Cliff Hangers:

Understanding the role that shelf break topography plays in hake, mesopelagics, and predator distributions along the U.S. West Coast

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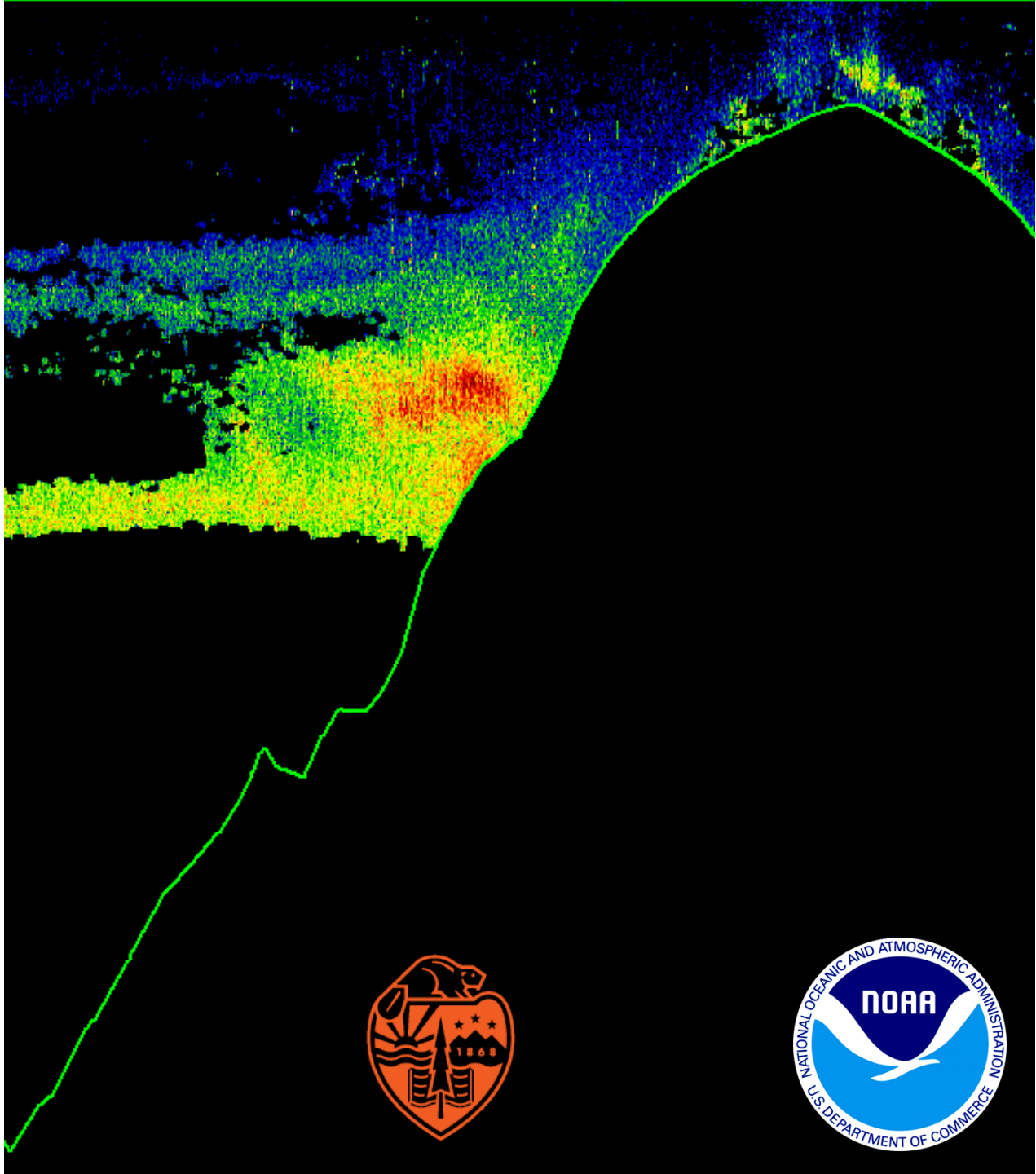
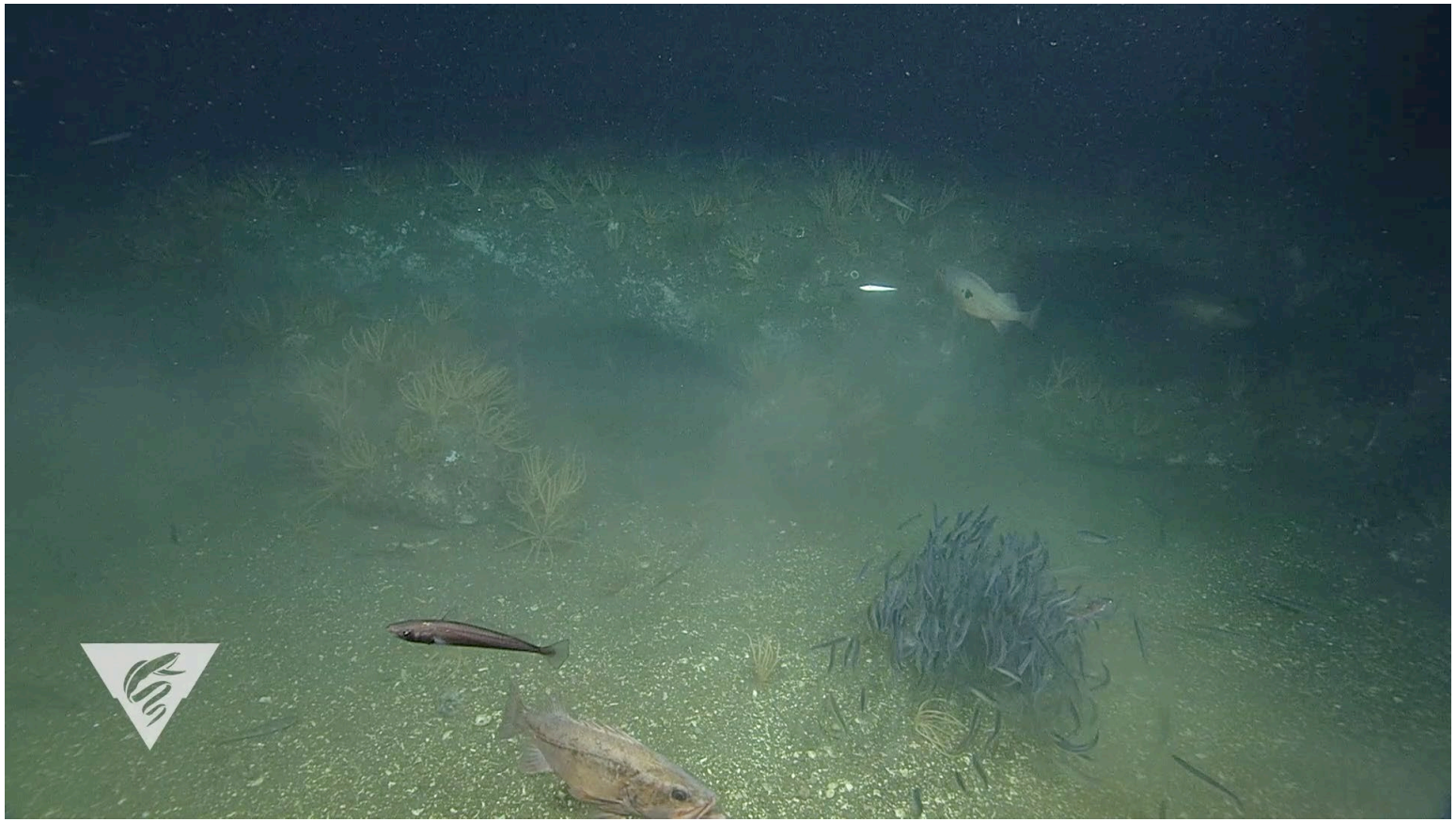


Hake, mesopelagics, and their predators

- *Merluccius productus* (hake)
  - $335 million
  - 4450 US Jobs
  - Most abundant CCLME groundfish
  - Key krill predator
  - Can associate with and form shelf break aggregations
  - Also feeds on mesopelagic fishes
- Mesopelagics
  - Key prey group (for rockfishes, tunas, squids, swordfish, mammals)
  - Often co-occur/mingle with hake
- Commercially, socially, and ecologically important predators (groundfishes, mammals)



Our Questions:

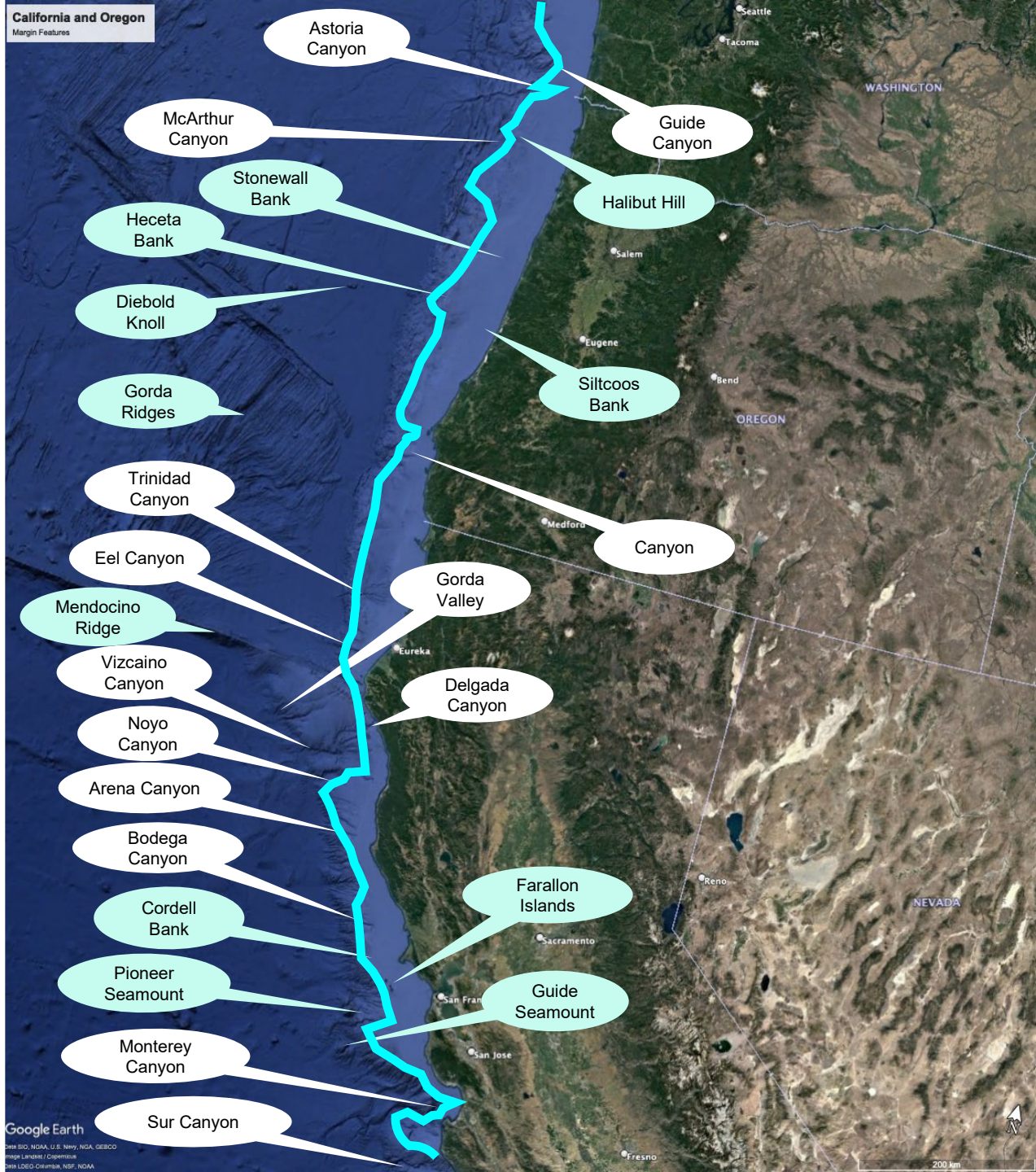
- How does bathymetry impact hake aggregations across scales?
  - Mesopelagics?
  - Rockfishes?
- Can bathymetric variables be incorporated into existing echo classification model (HakeML PD4121)

Our Goals:

- Quantify fish-bathymetry relationships across scales across latitude on the west coast to

  1) Better understand environmental and habitat drivers of economically and ecologically important fish and prey aggregations

  2) Refine echo classification model results by incorporating additional parameters



Proposed Methods

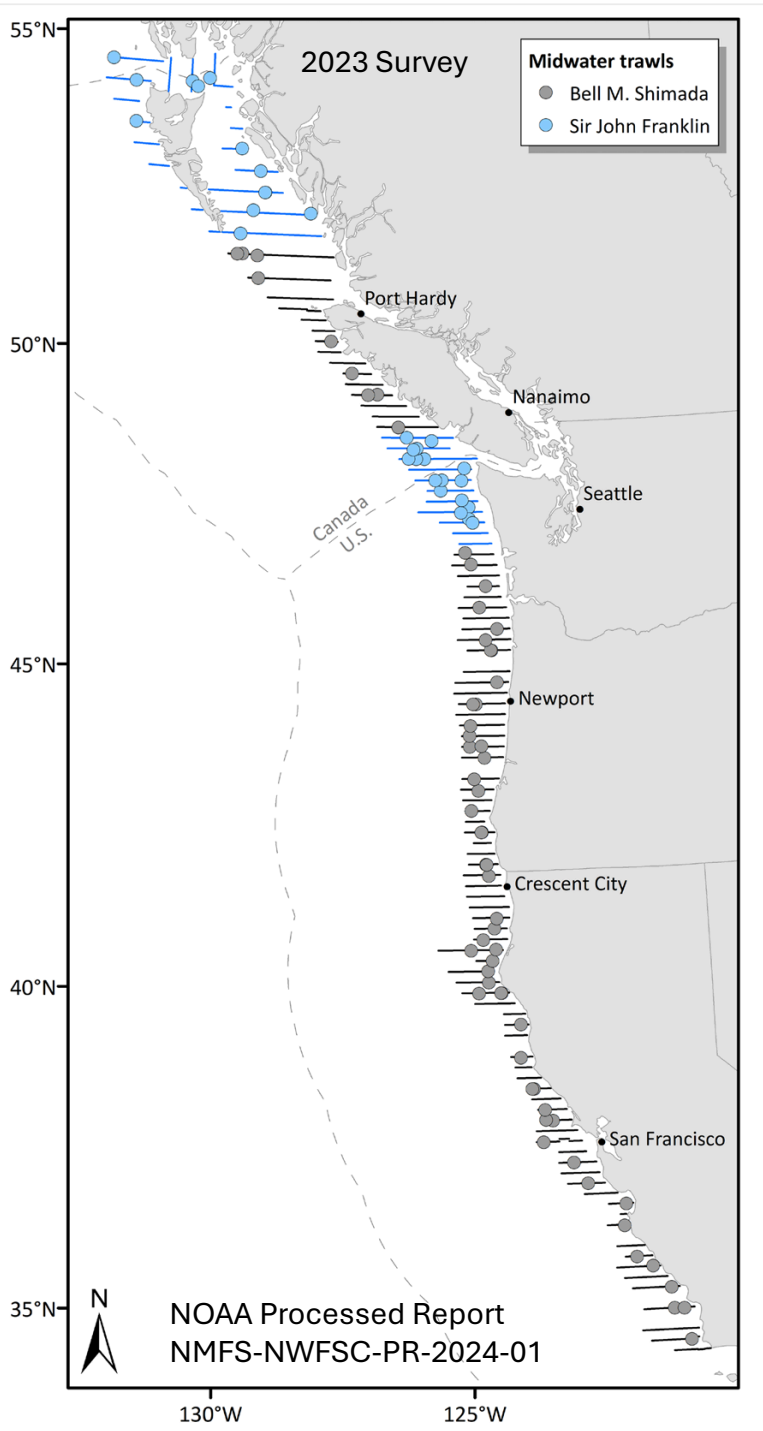
1) Joint U.S.–Canada Integrated Ecosystem and Pacific Hake Acoustic Trawl Survey

- Acoustic Survey
- Midwater Trawls
- CTD
- Shipboard ADCP
- From 50-1500m isobath
- From 34.5 N to 54.7 N

2) West Coast Bathymetry and Backscatter Mosaic:

Susan Merle, NOAA/PMEL EOI Program

- Slope, Aspect, Complexity, Curvature, etc across scales
- Broad Feature Classification



Importance and Applications of Fish-Bathymetry Relationships

- Inform understanding of where and when shelf break aggregations are primarily hake vs mixed species
- Increase understanding of bio-geo-physical coupling in the CCLME
- Enhance predictive capacity of species distribution models
- Directly inform existing automated echo classification tools
  - Expand model performance and applications for other species eg rockfishes and mesopelagics
- Inform efforts to build environment-driven predictive models for important fish populations in the CCLME