

IOOS Advisory Committee:

NOAA's Next Generation Ecological Forecasting Enterprise

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NOAA Ecological Forecasting Roadmap

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Bottom Line Upfront:

IOOS and the Regional Associations are key partners in the evolution of ecological forecasting

- 1) Clarify the scope and applications of cross-NOAA EF (2 min)

Opportunities for greater IOOS/RA integration:

- 2) **Observations:** R&D based on available platforms, data streams, and models (O2R) (2 min)
- 3) **Innovation:** Targeted engagement to drive integration of interdisciplinary STEM (5 min)
- 4) **Sustainability:** novel use of partnerships in forecast system anatomy (Role of RA's and Private Sector) (10 min)
- 5) **Impact:** Novel applications of EF science (10 min)

What is an ecological forecast?

- [NOAA's EF Enterprise](#): “...interdisciplinary science to monitor, track, and forecast ecological processes or states and predict the resulting impacts on people, economies, and communities.”
 - Applied science directed by user requirements
 - Supports [WH OSTP](#)/NOAA priority areas (e.g. Blue Economy) and legal mandates (e.g. HABHRCA)
 - Advances the use of observations, modeling, and social science capabilities
 - Includes Forecasts, Nowcasts (monitoring), Hindcasts, and scenario-based applications
 - Current focus: predominantly sub-seasonal (days/weeks) to seasonal scales

NOAA Ecological Forecasting NCCOS NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

Portfolio

Region	Forecasts	Stakeholders and Usage
North and Mid-Atlantic	Gulf of Maine HABs (RL 7)	Shellfish harvest and toxicity monitoring Land management/Fisheries resources
	Chesapeake Bay Vv Model (RL 9)	
	Chesapeake Bay Hypoxia (RL 9)	
Gulf of Mexico	FL HAB Bulletin (RL 5)	Beach hazards and shellfish closures Decision support for land management
	TX HAB Bulletin (RL 5)	
	GoM hypoxia (RL 5)	
California	CA Harmful Algal Regional Model (RL 9)	Fisheries and protected resources management
Pacific Northwest	PNW HAB Bulletin (RL 7)	Fisheries management and public health
	Puget Sound Intertidal Vp Model (RL 4)	
Great Lakes	Lake Erie HAB Bulletin (RL 9)	Drinking water management
	Lake Erie Hypoxia Forecast (RL 4)	Drinking water and land management



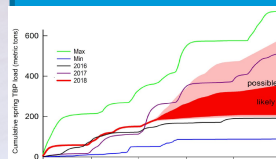
Actionable Intelligence

Sustained Service Delivery

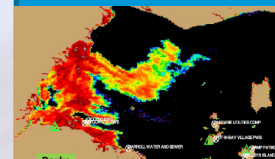
Observations



Models



Forecasts



Stakeholder Needs



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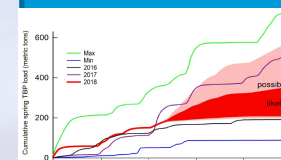
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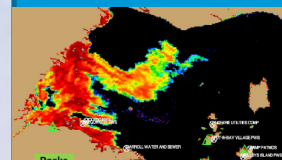
Observations



Models



Forecasts



Stakeholder Needs

Effective O2R:

Increased use of
operational observations
networks for R&D

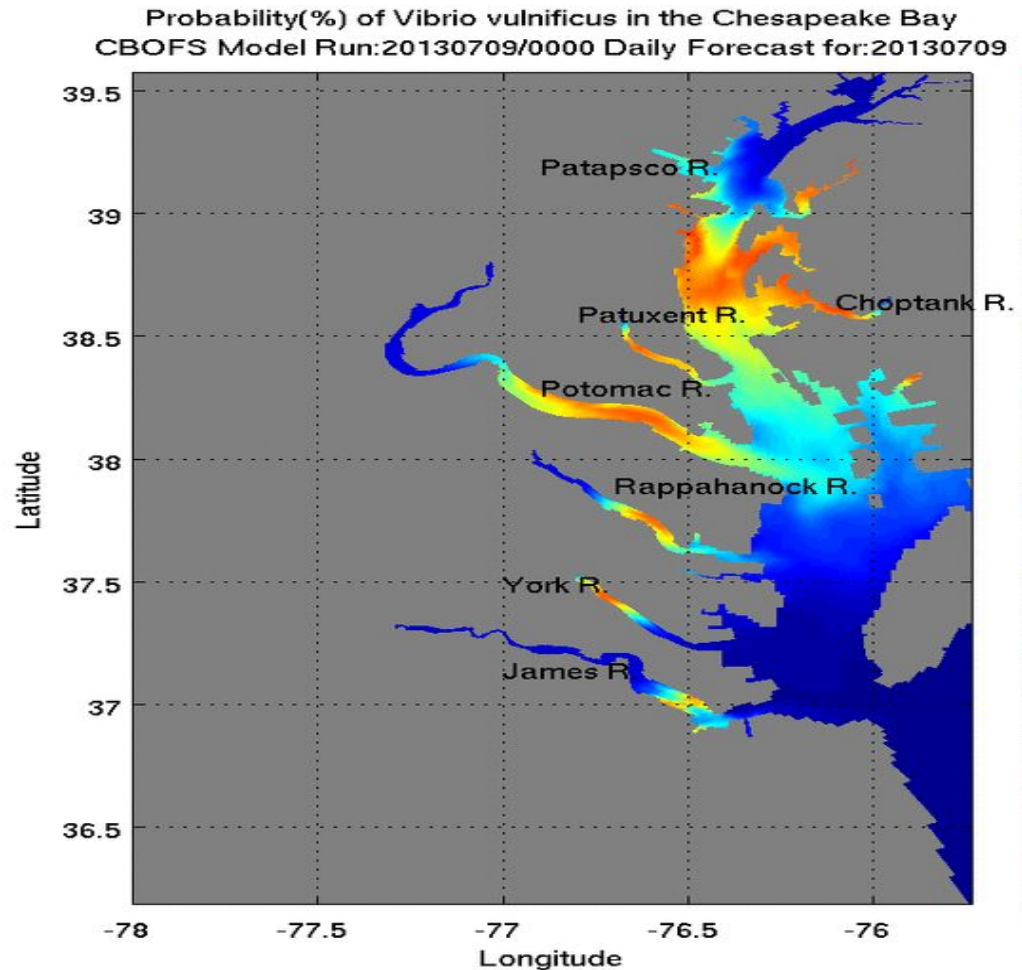
Discussion:

What mechanisms are
available to better
communicate with R&D
community?

Effective O2R:

Chesapeake Vv Guidance

- Forecast: past 6-day, current and next day Vv probability
- Model Integration: CBIBS data and CO-OPS CBOF (uncoupled)
- Delivery through nowCoast
- Updated products utilize NWS data provided in operational environment
- Provision of national level guidance for shellfish aquaculture





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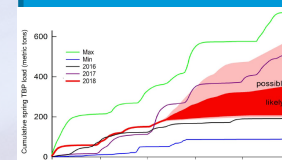
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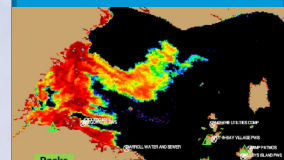
Observations



Models



Forecasts

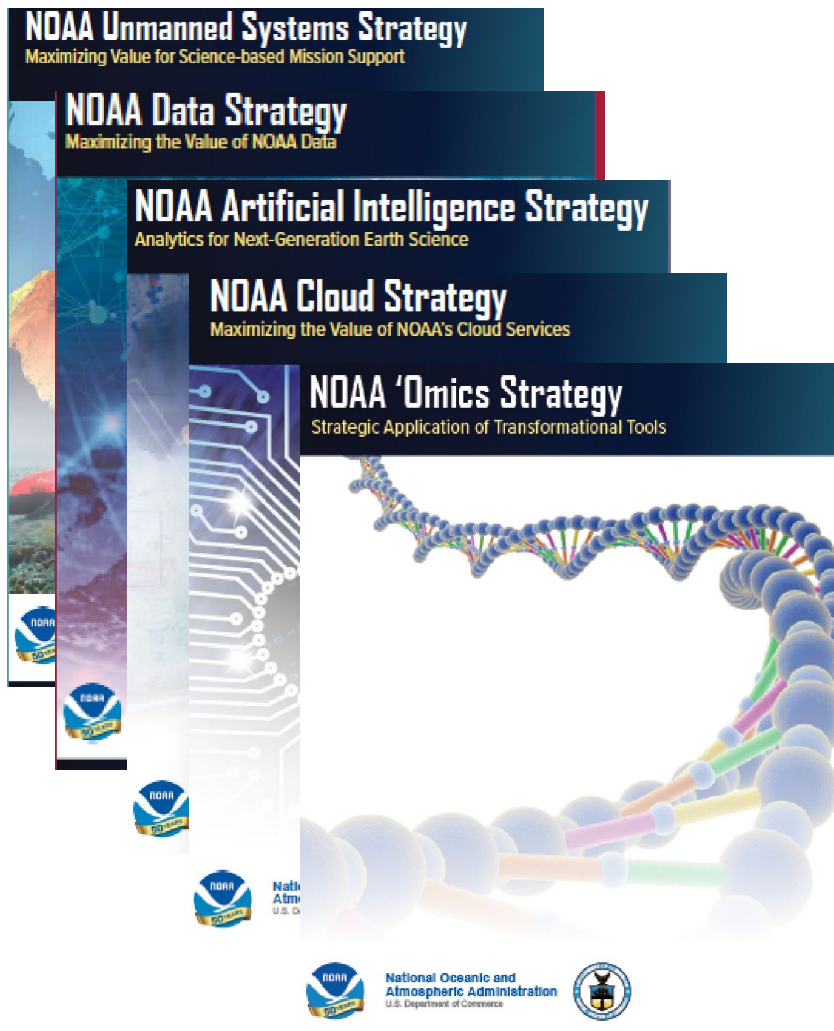


Stakeholder Needs

Integrating Diverse STEM Talent: engagement outside the traditional “ocean science” community ([WHOI D&I Report](#))

Discussion:
How to implement targeted engagement?

Targeted Engagement: Integrating STEM Expertise from Diverse Talent Pools



- Sustained engagement focused on increasing awareness of NOAA mission and careers
- Minority-oriented STEM Professional Organizations
- NOAA [Cooperative Science Centers](#)



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Actionable Intelligence

Sustained Service Delivery

Sustainability:

Incorporation of novel partnerships

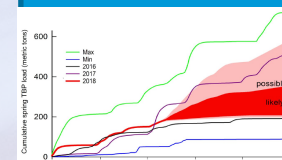
Discussion:

What is the appropriate role for RA's and the private sector?

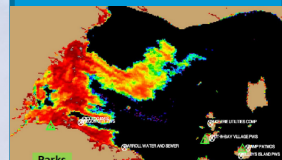
Observations



Models



Forecasts

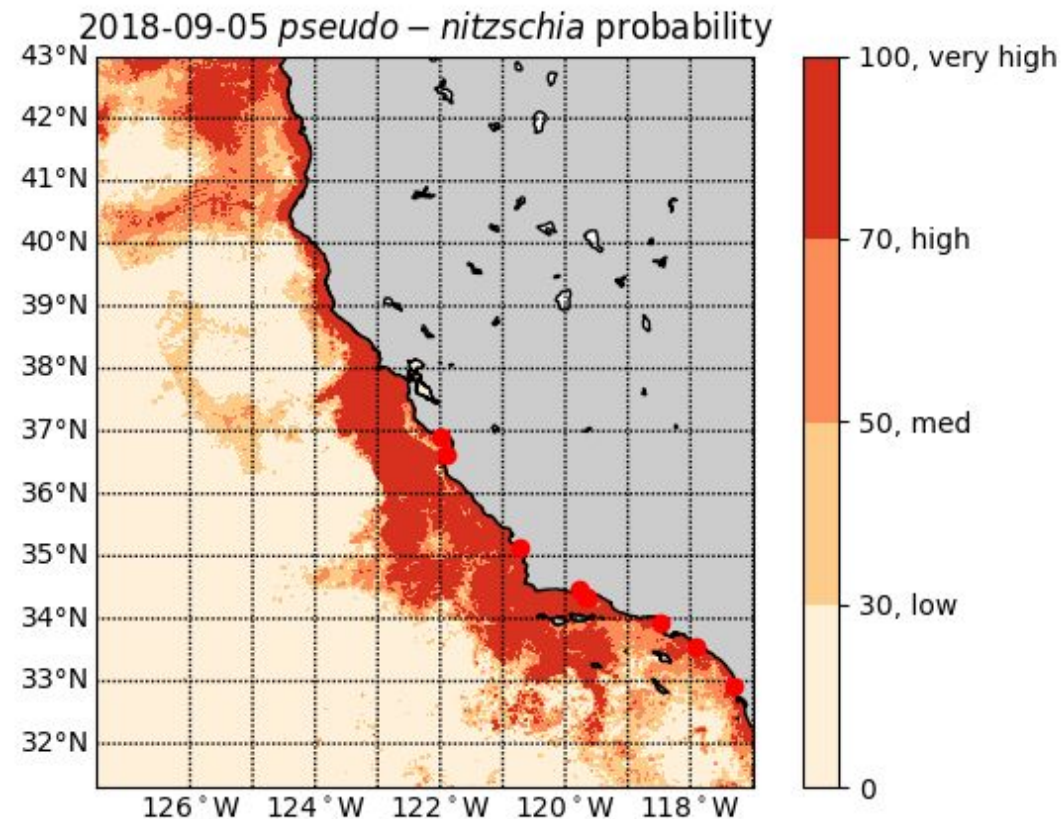


Stakeholder Needs

SCIENCE SERVING COASTAL COMMUNITIES

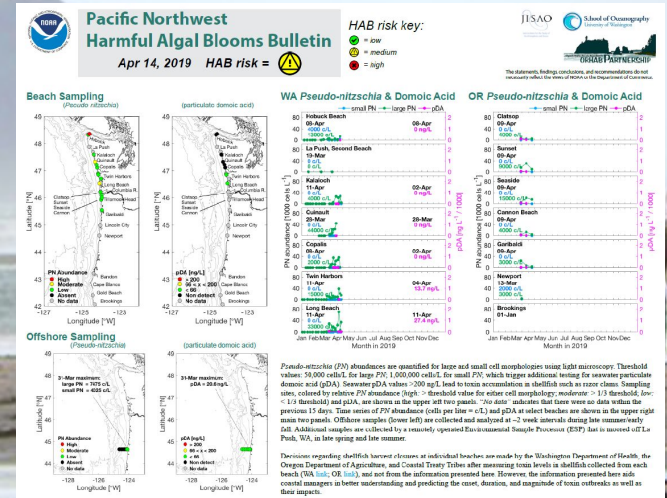
California Harmful Algae Risk Mapping (C-HARM)

- 1-3 day outlook of HAB and toxins provided daily
- Uses: Aquaculture, protected species, HAB monitoring
- Uncoupled model incorporating remote sensing data, ocean circulation, and statistical model for bloom probability



Novel Models For Forecast System Anatomy

Pacific Northwest HAB Bulletin



Novel Applications of EF Science and Observations Assets

- Broader incorporation of R&D and applications: Topical and Geographic
 - Ocean Acidification: forecasting to support aquaculture and fisheries management
 - Fish Habitat: inform restoration, stewardship, other applications for sustainable fisheries
 - Other regions: Alaska, Chesapeake, offshore



Questions?



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