

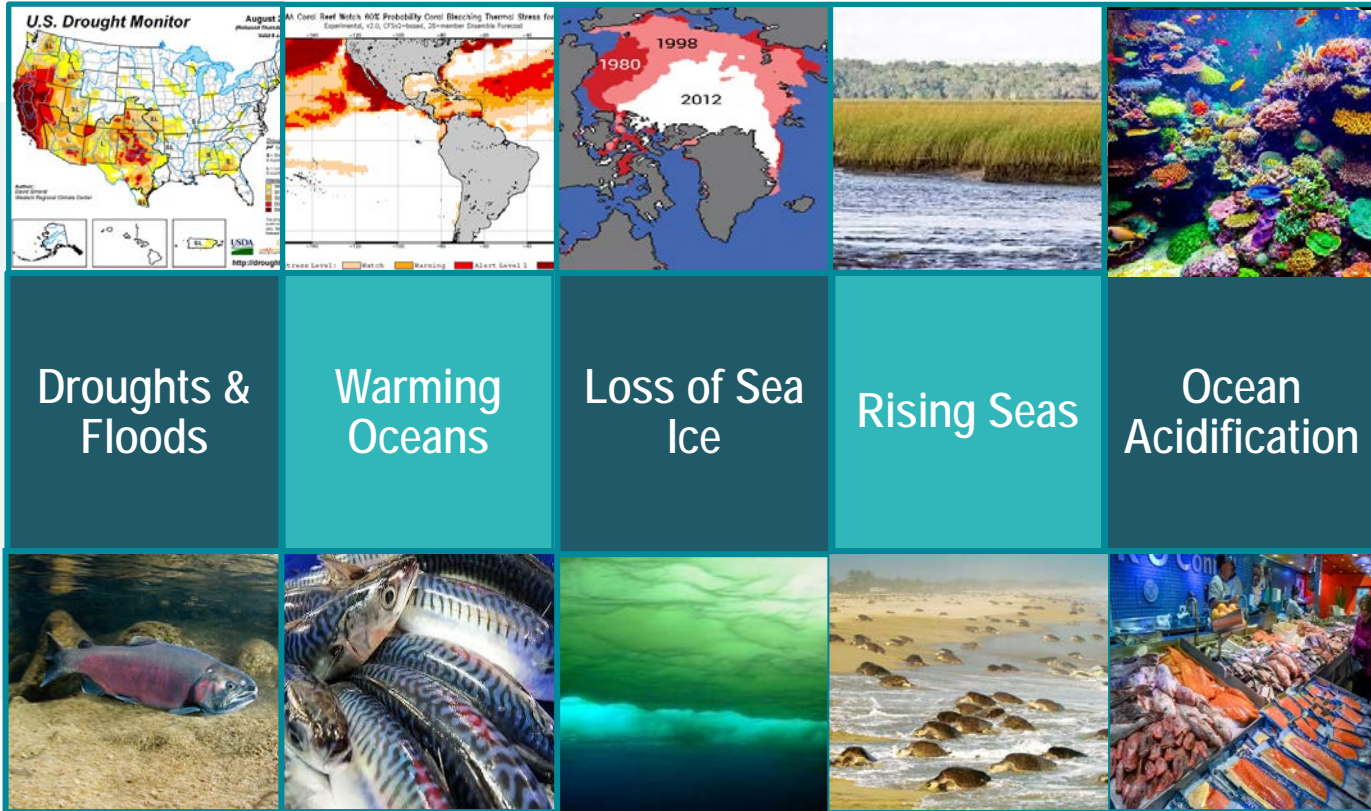


Climate and Fisheries Initiative

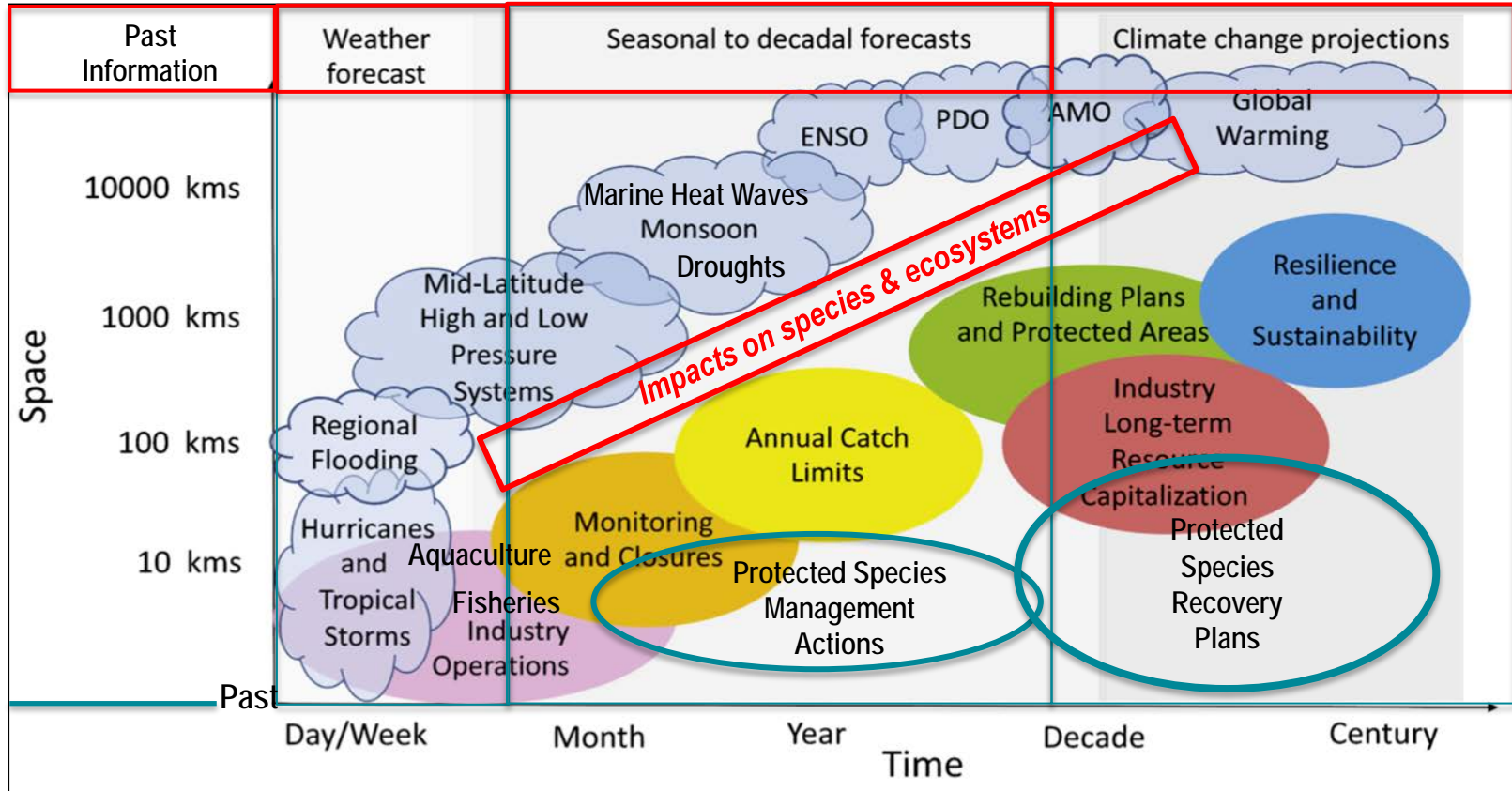
CFI Draft Implementation Approach CFI Webpage

NPFMC Groundfish Plan Team
September 2021

Growing Challenges for Effective Resource Management



2019 Assessment: NMFS Climate Information Requirements



NOAA's Climate and Fisheries Initiative

- **Challenge:** Climate change is impacting the nation's valuable marine and Great Lakes ecosystems, fisheries, and the communities that depend on them. These impacts are creating urgent questions that demand climate-informed answers.
- **Response:** NOAA's Climate Fisheries Initiative is a cross-NOAA effort which, when combined with existing programs, will enable the sustained operational ocean prediction and decision support system needed to reduce negative impacts and increase resilience of ecosystems and coastal communities



NOAA Climate and Fisheries Initiative (CFI)

-
- *Cross-NOAA effort (NMFS, OAR, NOS, NWS, NESDIS)*
 - *Build a operational ocean modeling and decision support system*
 - *Provide state-of-the-art ocean forecasts and projections*
 - *Provide climate-informed ecosystem projections, risk assessments and management strategies*
 - *Reduce impacts and increase resilience of LMRs and communities.*

What will CFI do?

CFI will:

- *Build an operational ocean modeling and decision support system to*
- *Provide NMFS and other decision-makers with state-of-the-art ocean forecasts, risk assessments and management options that*
- *Enable climate-informed LMR management.*

Integrated, nation-wide operational system that delivers:

- Ocean forecasts and projections
- Ecosystem projections
- Stock projections
- Risk Assessments
- Adaptation Options
- Strategy Evaluations
- Management capacity

CFI End-to-End Ocean Modeling and Decision Support System

▶ Advancing Ocean, Ecosystem, and Climate Understanding

▶ Operational Ocean, Climate, and Ecosystem Prediction Systems

▶ Climate Ready Decision Making

1

2

3

SCIENCE AND DEVELOPMENT

Drives Innovation and Skill

OPERATIONS AND INFRASTRUCTURE

Drives Dissemination and Decision Support

EXTENSION AND ENGAGEMENT

Drives Service Delivery and Knowledge Transfer



Targeted Research that Fuels Innovation



Enhanced Observations



National Community of Practice



Enhanced Ocean Modeling Capabilities



Regional Ocean Modeling and Prediction



CFI Information Hub



Fisheries and Climate Decision Support Systems



Ecosystem Foresight

(FACSS)



Increasing Capacity for Climate Ready Decisions



Rapid Response



Climate Smart Decision Support Tools

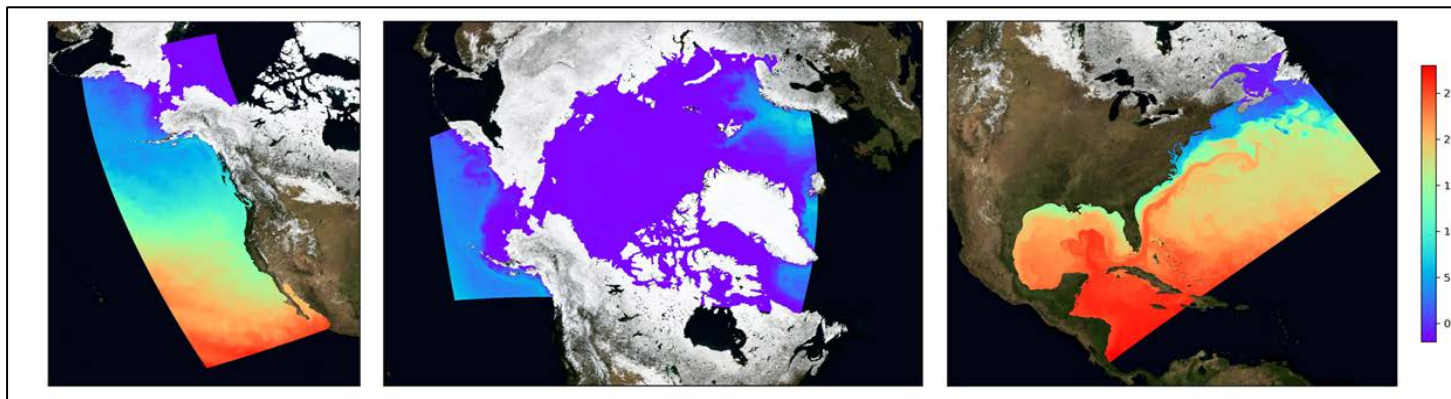


Improve Surveys and Research



Coordinated Science and Advice

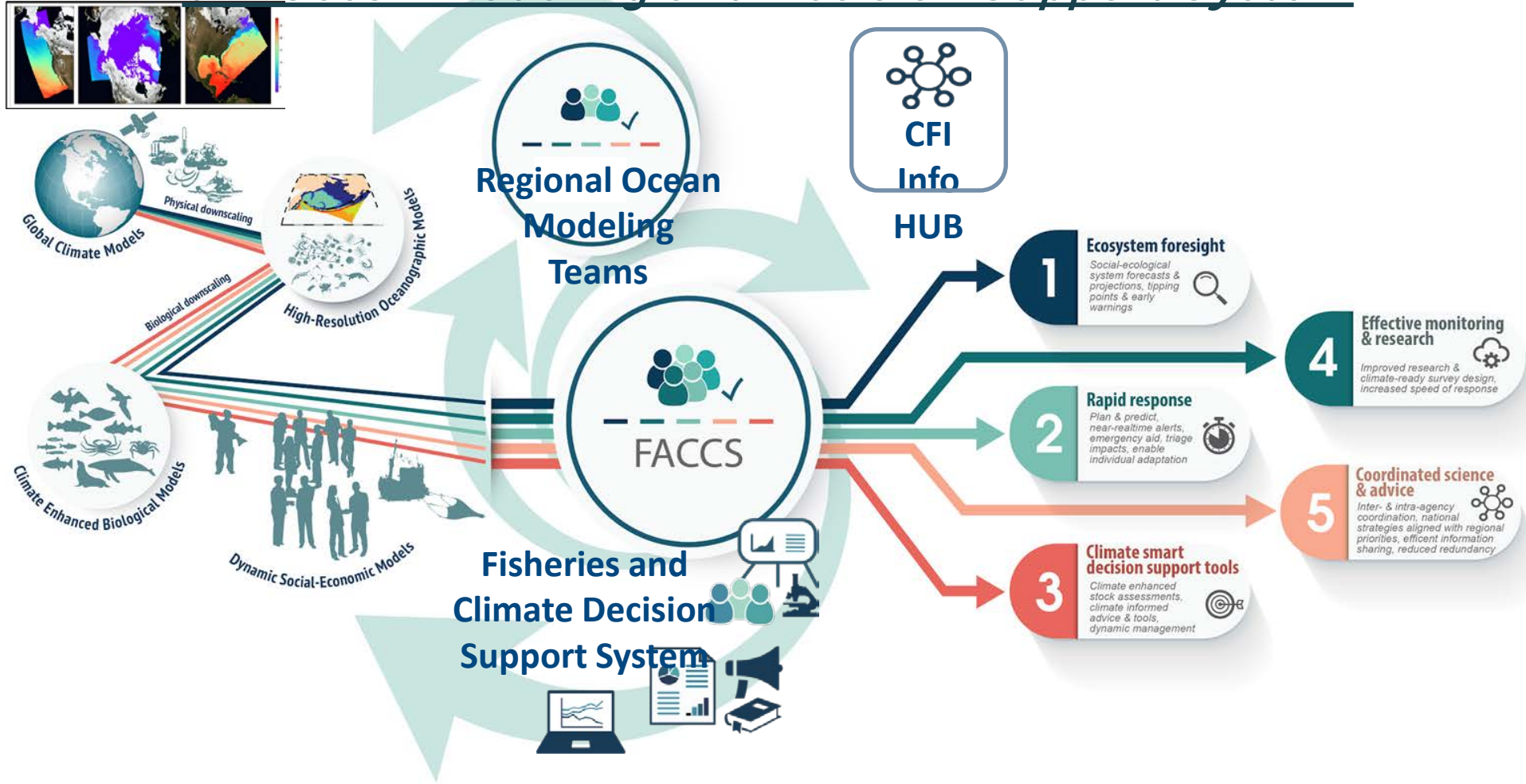
National Ocean Prediction System fueled by NOAA High Performance Computing



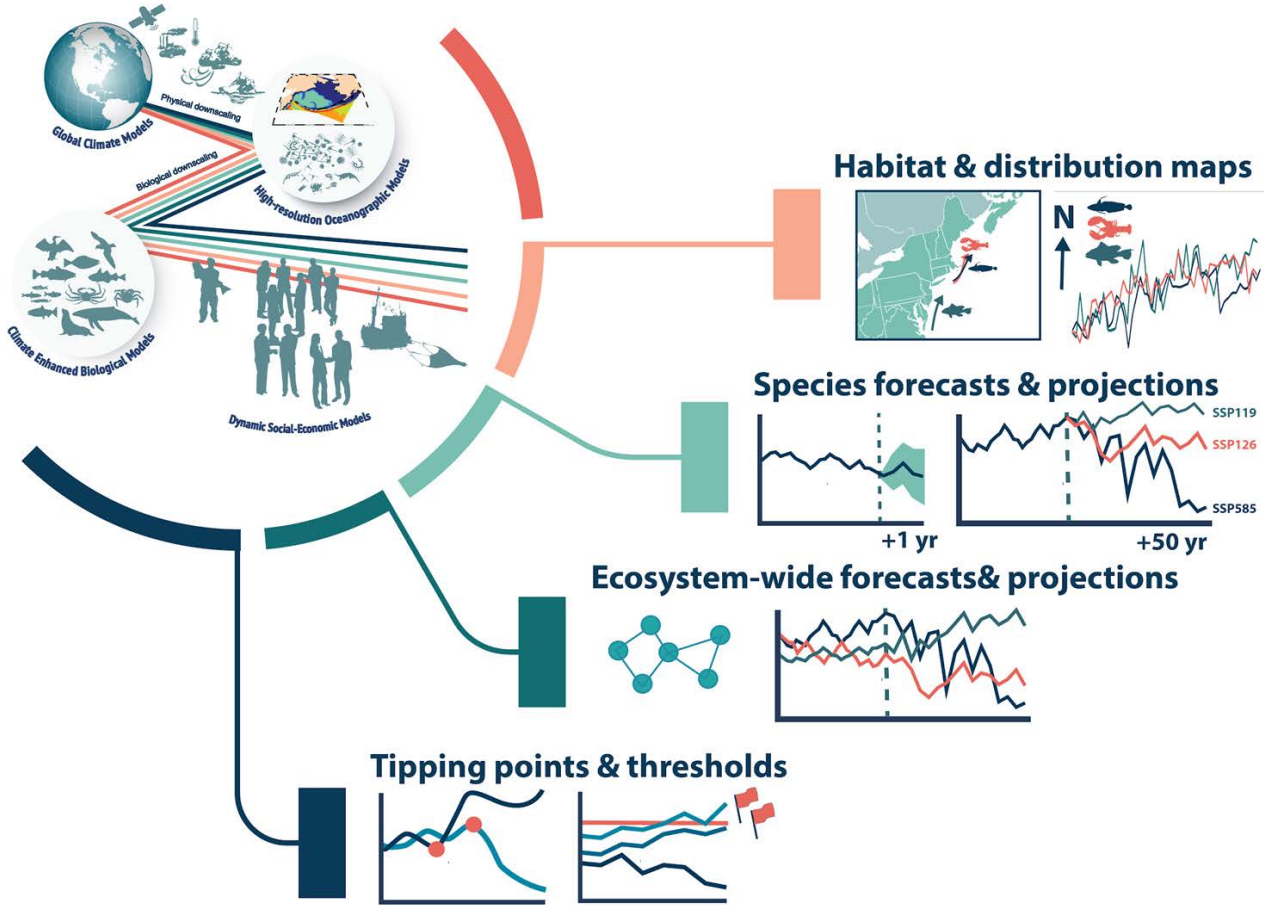
Prototype MOM6 coast-wide domains for seasons to decades (Great Lakes, Pacific Islands in progress)

- Builds on NOAA ocean forecast (NOS) and Prediction Systems (OAR/GFDL)
- Regional Ocean Modeling Teams customize products for NMFS uses
- Holistic ocean/BGC predictions, expandable to earth system as needed
- NOAA HPC powers predictions spanning the range of ocean futures
- Robust dissemination through CFI Information Hub & national data stds

CFI Ocean Modeling and Decision Support System



FACSS Products and Services

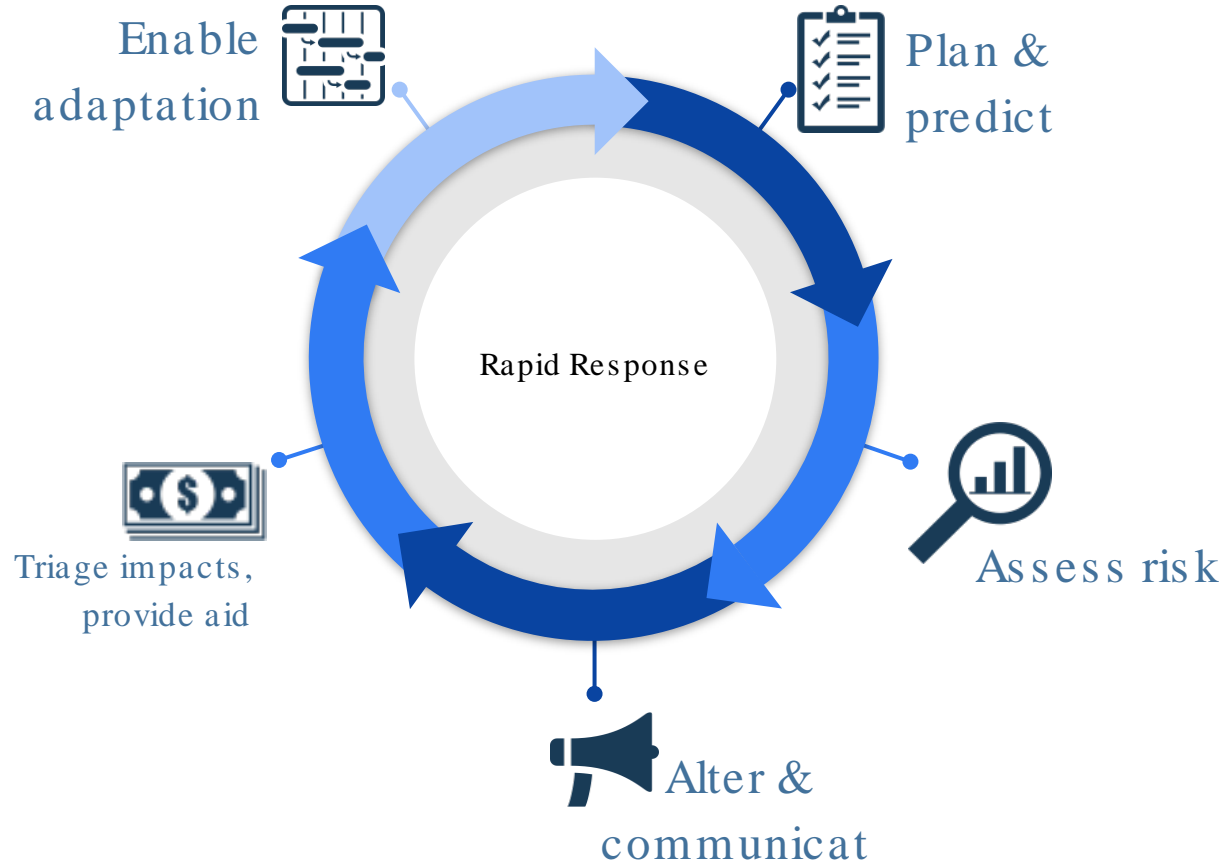


1 Ecosystem foresight

Social-ecological system forecasts & projections, tipping points & early warnings

- **Dedicated product line**
- **Operational delivery**
- **Customized services**

Improve Rapid Responses



1

Ecosystem foresight

Social-ecological system forecasts & projections, tipping points & early warnings



2

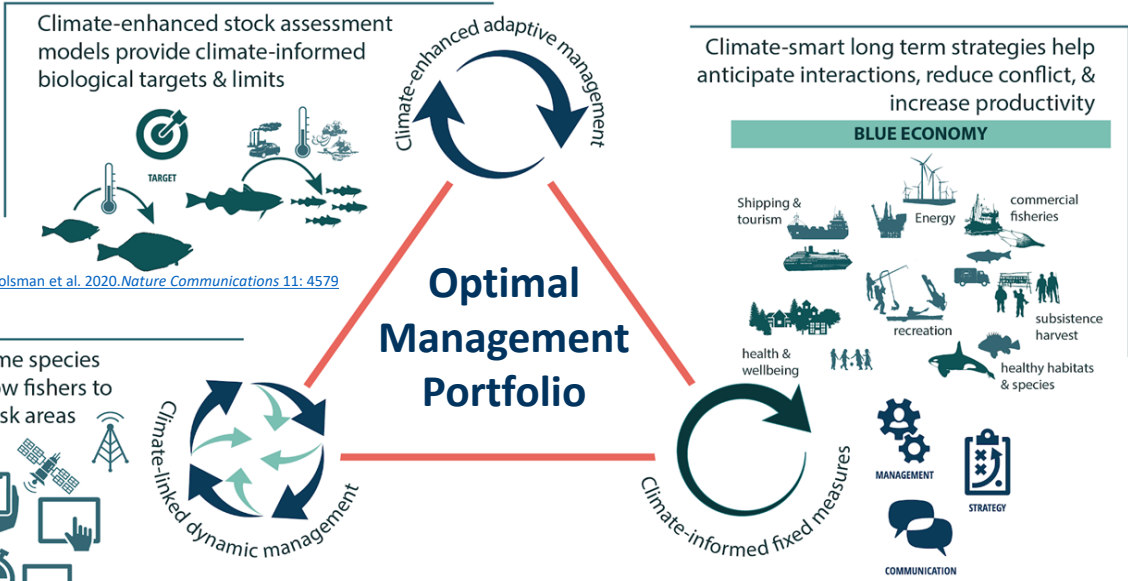
Rapid response

Plan & predict, near-realtime alerts, emergency aid, triage impacts, enable individual adaptation



- Planning
- Preparation
- Triage
- Action

Tailored Adaptation Approaches



Holsman et al. 2020. *Nature Communications* 11: 4579

Hazen et al. 2018. *Science Advances*. 4(5) eaar3001

Santos et al. 2020. *Nature Sustainability* 3: 505-516



- ## 1 Ecosystem foresight

Social-ecological system forecasts & projections, tipping points & early warnings
- ## 2 Rapid response

Plan & predict, near-realtime alerts, emergency aid, triage impacts, enable individual adaptation
- ## 3 Climate smart decision support tools

Climate enhanced stock assessments, climate informed advice & tools, dynamic management

Performance Testing

Initial funding 2021

- *Continue ROMS-MOM6 transition and testing*
 - *Pilot Projects Continue in New England, Eastern Bering Sea, Gulf of Alaska and West Coast*
- *Continued development of Arctic Grid*

Build Phase 2022

- Data Portal Teams
- Model Teams
- FACSS Teams
- Skill Assessments
- Model design specifications to meet regional needs
- Cross – NOAA Communication
- Testing and implementing tools and products

CFI Steering Committee (In Transition)

Co-chairs

Wayne Higgins (OAR)

David Detlor (NMFS)

Members

John Cortinas (OAR)

Libby Jewett (OAR)

Debbie Lee (OAR)

Michelle McClure (OAR)

V Ramaswamy (OAR)

Robin Webb (OAR)

Robert Foy (NMFS)

Jon Hare (NMFS)

Catherine Marzin (NMFS)

Kevin Werner (NMFS)

Jenni Wallace (NMFS)

John Murphy (NWS)

Keelin Kuipers (NOS)

Jeff Privette (NESDIS)

CFI Implementation Team (In Transition)

Co-chairs

Anne Hollowed (NMFS)

Charles Stock (OAR)

Desiree Tommasi (NMFS)

Michael Jacox (NMFS & OAR)

Aijun Zhang (NOS)

Hassan Moustahfid (NOS)

Kris Holderied (NOS)

Arun Kumar (NWS)

Members

Kirsten Larsen (NESDIS)

Roger Griffis (NMFS)

Kirstin Holsman (NMFS)

Avichal Mehra (NWS)

Dan Barrie (OAR)

Mike Alexander (OAR)

Questions?

