

# Bering Sea Conditions

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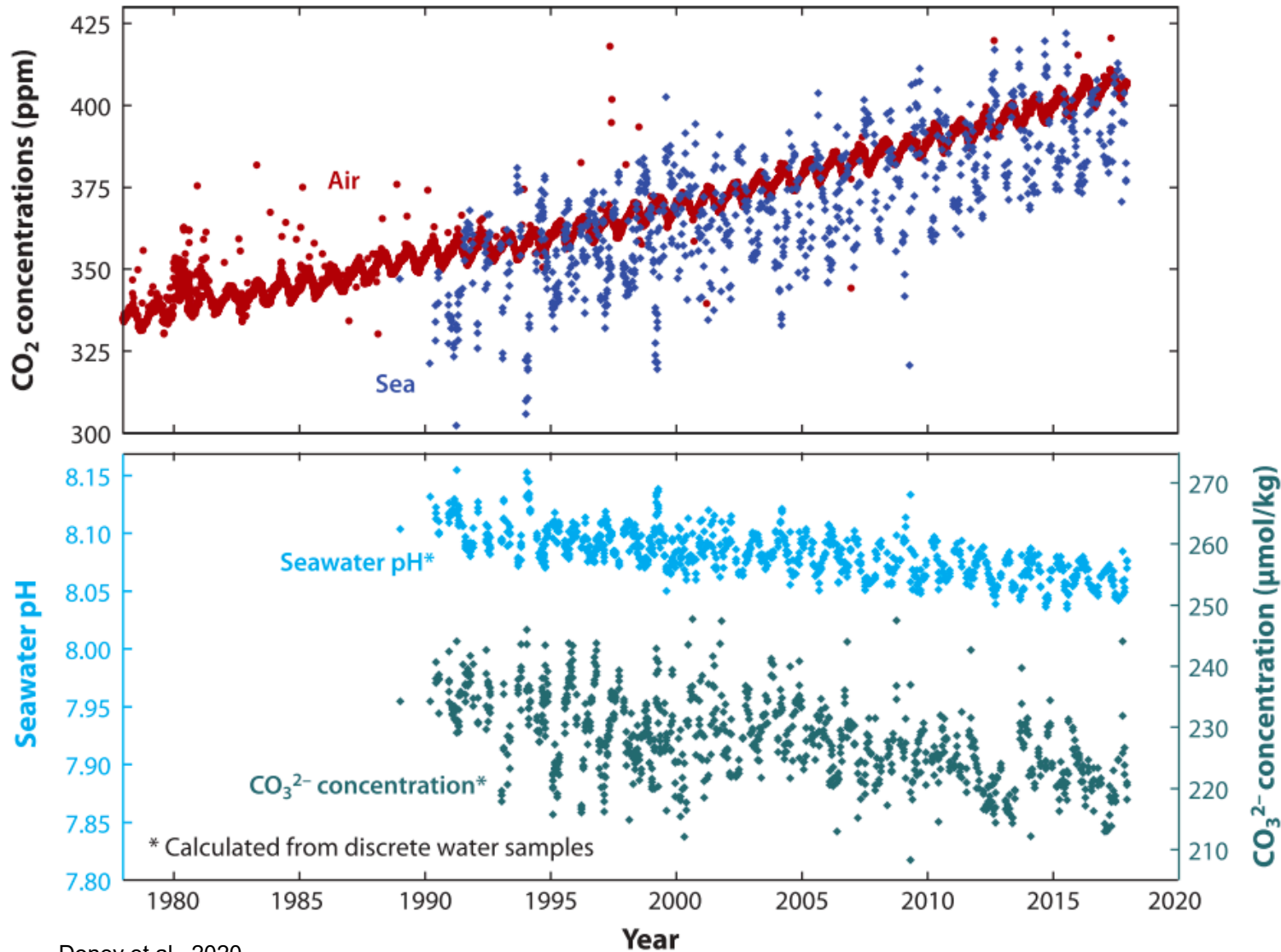
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# Ocean Acidification (OA)



Increase in atmospheric  $\text{CO}_2$



Ocean absorbs more carbon



Reduced pH and  $[\text{CO}_3]^{2-}$

# Ocean Acidification (OA)

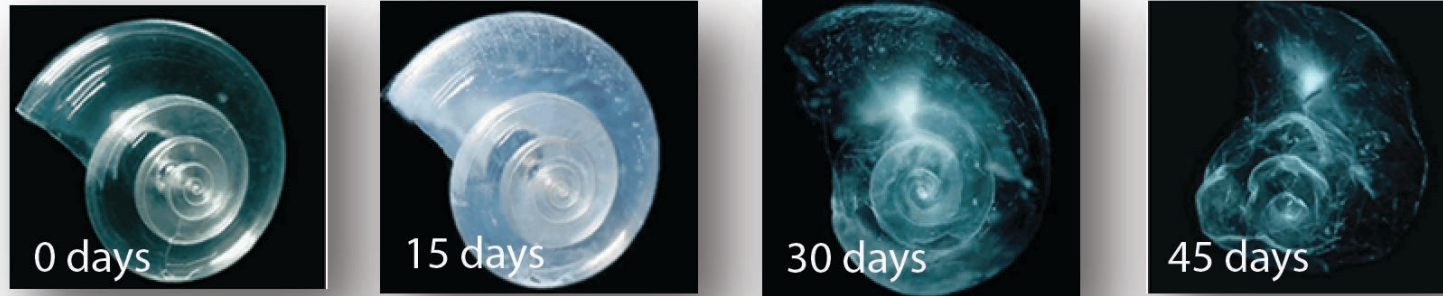


Photo credit: David  
Liittschwager/National Geographic  
Stock.

More difficult for calcifying organisms to build their shells

In addition to pH, often look at the aragonite saturation state ( $\Omega_{\text{arag}}$ )

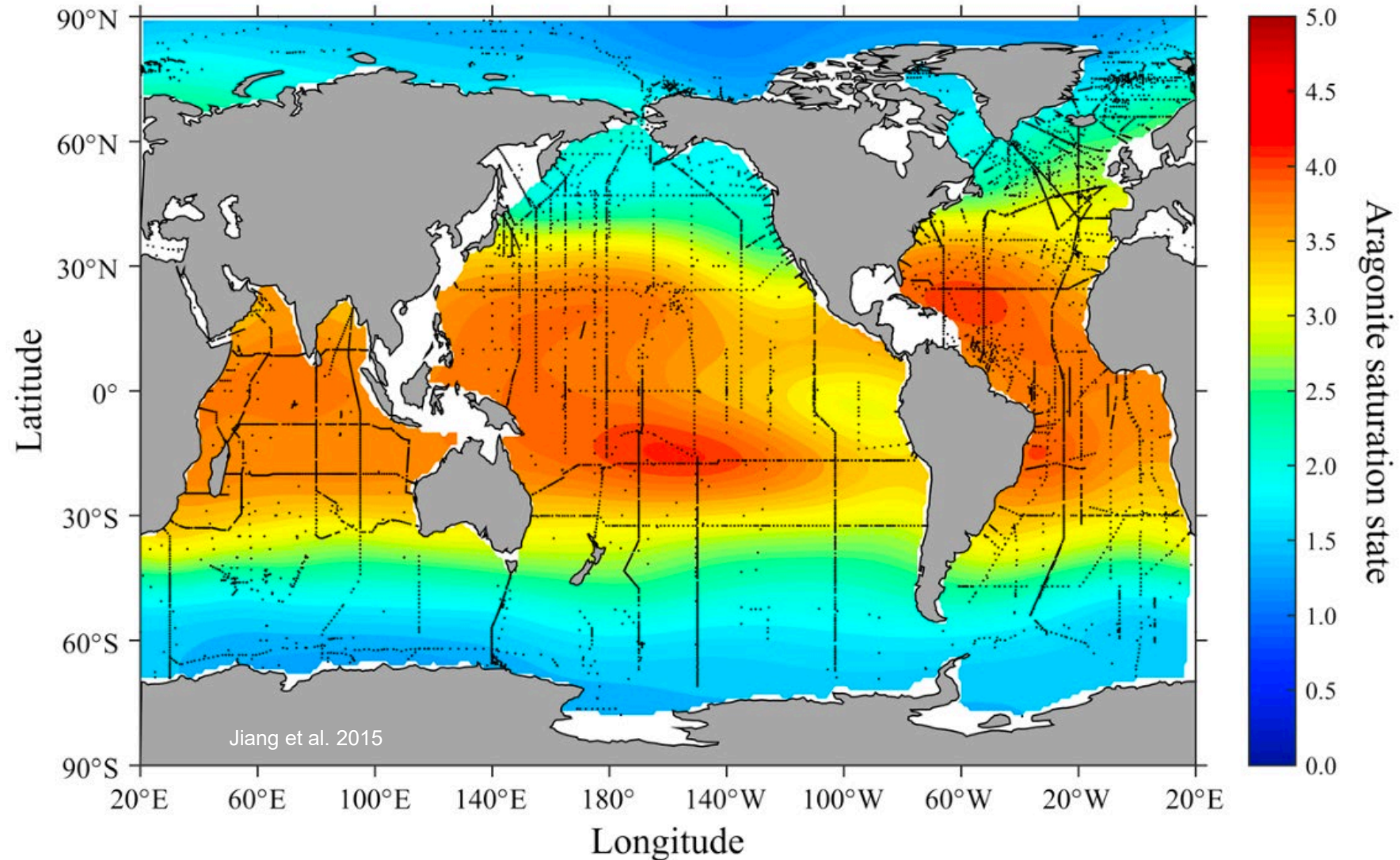
$\Omega_{\text{arag}} > 1$ : Shell building favorable

$\Omega_{\text{arag}} < 1$ : Shell building unfavorable

**Biological Impact of Ocean  
Acidification in the Canadian Arctic:  
Widespread Severe Pteropod Shell  
Dissolution in Amundsen Gulf**

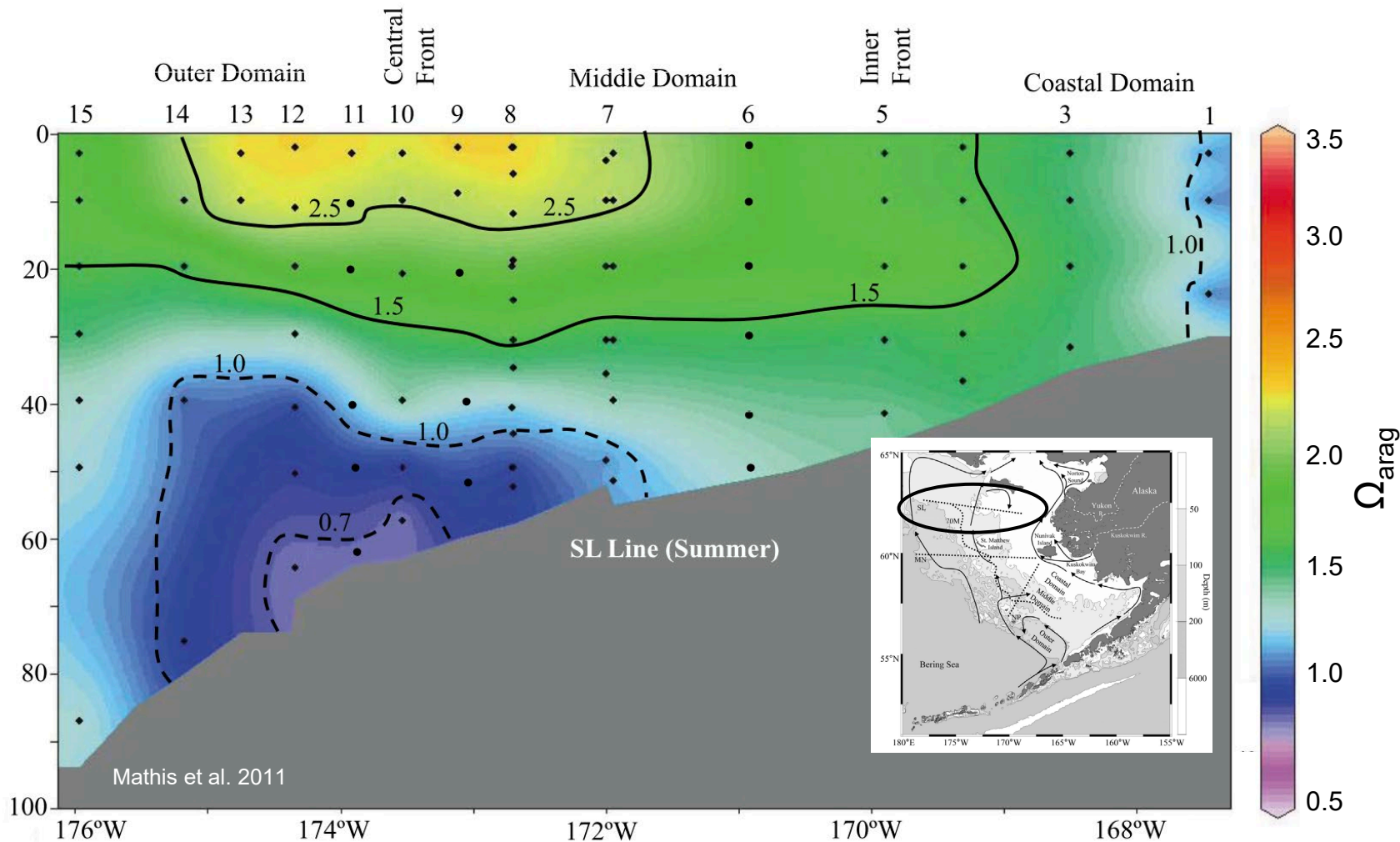
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# Alaskan waters are naturally high in CO<sub>2</sub>





# Bottom waters are already seasonally corrosive

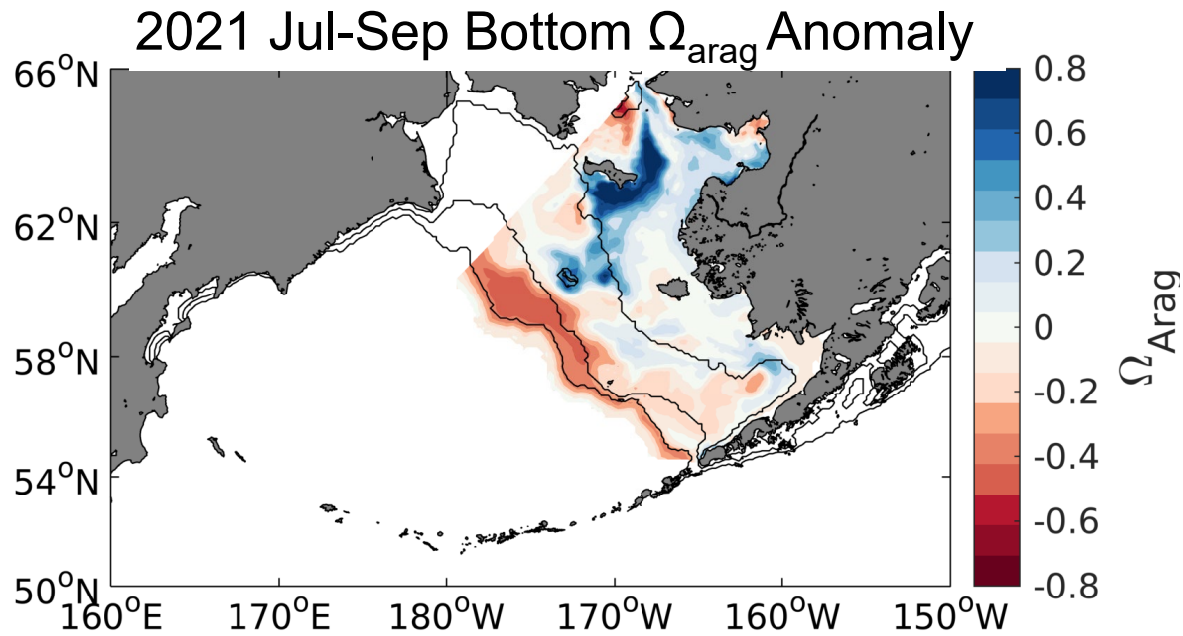


In addition to baseline conditions shown at left, we're expecting growth in spatial extent, duration, and intensity of these conditions due to OA

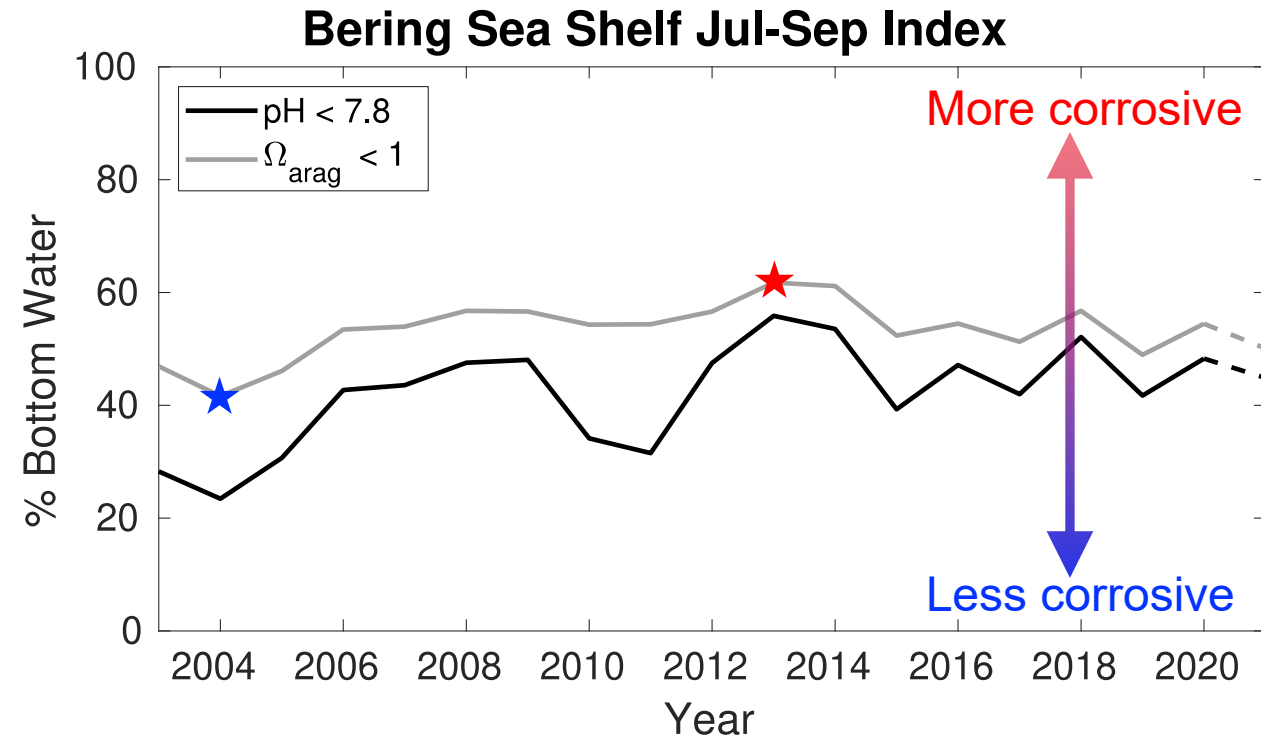
# Use data to develop computational models



# 2021 In Review

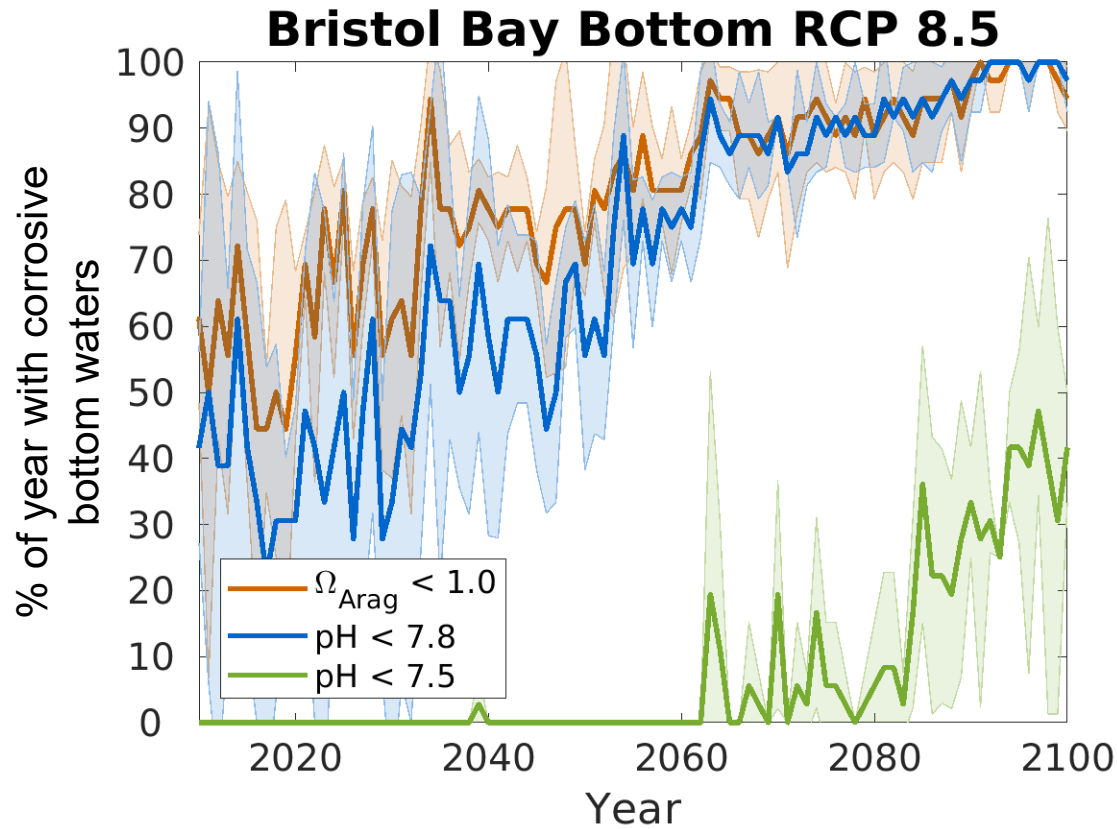


Bottom water conditions near St. Lawrence Island greater than normal, outer shelf conditions more corrosive than normal



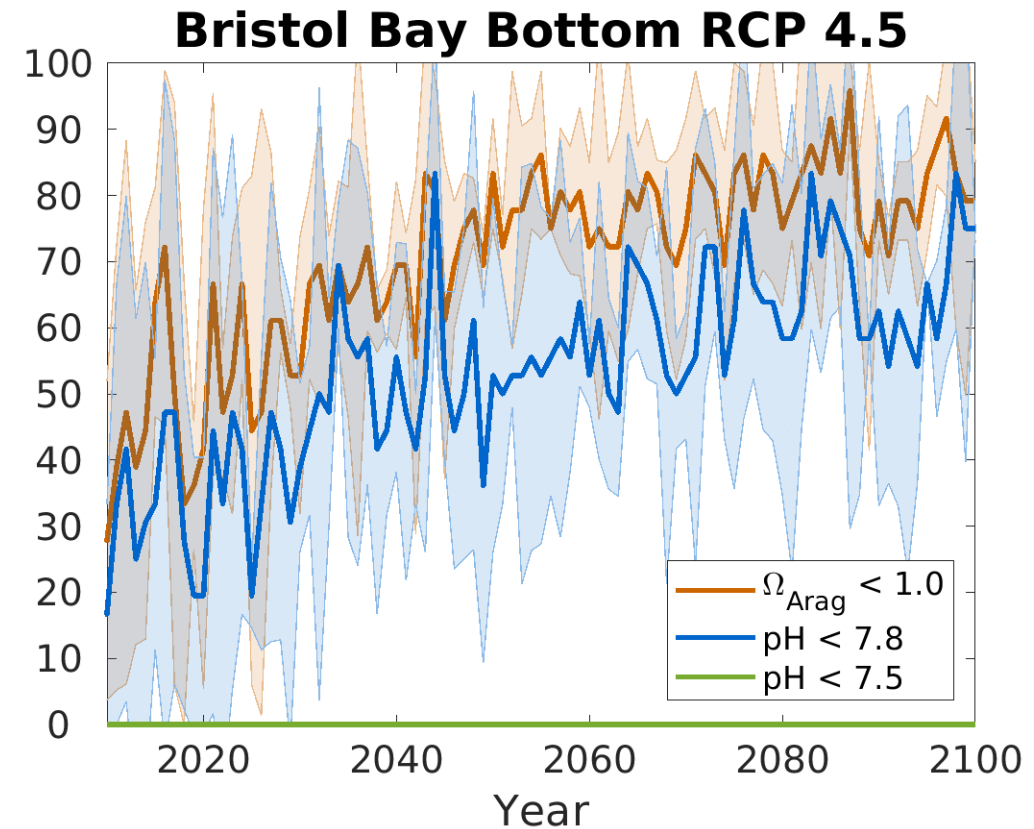
Both indices are slightly improved compared to 2020 and are near the 2003-2020 average

# Projected changes to Bristol Bay red king crab suitable habitat

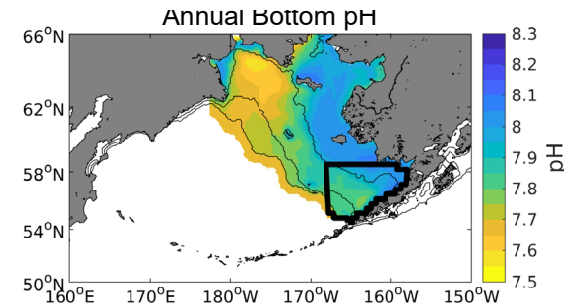


More corrosive

Less corrosive



Apply experimentally derived thresholds to specific regions and stocks





# Key Stakeholders and Users

**Connected with a wide range of federal, academic, commercial, and community partners!**



Presentations from  
Crab/Climate Mini Workshop for Crabbers

