Draft Western Regional Action Plan (WRAP 2.0) 2022 – 2024 for the NMFS Climate Science Strategy (NCSS)

PFMC Agenda Item H.2: Situation Summary

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9/12/2022

What are the NMFS Climate Science Strategy (NCSS) and the Western Regional Action Plan (WRAP)?

The NCSS is the national framework within which a loosely organized group of NMFS projects that address present and future climate impacts on Fishery management are coordinated

The WRAP represents those projects which address these present and future impacts in the California Current

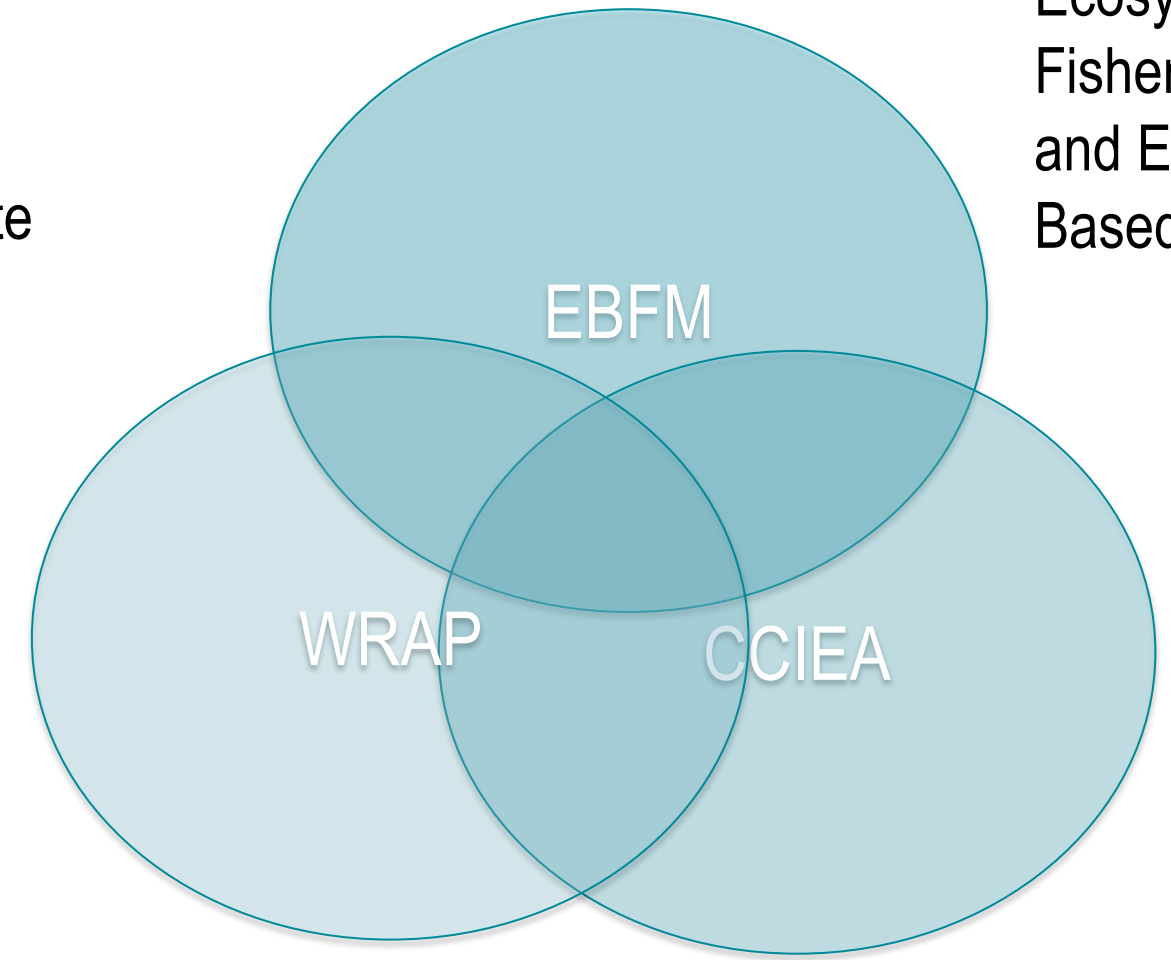
7 NCSS Regional Action Plans (RAPs) Nationally:

- California Current (WRAP)
- Gulf of Alaska
- Bering Sea
- Arctic Sea
- Pacific Islands
- Northeast
- Southeast (includes Gulf of Mexico)

What is the WRAP?

NCSS: NMFS's Climate Science Strategy:
A national framework for addressing fishery management in a changing climate

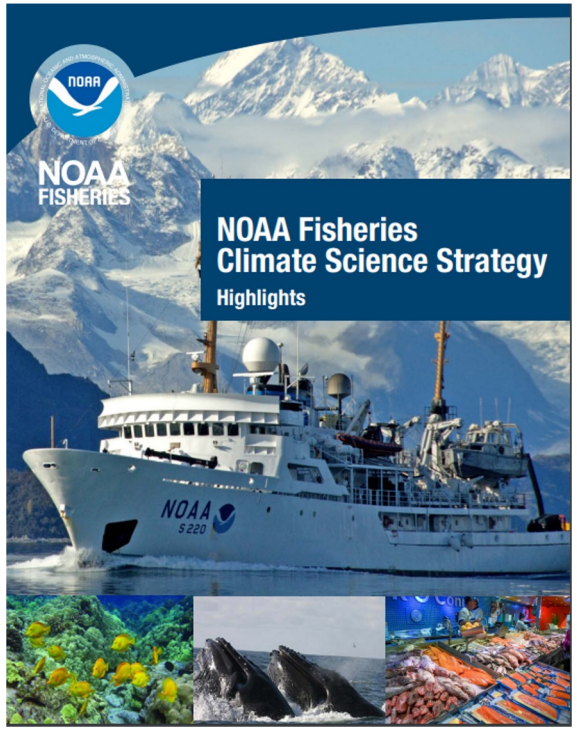
WRAP is the Western Regional Action Plan for the NCSS



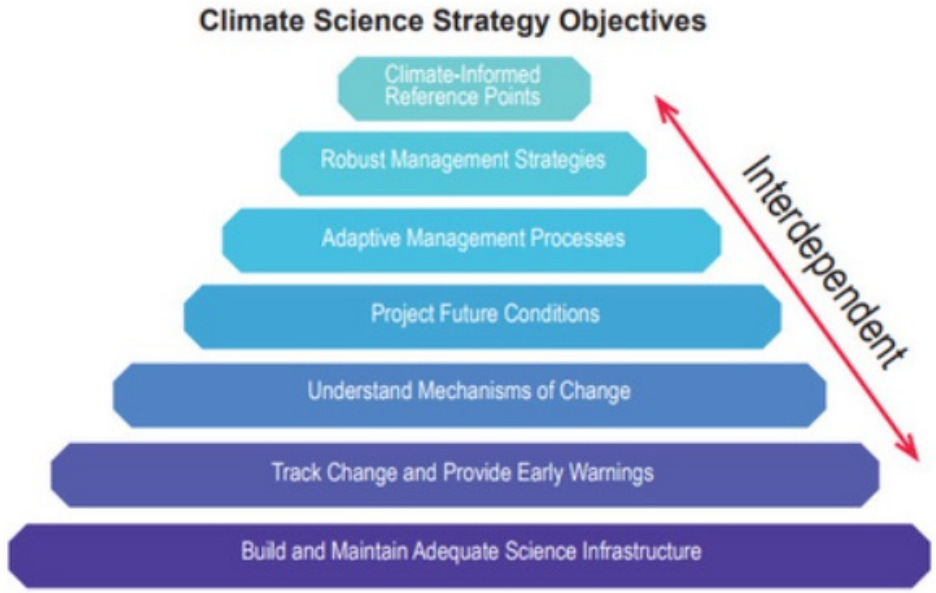
Ecosystem Based Fishery Management and Ecosystem Based Management

ESR reports current ecosystem and climate Issues for informing EBFM within the California Current

WRAP Progress



WRAP 1.0
2016



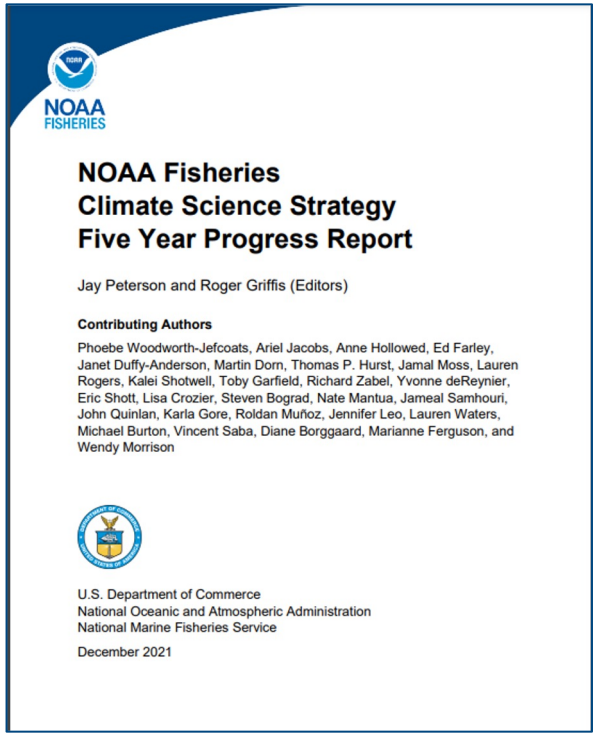
The NOAA Fisheries Climate Science Strategy is organized around seven priority science objectives. This diagram outlines these objectives.

https://www.fisheries.noaa.gov/national/climate/noaa-fisheries-climate-science-strategy

WRAP Progress

WRAP 1.0
2016

5 Year
Synthesis
Report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NOAA Fisheries
Climate Science Strategy
Five Year Progress Report

Jay Peterson and Roger Griffis (Editors)

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U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

December 2021

https://www.fisheries.noaa.gov/resource/document/noaa-fisheries-climate-science-strategy-5-year-progress-report

WRAP Progress

Internal NMFS Drivers

Center Ecosystem Program Reviews (2016)

Ecosystems Based Fishery Management (EBFM) Roadmap

- (Western Regional Implementation Plan : WRIP)

NOAA Climate Science Strategy (NCSS) (Regional: WRAP)

Climate and Ecosystem Fisheries Initiative (CEFI)

Protected Resources (PR) Board Science

Offshore Wind

Multi species interactions

Regional Office Climate Science Needs

External Drivers: PFMC

- Revised FEP
  - FEP Appendix
    - Section 1 – Completed Ecosystem Initiatives
    - Section 2 -- New Ecosystem Initiative Ideas

- Evolving Ecosystem Status Report (the three year plan)
  - Synoptic summaries in key areas
  - Automated reports for quick response
  - More connecting of dots on drivers and responses – specifically, human dimensions and biophysical changes
  - Developing Indicators of Long Term Climate Change (e.g. better understand forage base)

WRAP 1.0:

The original WRAP had seven planned actions. Significant progress has been made on specific applications within four areas:

(i) management strategy evaluations (MSE) that include climate projections, multiple species, multiple fleets, spatial distribution changes and economic models,

(ii) full life-cycle models for Pacific salmon that are explicitly linked to climate projections and management actions,

(iii) continued development of the California Current Integrated Ecosystem Assessment (CCIEA) and its Ecosystem Status Reports (ESR), and

(iv) dissemination of climate-related science and information, e.g., climate vulnerability analyses and other communications.

WRAP 1.0 (cont'd)

The other three planned action areas that are more internal to NMFS have been initiated to varying extents, but do not have completed products to date:

(i) establish an internal framework for strategic planning of climate work, originally conceived as the NMFS West Coast Climate Committee (WC^3) and Program (WCCP),

(ii) build scientific expertise within the Centers to address ongoing and expected changes, and

(iii) review, coordinate and standardize existing data-collection efforts and analyses to bring climate indices and projected trust species' responses into management applications.

WRAP 2.0

- **Informing Management (NCSS Objectives 1-3)**
- Continue delivery the California Current Integrated Ecosystem Assessment (CCIEA) Ecosystem Status Report to the Fishery Management Council
- Complete Management Strategy Evaluations for select species (sablefish, swordfish, sardine, albacore, coastal pelagic species)
- Complete Climate Vulnerability Assessments (e.g. managed stocks, marine mammals, turtles, habitat)
- Expand the potential to use Adaptive and Dynamic Ocean Management
- Implement the Climate, Ecosystem and Fisheries Initiative (CEFI)
- Address recommendations from the Climate and Communities Initiative and scenario planning

WRAP 2.0 (Cont'd)

- **Understanding mechanisms and projecting future conditions (NCSS Objectives 4 & 5)**
- Support and strengthen forecasting (e.g. JSCOPE) and projection (e.g. Future Seas) models
- Conduct salmon climate-driven lifecycle modeling for Salmon Populations
- Advance ecosystem modeling of the California Current
- Develop spatial distribution/abundance modeling papers

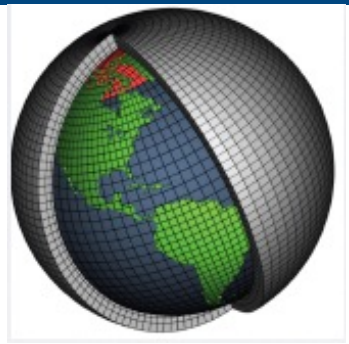
WRAP 2.0 (Cont'd)

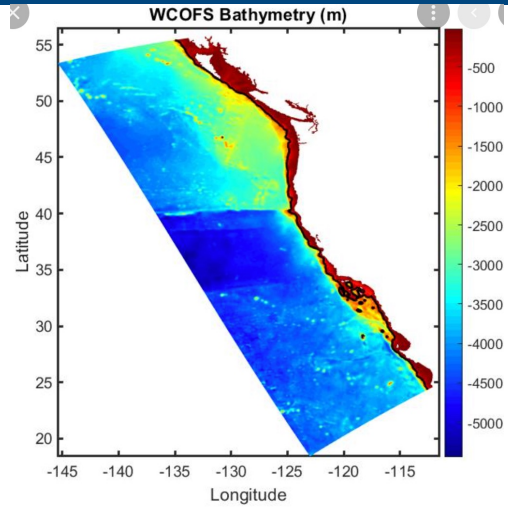
- **Infrastructure and Tracking Change (NCSS Objectives 6 & 7)**
- Maintain CCIEA Ecosystem Status Report
- Enhance Strategic Planning and capacity building
- Data coordination - collection and sharing
- Standardized reporting

WRAP 2.0 (Cont'd)

- **Human dimensions**
- Maintain and expand data collection (NCSS Objectives 6 & 7)
- Understand the influence of fishing portfolios on community response to extreme events (NCSS Obj. 5)

WRAP and CEFI





- **Ocean Modeling**
- Support MOM6 for climate projections and operational applications
- Support the West Coast Operational Forecast System (WCOFS) for short term forecasts

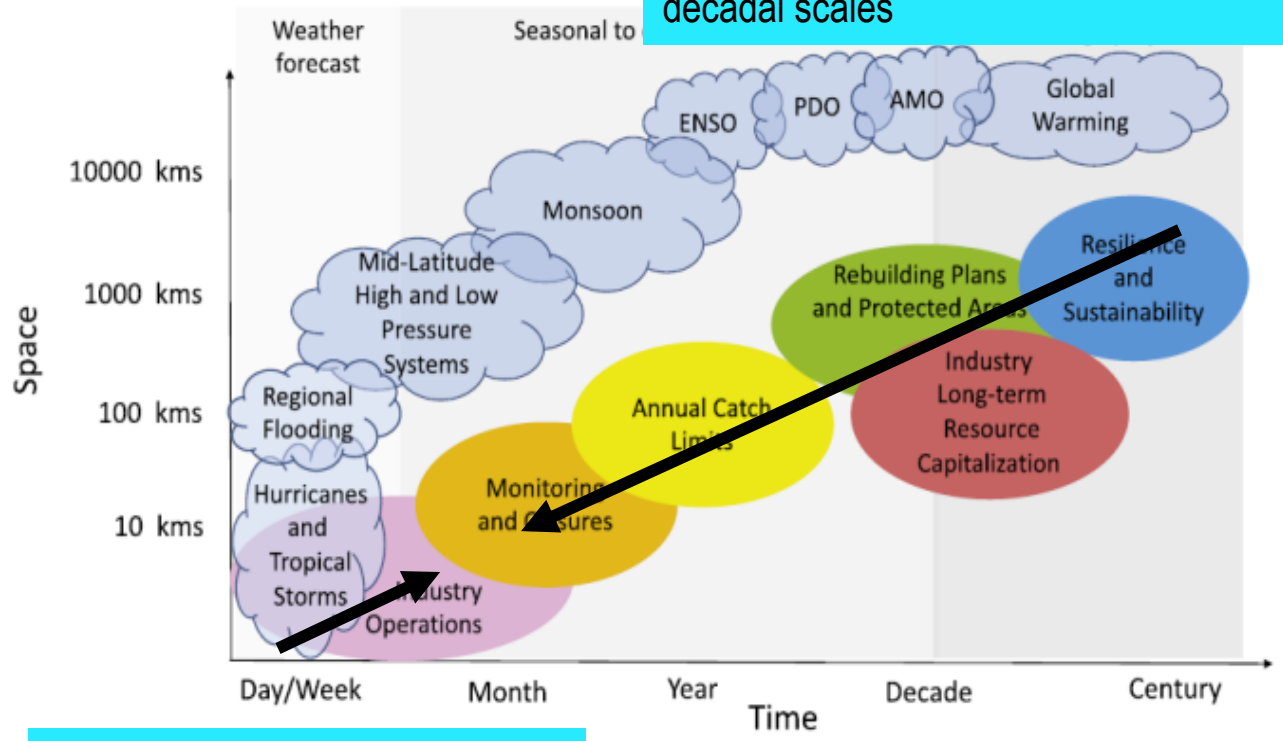
MOM6, a global model developed by NOAA's OAR includes a high resolution expansion in the California Current

WCOFS, developed by NOAA's NOS for short term predictions, is an expanded ROMS assimilative model to provide short term forecasts (~3-5 days)

All Hands on Deck: A coordinated national ocean modeling and prediction system for NOAA's Living Marine Resource mandates

- Expansion of global ocean prediction systems to include biogeochemistry
- Expansion of NOS-led ocean forecasting systems (WCOFS) to provide national coverage, enhance biogeochemistry and extend prediction to seasonal scales
- Regional deployment of NOAA's global earth system models (starting with MOM6 + ocean biogeochemistry) to generate downscaled seasonal to decadal predictions, and multi-annual climate change projections.

OAR-led regional deployment of MOM6-based ocean physics + BGC satisfies regional LMR needs seasonal to multi-decadal scales



NOS-led expansion of WCOFS systems satisfies LMR needs over short time horizons

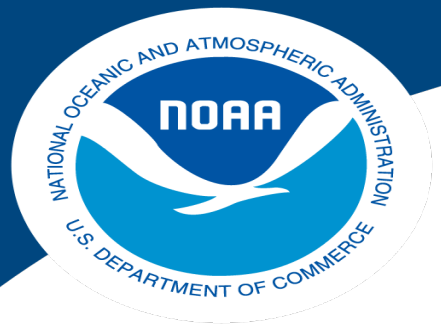
Public Input

90 day comment: April – July

- Very supportive of NMFS effort to identify needs and actions to be more climate-ready.
- Support for proposed and additional actions.
  - Prioritize surveys and ecosystem monitoring.
  - Increase funding to address key needs including CEFI.
  - Better link science to regional management needs.
  - Expand plans to include more management applications.
- Engage and collaborate with stakeholders.
- Adopt more consistent RAP format.

Next Steps

- Teams are considering & responding to public input
- Finalizing RAPs with metrics
- **Sept 30**: Final documents cleared through regional leadership are submitted to ST
- Oct: Review by NMFS leadership
- Nov/Dec: Public release via website and as individual Tech Memos



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Thank you and any questions?