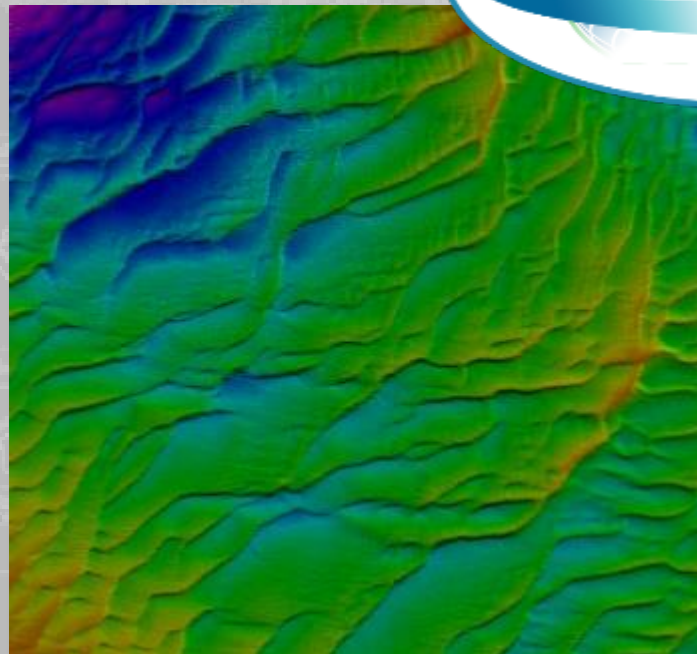


# CASE STUDIES FOR OPTIMIZING THE COLLECTION OF TOPOBATHY LIDAR IN ALASKA

Christopher Macon  
NCMP Technical Lead  
3<sup>rd</sup> Alaska Coastal Mapping Summit  
10 December 2020



US Army Corps  
of Engineers®

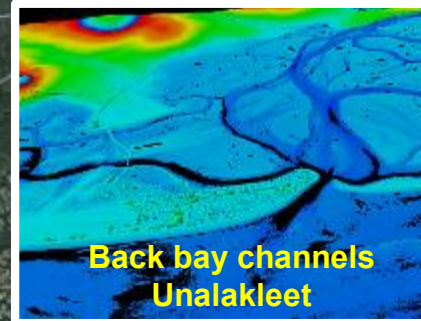
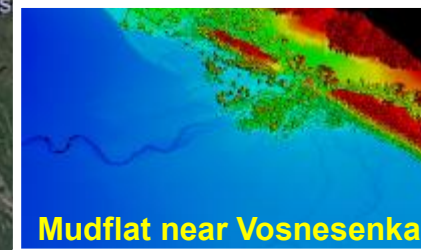
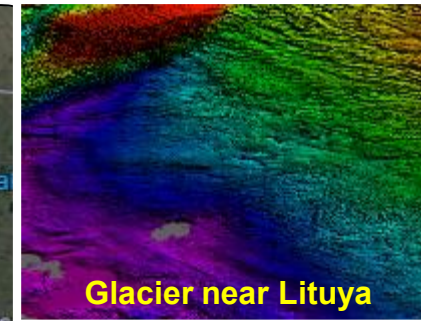
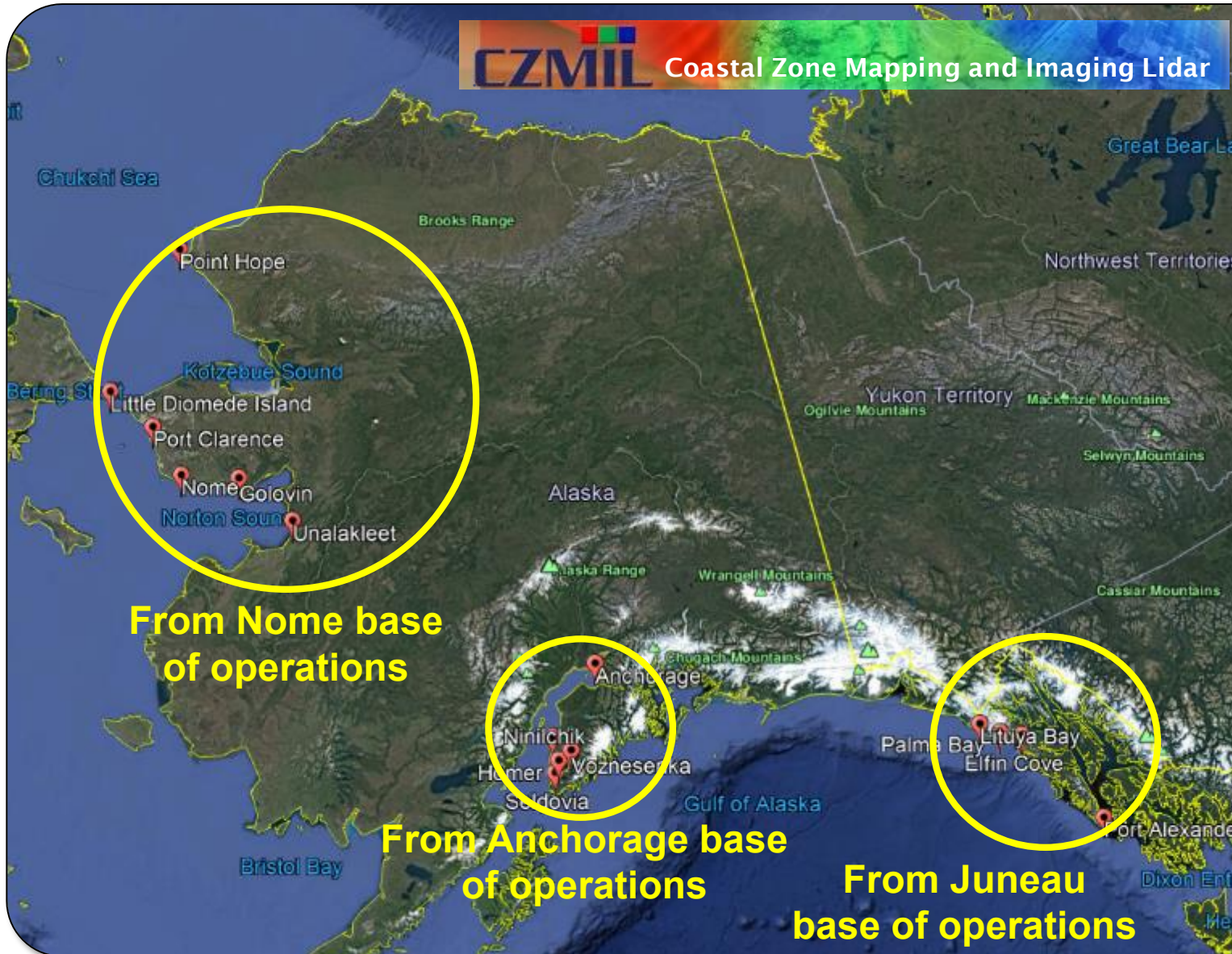


**JALBTCX**  
Joint Airborne Lidar Bathymetry  
Technical Center of Expertise





# 2019 JALBTCX Topo/Bathy Operations



- Utilized NAVO return transit from INDOPACOM
- July 4 – July 29
- 13 Flight days between 9 July and 27 July
- 18 Flights
- 100 Engine Hours
- 54 Survey Hours
- 40 Transit Hours
- ~ 1/3 of days impacted by Weather
- Delivered Data on 17 Dec to USACE, DGGS, and NPS





# STANDARD PLANNING CONSIDERATIONS



- Water Clarity
  - NOAA NGS Climatology Tool
  - Local Knowledge
  - Historic Imagery
- Terrain
  - Safety of Flight
- Waves
  - Surf zone
- Seafloor Reflectance



Lituya to Palma



Elfin Cove



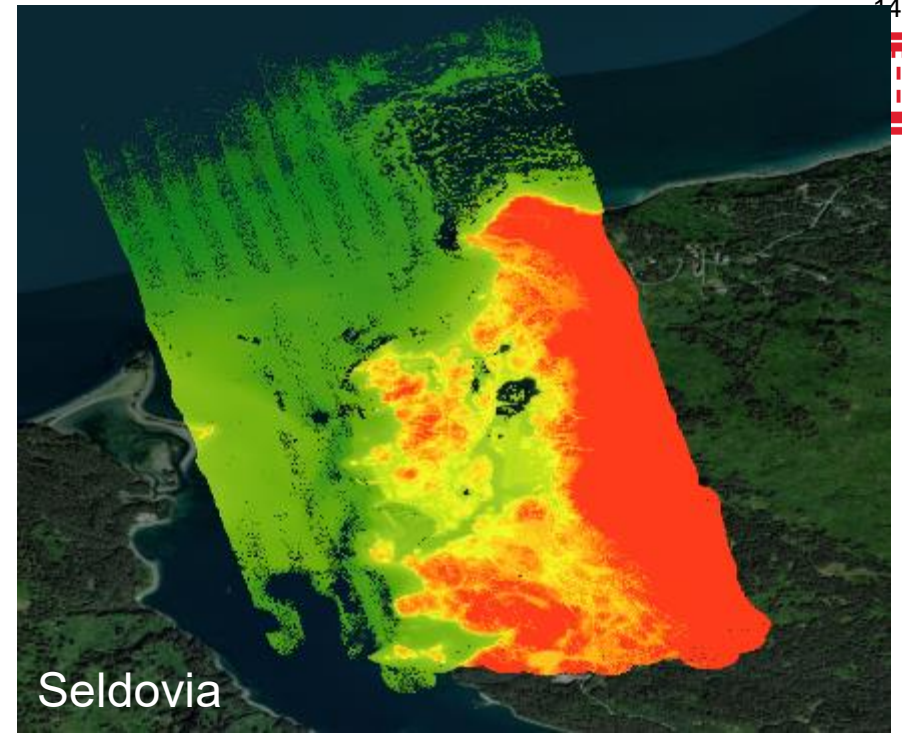


# DEFINITION OF SUCCESS?

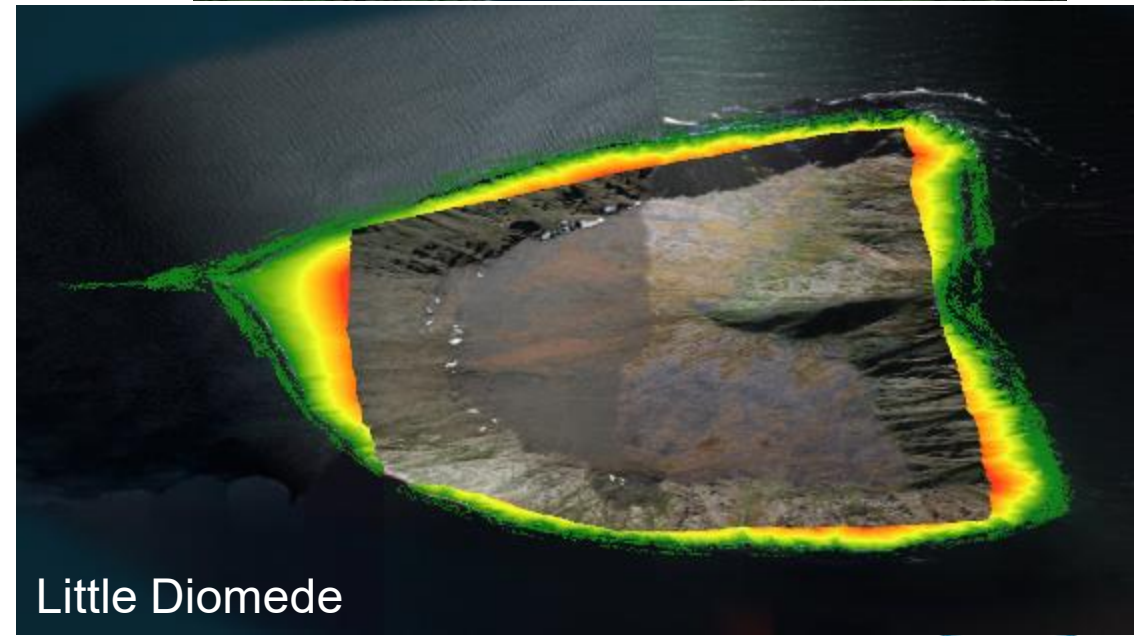
- Full coverage should not be expected
- Seamless Topo/Bathy
  - Vary with area
  - Use tidal range to help
- Understand the gaps
  - Rocks
  - Potential Vegetation
  - Turbidity
- Delta's and ponds



South Florida



Seldovia



Little Diomed

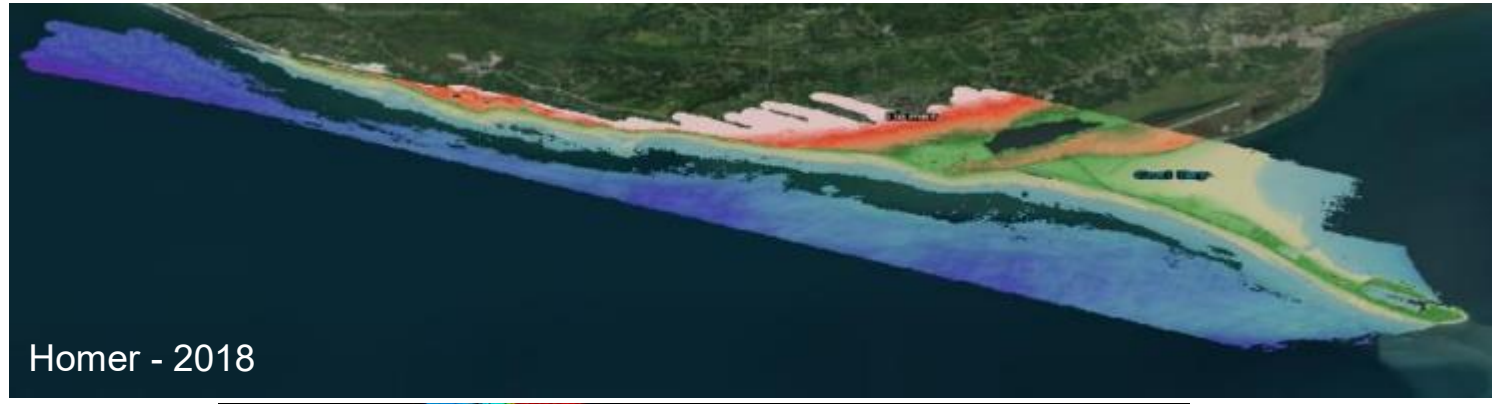




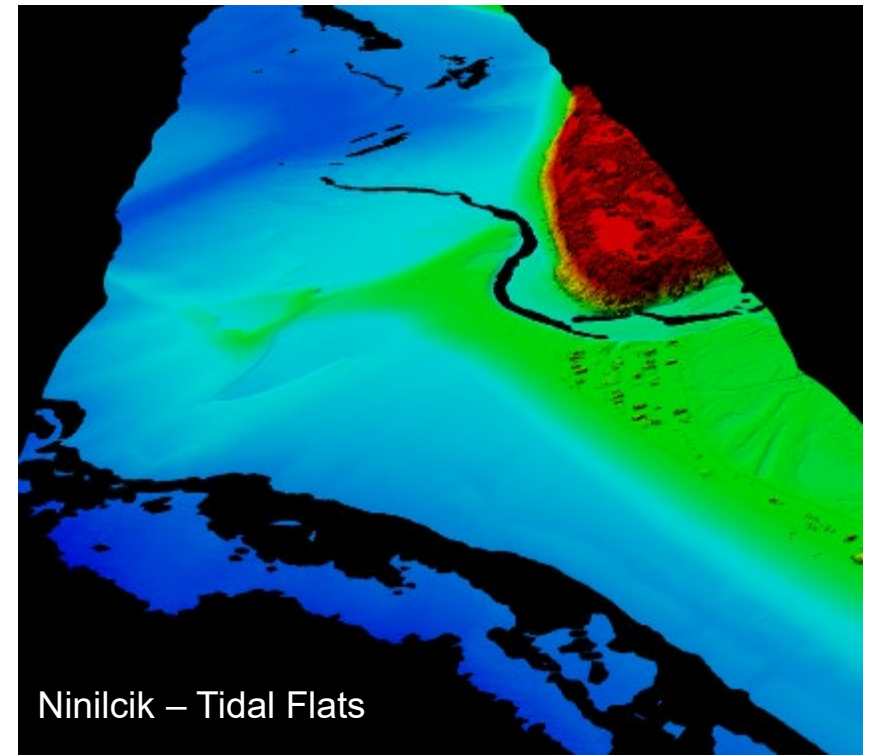


# ADDITIONAL FACTORS:

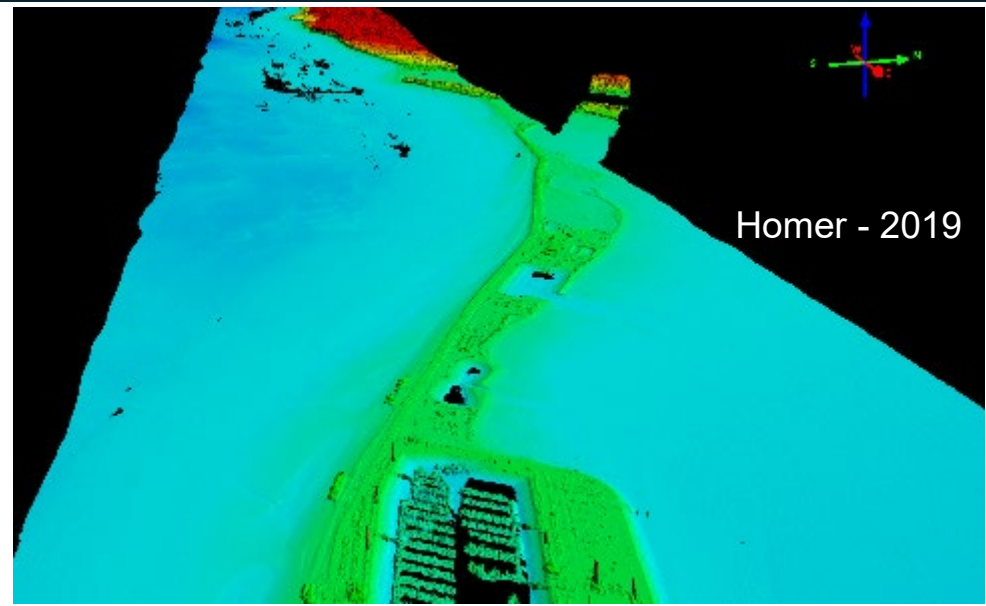
- Tides
  - Is the goal seamless data or low tide data?
  - Use large tide changes to your advantage



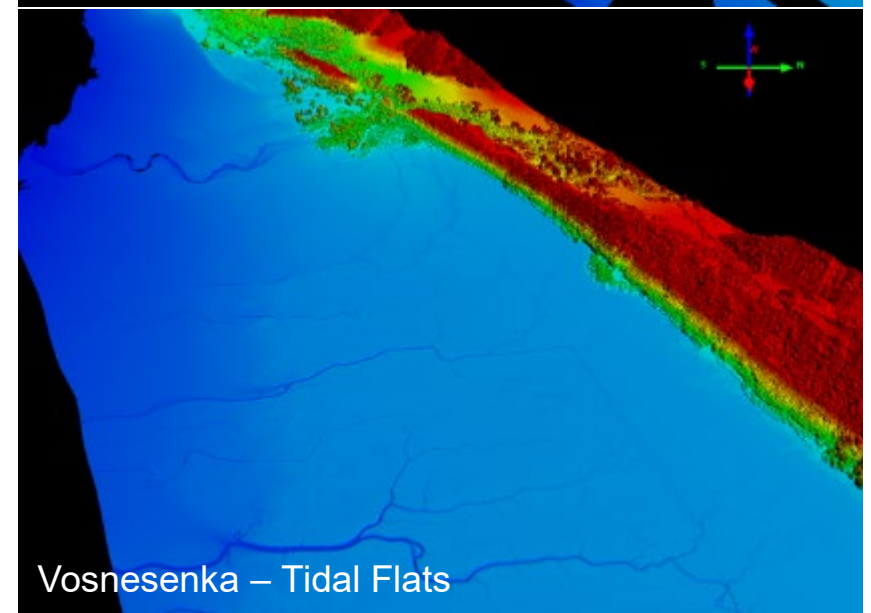
Homer - 2018



Ninilcik – Tidal Flats



Homer - 2019



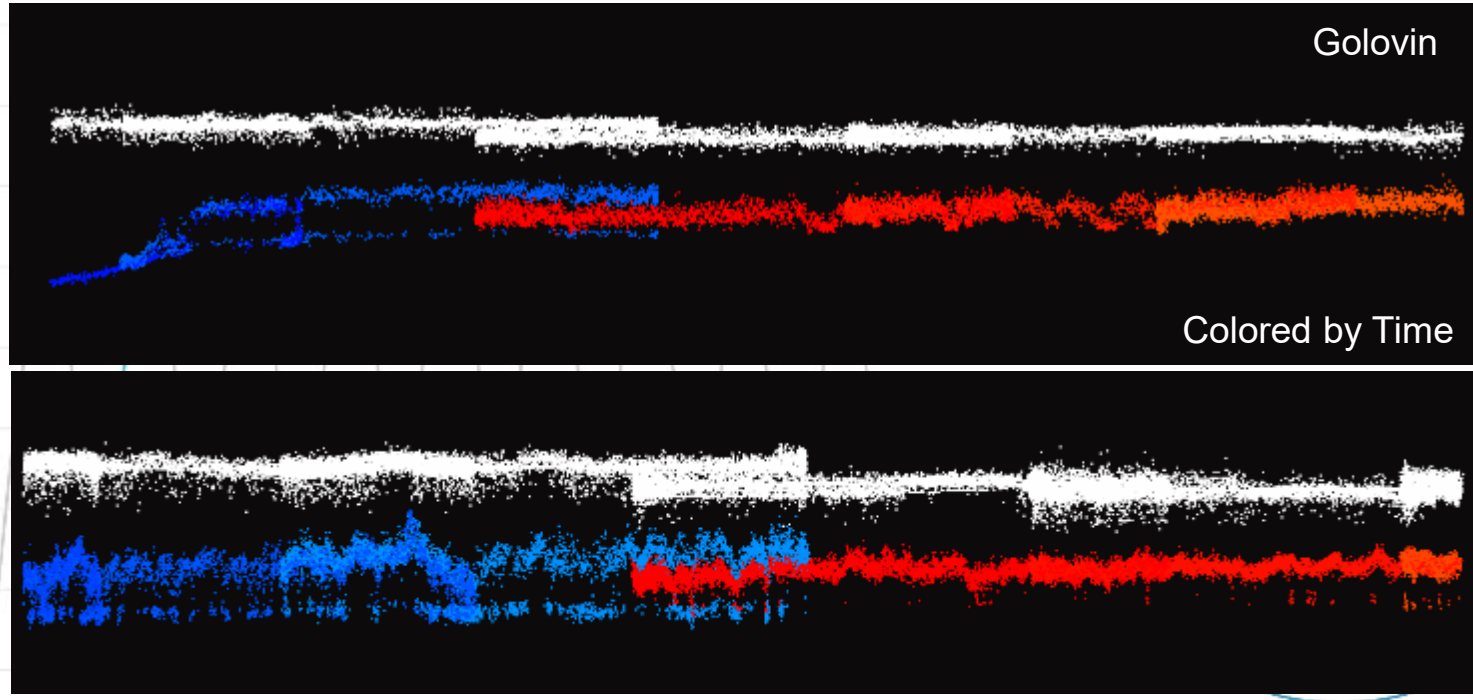
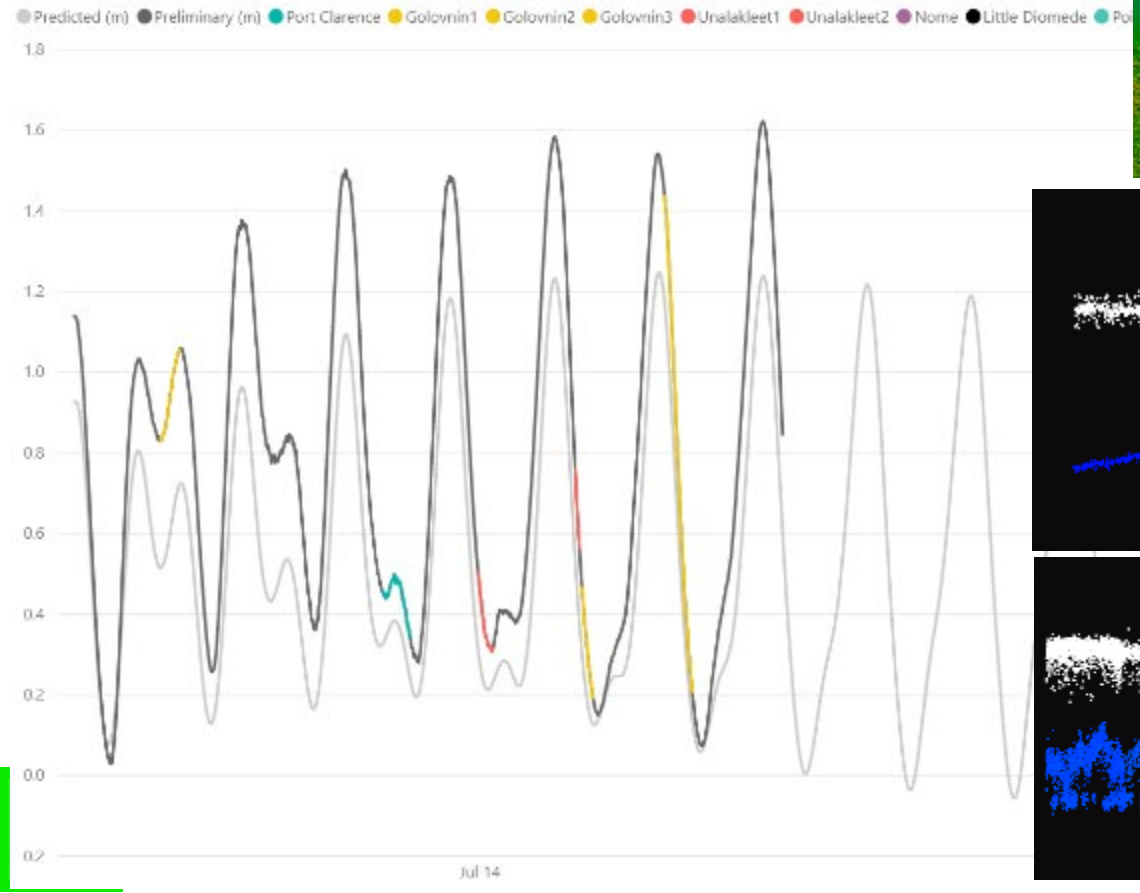
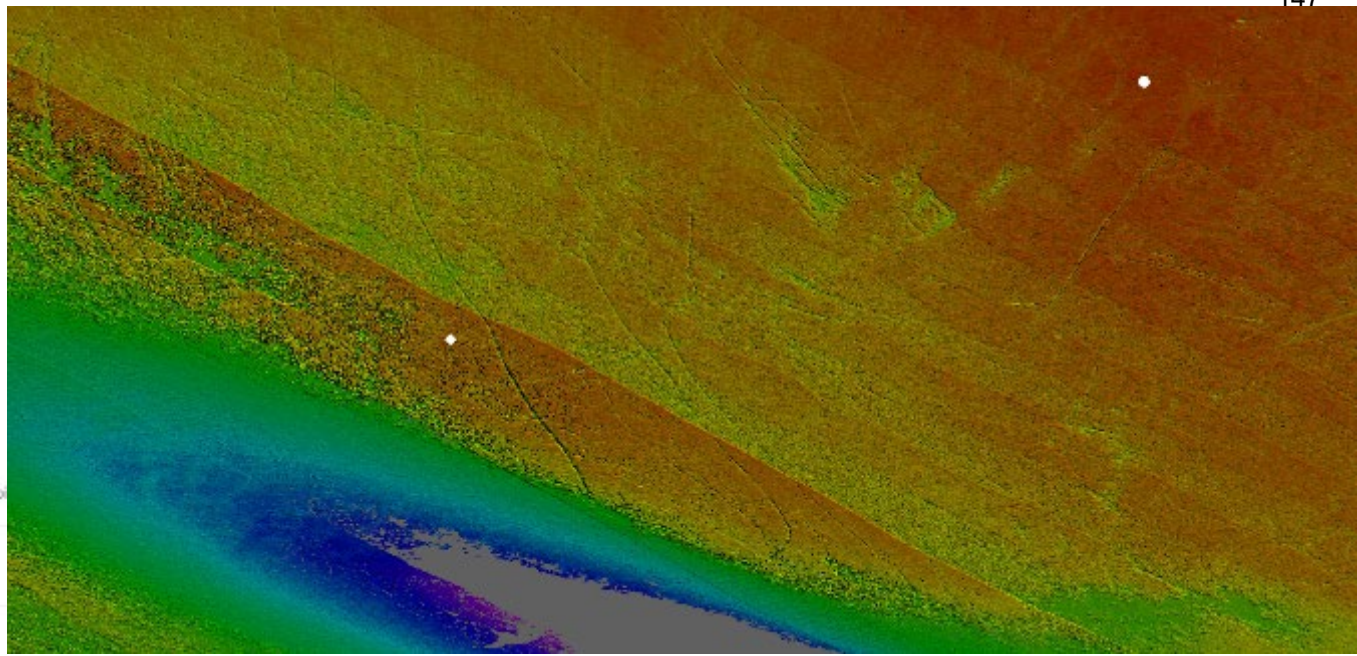
Vosnesenka – Tidal Flats





# ADDITIONAL FACTORS:

- Water Column
  - Turbidity
  - Submerged Aquatic Vegetation (better penetration at high tide)

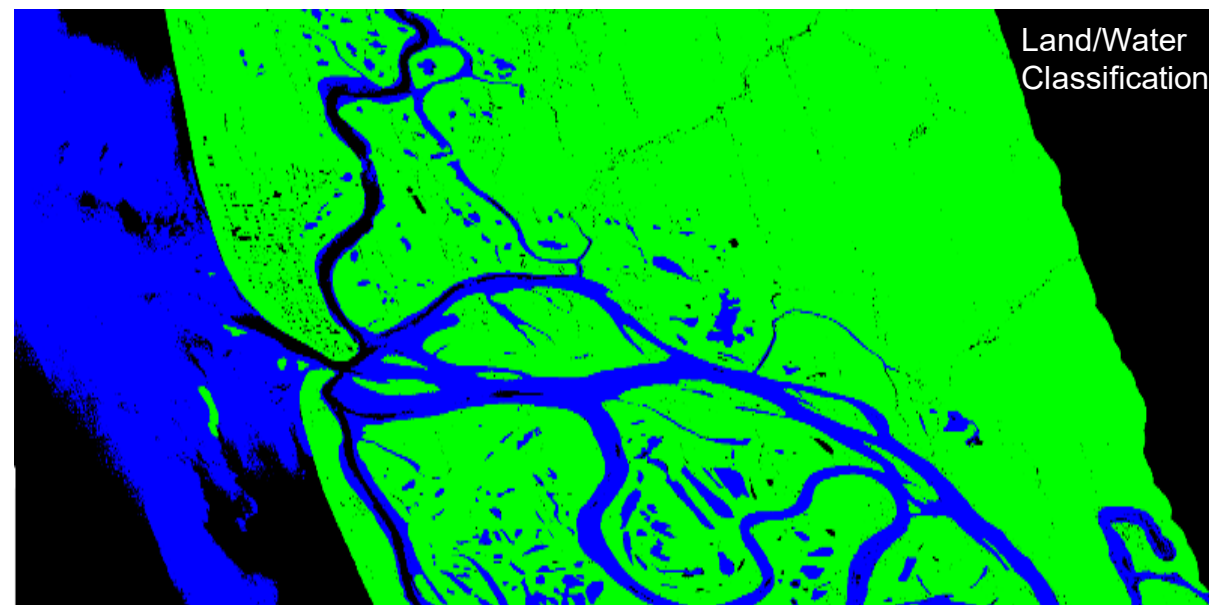
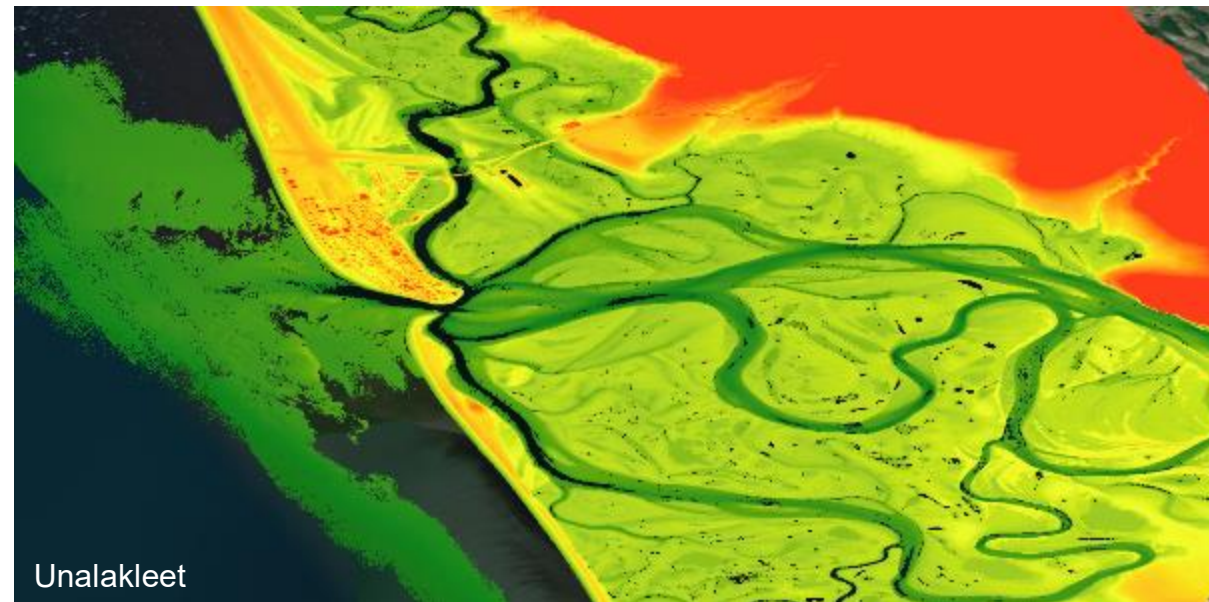






## ADDITIONAL FACTORS:

- Shoreline type
  - Very rocky shorelines can be challenging
  - Large tidal flats and back bay streams/ponds
- Winds

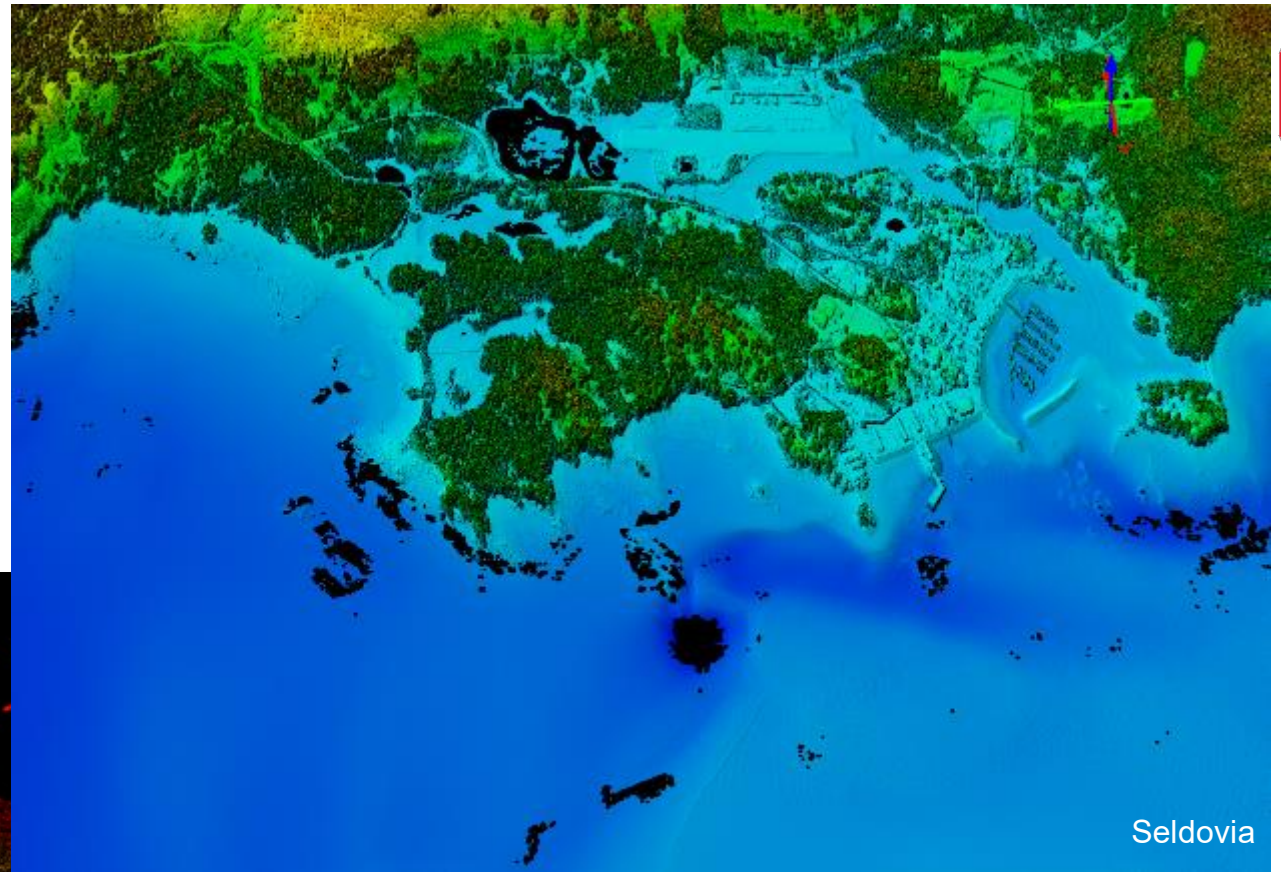






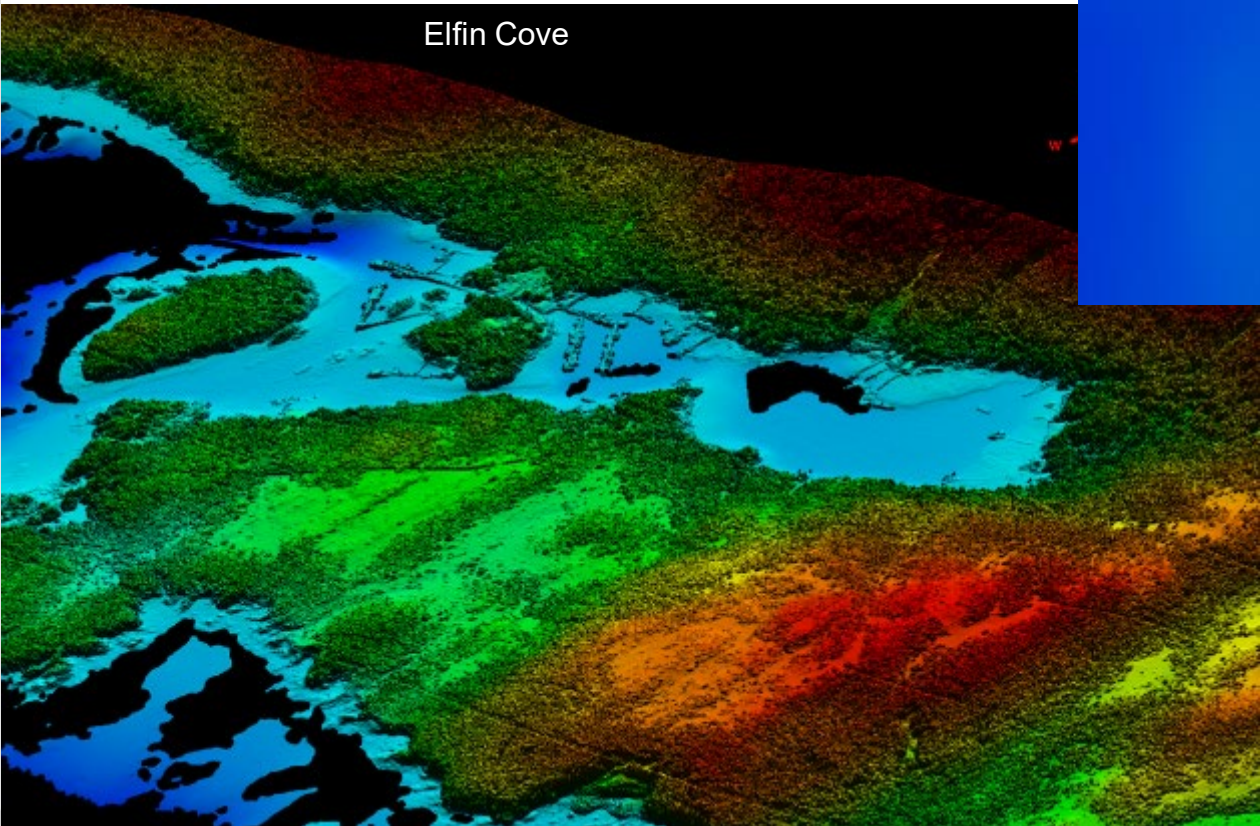
# ADDITIONAL FACTORS:

- Seafloor
  - Reflectance
  - Signal Attenuation



Seldovia

Elfin Cove





# CHRIS MACON

CHRISTOPHER.L.MACON@USACE.ARMY.MIL



Time-lapse of a night flight, Long Island, NY, September 2017