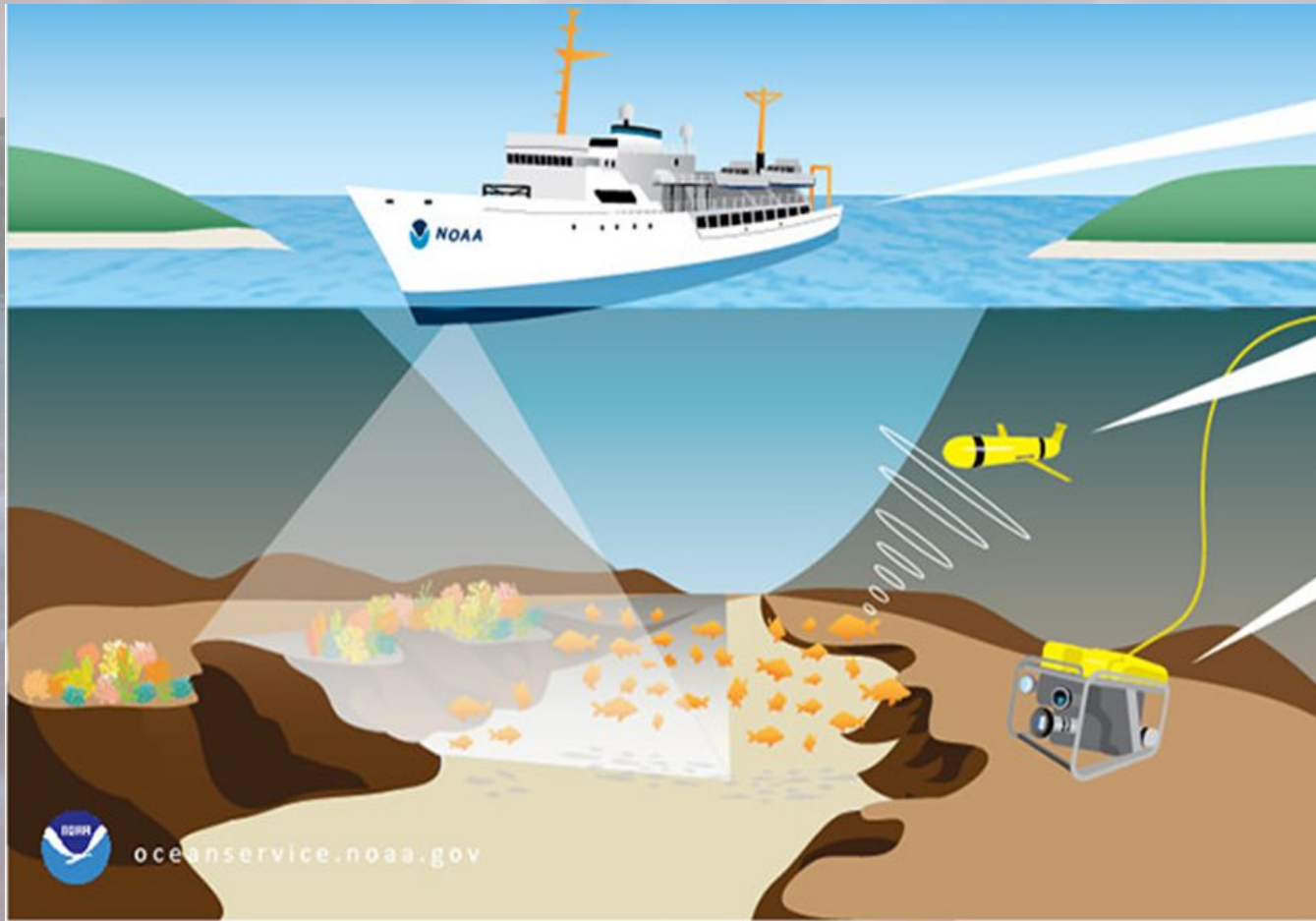


Prioritizing Areas for Seafloor Mapping off the Southeast U.S.

Project Outcomes - May 27, 2020

Christine Buckel
Maria Bollinger
Chris Taylor
John McCombs (OCM)





Agenda

1. Project Overview
2. Analytical Methods
3. Preliminary Results
4. Next Steps

Project Rationale

SECART Strategic Plan, FY 2014

“ . . . Improving seafloor habitat mapping coordination is a high priority in the region within NOAA and among partners”

Presidential Memorandum on Ocean Mapping, November 19, 2019

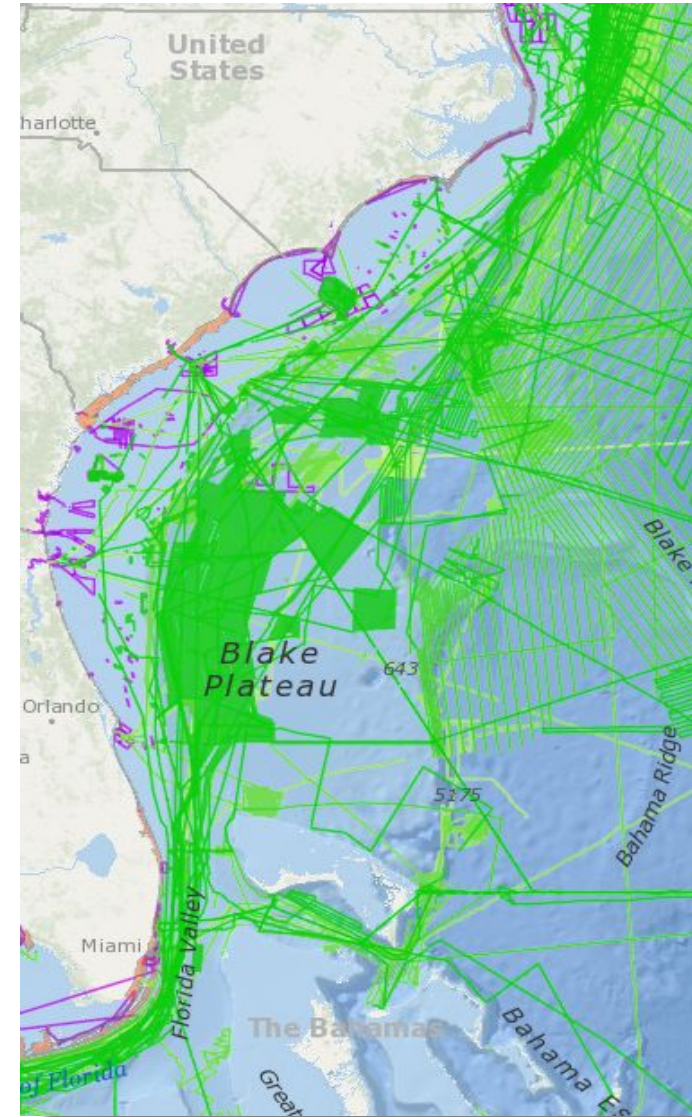
“ . . . in coordination with the Administrator of the National Oceanic and Atmospheric Administration, shall develop a proposed strategy to map the U.S. EEZ, to identify priority areas within the U.S. EEZ, and to explore and characterize the priority areas, and shall submit it to the Director and the Chairman.”

The Southeast Region

Seafloor maps serve the Blue Economy, guiding safe navigation and commerce, sustainable resource management, wise ocean stewardship

- Roughly 15% of the SE US shelf (<200m) has been surveyed to modern standards
- It may take 6,129 ship-days (~17 years) to map the rest!

MAP ONCE! USE MANY TIMES!

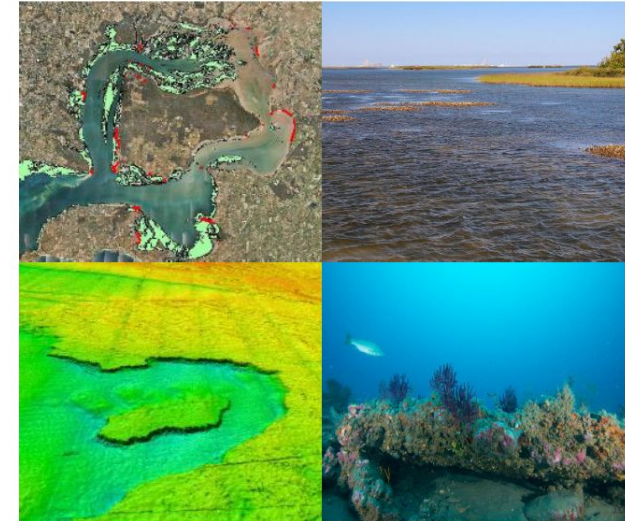


From NOAA NCEI Bathymetry Viewer
<https://maps.ngdc.noaa.gov/viewers/bathymetry/>

SE Mapping Technical Team

- **Ashley Chappell** - *Integrated Ocean and Coastal Mapping Program*
- **Kyle Ward** - *Office for Coast Survey*
- **Mary Conley** - *The Nature Conservancy*
- **Cheryl Hapke** - *University of South Florida*
- **Bill O'Bierne** - *Office for Coastal Management*
- **Adam Bode** - *Office for Coastal Management*
- **John McCombs** - *Office for Coastal Management*

Improving Seafloor Habitat Mapping Coordination on the Southeast US Coast and Outer Continental Shelf



A Report from Workshops Hosted by

NOAA's Southeast and Caribbean Regional Collaboration Team

Editors:

J. Christopher Taylor, Virginia Crothers, Christine A. Buckel

Contributing Authors:

Donald Field, Mark Finkbeiner, Scott Harris, Katie Luciano

Southeast US Seafloor Habitat Mapping Steering Committee:

Adam Bode, Ashley Chappel, Mary F. Conley, Cheryl Hapke, Kyle Ward



Project Overview

- Funded by SECART, National Centers for Coastal Ocean Science (NCCOS) and NMFS Southeast Regional Office Habitat Conservation Division
- Participant list defined by SE Seafloor Mapping Technical Team
- **Objective:**
 - Identify priority needs for seafloor mapping in SE
 - Align with [Florida Coastal Mapping initiative](#)
 - Support and feed priorities to NOAA's national mapping prioritization



Process: Identify Spatial Priorities

2019

December 2019

Jan-Apr 2020

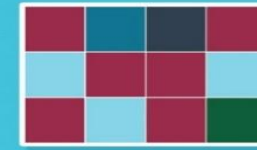
May 14, 2020

1. Identify Groups

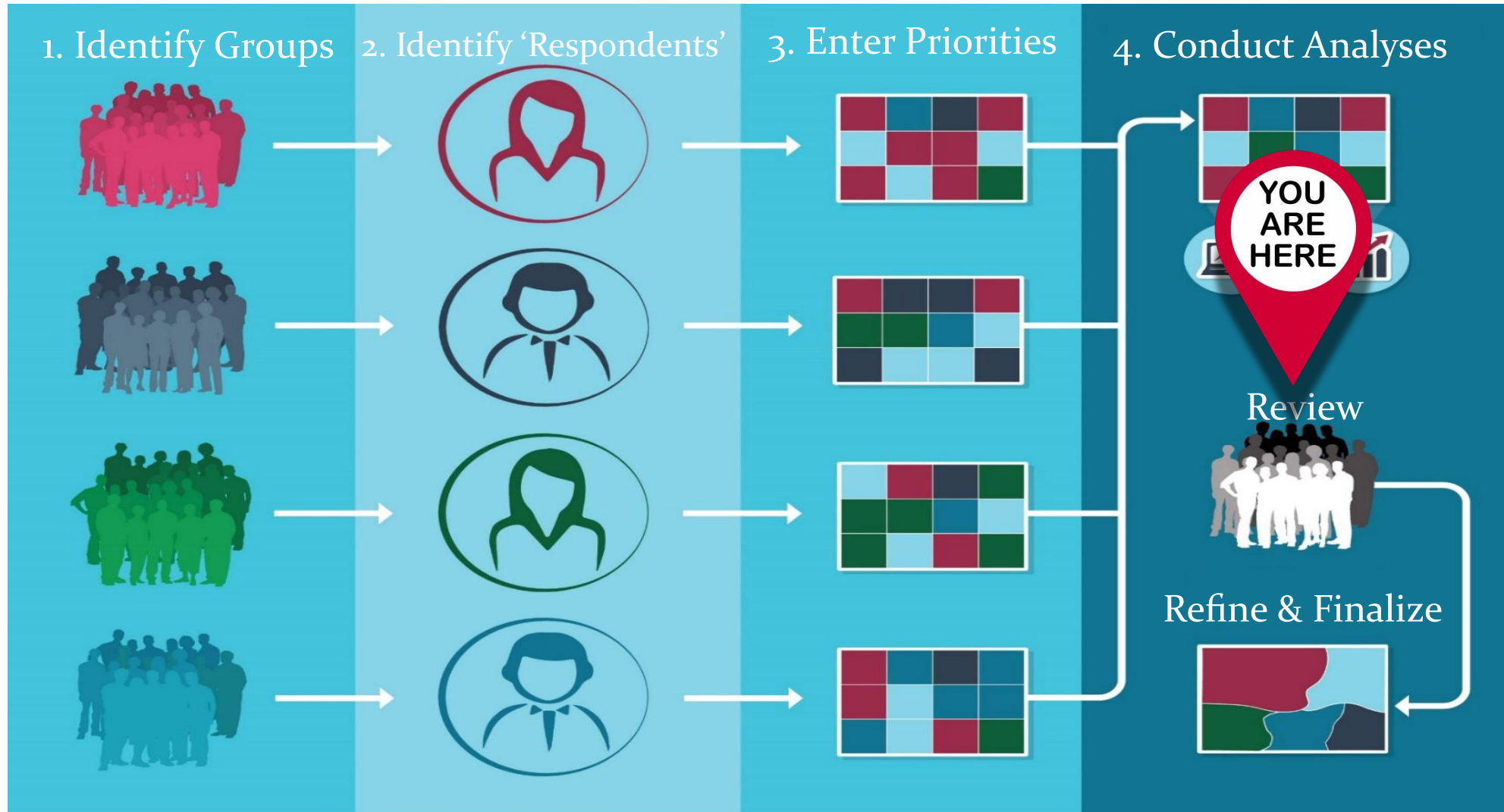
2. Identify 'Respondents'

3. Enter Priorities

4. Conduct Analyses



- Vetted and applied in multiple U.S. locations and now national mandate
- Web-based, standardized to allow quantitative analysis



Participating organizations

- Program offices within NOAA, Department of Interior, Department of Defense
- State and regional fisheries and coastal zone management agencies
- Academic institutions
- Non-governmental and conservation organizations

Prioritizing Seafloor Mapping Needs

WHERE

- Custom interface for each sub-region
- Areas of need defined by respondents

WHY

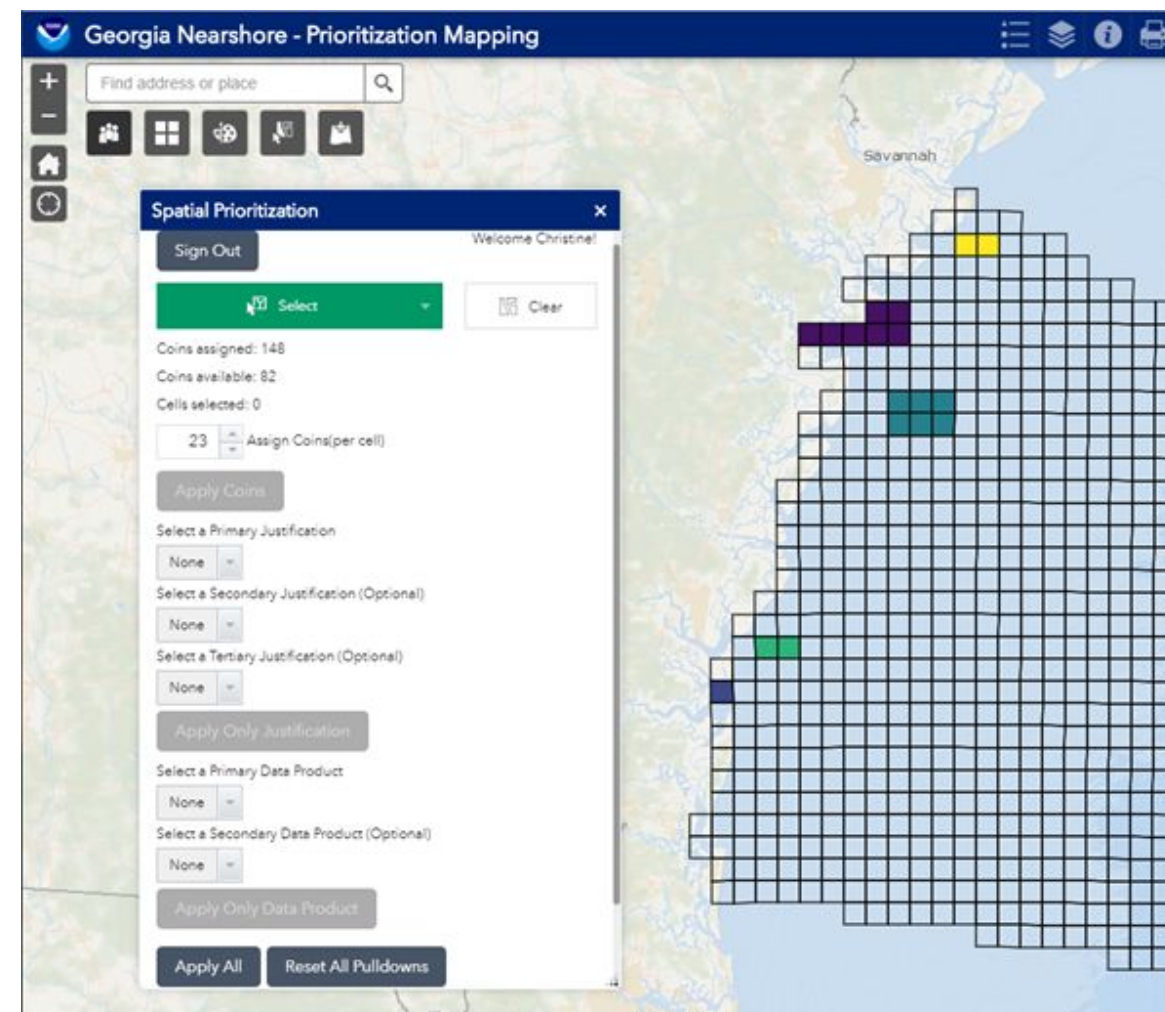
- Justification

WHEN

- How quickly do you need the data (Coins)?

WHAT

- Data products needed most



| | | | | | |
|----------------|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|------------|
| Response Rates | Coin Distribution (normalized) | Number of Respondents (normalized) | Justification Summary (normalized) | Data Product Summary (normalized) | Clustering |
|----------------|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|------------|

Response Rates

Response Rates

Coin Distribution
(normalized)

Number of Respondents
(normalized)

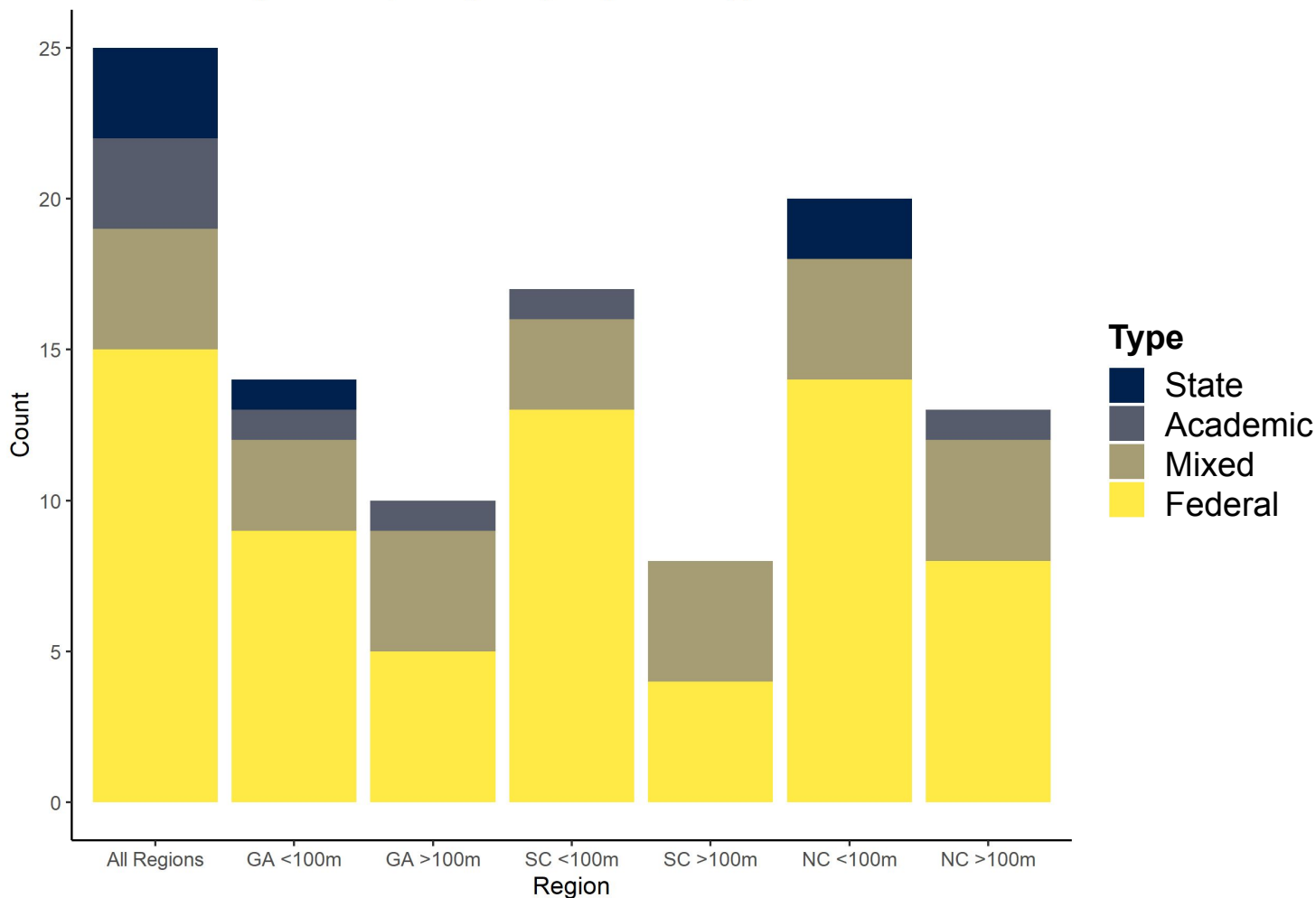
Justification Summary
(normalized)

Data Product Summary
(normalized)

Clustering

Respondent Rates and Type of Respondents

Number of respondents per region by respondent type



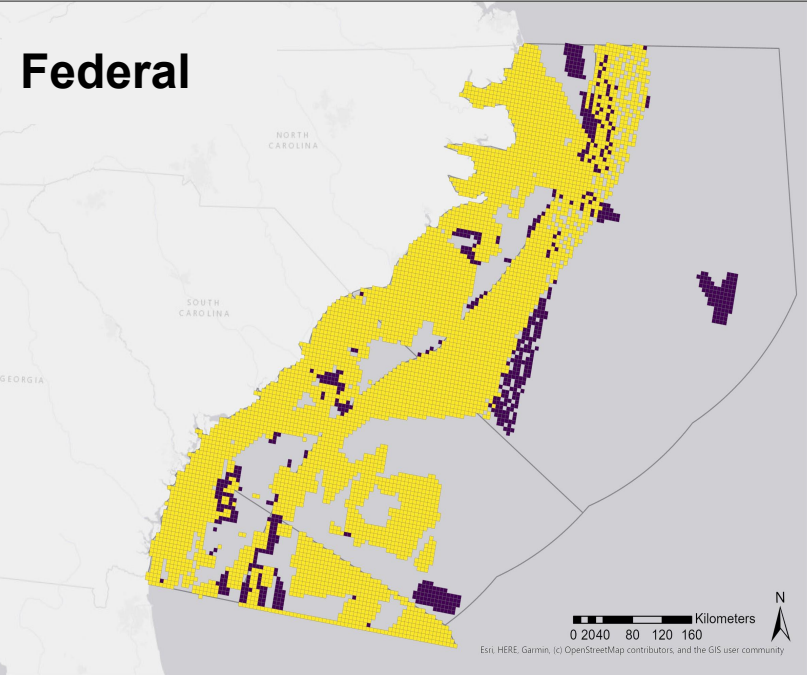
Invited Organizations = 43
 Participating Organizations = 25

Organization Count by state:
 NC = 22
 SC = 19
 GA = 17

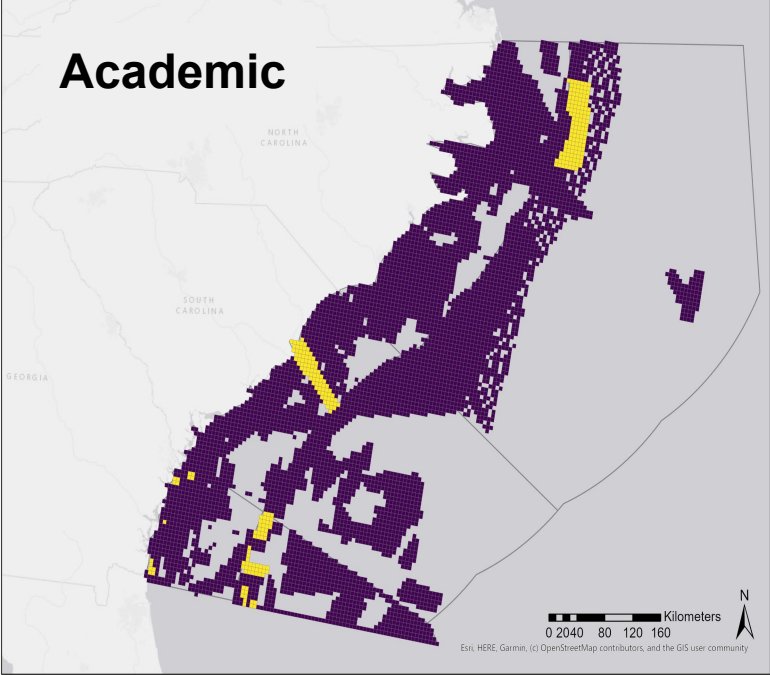
Counts by Type of Organization:
 State: 3
 Academic: 3
 Mixed: 4
 Federal: 15

Respondent Type Distribution

Federal



Academic

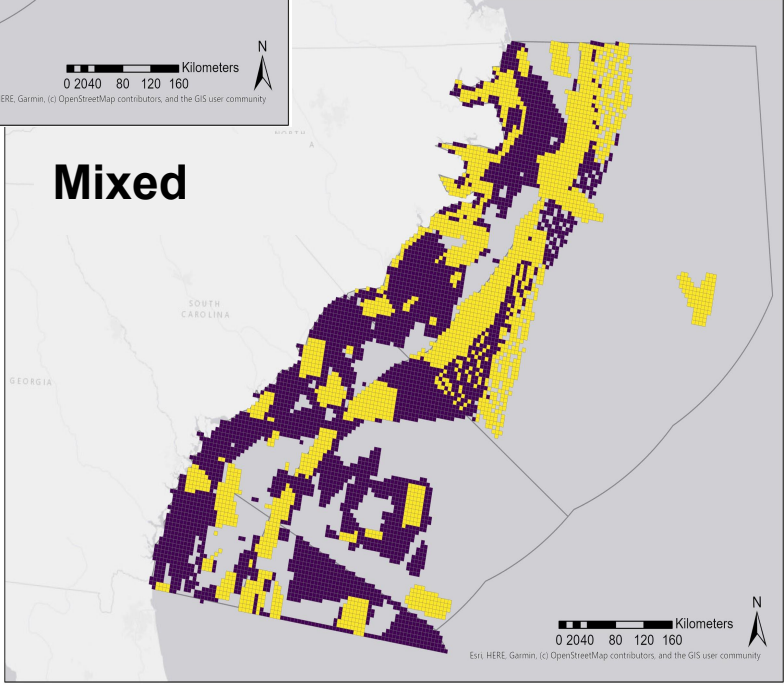


Legend:
Coin assigned
No coin assigned

State



Mixed



Coin Distribution

(When -- how quickly are the data needed?)

Response Rates

Coin Distribution
(normalized)

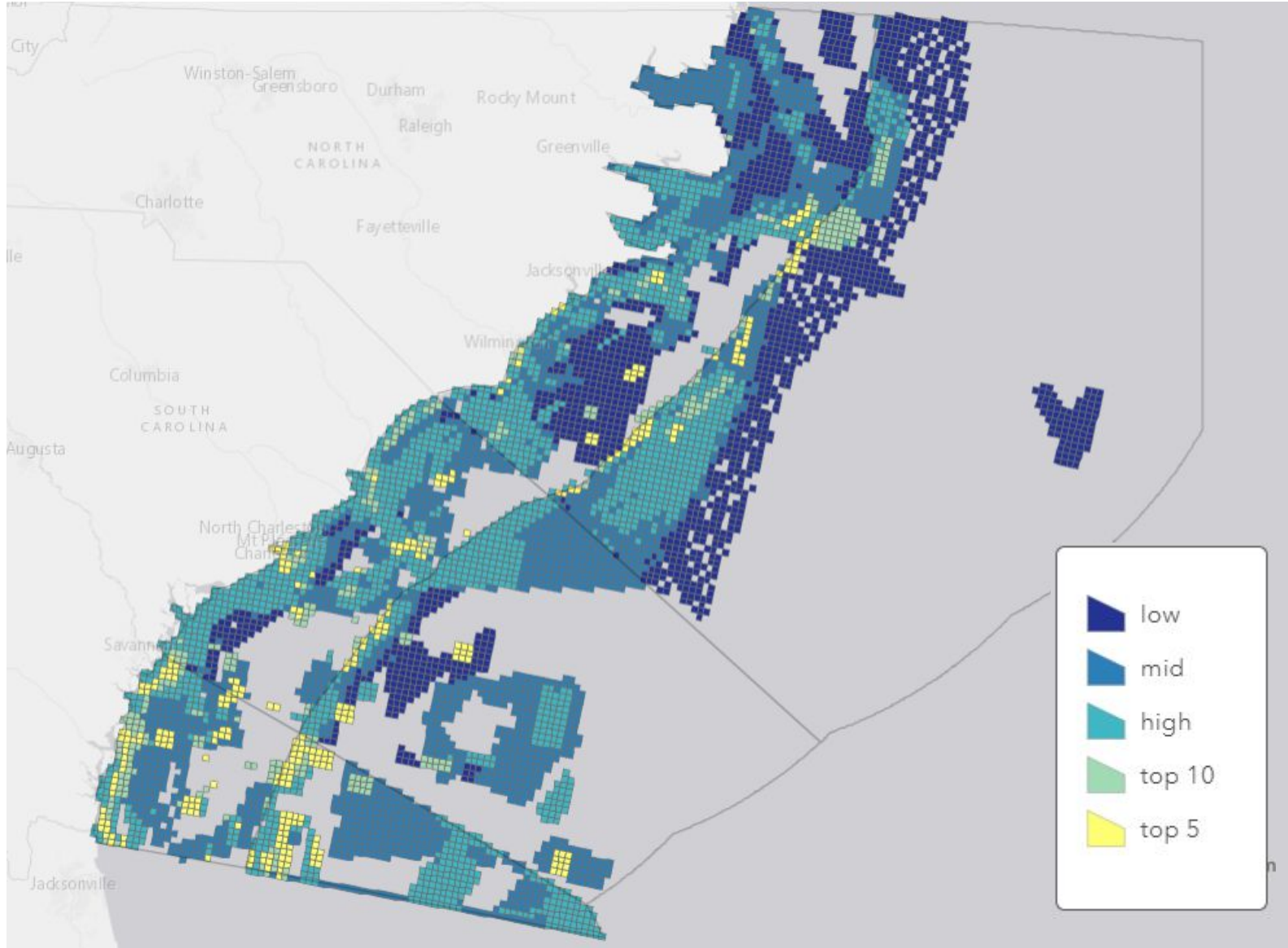
Number of Respondents
(normalized)

Justification Summary
(normalized)

Data Product Summary
(normalized)

Clustering

Standardized and Ranked Coins



- **When is the data needed?**
- Standardized coins due to differences in subregion sizes and available total coins
- Standardized Coins = $\text{Grid cell coin total} / \text{subregion coin total}$
- Ranks defined by quantiles
 - **low** (<30%)
 - **mid** (30 - < 60%)
 - **high** (60 - < 90%)
 - **top 10%** (90 - < 95%)
 - **top 5%** (95% +)

Respondents

(Who? How many others need data here too?)

Response Rates

Coin Distribution
(normalized)

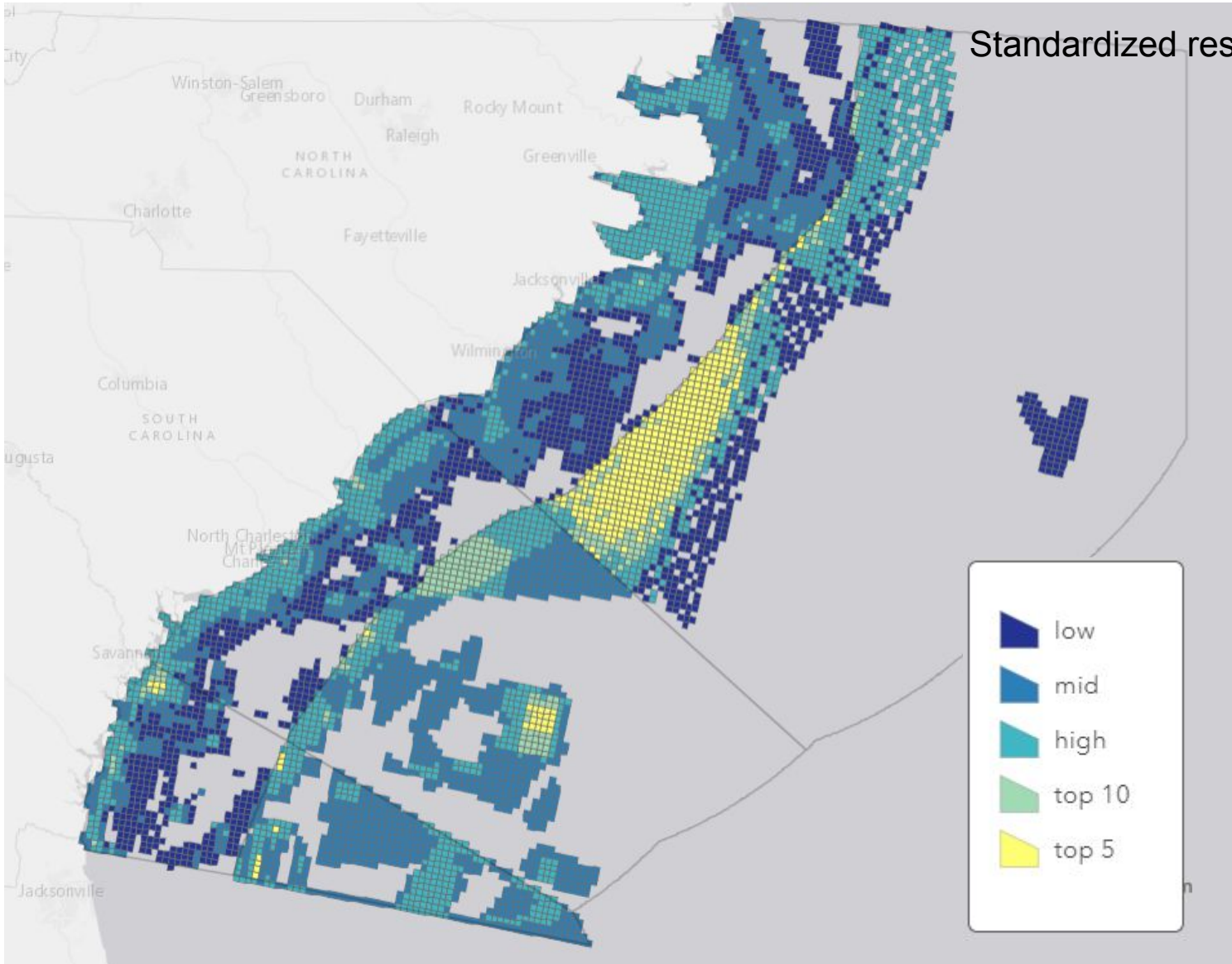
Number of Respondents
(normalized)

Justification Summary
(normalized)

Data Product Summary
(normalized)

Clustering

Respondent Number Standardized & Ranked



Standardized respondent count = $\frac{\# \text{ of respondents allocating coins in the grid}}{\text{total \# respondents to subregion}}$

Overlapping needs across user groups:

Grid cells had between 1 and 8 respondents

Three larger regions of interest by numerous respondents:

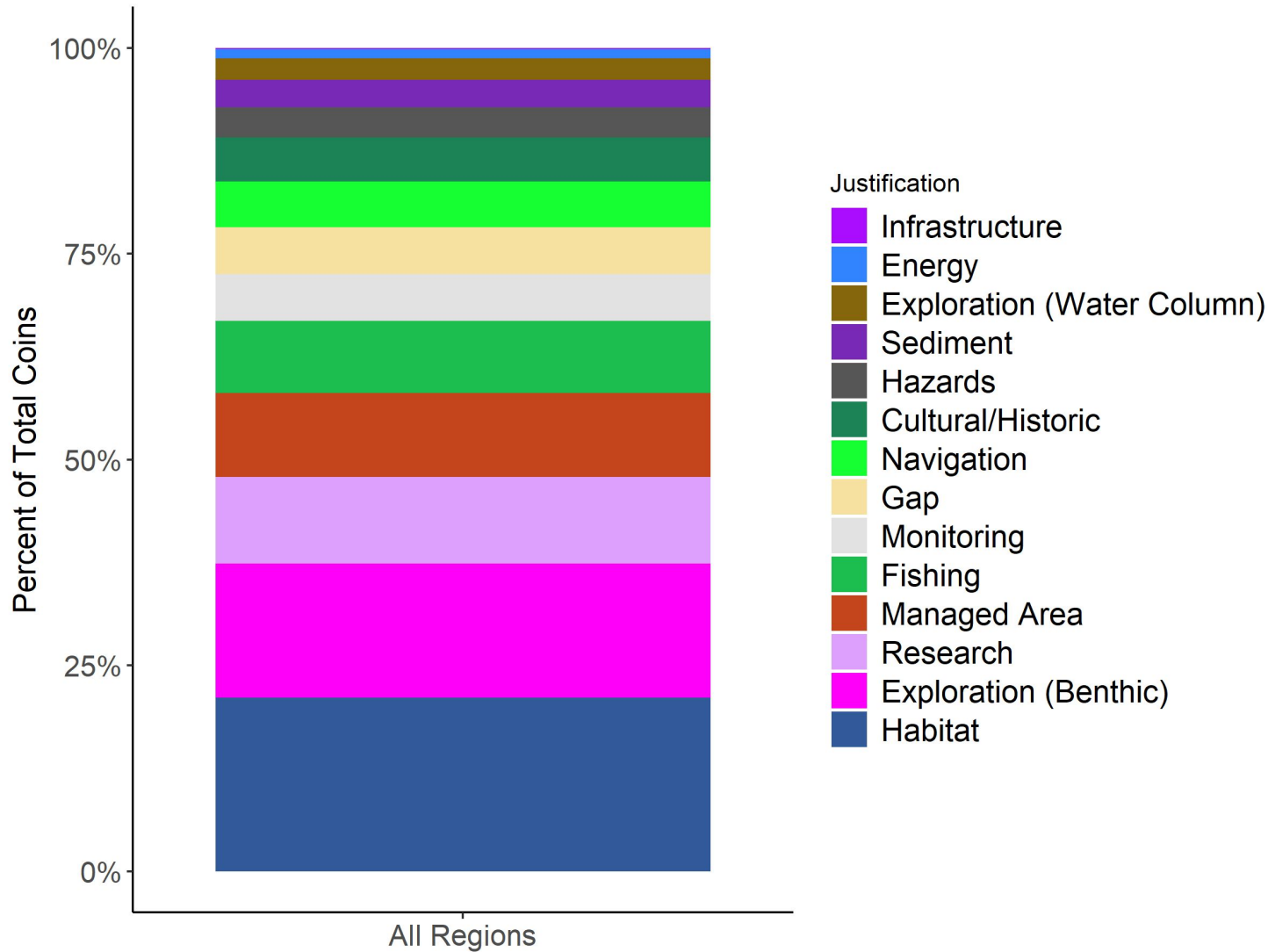
- Offshore NC
- Blake Plateau region offshore SC
- nearshore Savannah GA

Justifications

(Why is this region important?)

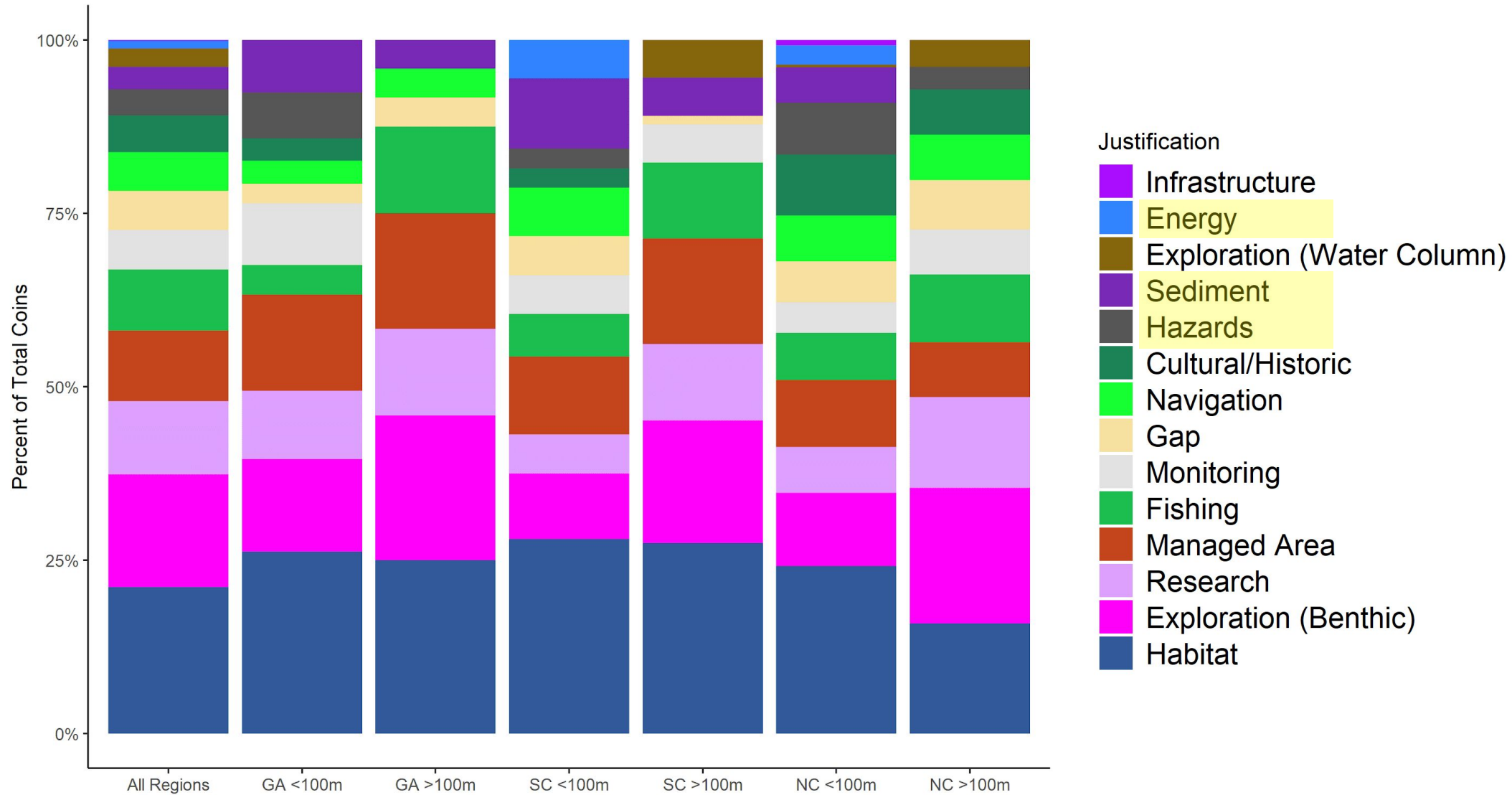
| | | | | | |
|----------------|-----------------------------------|---------------------------------------|---|--------------------------------------|------------|
| Response Rates | Coin Distribution (normalized) | Number of Respondents (normalized) | Justification Summary (normalized) | Data Product Summary (normalized) | Clustering |
|----------------|-----------------------------------|---------------------------------------|---|--------------------------------------|------------|

Justifications across all regions



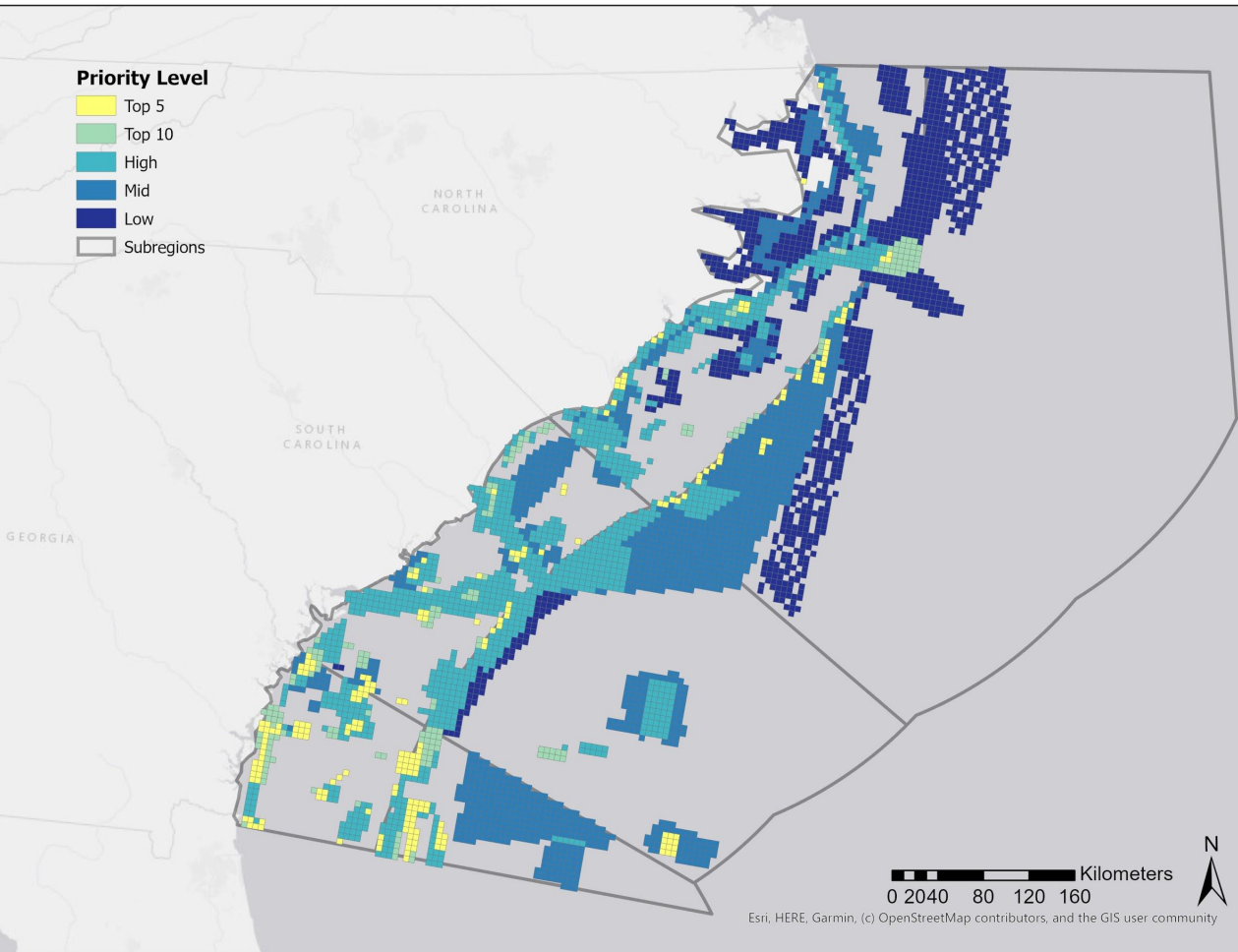
- 14 of 17 Justifications utilized
- 5 Justifications comprise nearly 67% of all coins allocated
 - Habitat 21%
 - Benthic Exploration 16%
 - Research 11%
 - Managed Area 10%
 - Fishing 9%
- Top justifications consistent among subregions

Justifications by Subregions

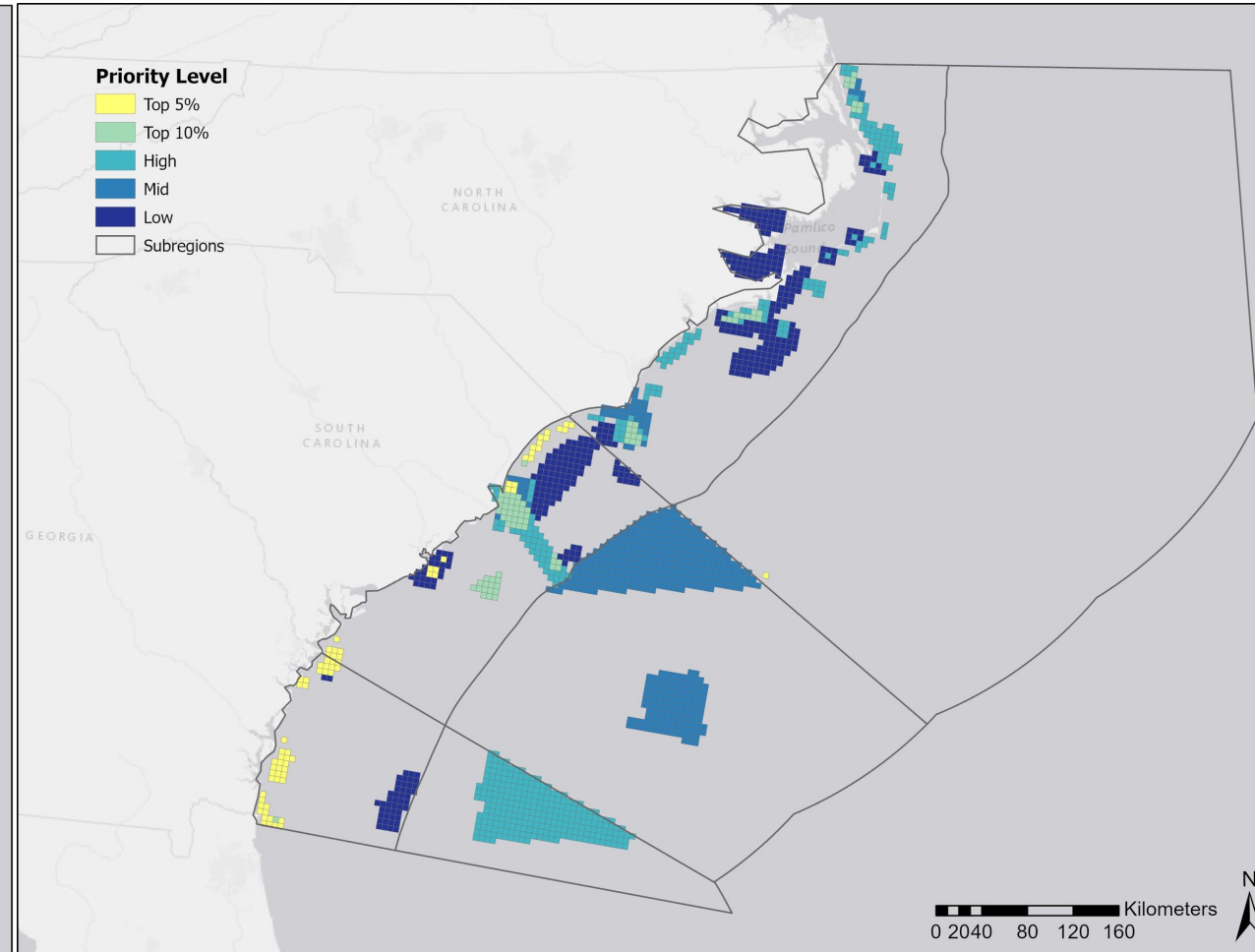


Individual Justification Patterns

Habitat



Sediment

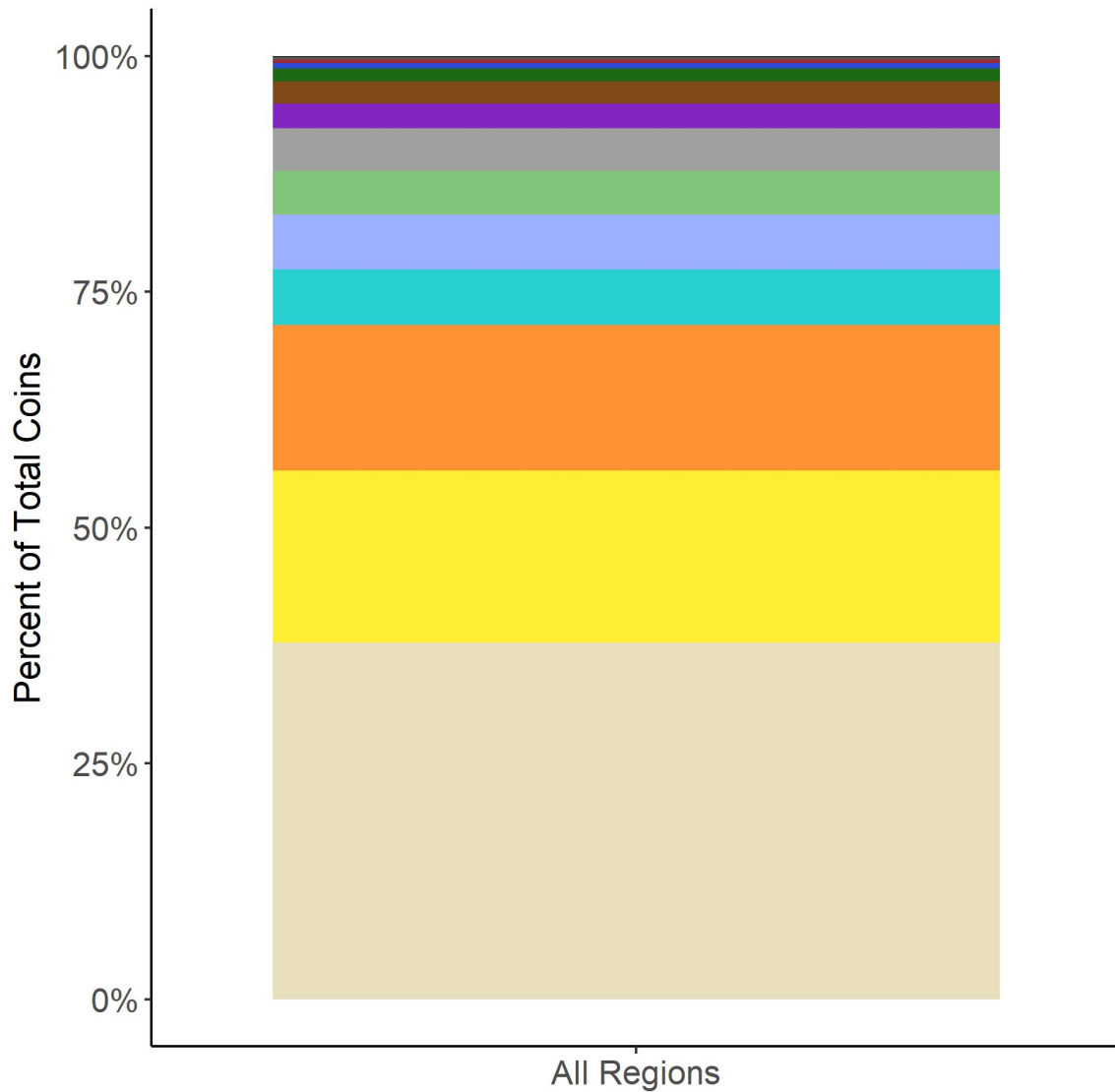


Data Products

(What products are needed most?)

| | | | | | |
|----------------|-----------------------------------|---------------------------------------|---------------------------------------|--|------------|
| Response Rates | Coin Distribution (normalized) | Number of Respondents (normalized) | Justification Summary (normalized) | Data Product Summary (normalized) | Clustering |
|----------------|-----------------------------------|---------------------------------------|---------------------------------------|--|------------|

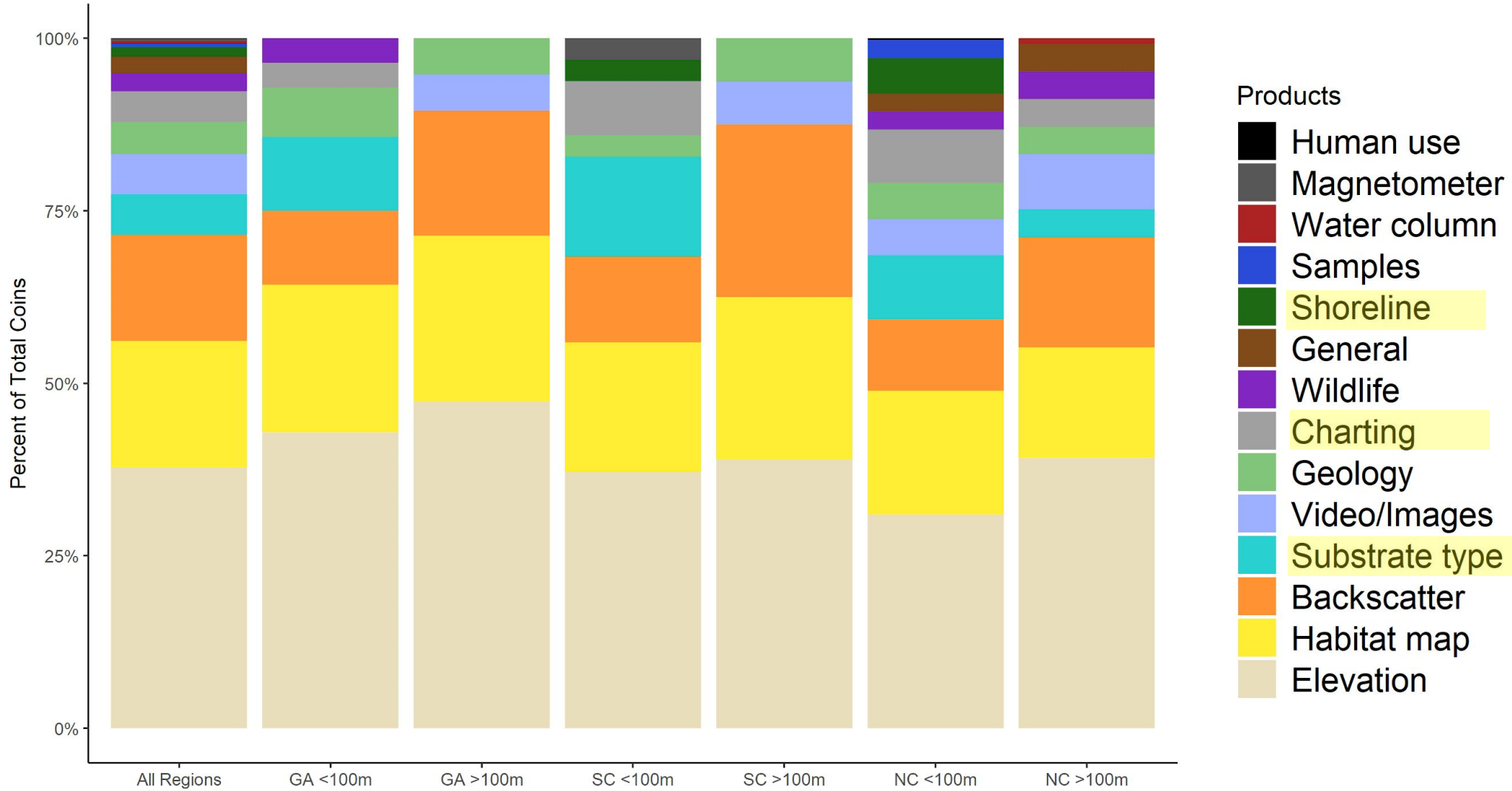
Products across all regions



- Products
- Human use
 - Magnetometer
 - Water column
 - Samples
 - Shoreline
 - General
 - Wildlife
 - Charting
 - Geology
 - Video/Images
 - Substrate type
 - Backscatter
 - Habitat map
 - Elevation

- **What data are needed?**
- 3 Products comprise nearly 72% of all coins allocated
 - Elevation 38%
 - Habitat Mapping 18%
 - Backscatter 15%
- Top products generally consistent among subregions

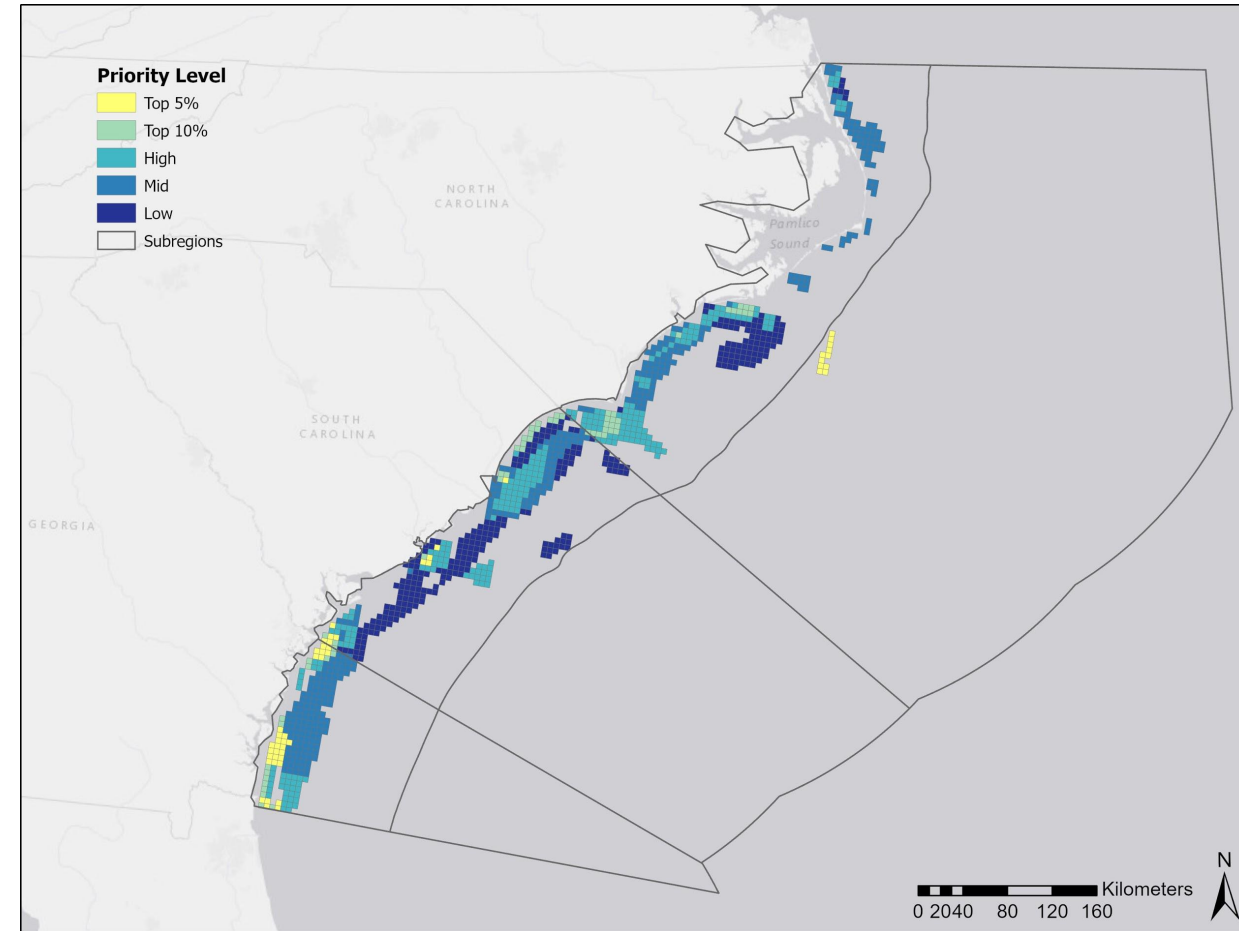
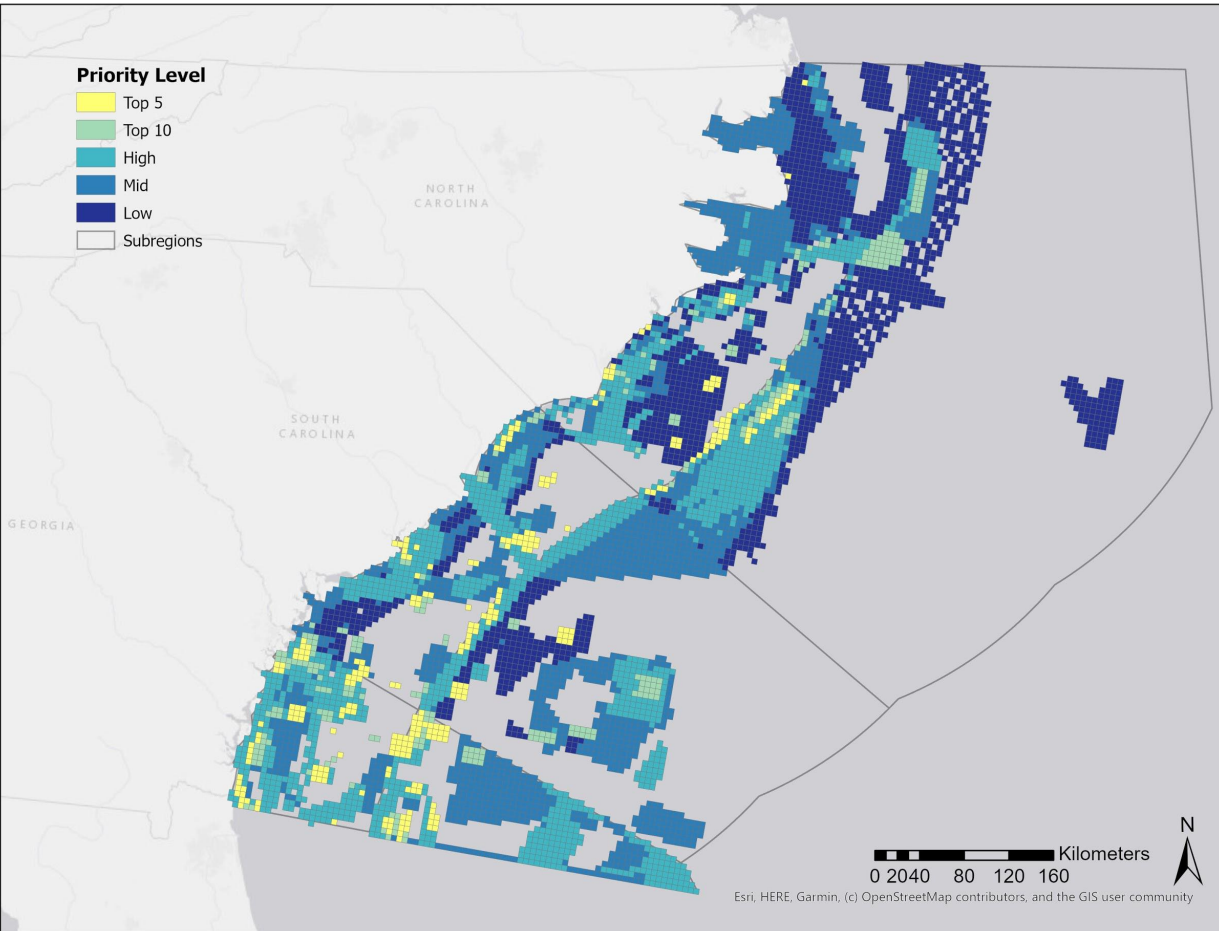
Data Products by Subregion



Individual Data Product Patterns

Elevation

Substrate Type



Clustering

Where were data products and justifications identified together?

Response Rates

Coin Distribution
(normalized)

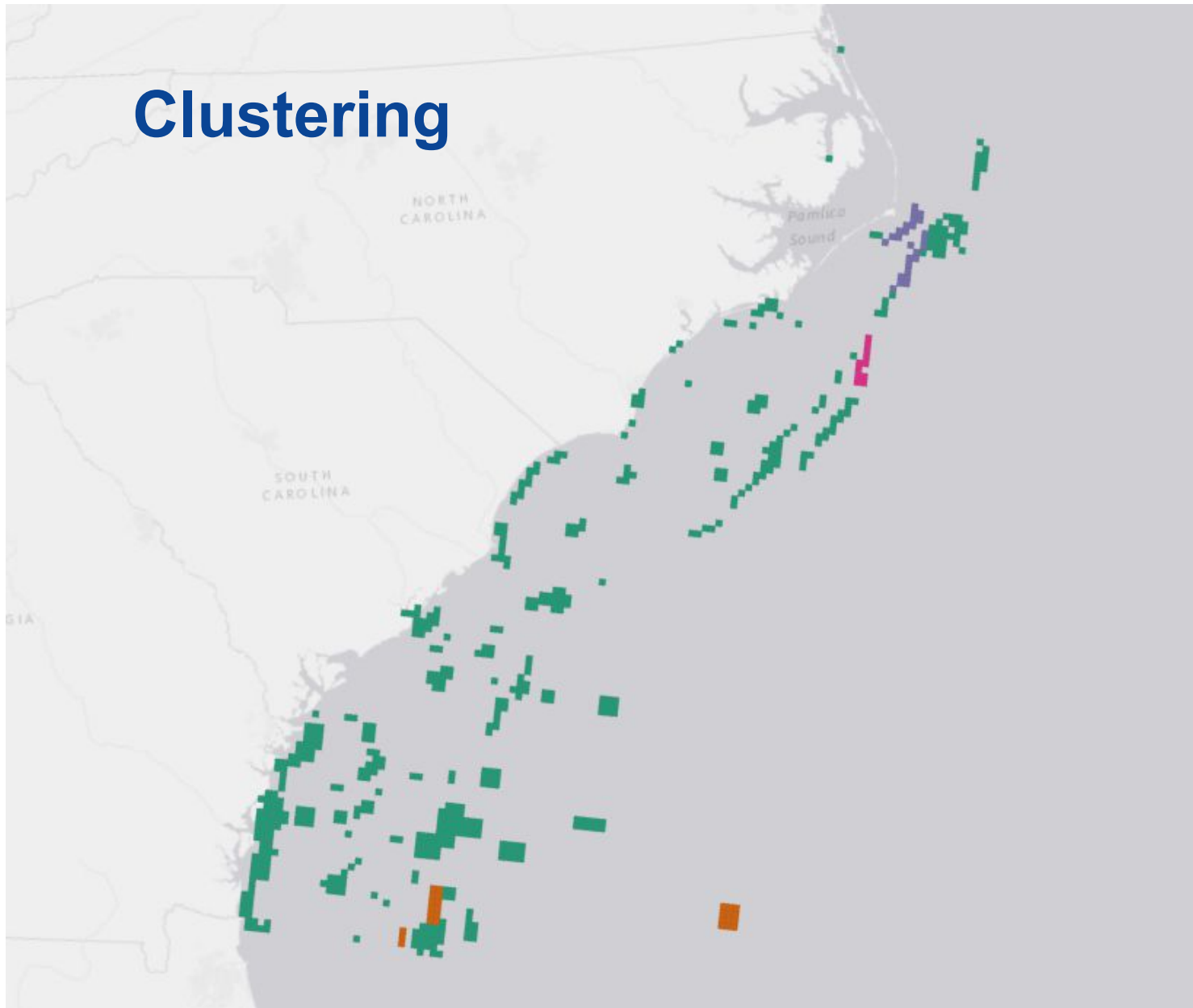
Number of Respondents
(normalized)

Justification Summary
(normalized)

Data Product Summary
(normalized)

Clustering

Clustering



- **Cluster 1:**
 - 533 Grid Cells
 - More common
 - Broad uses and needs

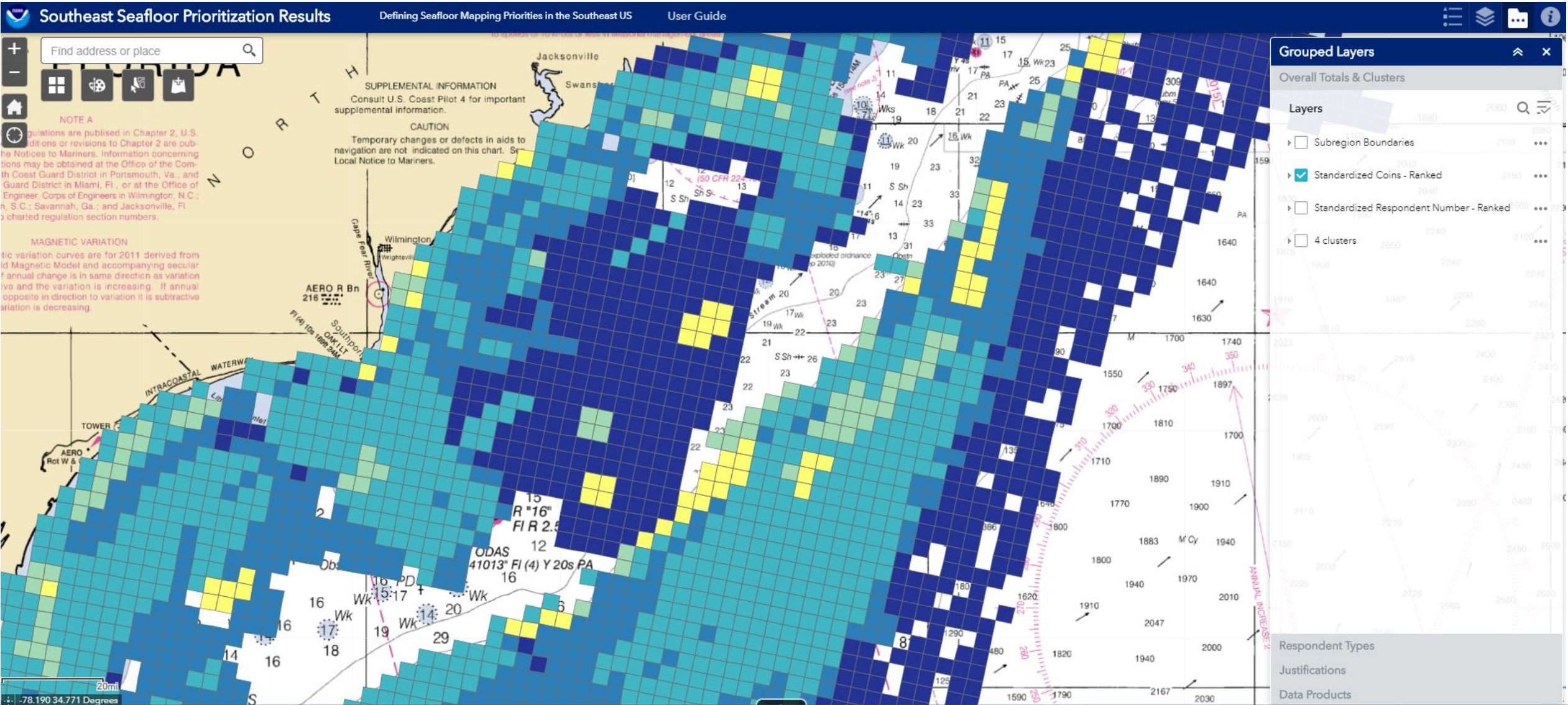
- **Cluster 2:**
 - 33 Grid Cells
 - Fishing
 - Video/Images

- **Cluster 3:**
 - 26 Grid Cells
 - Cultural/Historic & Gap
 - General

- **Cluster 4:**
 - 11 Grid Cells
 - Fishing
 - Substrate type

Data access and availability

<https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=04cdd2a68c4f427f893f2042f326dc80>



Response Rates

Coin Distribution (normalized)

Number of Respondents (normalized)

Justification Summary (normalized)

Data Product Summary (normalized)

Clustering

Next Steps

- Gathering feedback for narratives around key priority areas
 - Participants reviewed outcomes at Arc Online ([NOAA Geoplatform](#))
 - Participants provided details on specific project or management drivers, including updates on your level of need
- NOAA Technical Report in preparation (early Fall 2020)

Visit the [*Southeast Seafloor Mapping Prioritization Project Page*](#)

Questions?



