



USCRP
US COASTAL RESEARCH PROGRAM

Future of Coastal Processes Research

Bret Webb, Co-Academic Executive Director

ASBPA National Coastal Conference

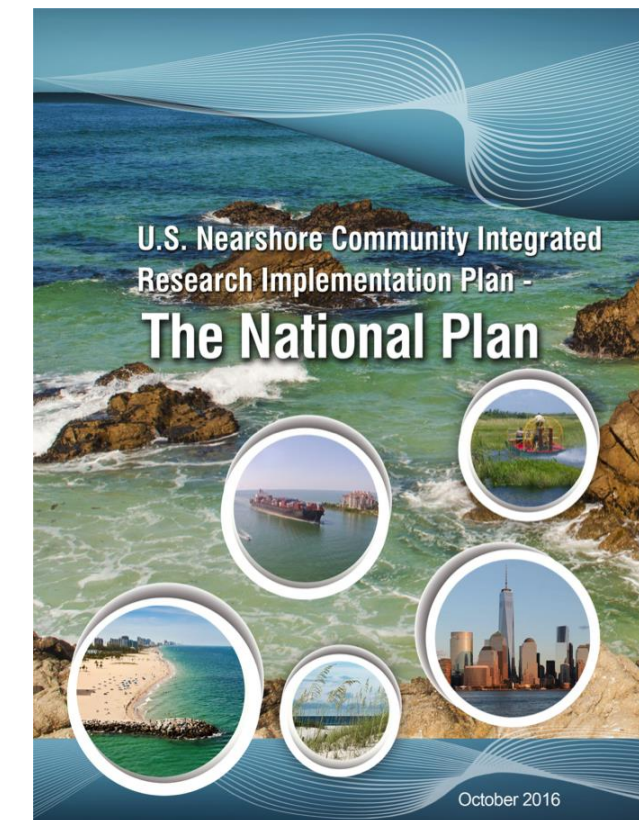
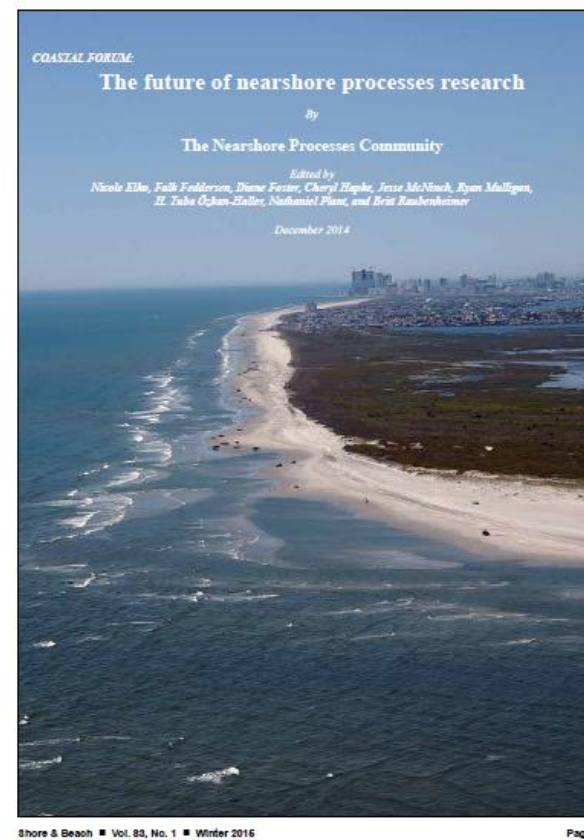
October 9th 2025

USCRP 2014-2024

“The Nearshore Report is a catalyst for the nearshore research community to leverage its strong existing relationships to enrich a heretofore distributed approach to U.S. nearshore research.”

USCRP Visioning Sessions

- Future of Nearshore Processes (2014)
- Interagency Collaboration (2016)
- Federal and Academic Collaboration (2016)



USCRP Research Themes

Complex issues that require integrated approaches AND provide opportunities for unique partnerships.



Extreme events: storm-induced flooding, coastal erosion, community impacts, natural recovery



Long-term processes and coastal response: sea level changes, future storms, sediment supply, land use changes, human interventions



Biological, chemical, physical processes that impact human and ecosystem health.

State of Nearshore Research: A Decade of Progress

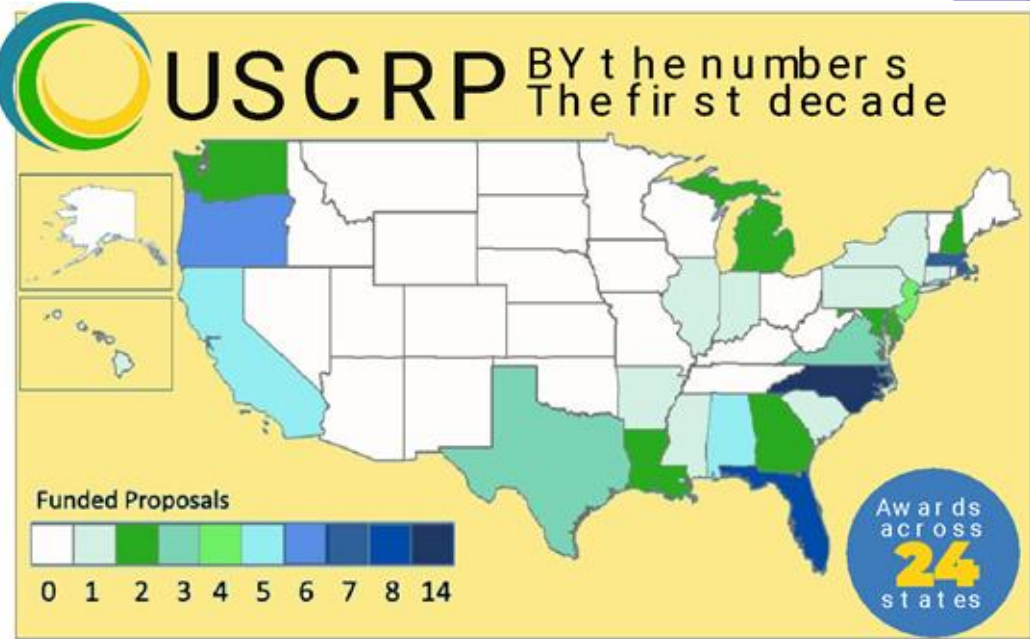
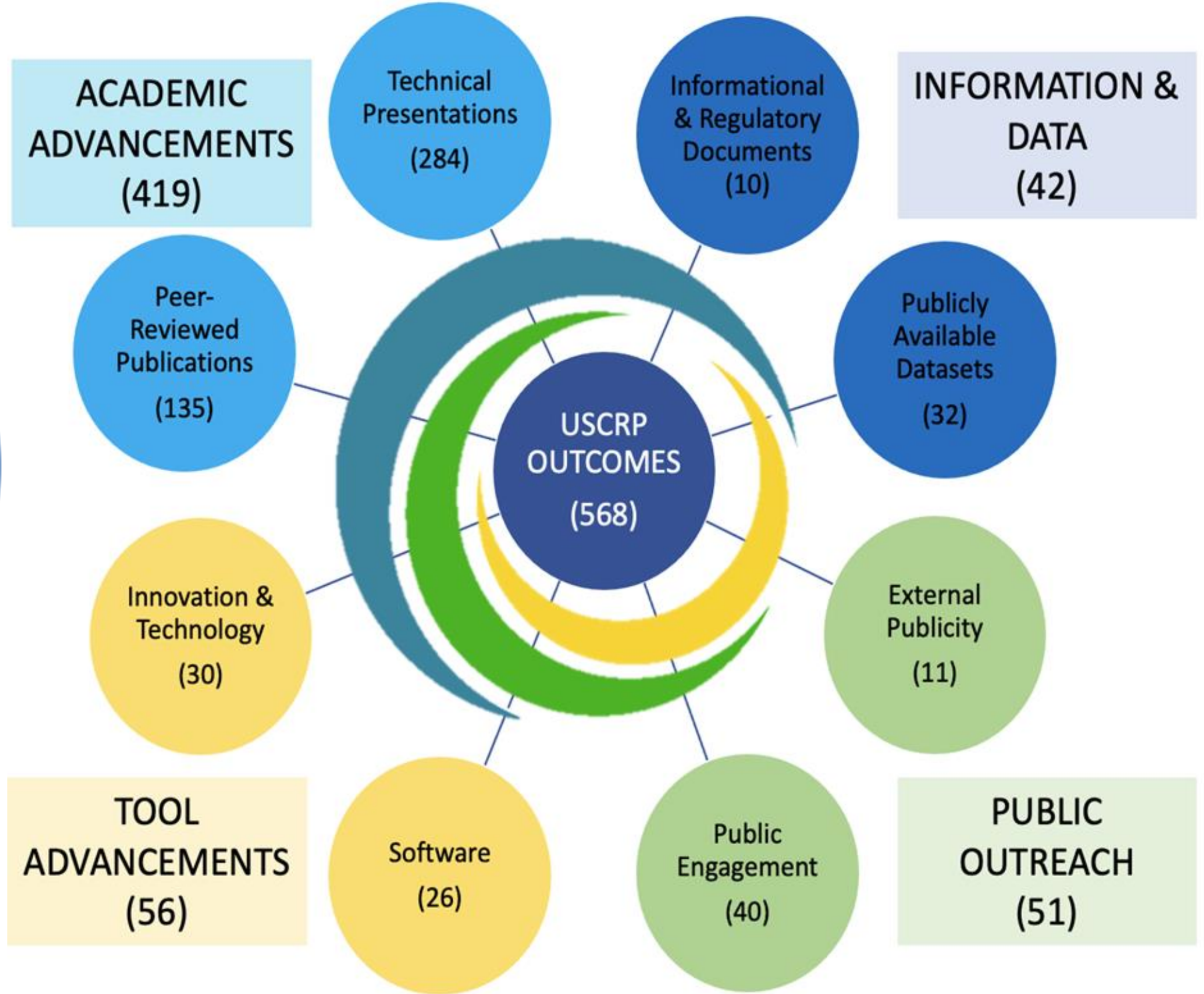
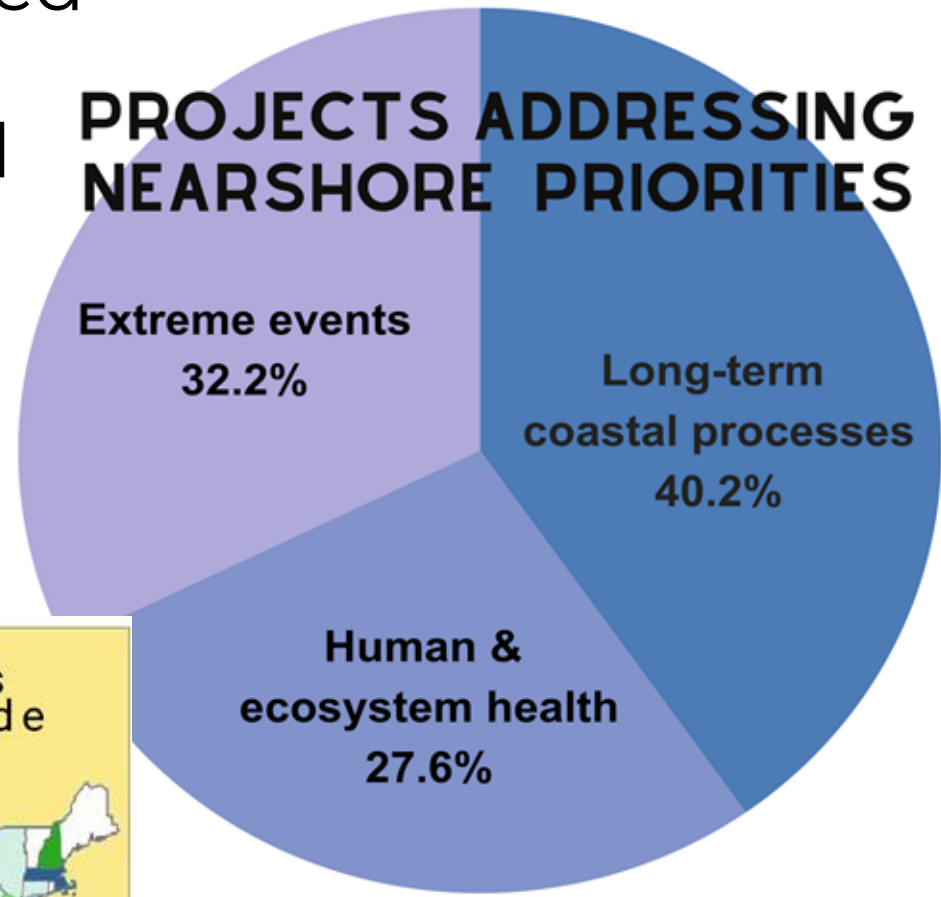
Major Recommendations from 2014 Meeting

- Extreme Events
- Human and Ecosystem Health
- Long Term Coastal Behavior
- Workforce Development

Year	Research Theme	Needs Identified Via	# Funded Projects	Total Funding
2016	Dunes on Developed Coasts	Thematic Workshop	5	\$220K
2018	Storm Processes and Impacts	Thematic Workshop	7	\$775K
2019	Research in Support of Federal Stakeholder Priorities (Including DUNEX)	Interagency Collaboration	24	\$5.4M
2020	Federal Science Priorities in Long-term Processes and Estuarine Ecosystems	Interagency Collaboration	15	\$5.0M
2021	Human and Ecosystem Health in the Coastal Zone	Thematic Workshop	11	\$3.3M
2022	Translating Coastal Research into Application	Interagency Collaboration	11	\$4.4M
2023	SEDiment transport COllaborative LABoratory Experiment (SEDCOLAB)	Interagency Collaboration, Expert Steering Committee	5	\$5.0M

US Coastal Research Program (2016 – 2023)

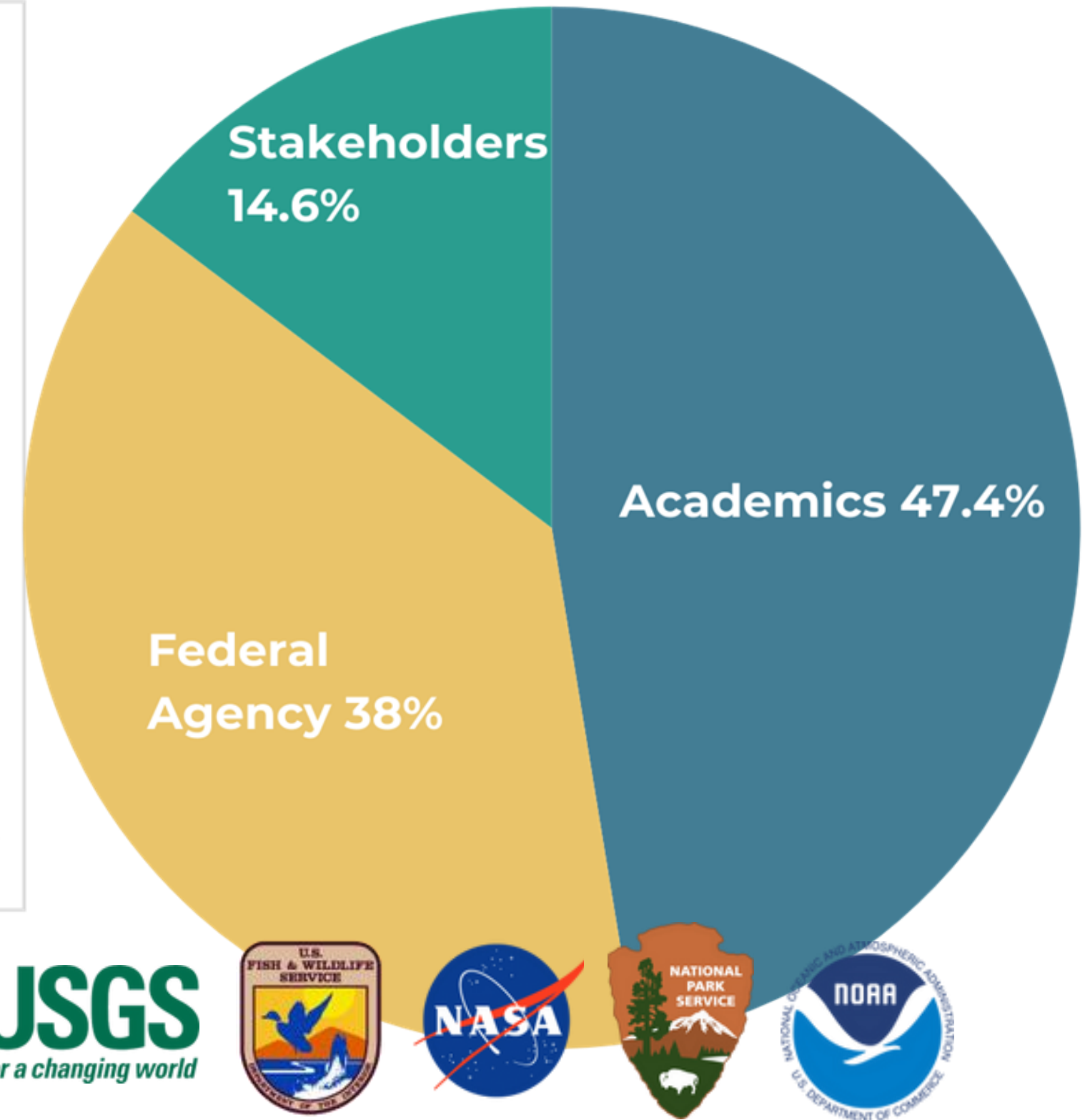
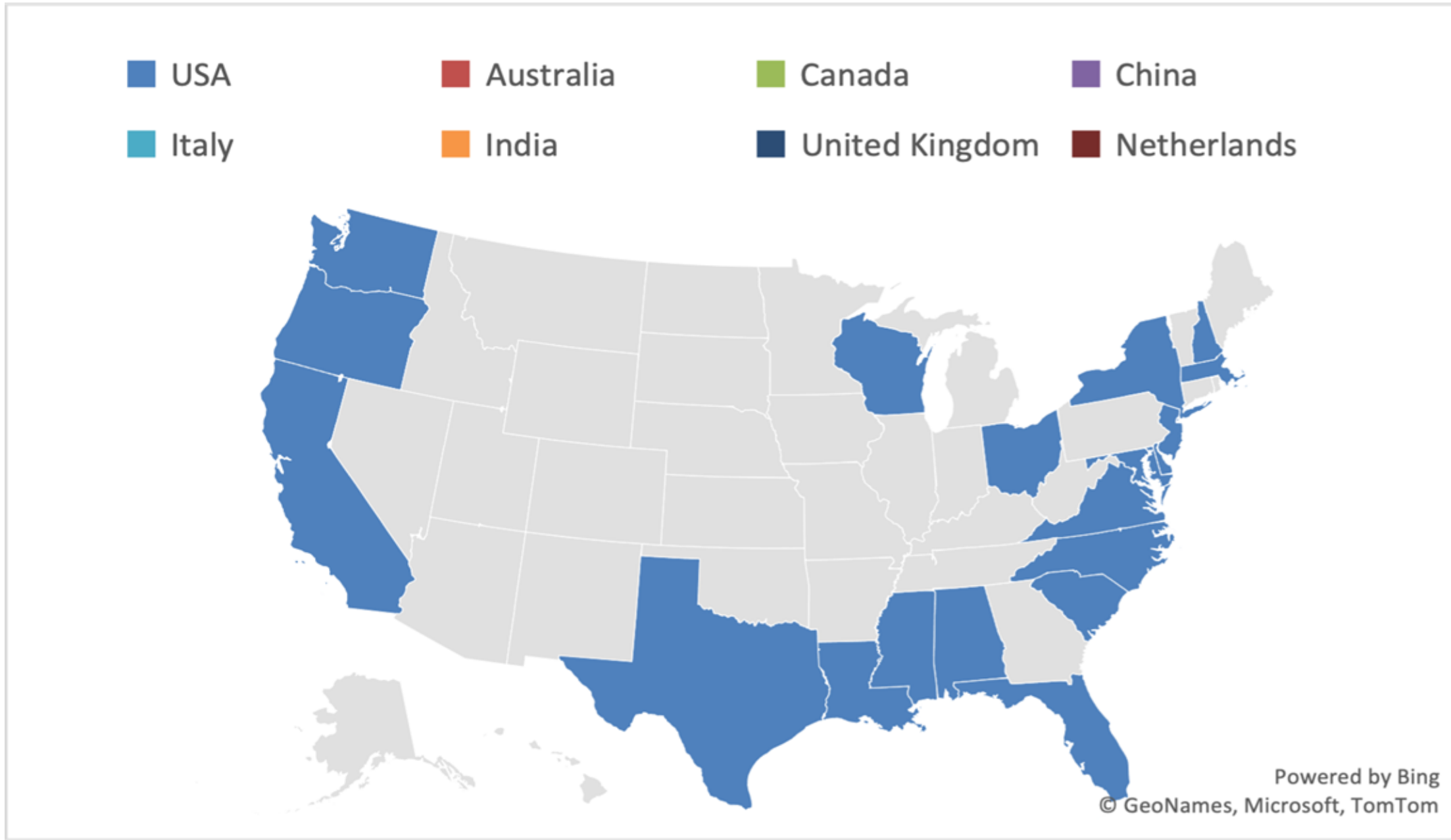
- 516 Proposals Received
- 77 Proposals Funded
- \$150M Requested
- \$23.5M Awarded



“Build a U. S. Nearshore Research Program - a sustained, coordinated program funded by multiple agencies.”

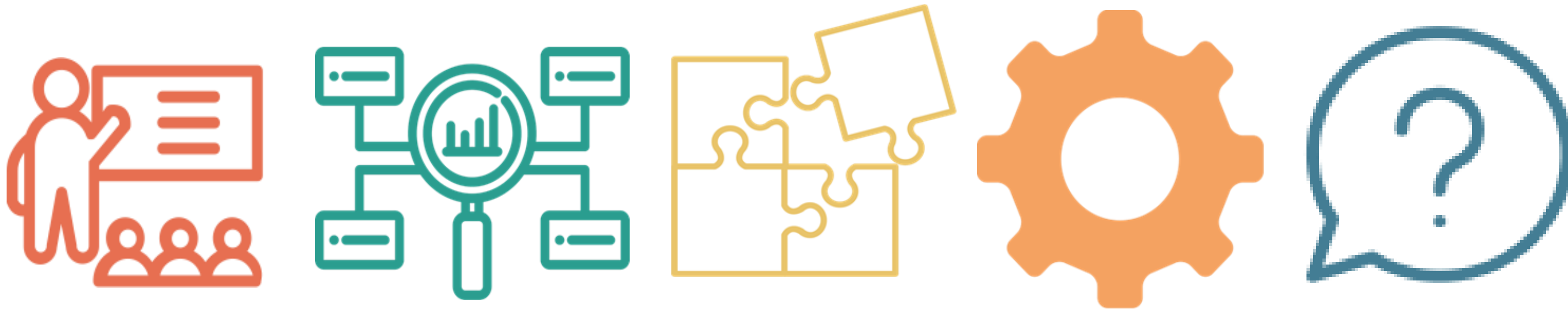
2024 Workshop

Who was in the room: 116



How was the agenda built?

Working through challenges and solutions to actionable research



What We Heard

- 1 Nature Based Solutions should be considered as a continuum.
- 2 We need measures of effectiveness for adaptation.
- 3 What regulatory challenges can science alleviate?
- 4 Is there a bulldozer in your model?
- 5 Non-linear coupling of multi-scale, multi-hazard processes across scales needed

Co-produced Priorities

**Coastal Flooding &
Extreme Events**

Adaptation

**Sediment
Management &
Morphologic Change**

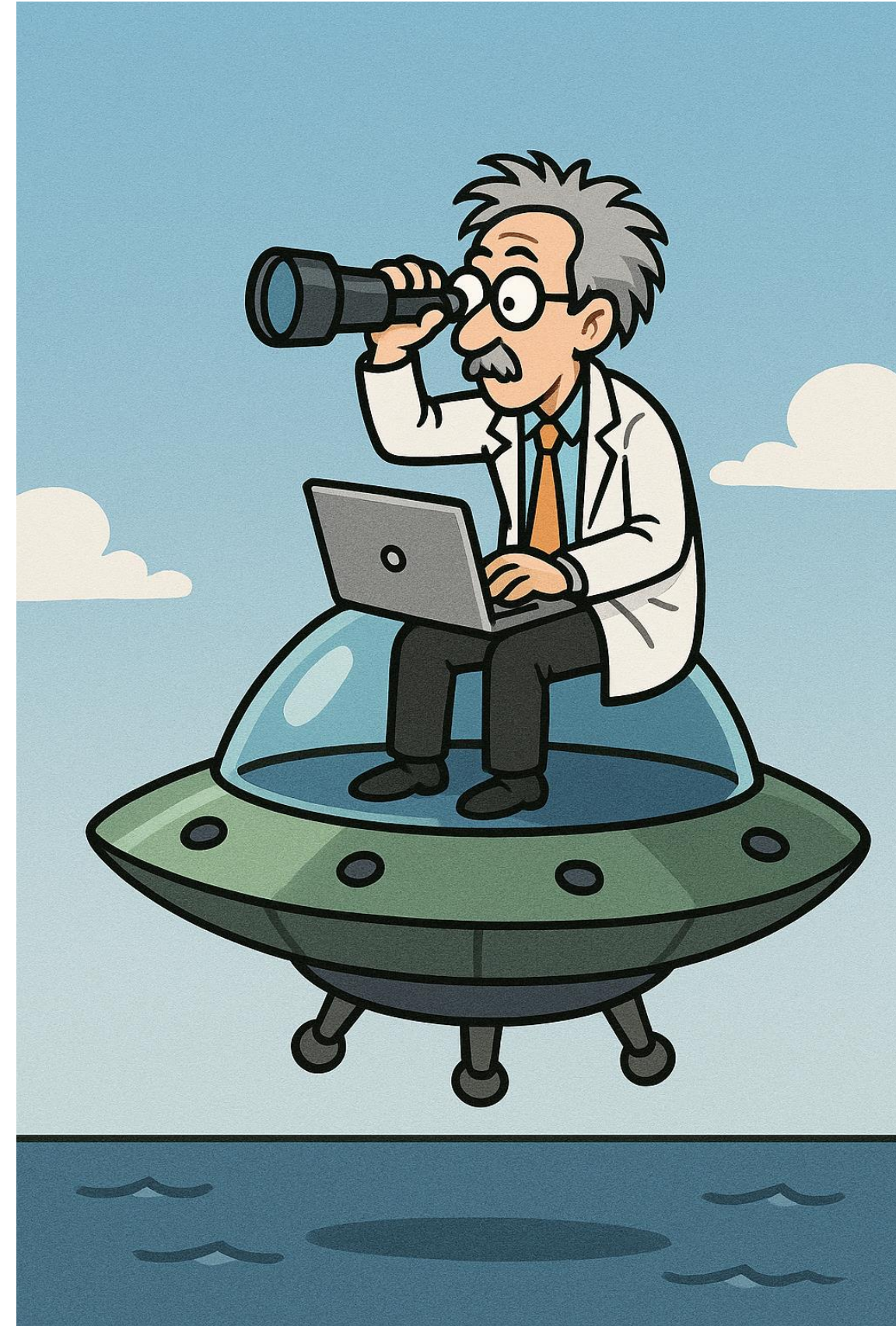
**Ecosystem
Restoration & Water
Quality**

Takeaways

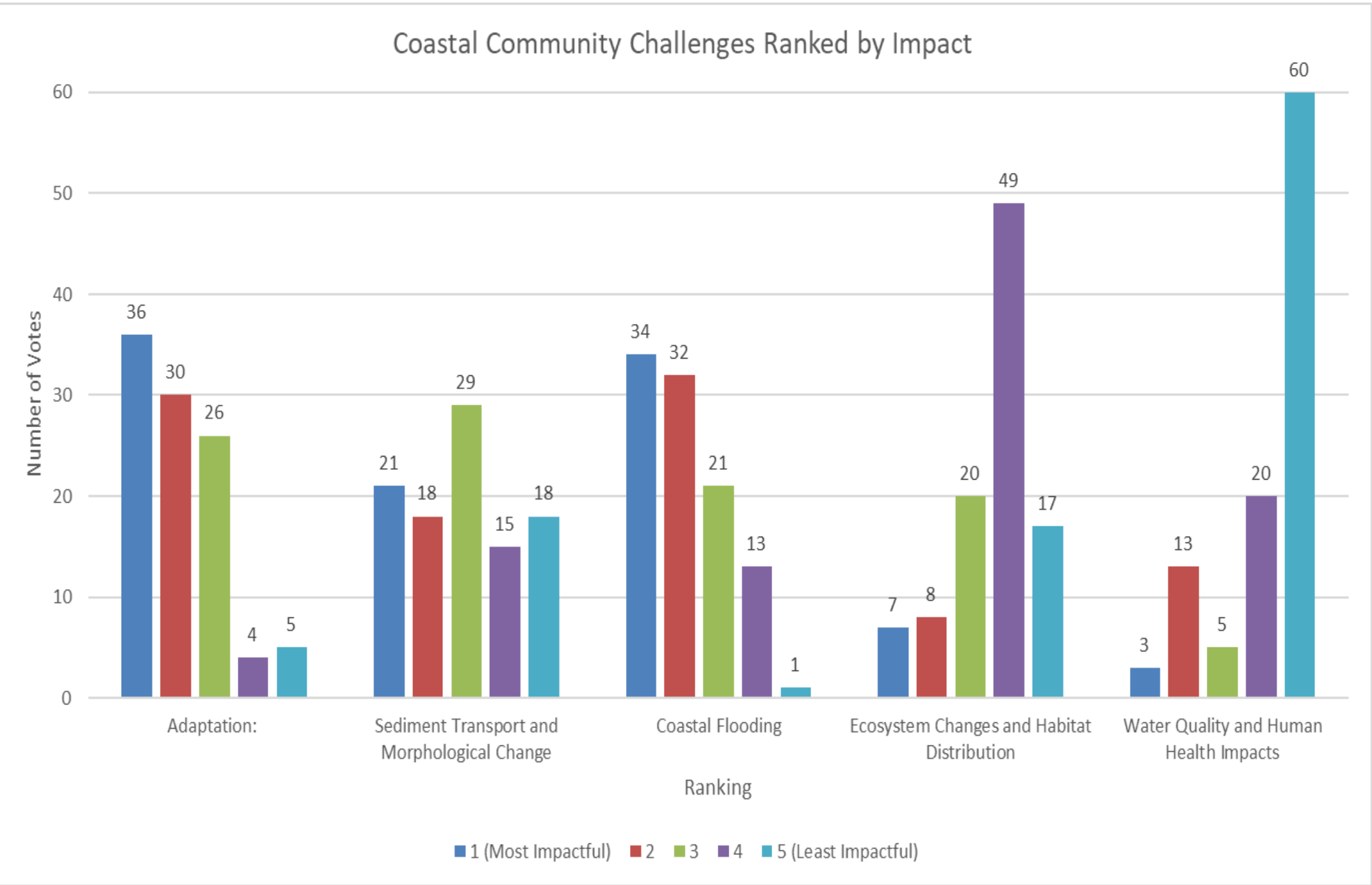
- Research is needed at **all scales** to transition from **foundational science** to **operational models** to **public information**.
- Need to collaborate **across disciplines** to **co-develop** effective **solutions** to coastal challenges.
- Interdisciplinary work must be at the right scale, **intentional, well-planned,** and **inclusive**.
- To understand current and future **shoreline change** need to incorporate influences of **humans and ecosystems**.
- **Nature Based Solutions** should be considered as a continuum.
- Need methods to measure **effectiveness** in **adaptation strategies**.

The Future

The Future of Coastal Processes Research



Rank the most pressing and impactful topics to address for coastal community resilience.



Adaptation and Coastal Flooding ranked **MORE CRITICAL.**

Ecosystems & Water Quality ranked **LEAST CRITICAL.**

Rank the following needs for applying the results of coastal research to support decision-makers.

Collaboration with locals,
integration of social science,
& partnerships with others

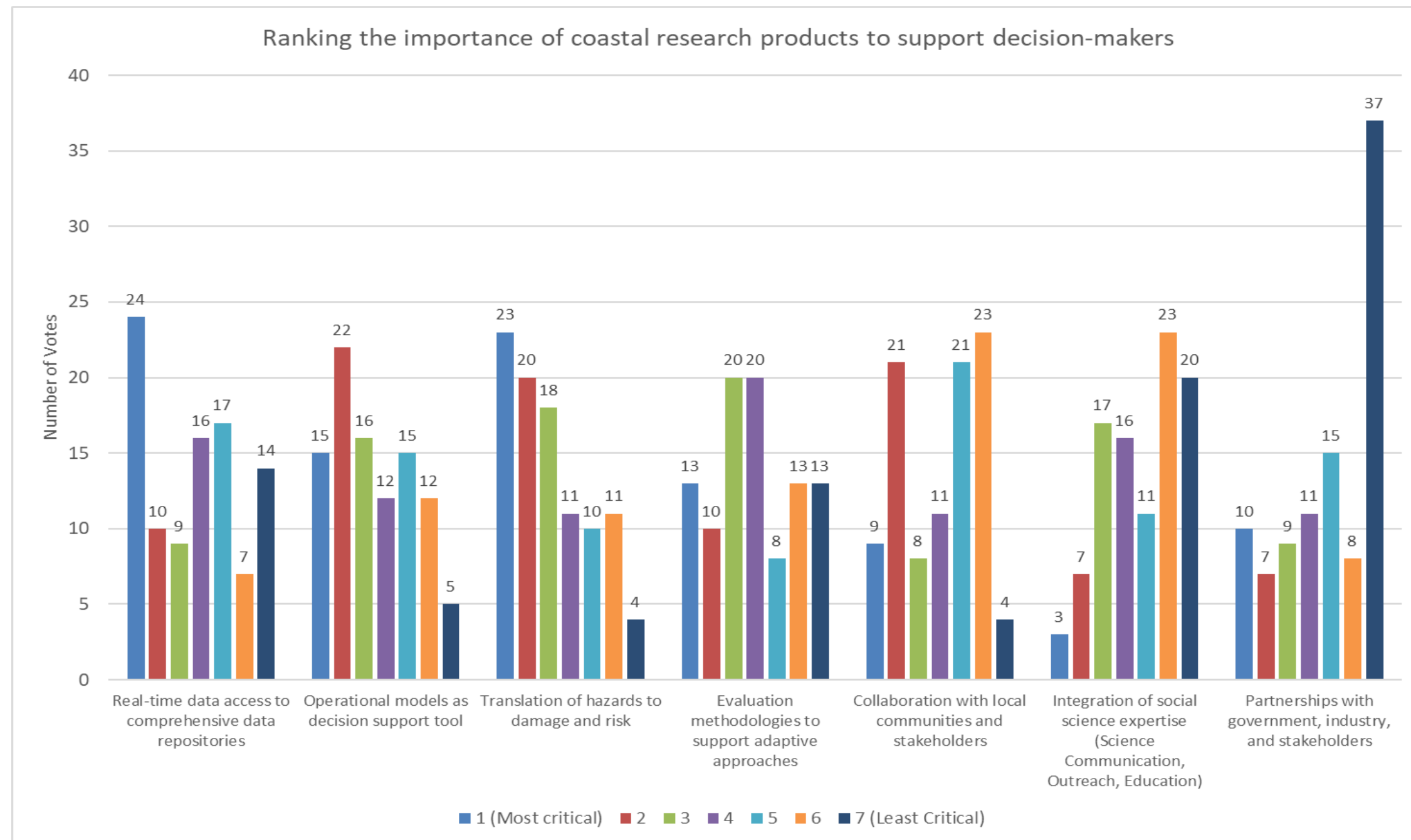
were ranked

LEAST CRITICAL

Data, Models, and Methods

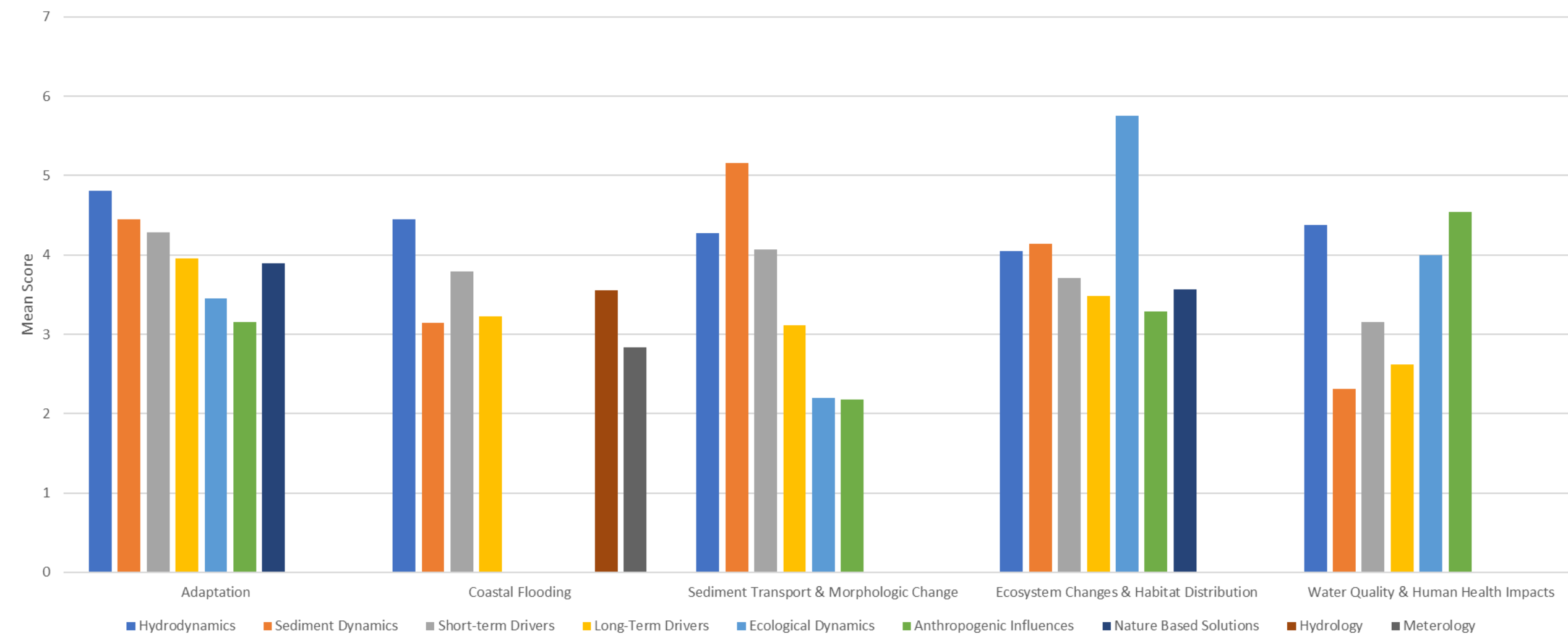
were ranked

MORE CRITICAL



Rank the following basic research topics based on their importance in understanding X and the associated impacts.

Basic Research Needs Per Coastal Challenge Ranked by Importance



Understanding **hydrodynamics** is in top ranking for all challenges.

Short-term drivers more important than long-term drivers.

Workshop Report

Coastal
Community
Challenges

Coastal
Flooding

Morphodynamics
and Sediment
Transport

Ecosystem
Change and
Health

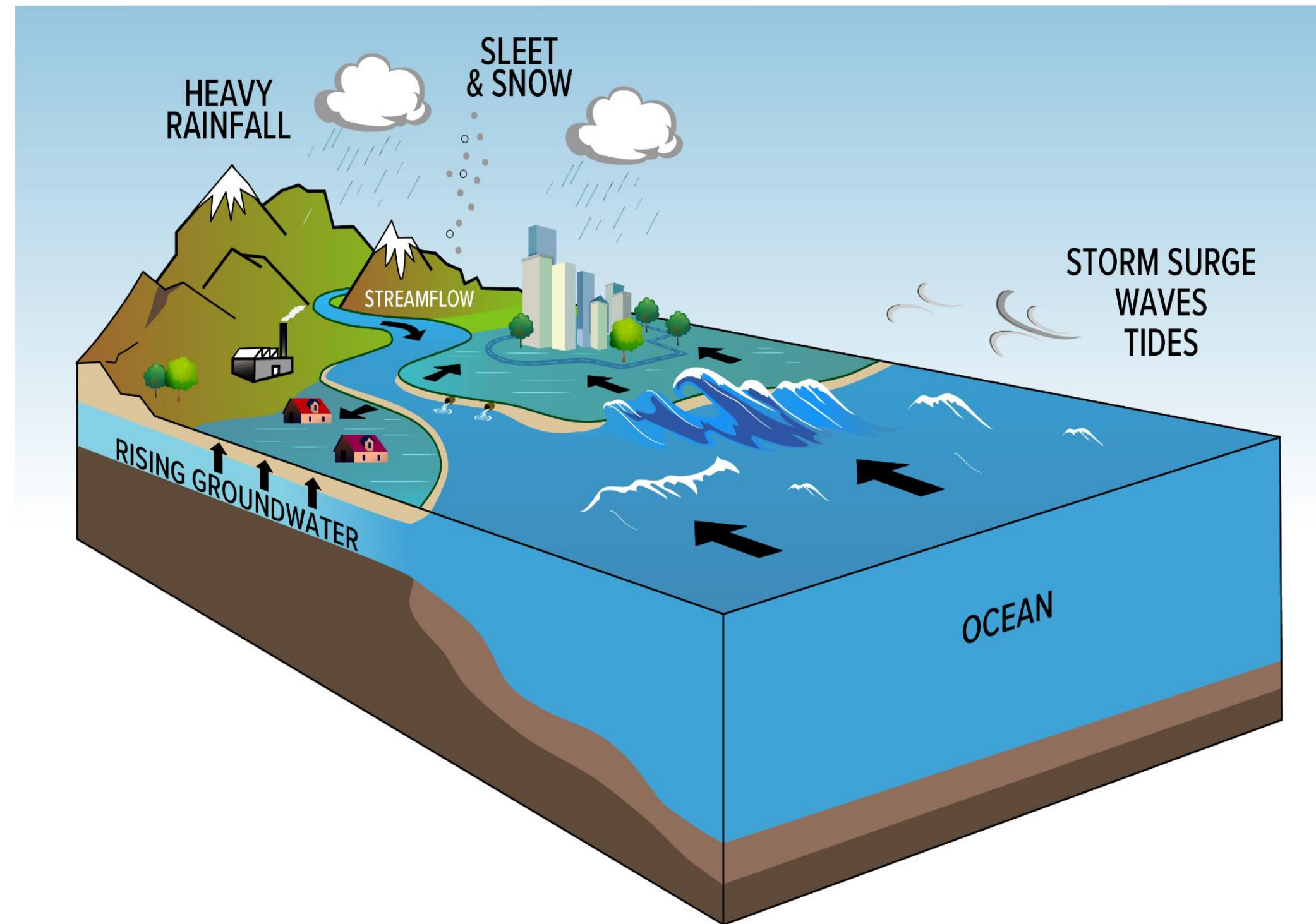
e.g., Coastal flooding...

Drivers

Amplifiers

Tools

Communication



Workshop Report

Meeting
User Needs

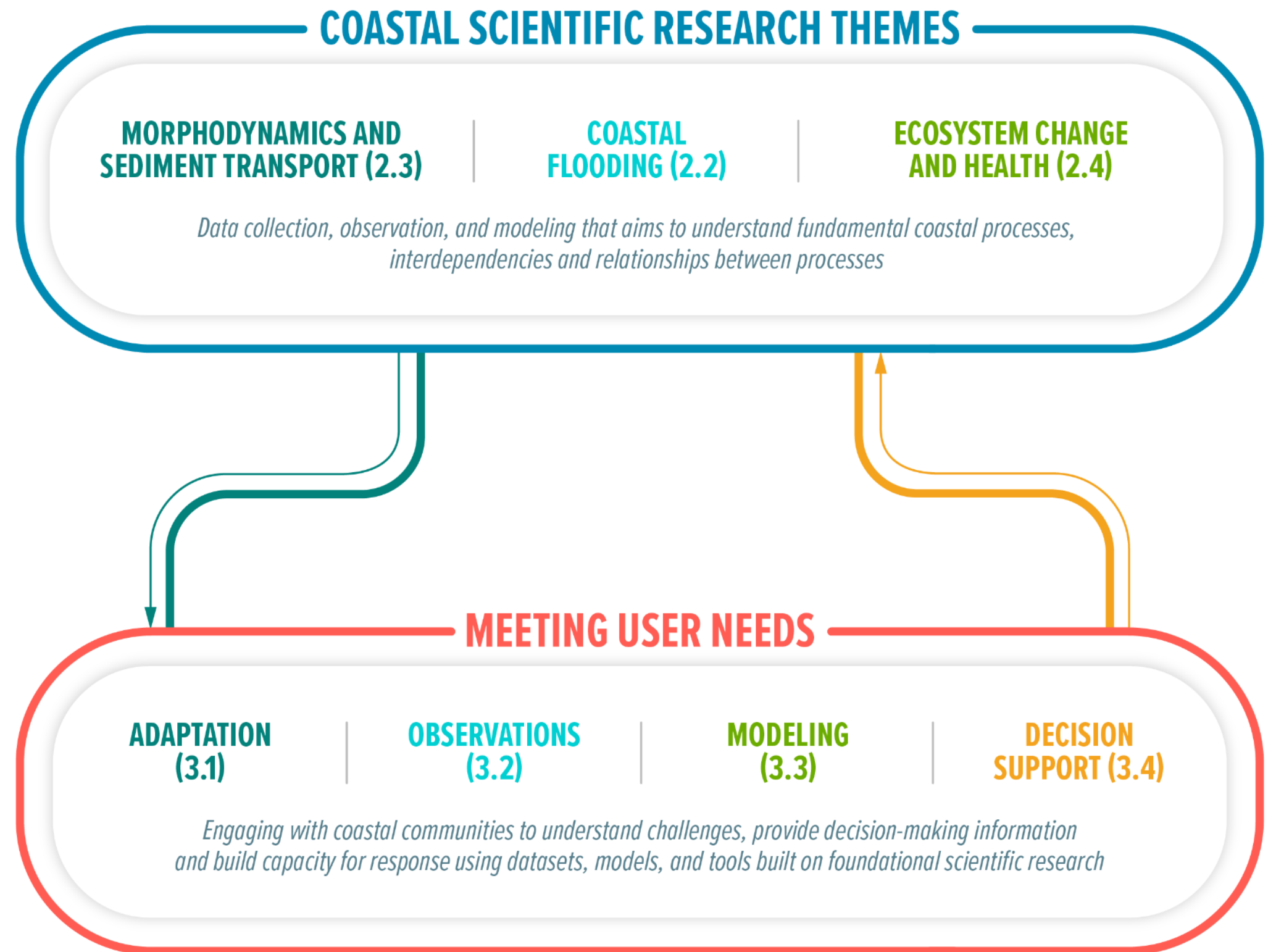
Adaptations
to Coastal
Hazards

Observations

Models

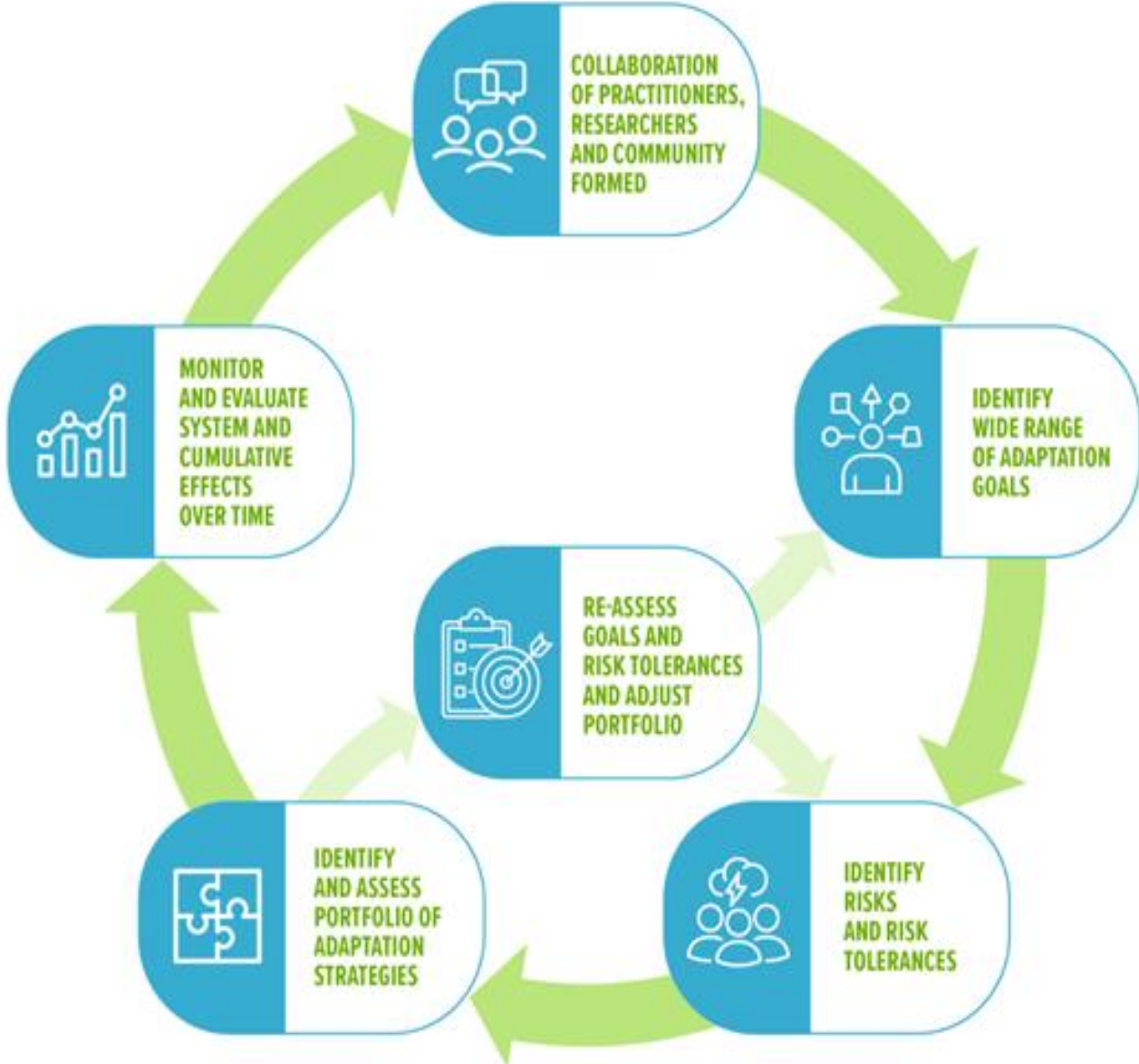
Decision-
Support

Putting it all into action...



Recommendations

- 1 Apply artificial intelligence and machine learning approaches
- 2 Meaningfully embed social science into coastal research
- 3 Maintain shared, open source and long-term key national data sets and co-production platforms
- 4 Develop coupled and holistic modeling frameworks
- 5 Modify funding, professional reward, and workload structures to promote interdisciplinary collaboration and co-production...
- 6 Strengthen approaches to promote integrated solutions
- 7 Reform funding mechanisms





Shore & Beach V94(1)

Past, Present, and Future of Coastal Research: USCRP Perspectives

01

Part 1: The
Future of
Coastal
Processes
Research

02

Part 2: State of
the Science in
Coastal
Processes
Research

03

Looking Back: a
Retrospective
on Coastal
Processes
Research

+

Workforce
Sediments
Adaptation
Co-production
Morphodynamics



USCRP

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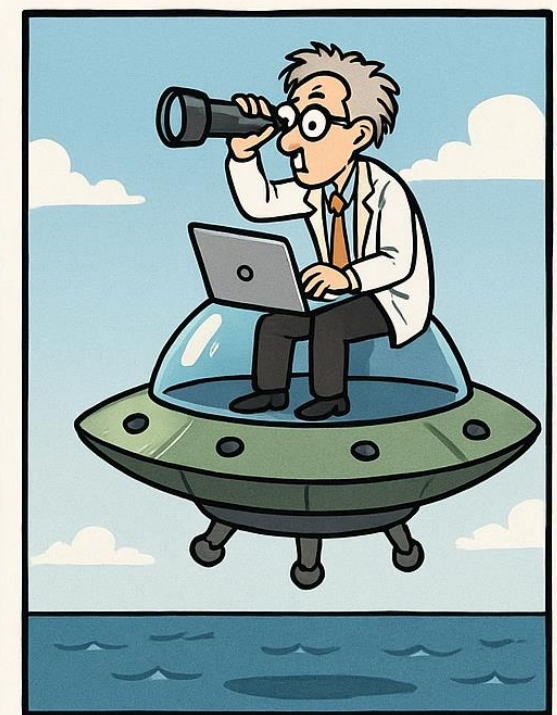
USCRP perspectives on the future of coastal process research



PAST



PRESENT



FUTURE