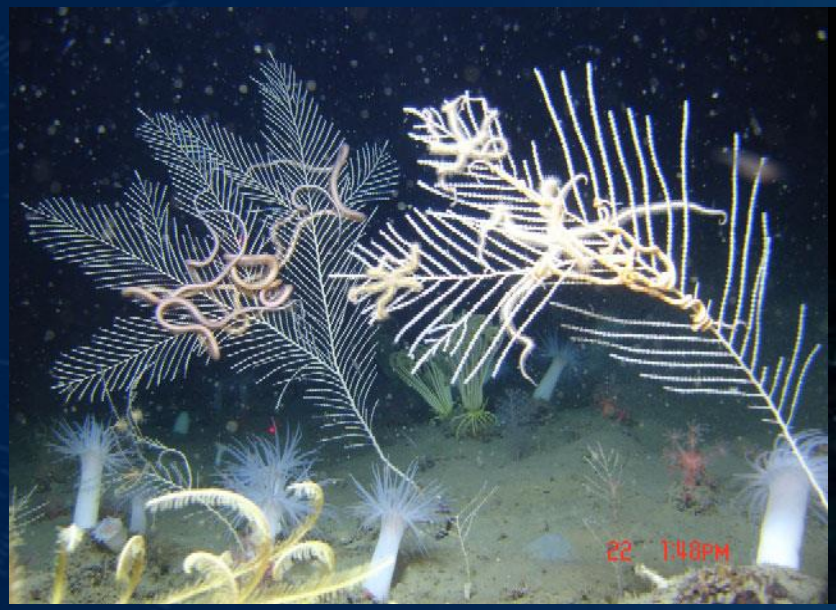
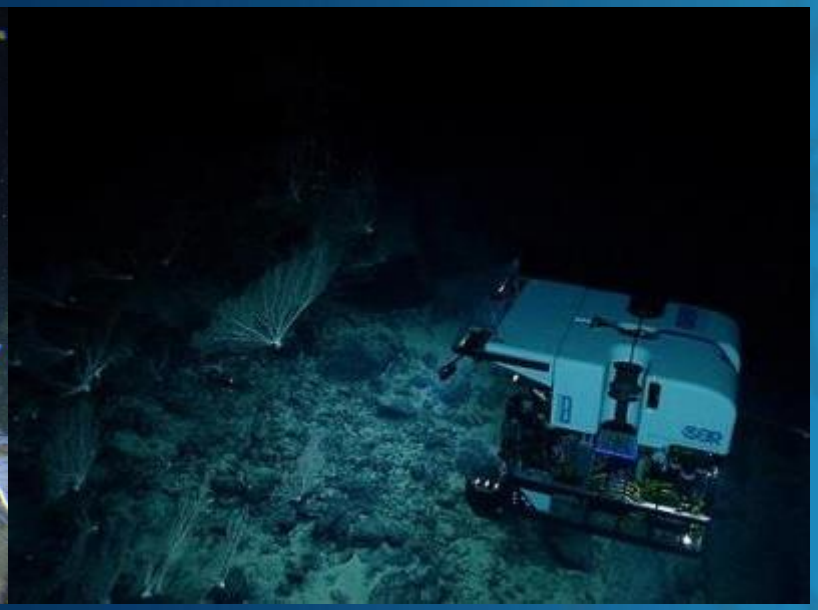
National Ocean Service

BOEM
Bureau of Ocean Energy Management

Gulf Coral Atlas Part I:
Rescued Data to the Rescue





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Data Rescue

- Definition:
  To bring new purpose, meaning, and utility to existing datasets from past, or recent projects originally intended for other purposes
- Conducts re-analysis and modernization to new technologies, methods, and taxonomy
- Extracting new observations
- Assist in predictor validation
- Replicating results from past research

Gulf of Mexico Coral Atlas Data Rescue Phase

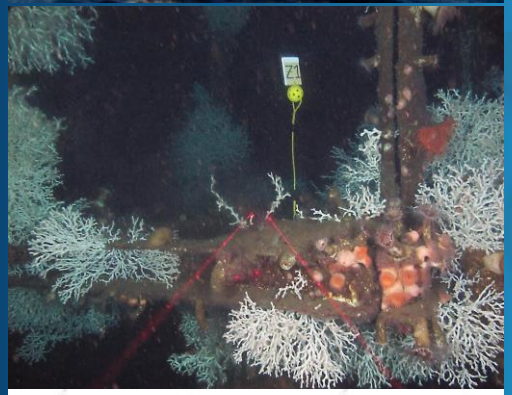
- **Objectives**
- To use rescued data to provide a **foundation** of real habitat observations of deep-sea corals, and chemosynthetic habitats for next generation modeling efforts
- To Incorporate presence, as well as **absence** observation data over larger areas
- To increases the spatial and taxonomic resolution of models
- Predictor variable validation
- To utilize nearly all benthic observational data from a project as long as seafloor is discernible, and positional (navigation) data is reliable

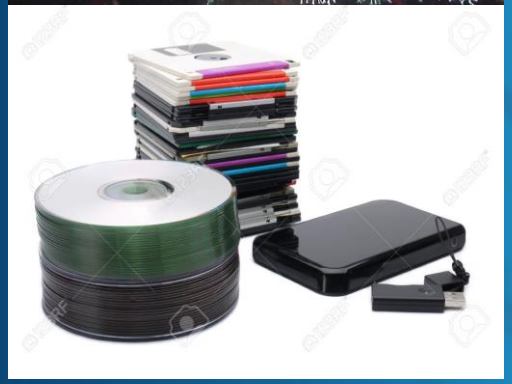
Data Rescue - Dataset Acquisition

- Many projects many regions
  - Which to rescue, which to leave alone?

  Approach:
  - Criteria & Prioritization
  - Availability?
  - Zone
  - Specific cruise objectives
    - ROV, HOV, AUV, or Tow Cam
  - Specific geographic range
    - US EEZ, Zone

  Specific depth range
    - 50-3000 meters
  - Stage of development, publications
  - Compliance with research design
    - Quality of positional data
    - Quality of images, lasers
    - Coverage & completeness





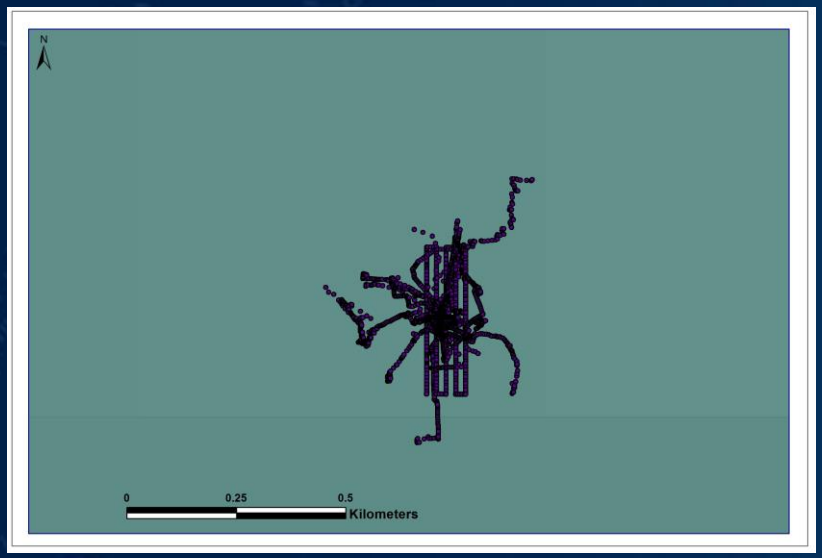
Data Rescue - Challenges

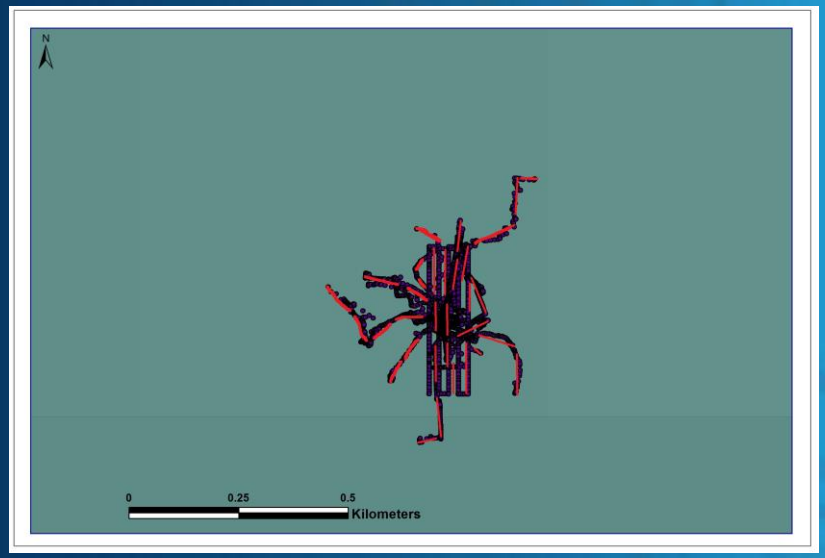
High variance in survey methods

- Sampling protocol
- Coverage
- Altitude
- Duplication
- Taxonomy

Presence-absence normalized by area

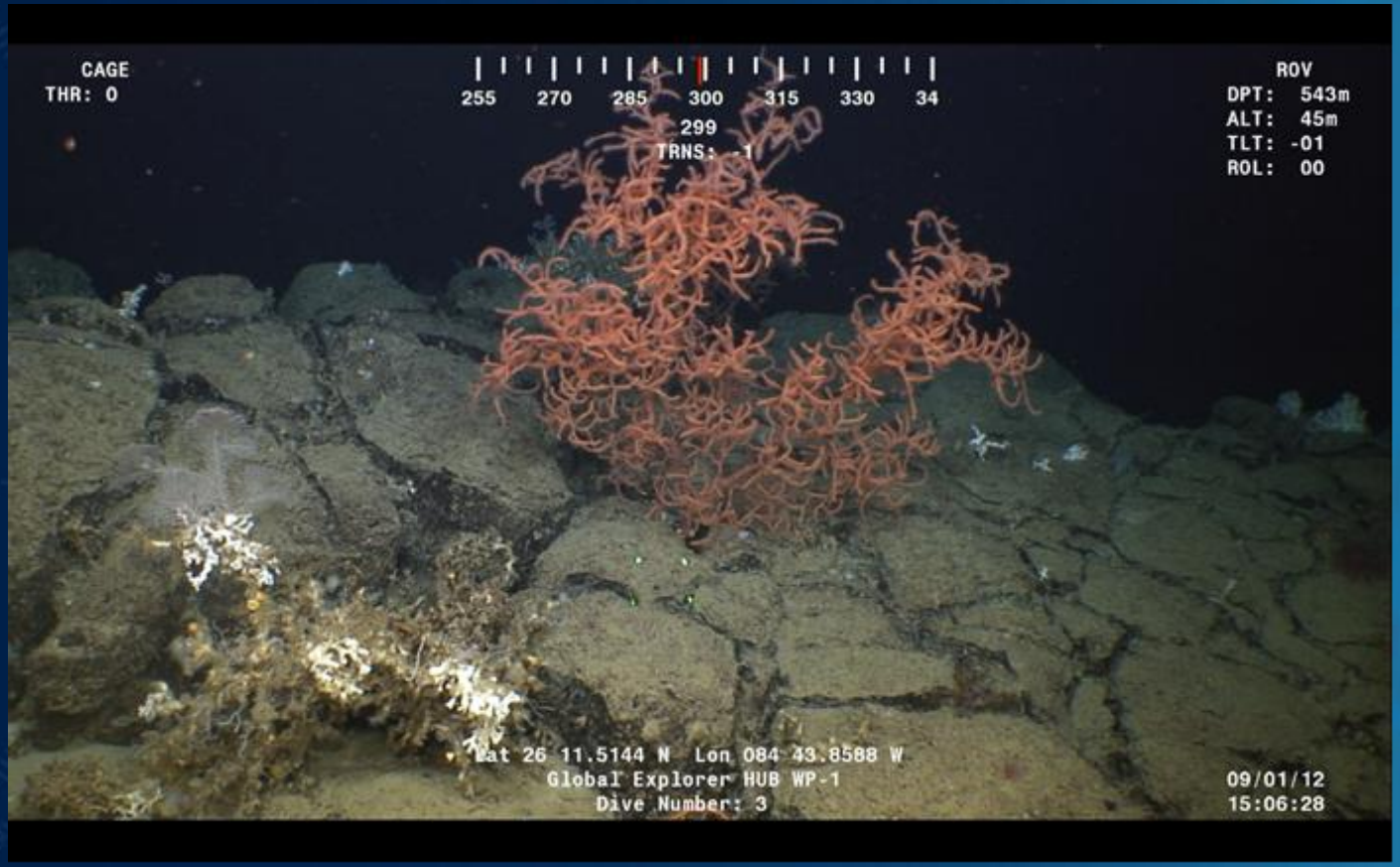
- **Segments** (1-100 meters in lenght)
- Area coverage in square meters
- Discernible seafloor and fauna
- Spatially unique
- **Target taxa** only is reviewed to lowest level possible





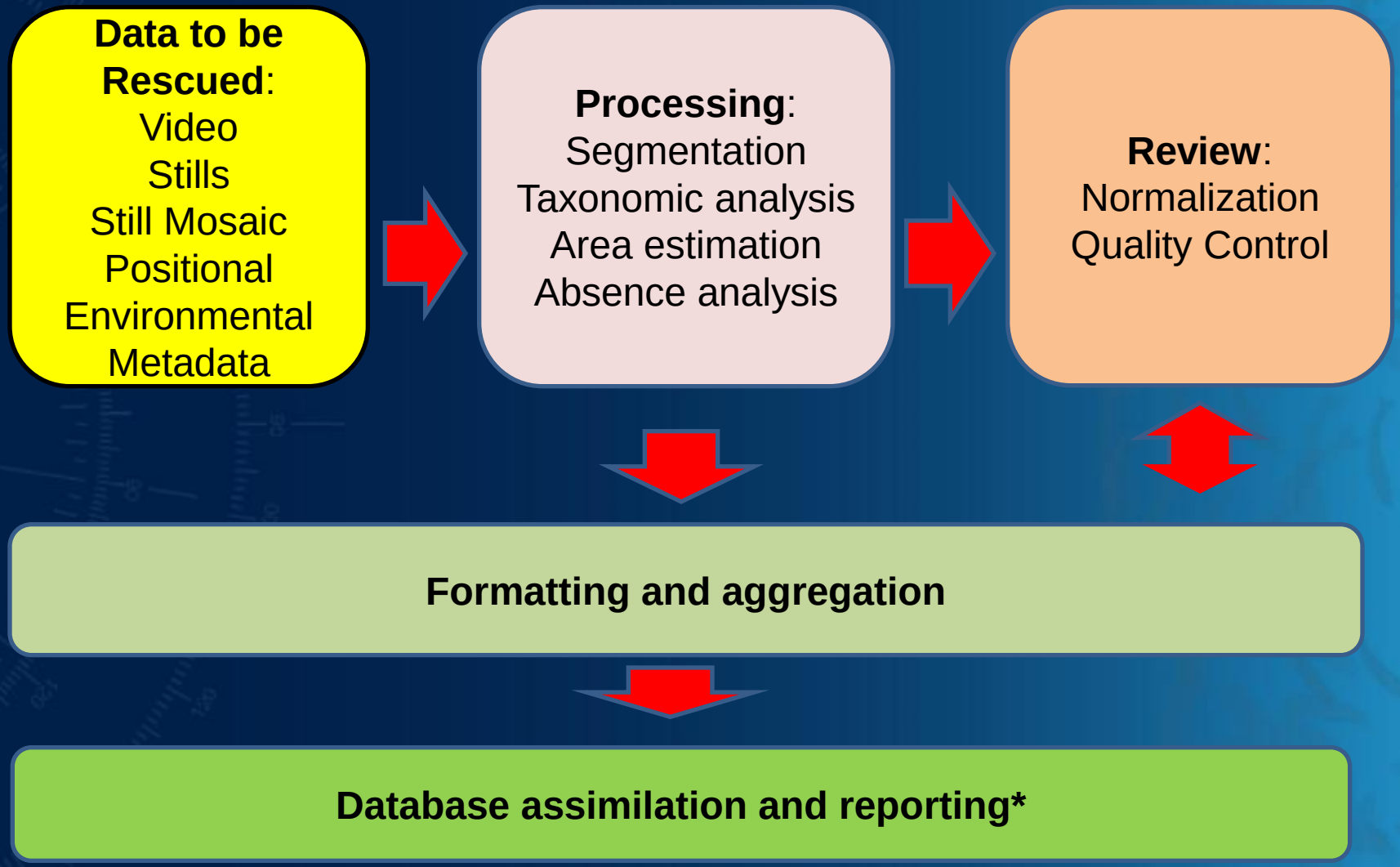
Data Rescue - Analysis

- Image data is analyzed for area coverage
- Presence of coral are further analyzed for BTR



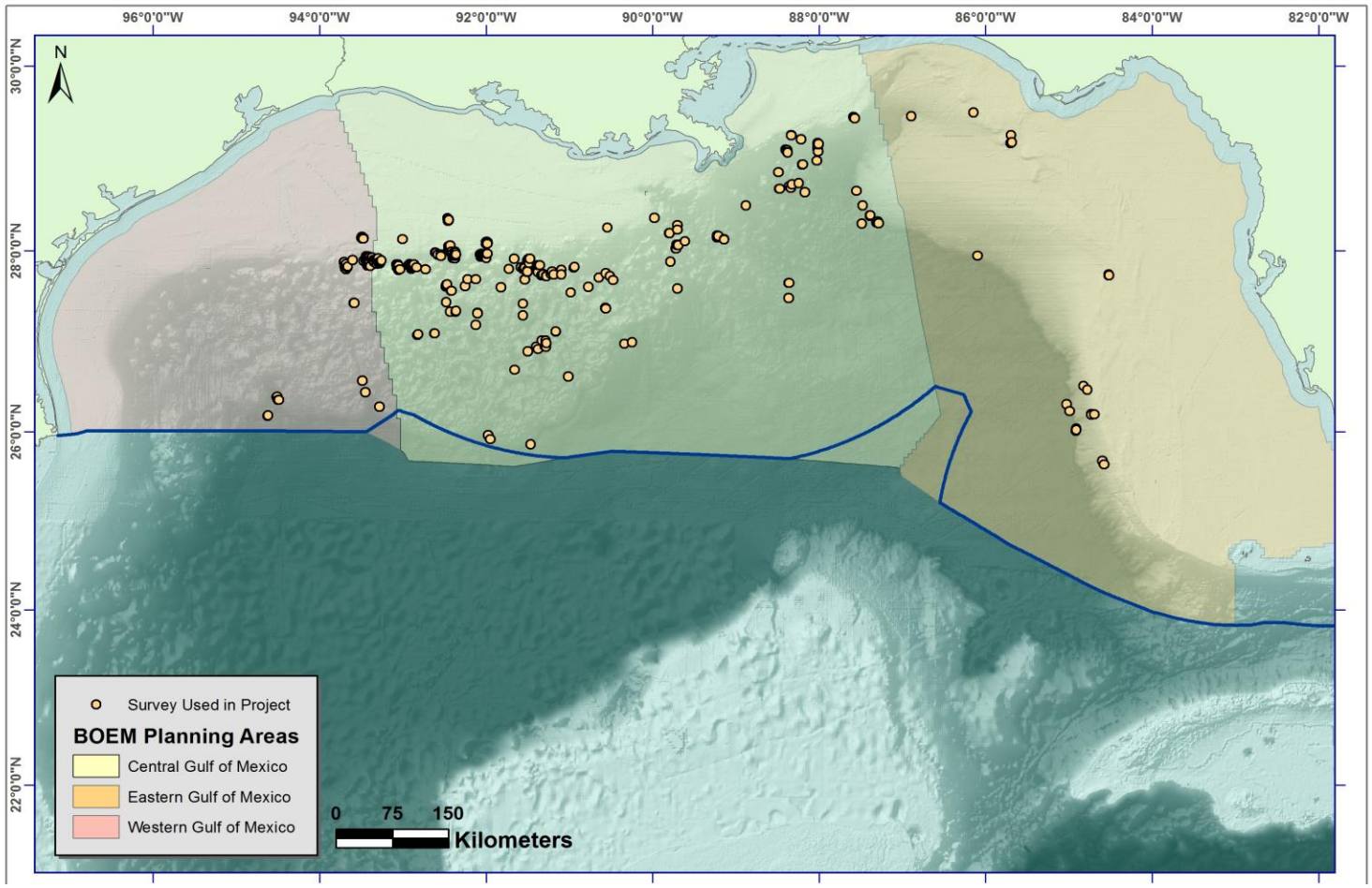
- Frame-width: 2.4 m Area: 3.6 m^2
- Taxa present: *Leiopathes* sp., *Lophelia* sp., *Callogorgia* sp.

Workflow



* August 2017

Data Rescue: Results



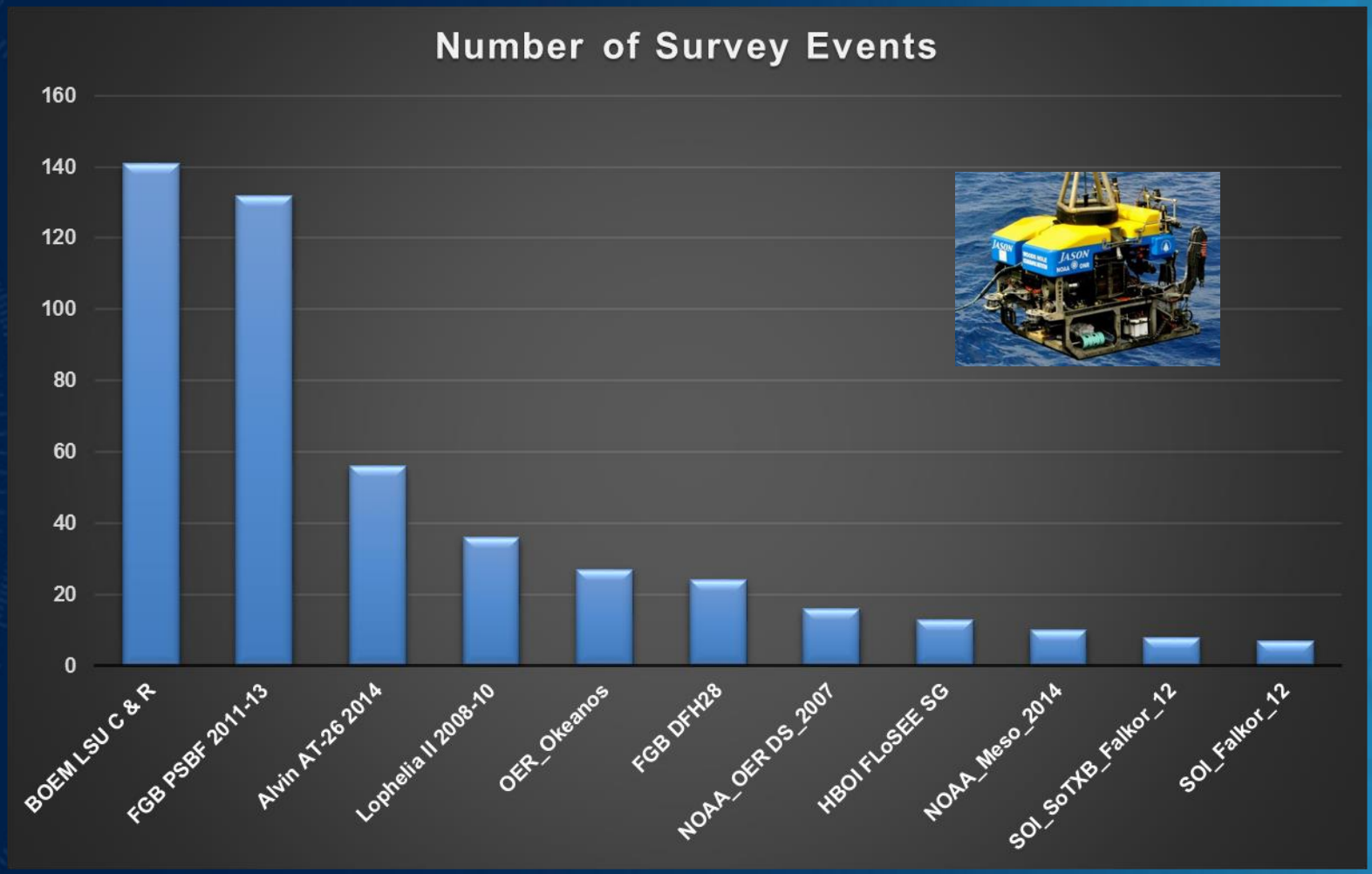
Overall summary:
Projects (datasets): **11**
Expeditions**: 34**
Years 1988-2015

Total number of Surveys (dives): **470**
Total area coverage: **269,260 m^2**
Total number of segments: **46,134**

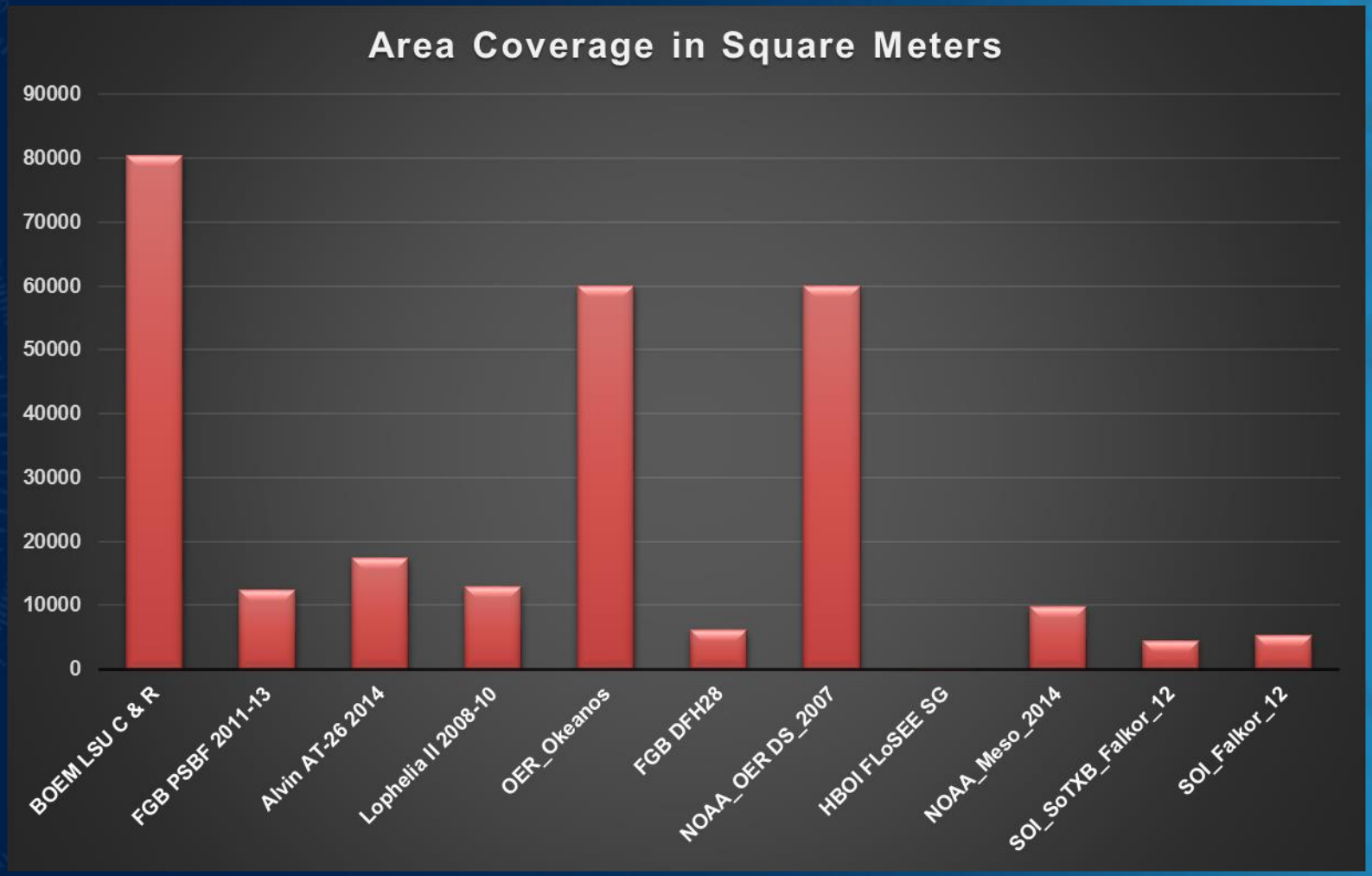
Area coverage

270,000 square meters vs. DT New Orleans

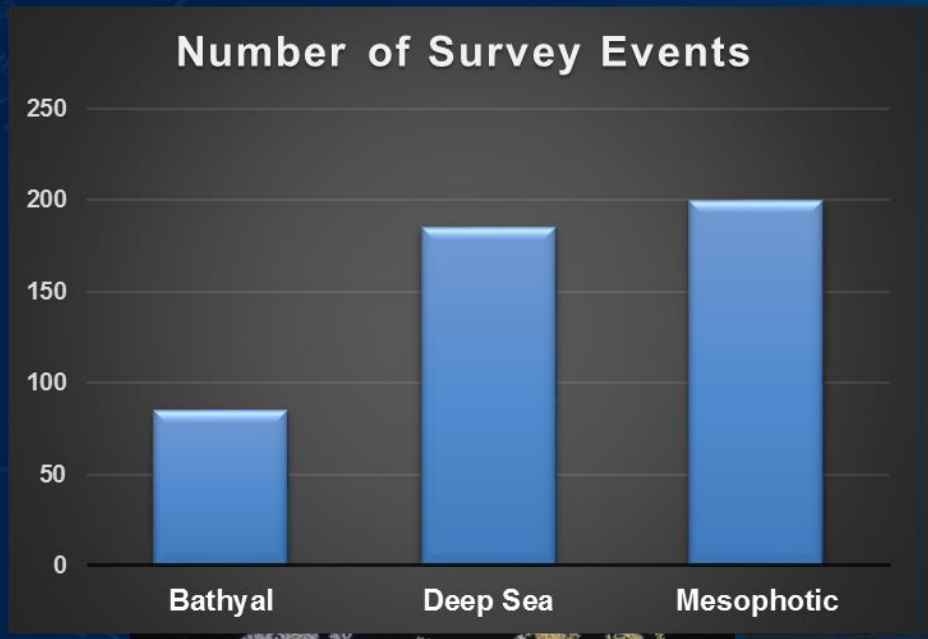
Project Contributions

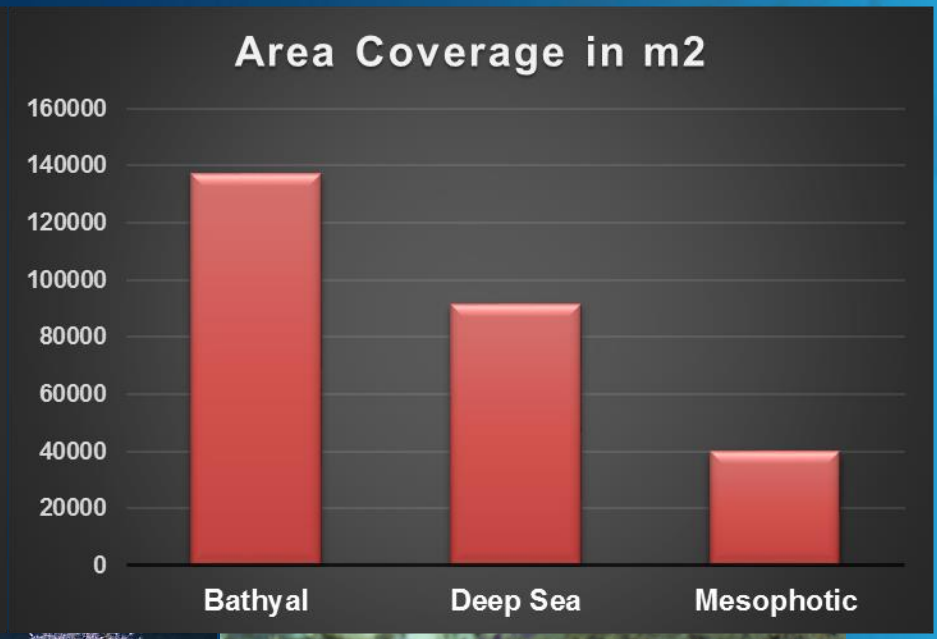


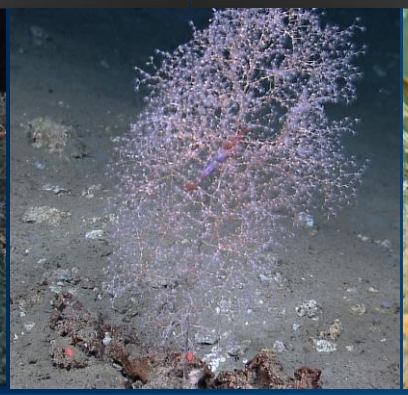
Project Contributions



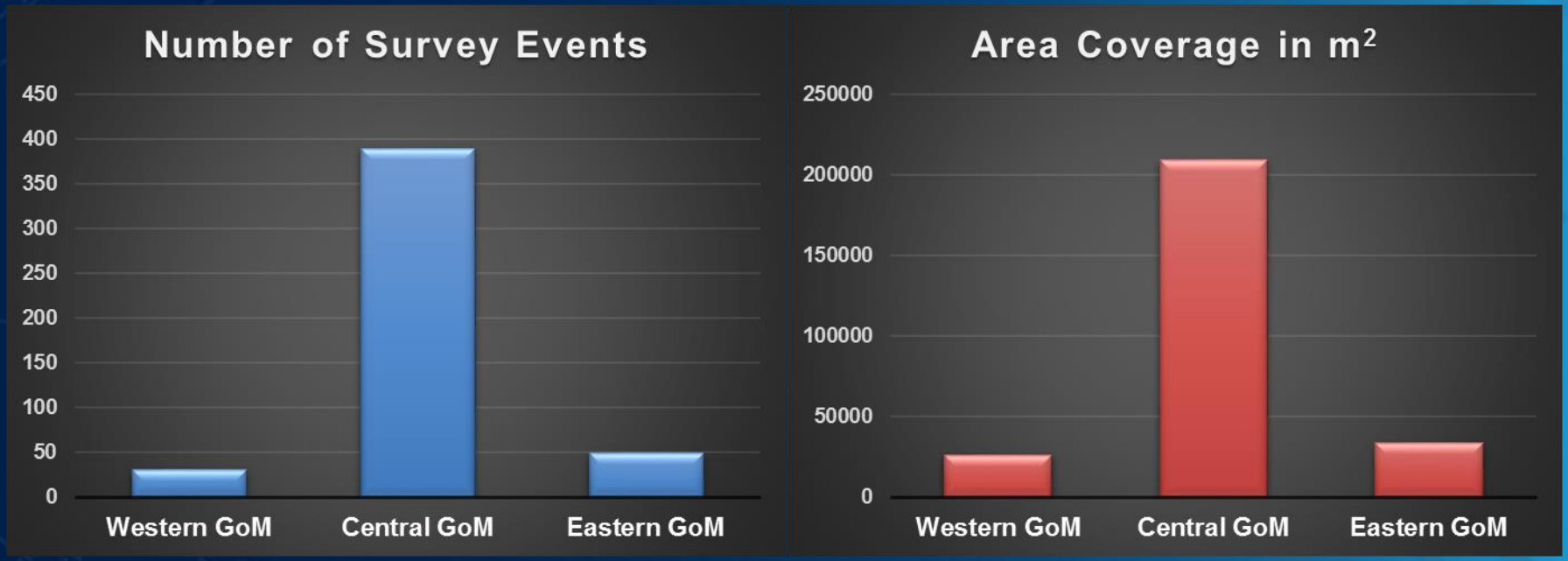
Coverage by Depth Zone





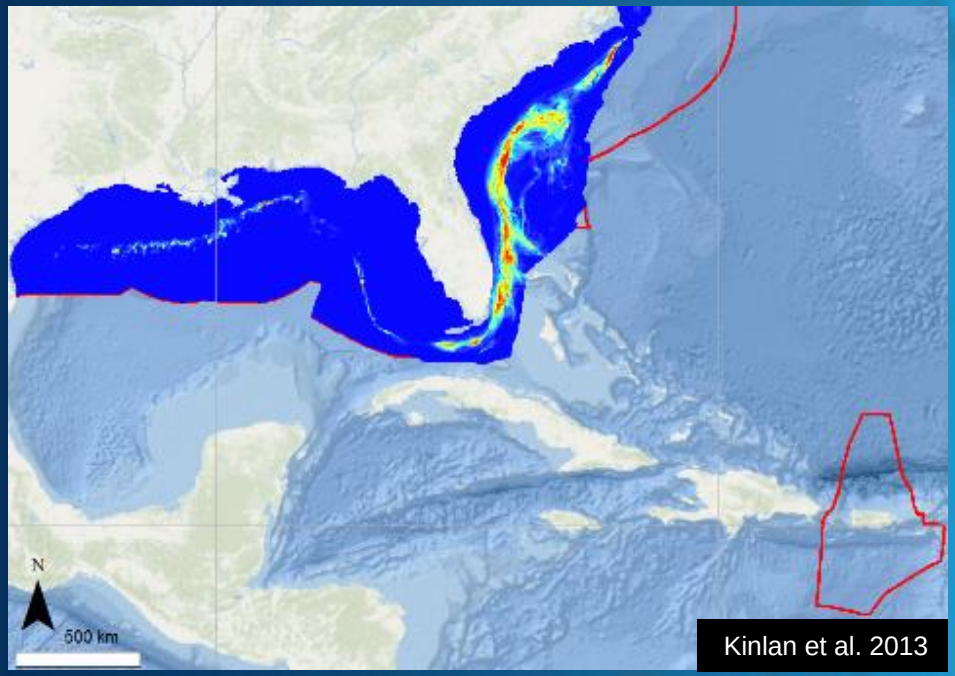


BOEM Planning Zones



Corals and Modelling

- Areal segments will be provided to modelers in Silver Spring in a SQL compatible database (MS Access)
- Observations of corals and chemosynthetic habitats will be combined in a Bayesian framework with environmental predictor variables to generate habitat suitability models
- First deep-sea coral modeling effort to use observed absence for predictor validation



Kinlan et al. 2013

Thank you!

Mark Mueller, Bruce Baird, Greg Boland, and my colleagues at CCEHBR

Data contributors
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Questions?