Oregon's Dynamic Ocean

Ocean Ecology & Ocean Acidification and Hypoxia (OAH)

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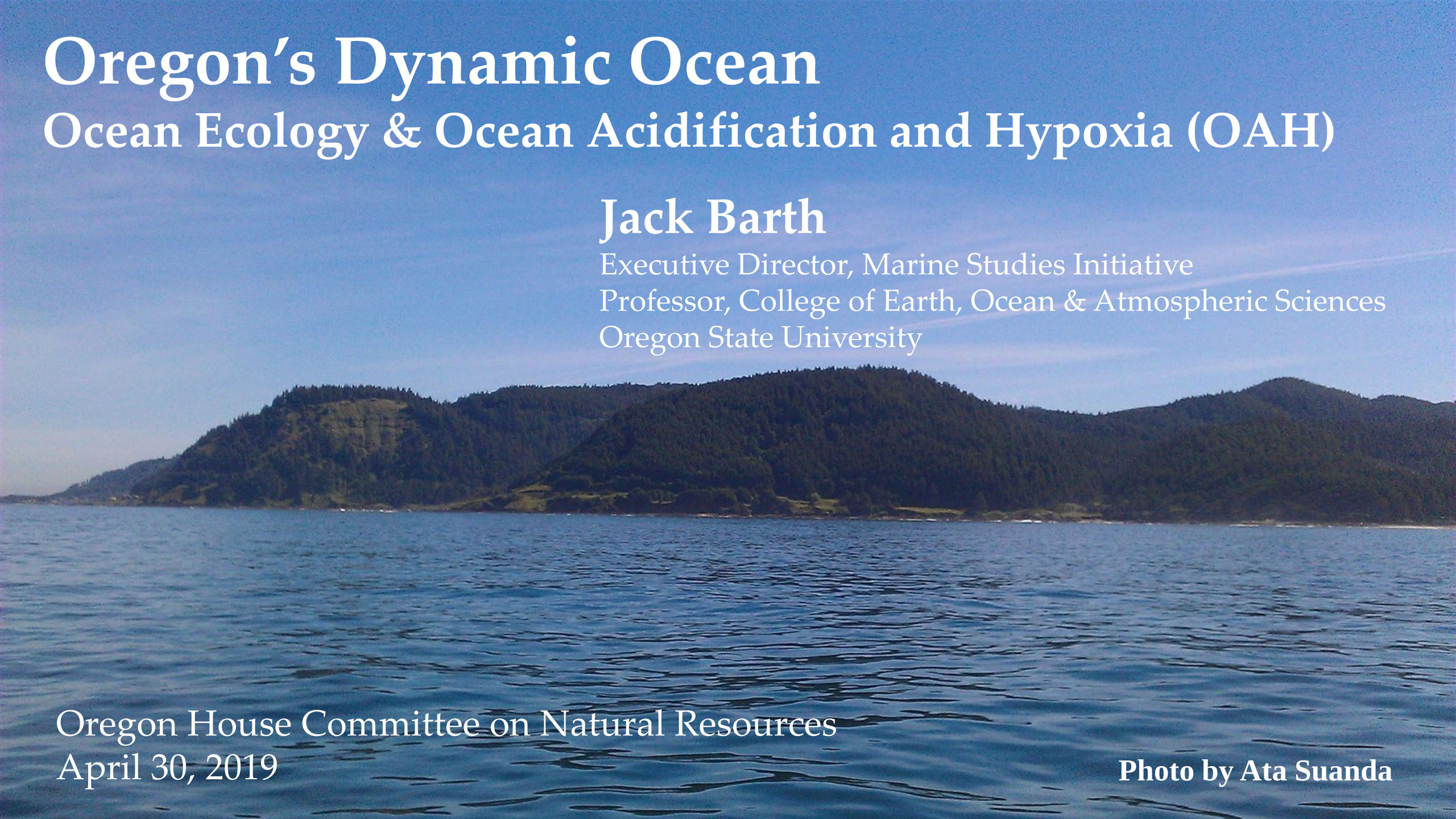
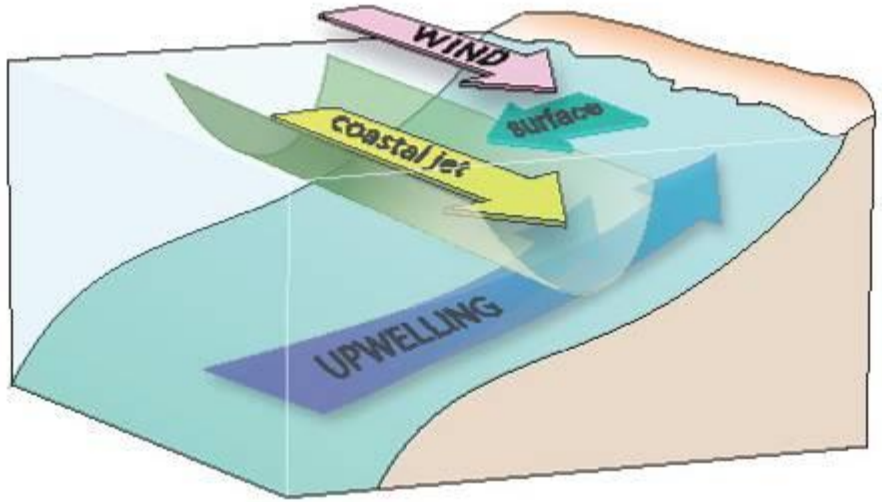


Oregon House Committee on Natural Resources
April 30, 2019

Photo by Ata Suanda

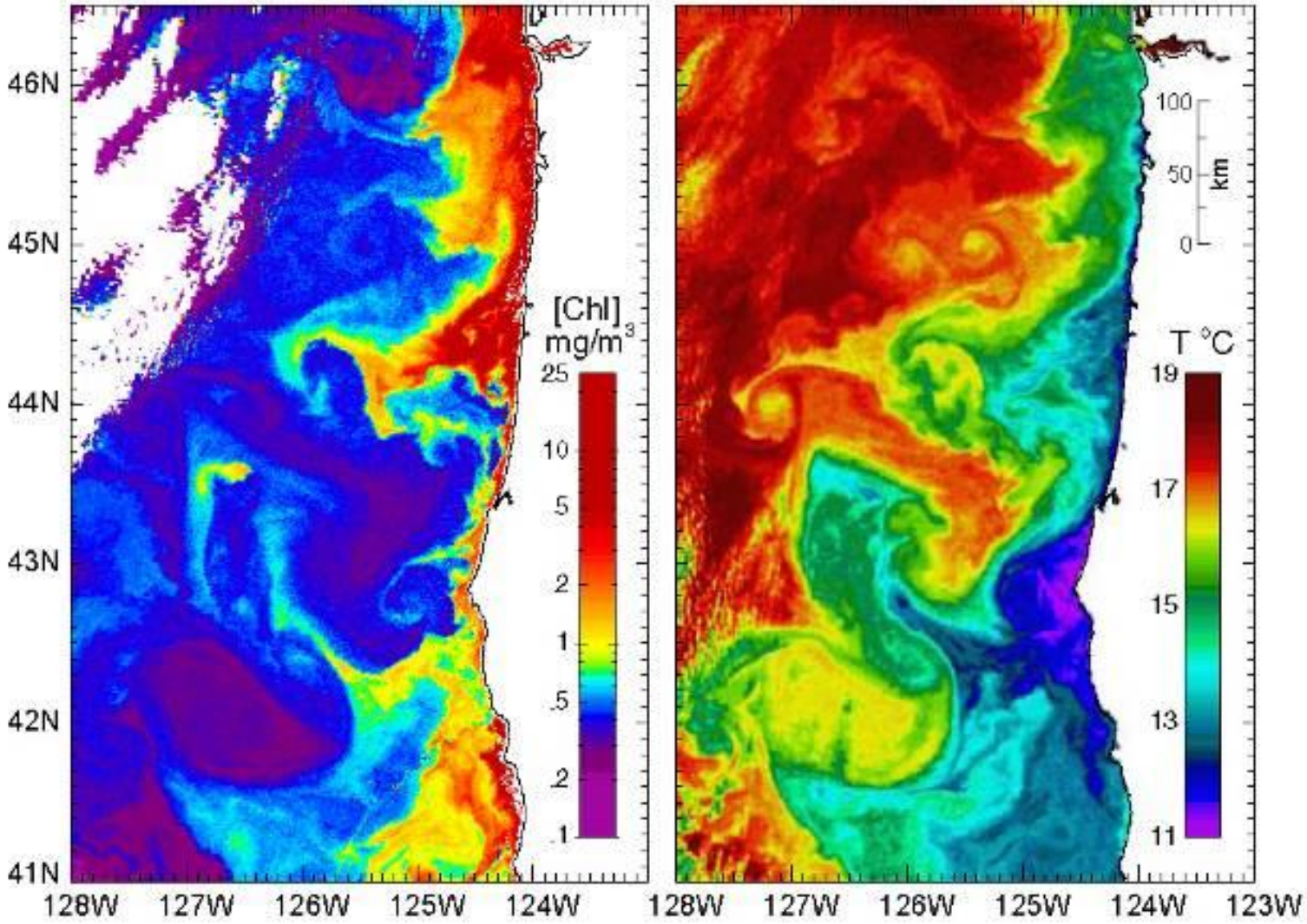
wind-driven upwelling drives ocean productivity



Port Orford -- Courtesy of Bruce Menge (OSU)

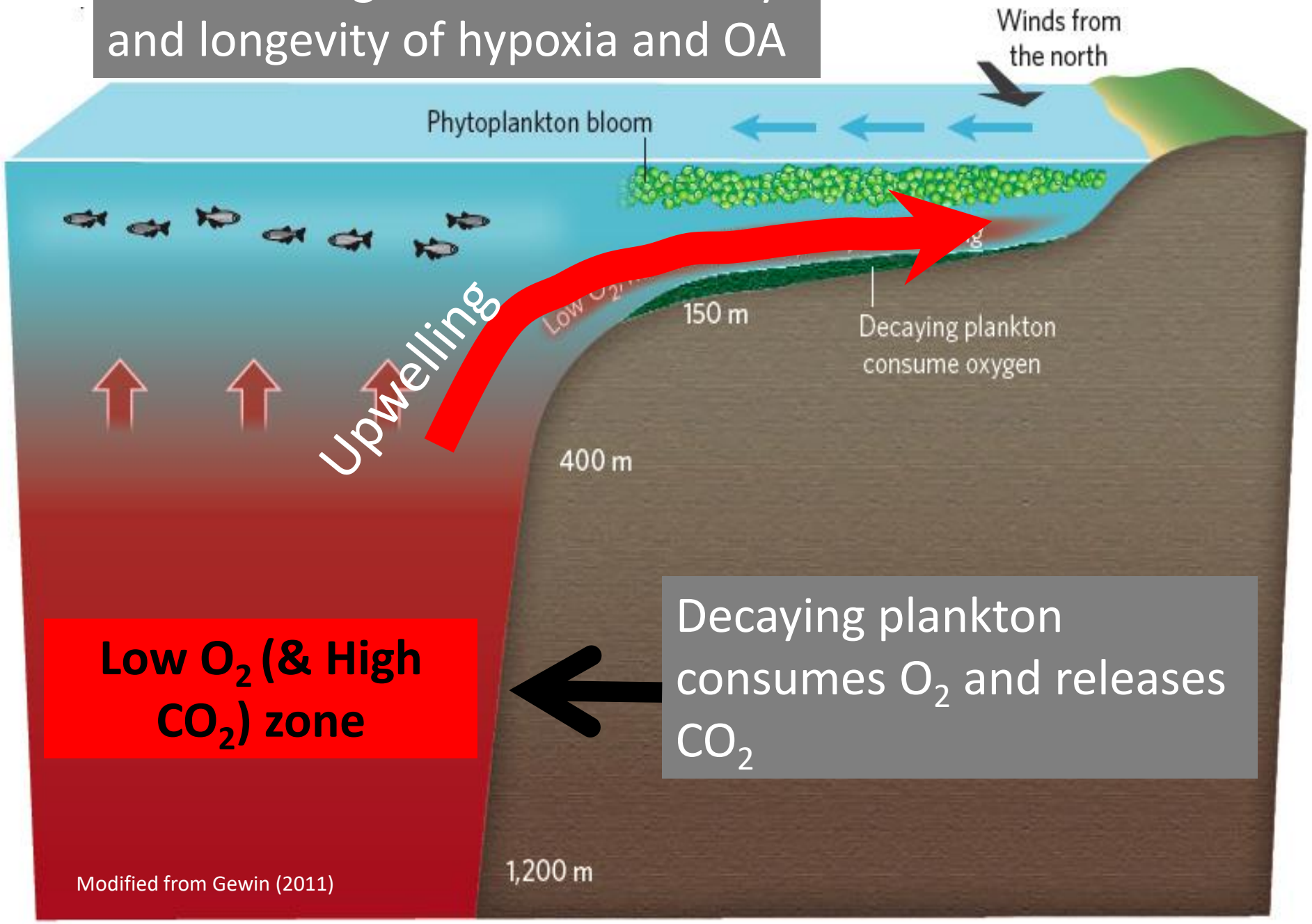
chlorophyll

temperature



Courtesy of Ted Strub (OSU)

Wind forcing influences severity and longevity of hypoxia and OA



Low O_2 (& High CO_2) zone

Decaying plankton consumes O_2 and releases CO_2

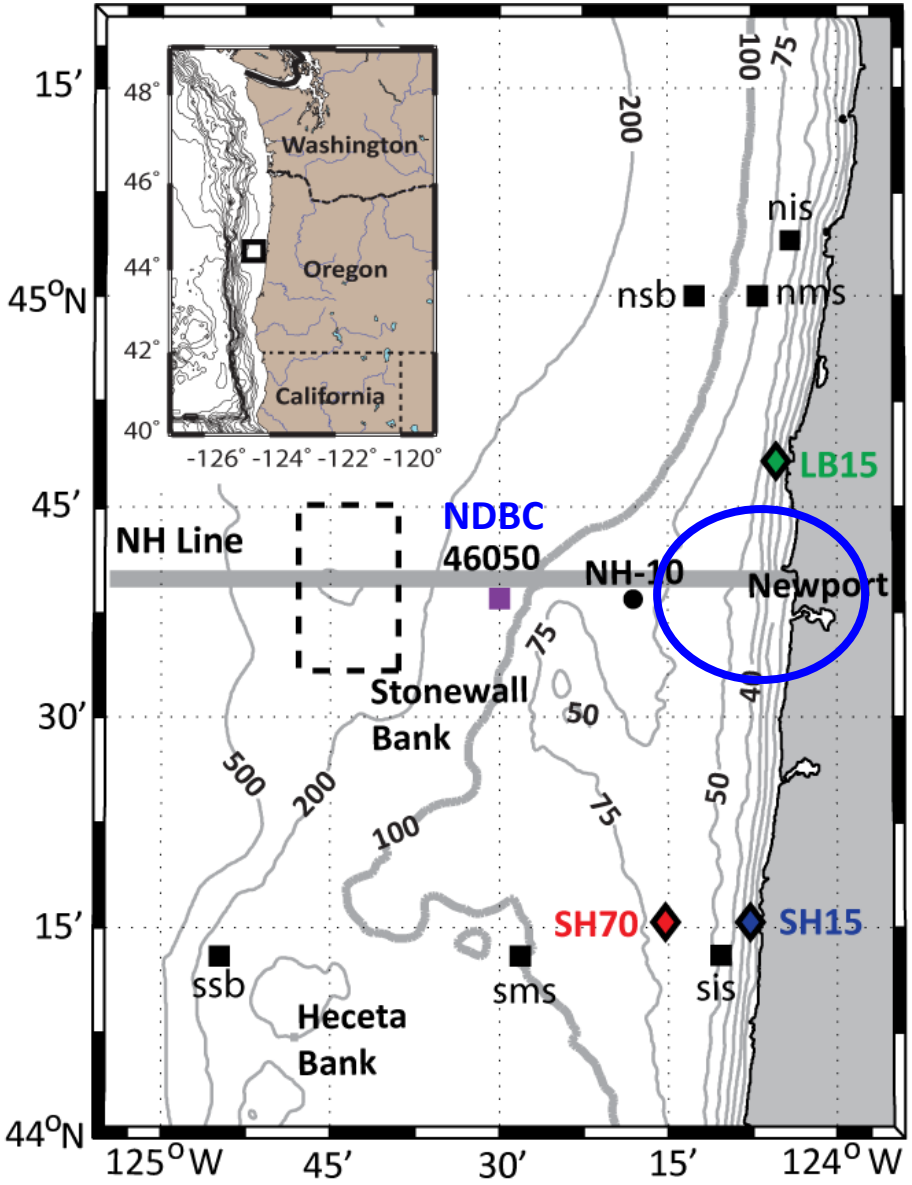
Modified from Gewin (2011)

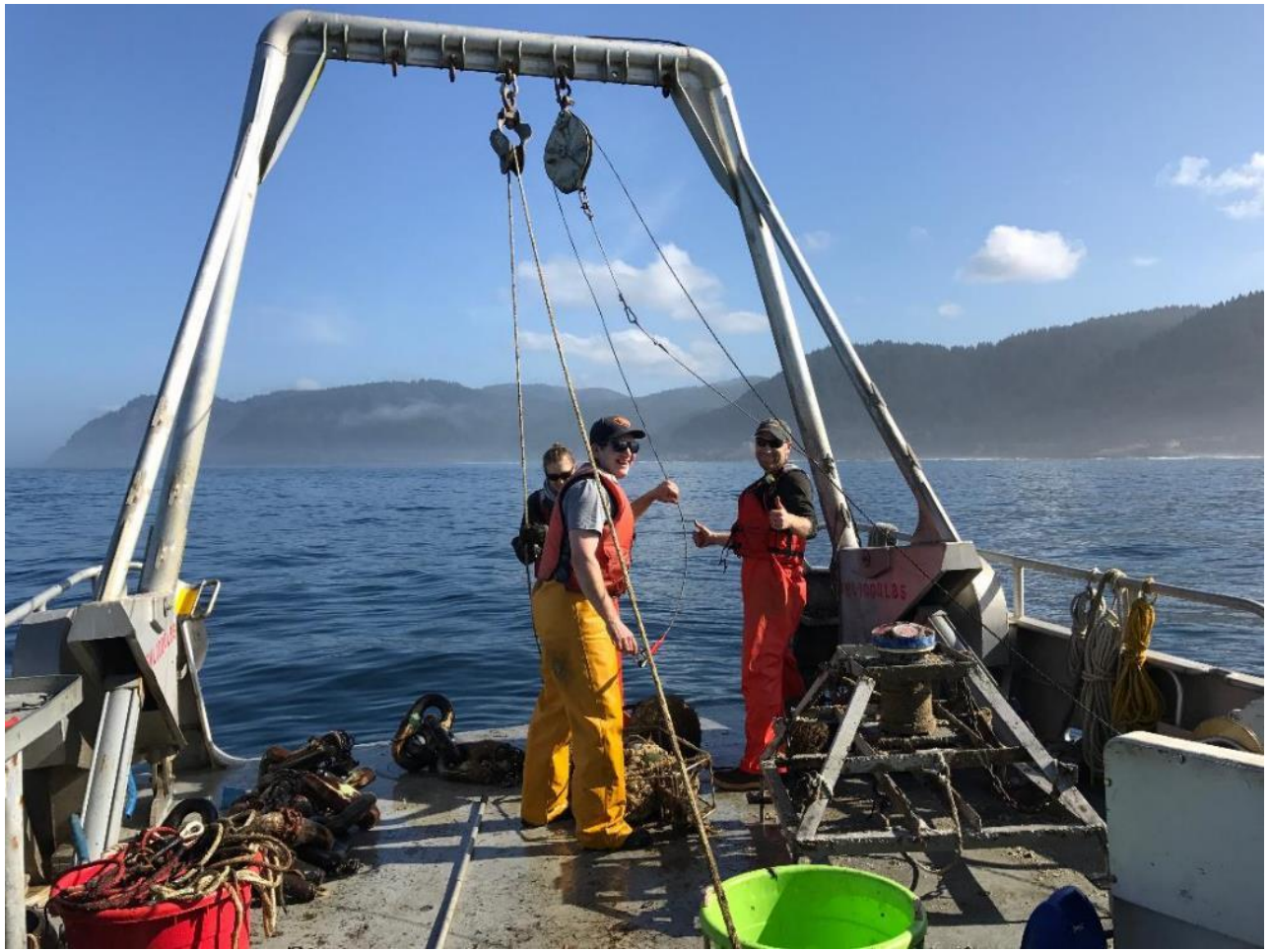
Low oxygen

High carbon dioxide

Low pH (more acidic)

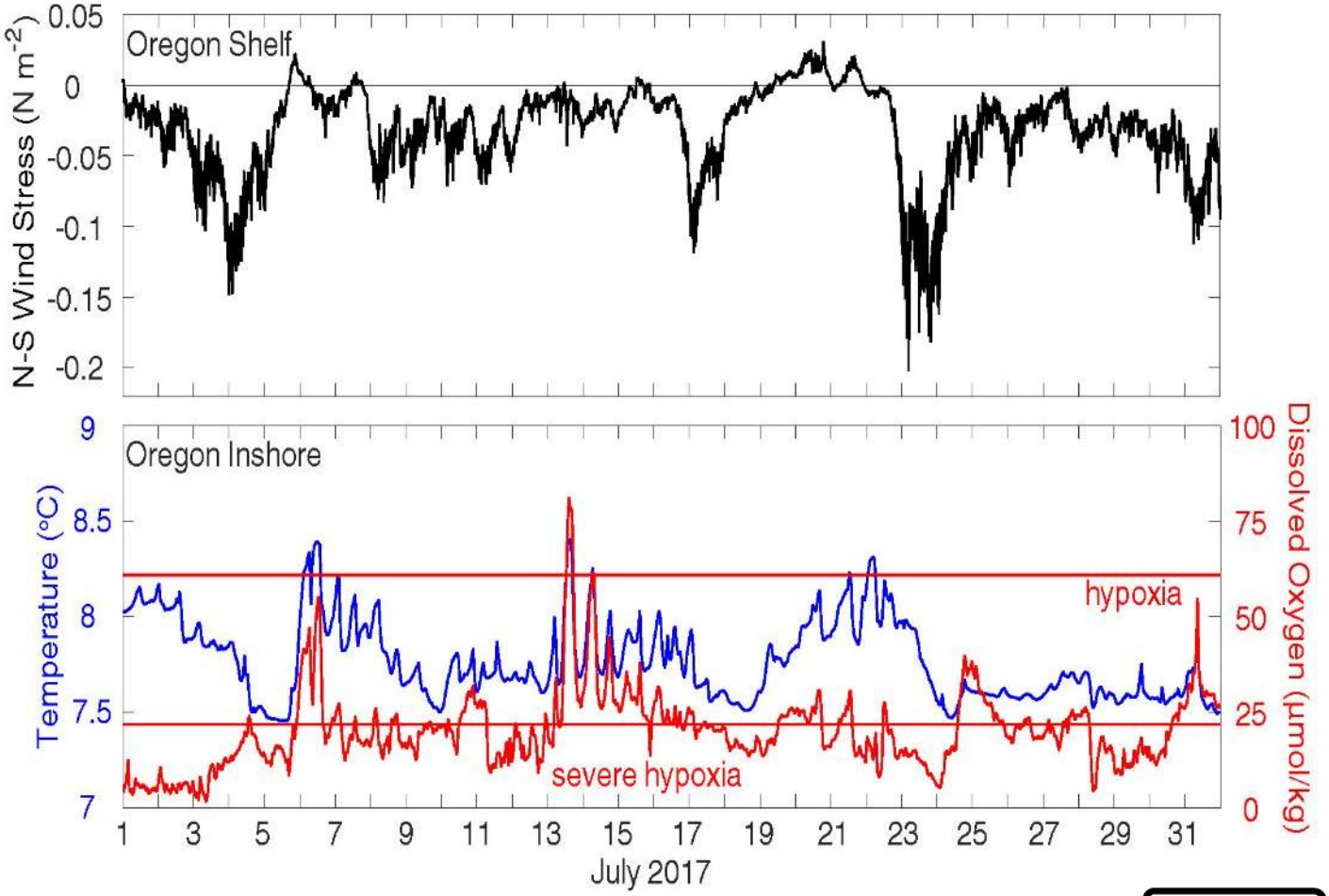
Examine data from moorings off central Oregon including along the Newport Hydrographic Line (44° 39'N) and Strawberry Hill (44° 15'N)





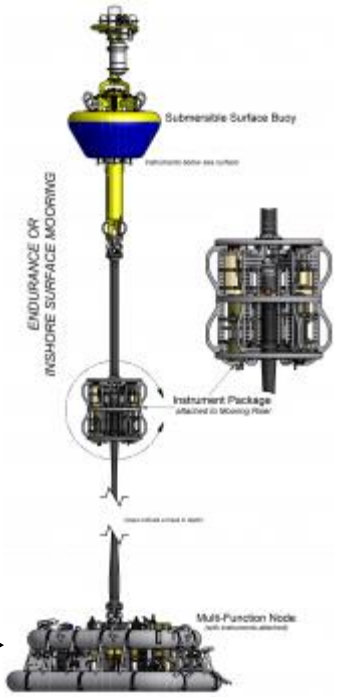
onboard OSU's R/V Elakha

Severe hypoxia kills Dungeness crabs – summer 2017



Barth et al., *Oceanography*, 2018

Ocean Observatories Initiative

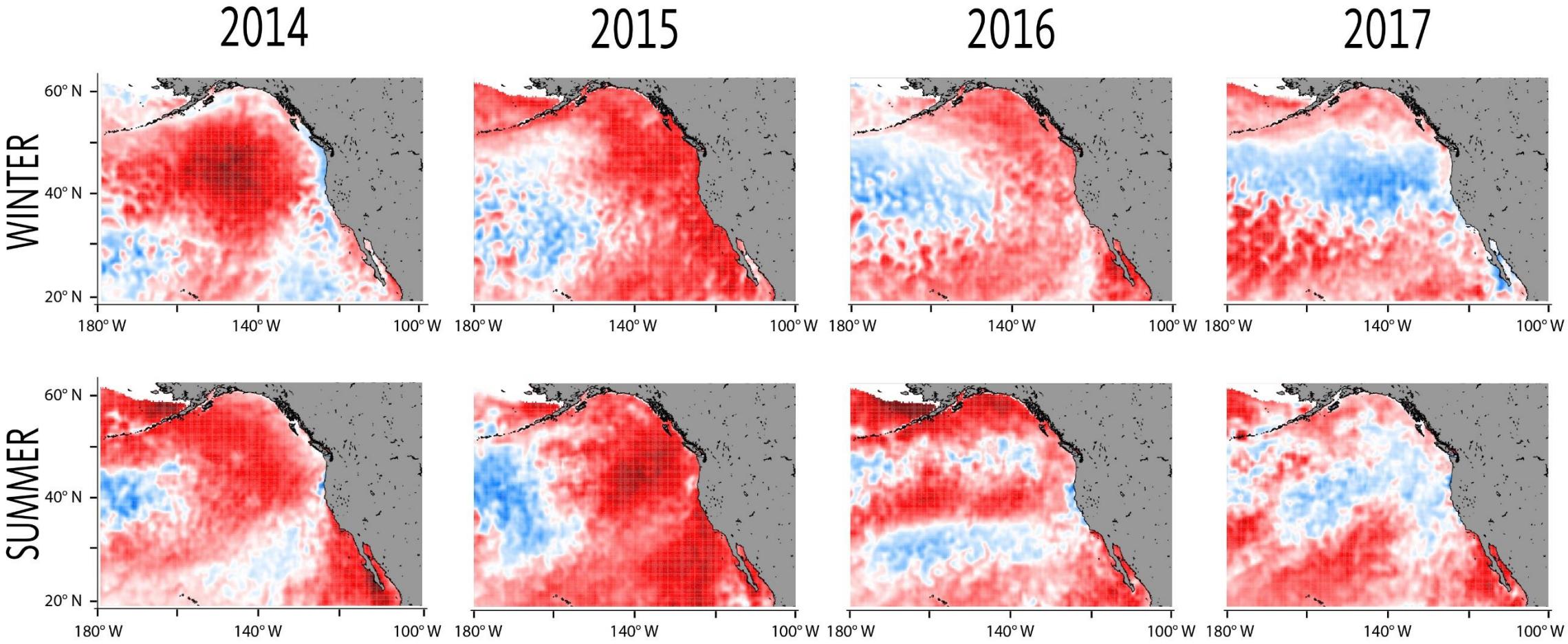


25 m

OREGON Fish & Wildlife

http://oregonmarinereserves.com/2017/09/06/hypoxia-central-coast/

Ocean warming: The Warm Blob



Barth et al., *Oceanography*, 2018

Harmful Algal Blooms (HABs) Close Fisheries

Clam opener canceled due to high toxin count

OLYMPIA — The first razor clam dig of the fall season has been postponed due to elevated levels of marine toxins on Washington's

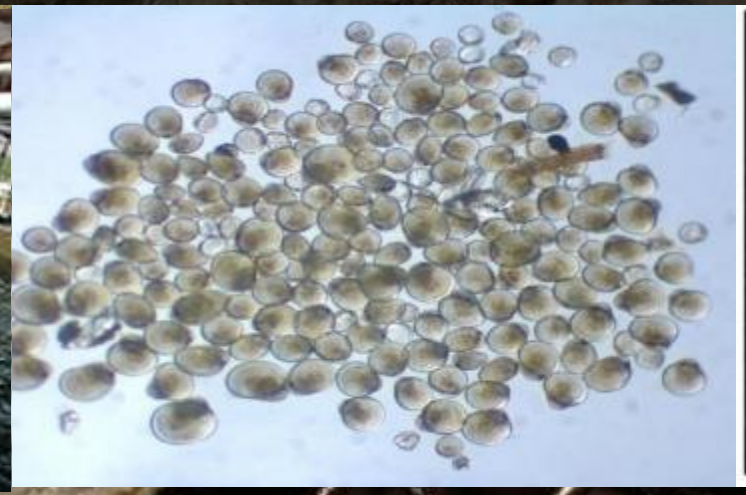
Beaches affected by the health closure include Long Beach, Twin Harbors, Copalis, Mocrocks and Kalaloch.

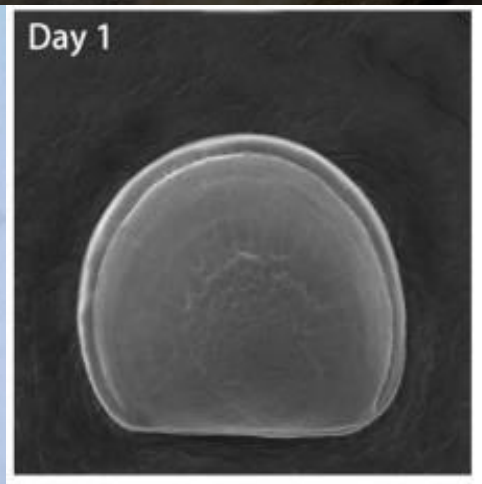
Southern coast closed to all Dungeness crab fishing due to increase in marine toxins

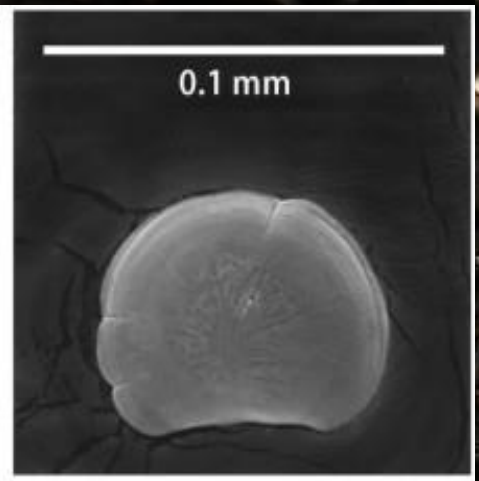
Originally published June 9, 2015 at 8:08 am | *Updated June 8, 2015 at 1:49 pm*

West Coast shellfish aquaculture: $270 Million annually

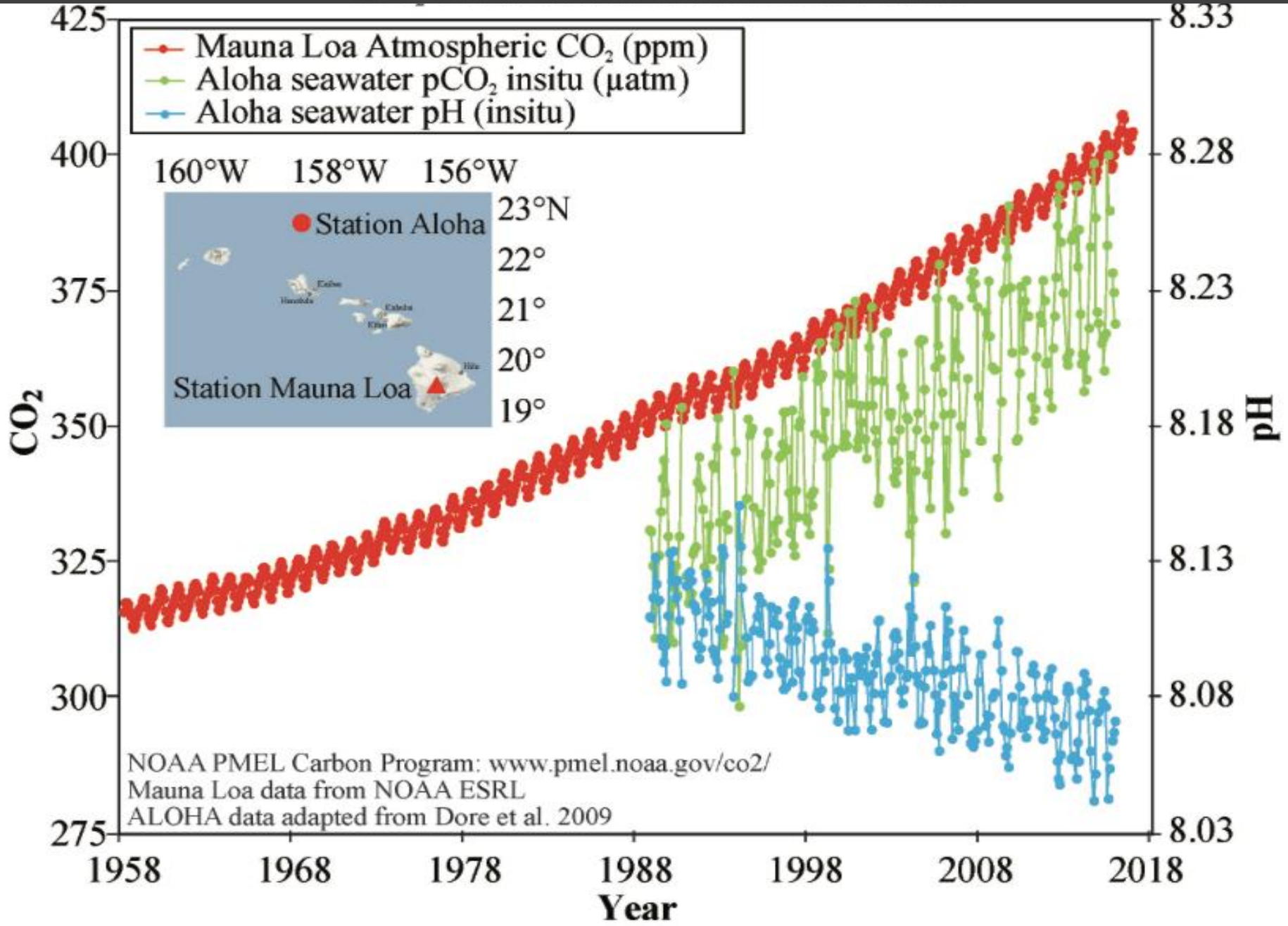
Whiskey Creek Shellfish Hatchery: 2007 larval class failures



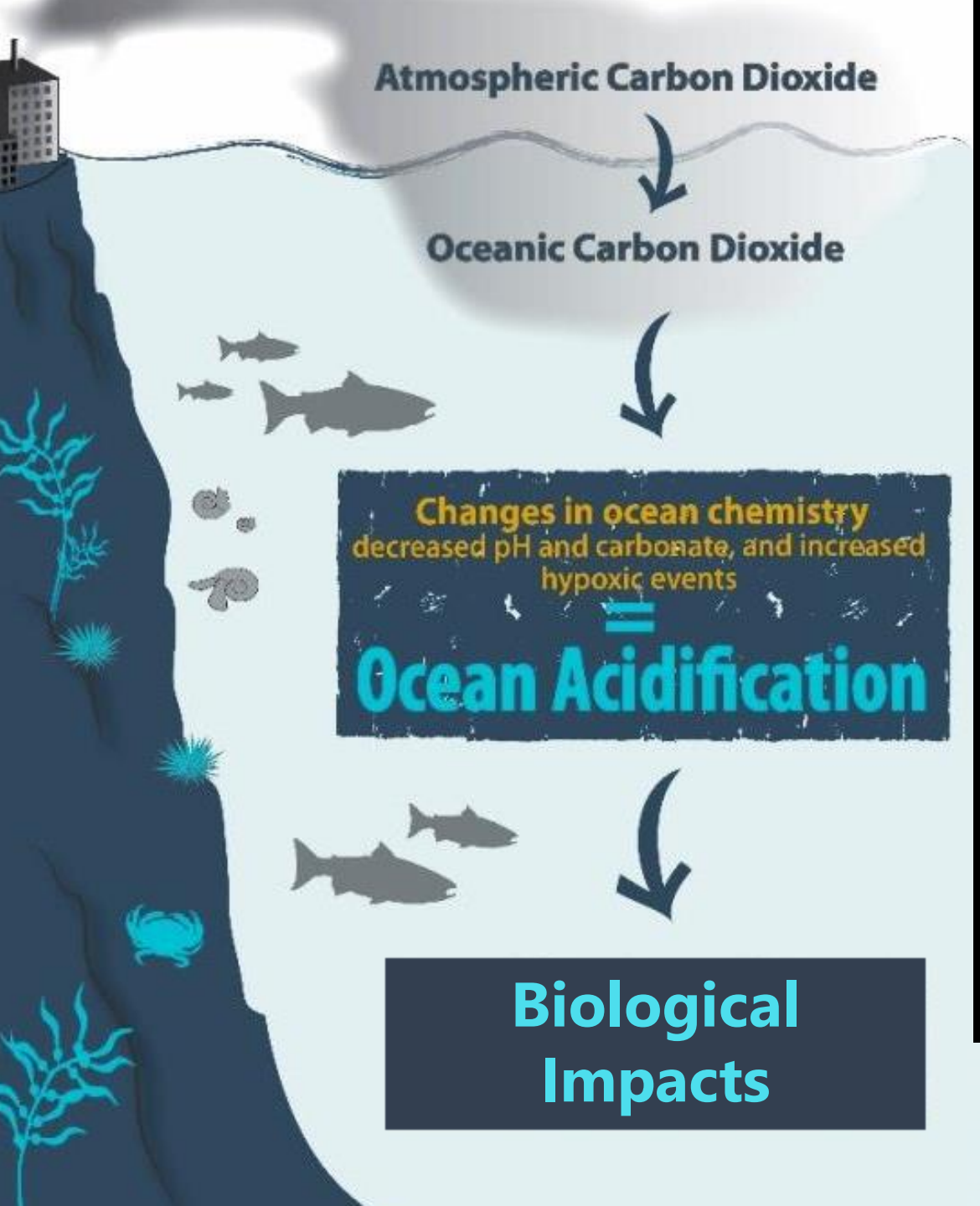




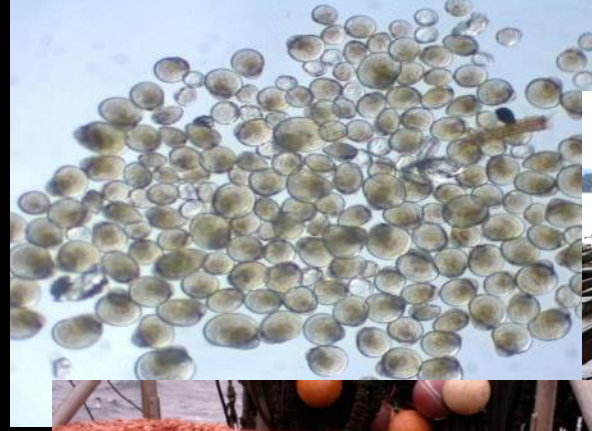
Increased CO_2 = acidification



- Increasing CO_2 in atmosphere
- Increasing pCO_2 in ocean
- Decreasing pH in ocean



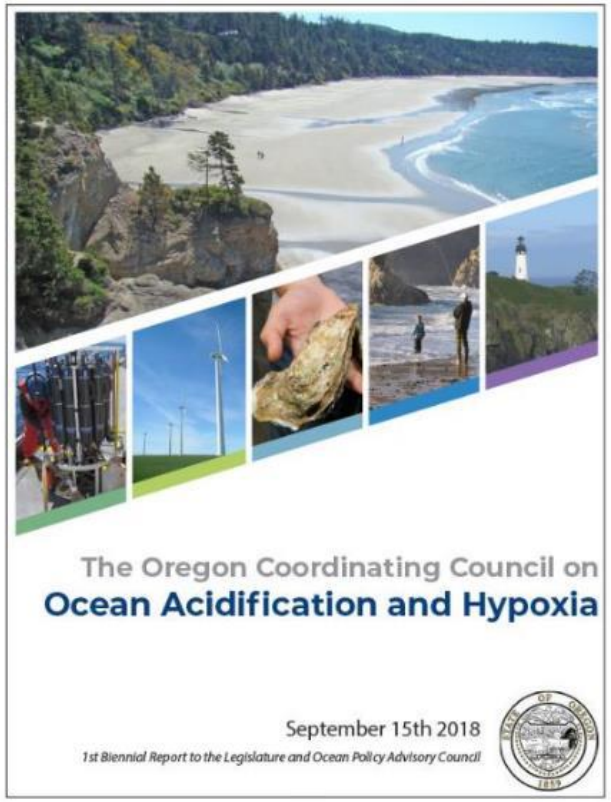
Biological Impacts



Economic Impacts Commercial & Sport

Oregon's Coordinating Council on Ocean Acidification and Hypoxia

- Oregon Senate Bill 1039 (2017)
- OAH Council Recommendations (2018)
- Governor's Oregon OAH Action Plan (in progress, 2019)



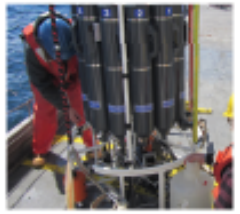
Oregon State University

Dr. Jack Barth, Co-Chair
Oregon State University

OREGON Fish & Wildlife

Dr. Caren Braby, Co-Chair
Oregon Department of Fish and Wildlife

Overarching Themes



THEME 1

Strengthen OAH science, monitoring, and research

THEME 2

Reduce causes of OAH

THEME 3

Promote OAH adaptation and resilience

THEME 4

Raise awareness of OAH science, impacts and solutions

THEME 5

Commit resources to OAH actions

Actions Recommended for Immediate Attention

- Support and maintain Oregon's monitoring of OAH oceanographic metrics and biological response metrics (Actions 1.1.a/c)
- Incorporate OAH into CO_2 management and mitigation discussions in the state (Action 2.1.b)
- Support new initiatives to promote natural ecosystem resilience (Actions 3.2.a/b)
- Keep legislators and policy-makers up-to-date on the science, impacts of and solutions for OAH (Action 4.2.a)
- Develop high-level policy guidance for the state's government agencies on prioritizing OAH in agency workload (Action 5.1.a)


Questions?
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