

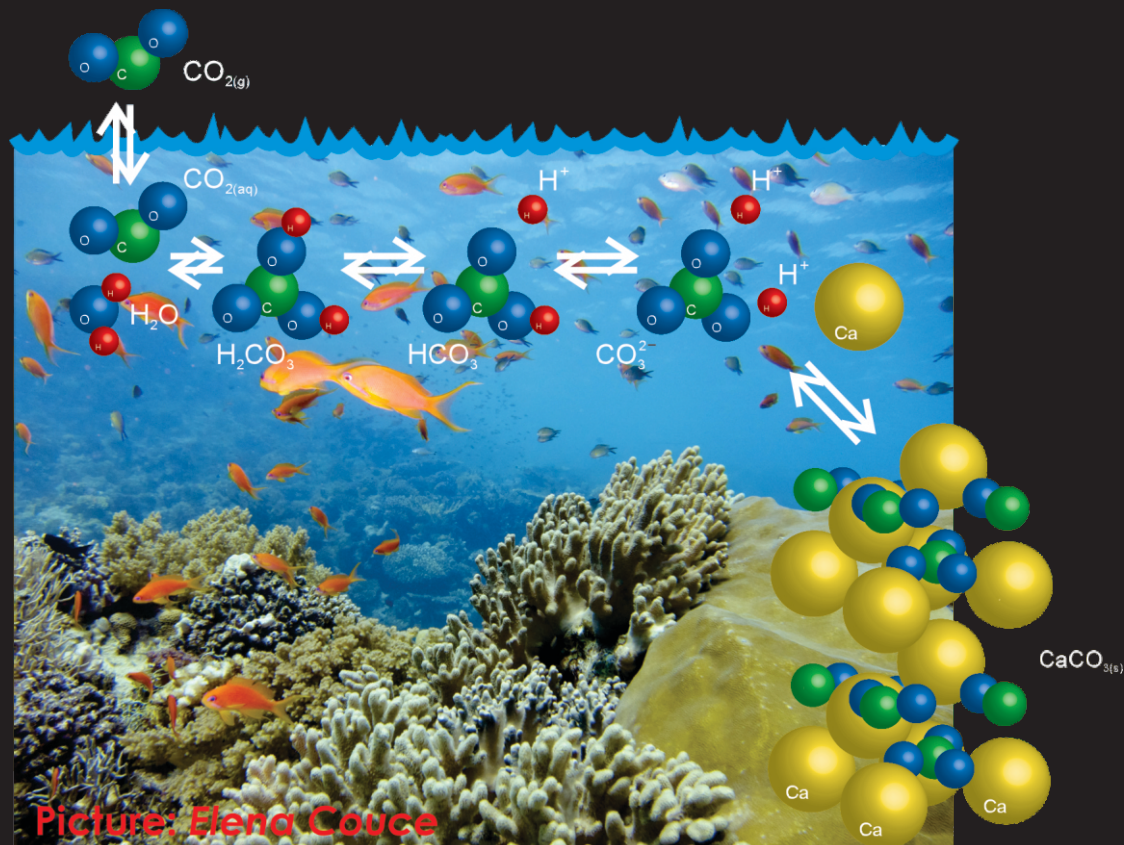
# CO<sub>2</sub>-CarbonCycle-Climate-Interactions (C4I)

(A potted update)

Andy Ridgwell, Lauren Gregoire, Jamie Wilson, Steve Barker



UK Ocean Acidification  
Research Programme

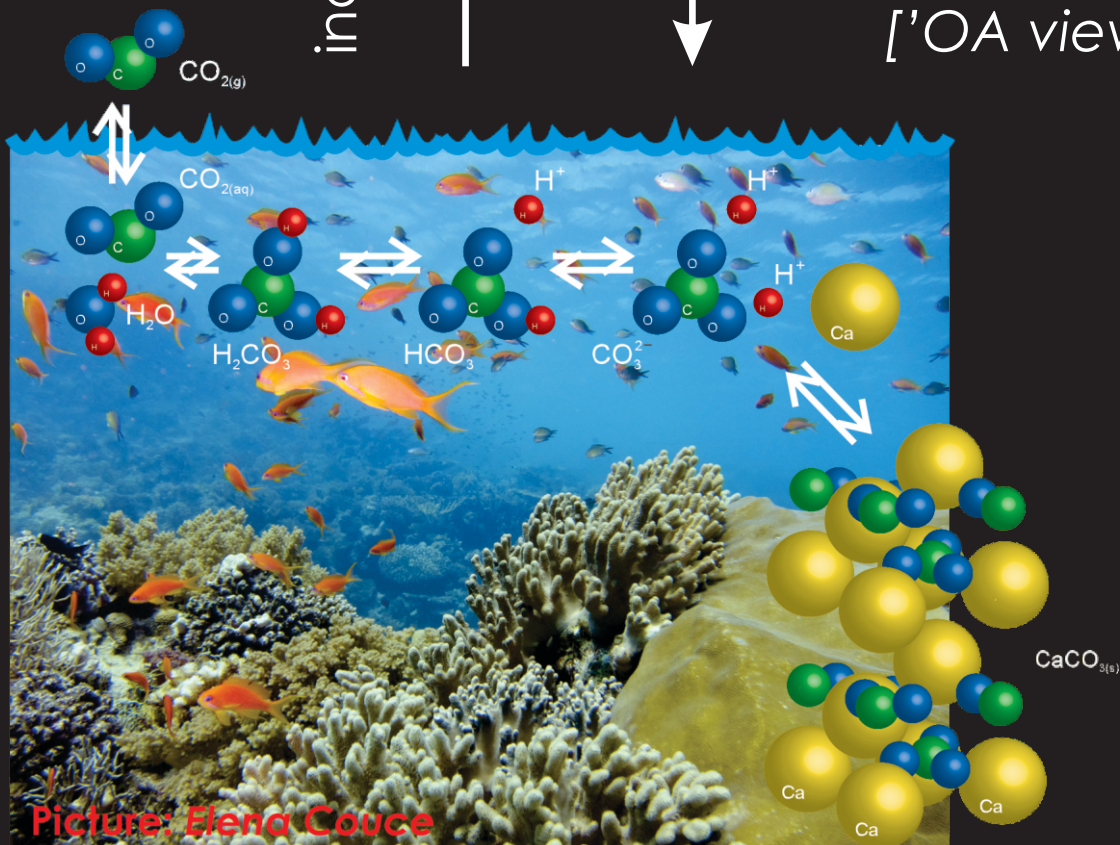


Picture: Elena Couce

increasing compliance with  
project deliverables

increasing level of  
scientific discovery

1. *What we are not meant to be doing*  
[tropical corals]
2. *What someone else is meant to be doing*  
[Eocene carbon cycling]
3. *What we were not doing at the outset*  
[AVA]
4. *What we should have done a while ago  
and have actually done*  
['OA viewer']

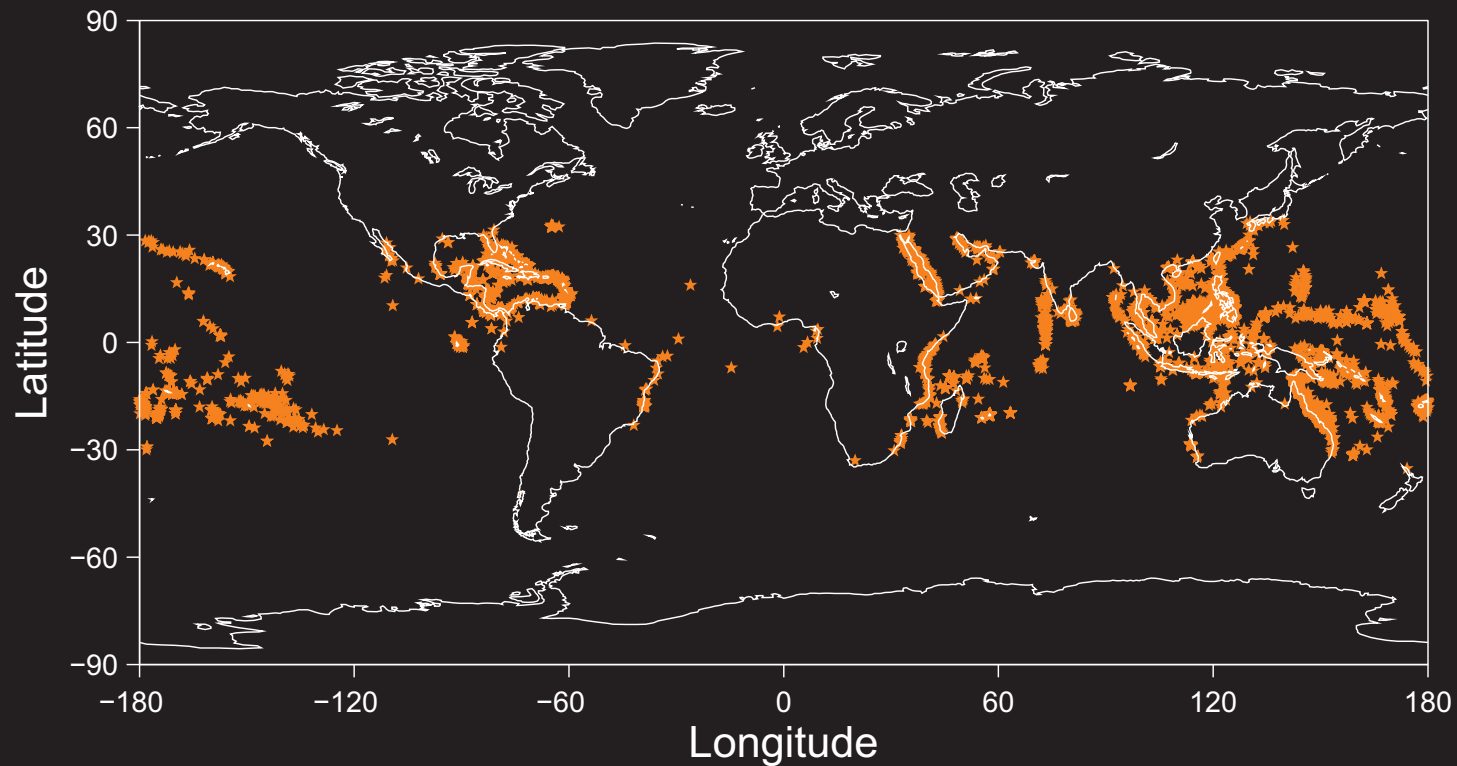


# Tropical corals and OA

Elena Couce, Erica Hendy, Andy Ridgwell



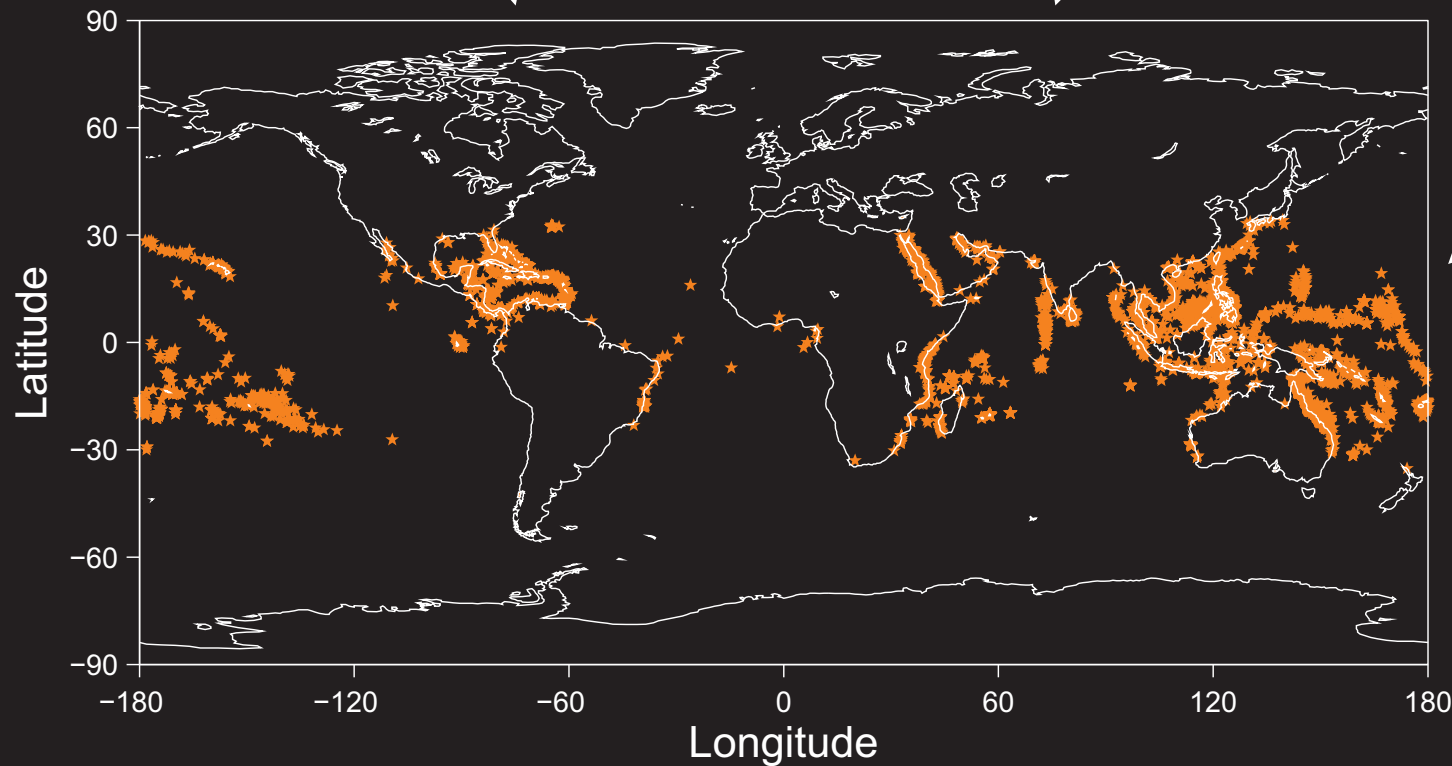
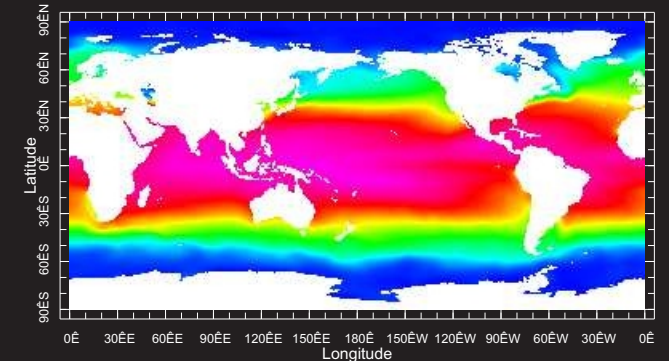
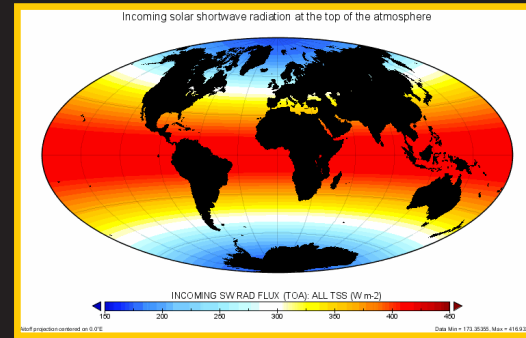
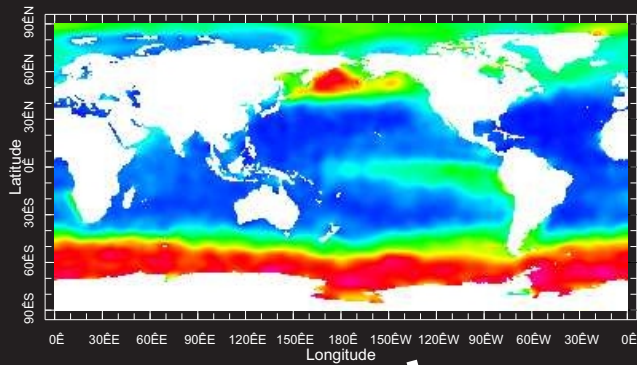
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# Species Distribution (habitat suitability) modeling



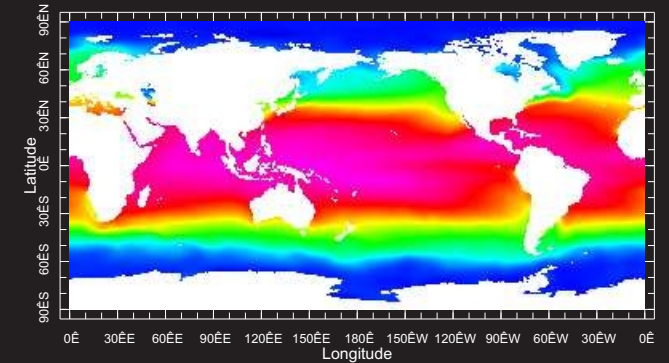
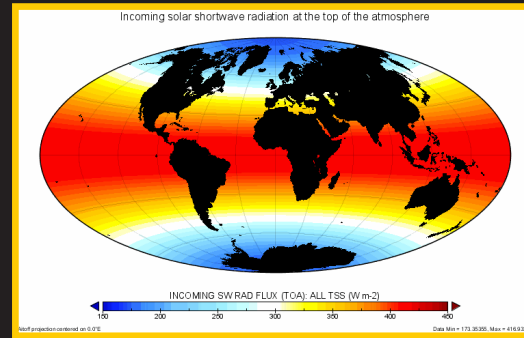
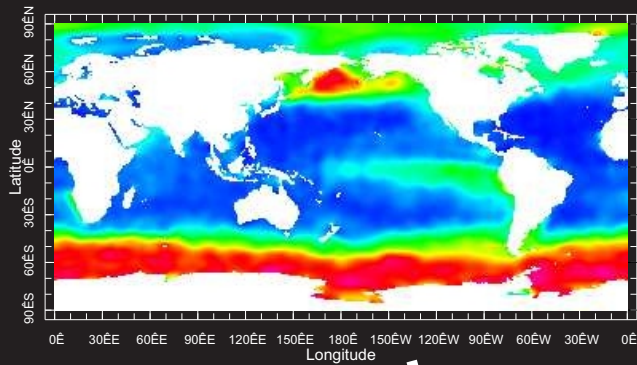
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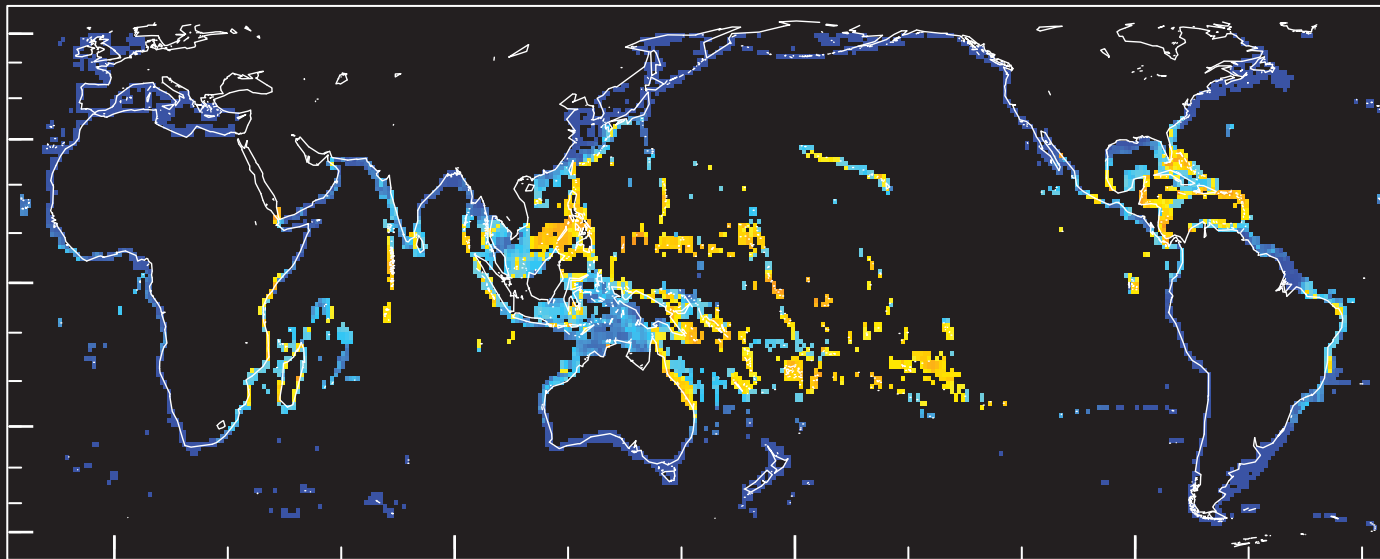
Couce et al. [2012]



# Species Distribution (habitat suitability) modeling



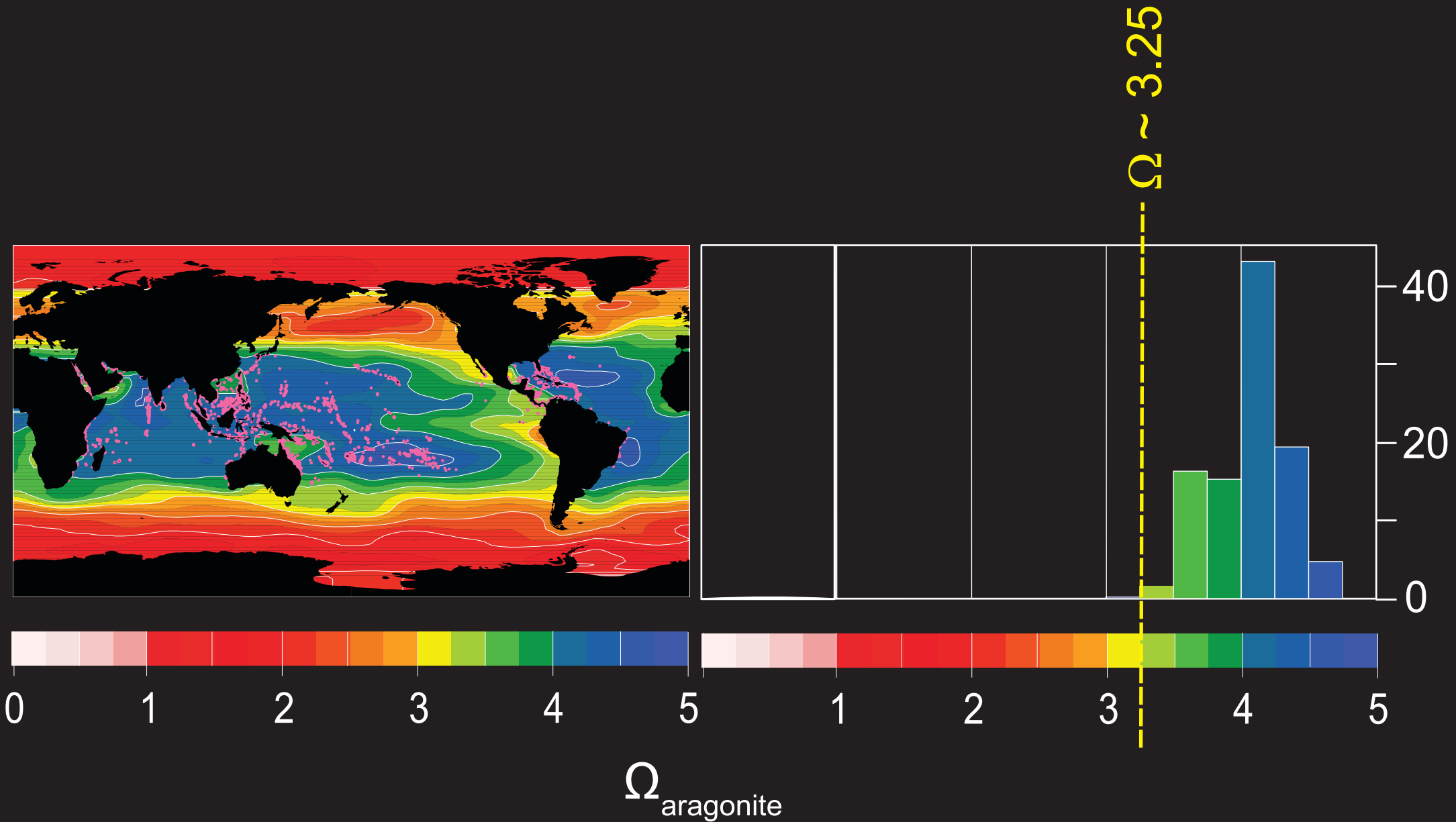
MaxEnt



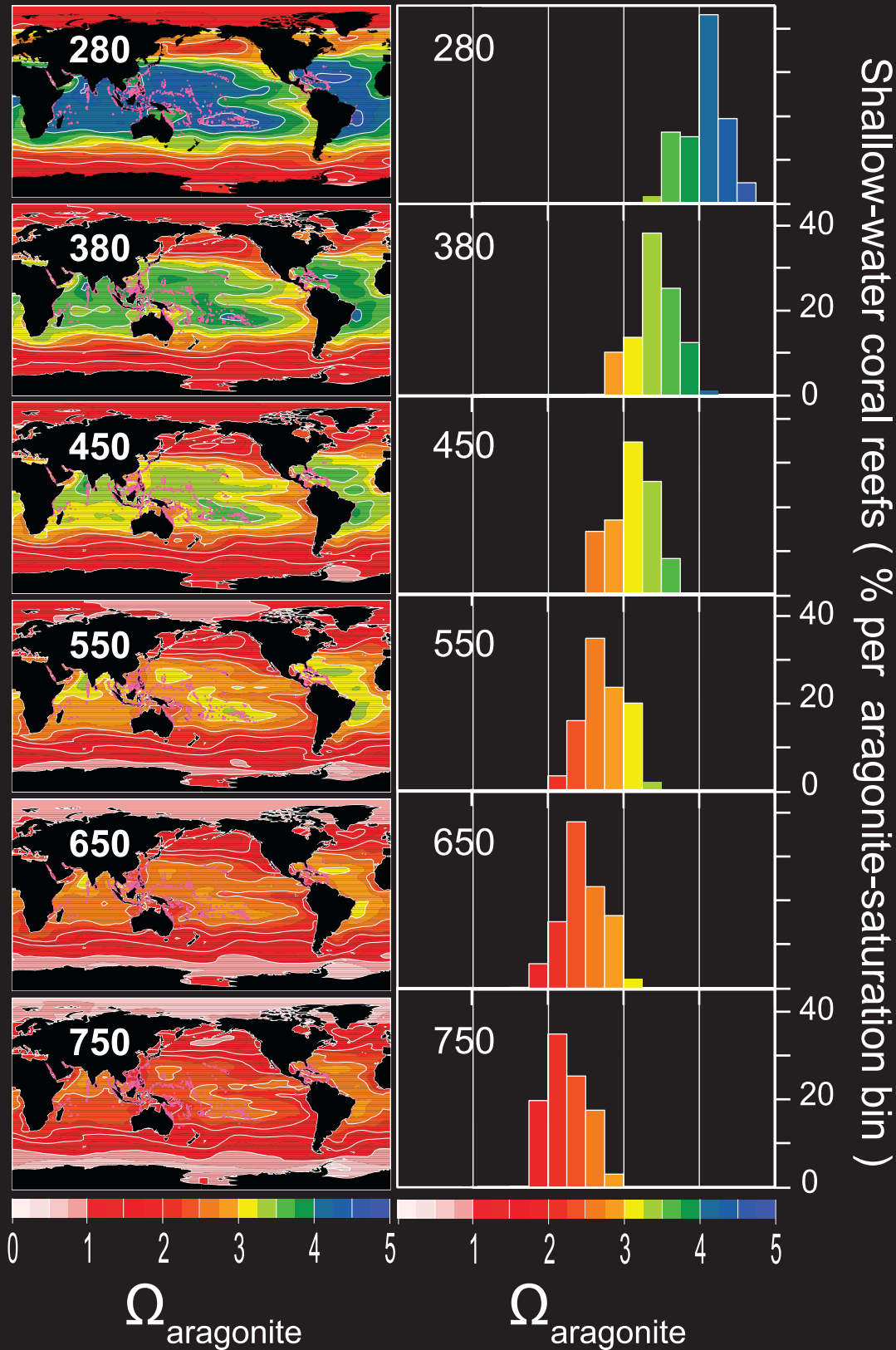
# 'The tyranny of $\Omega = 3\frac{1}{4}$ '



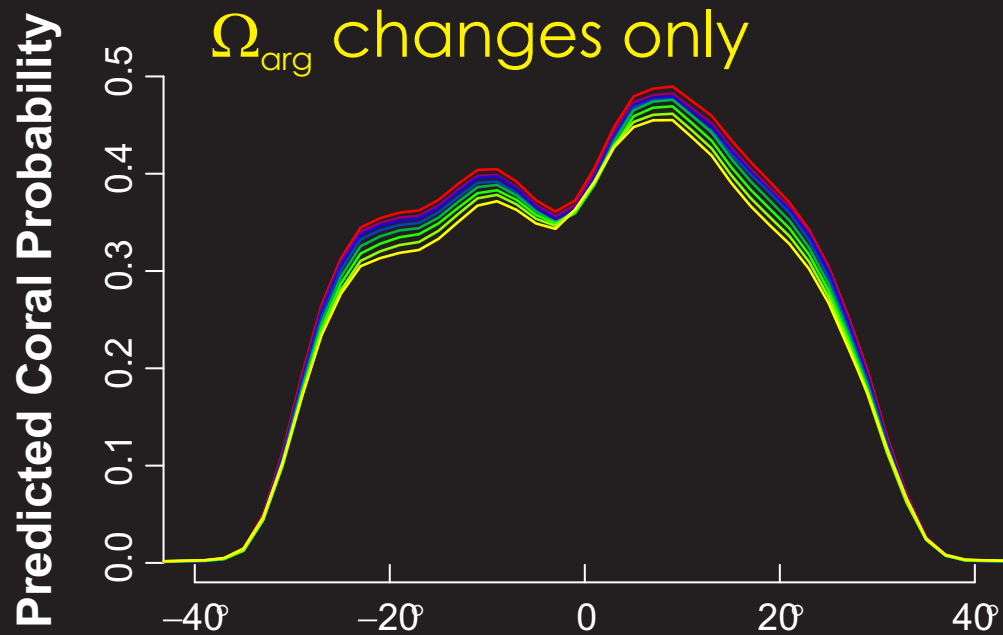
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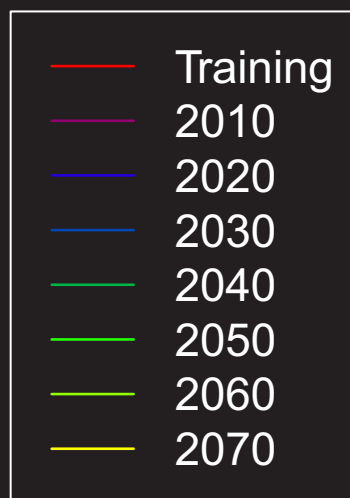
Cao and Caldeira [2008]



# Species Distribution (habitat suitability) modeling

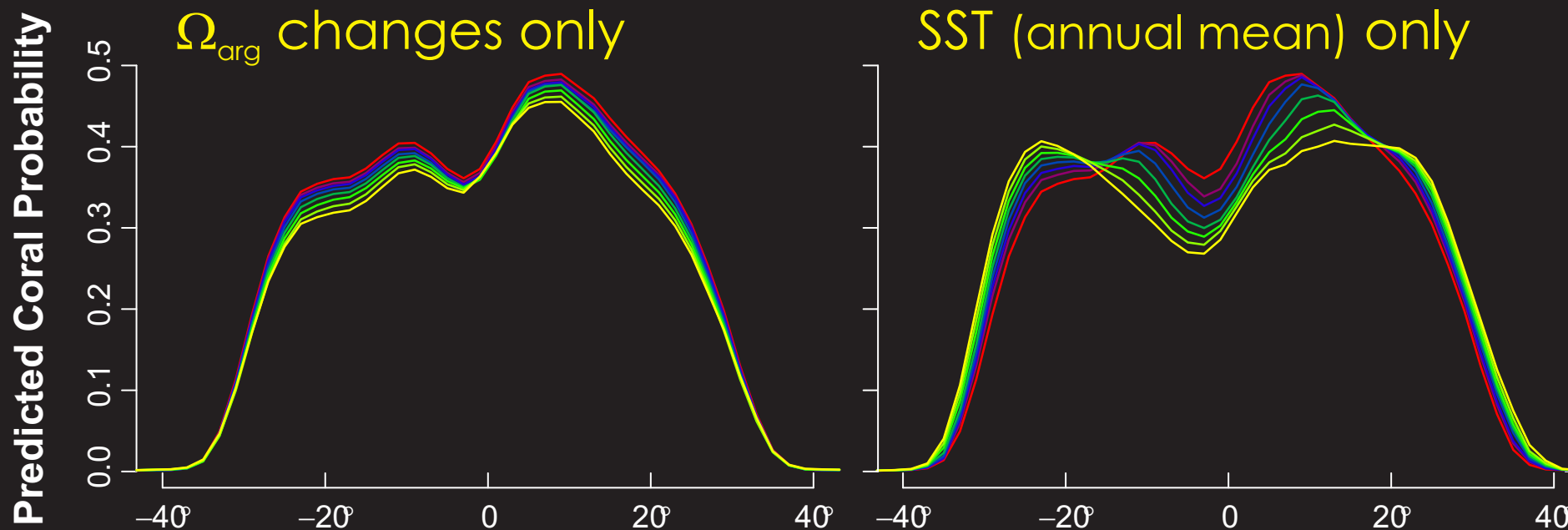


## MaxEnt SDM

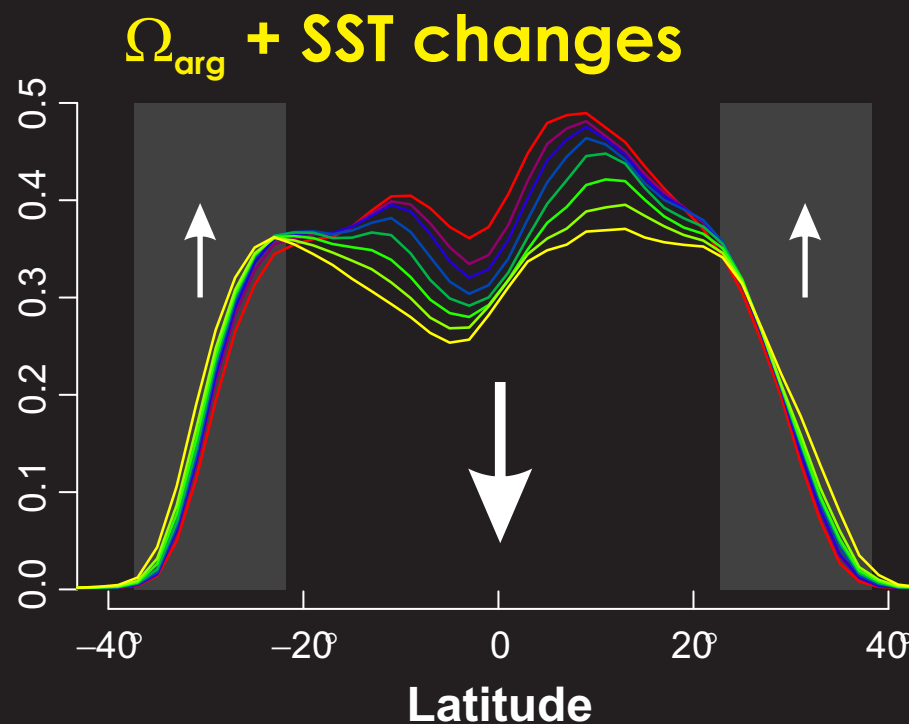
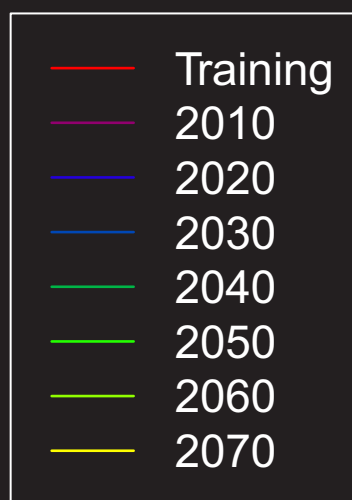




# Species Distribution (habitat suitability) modeling

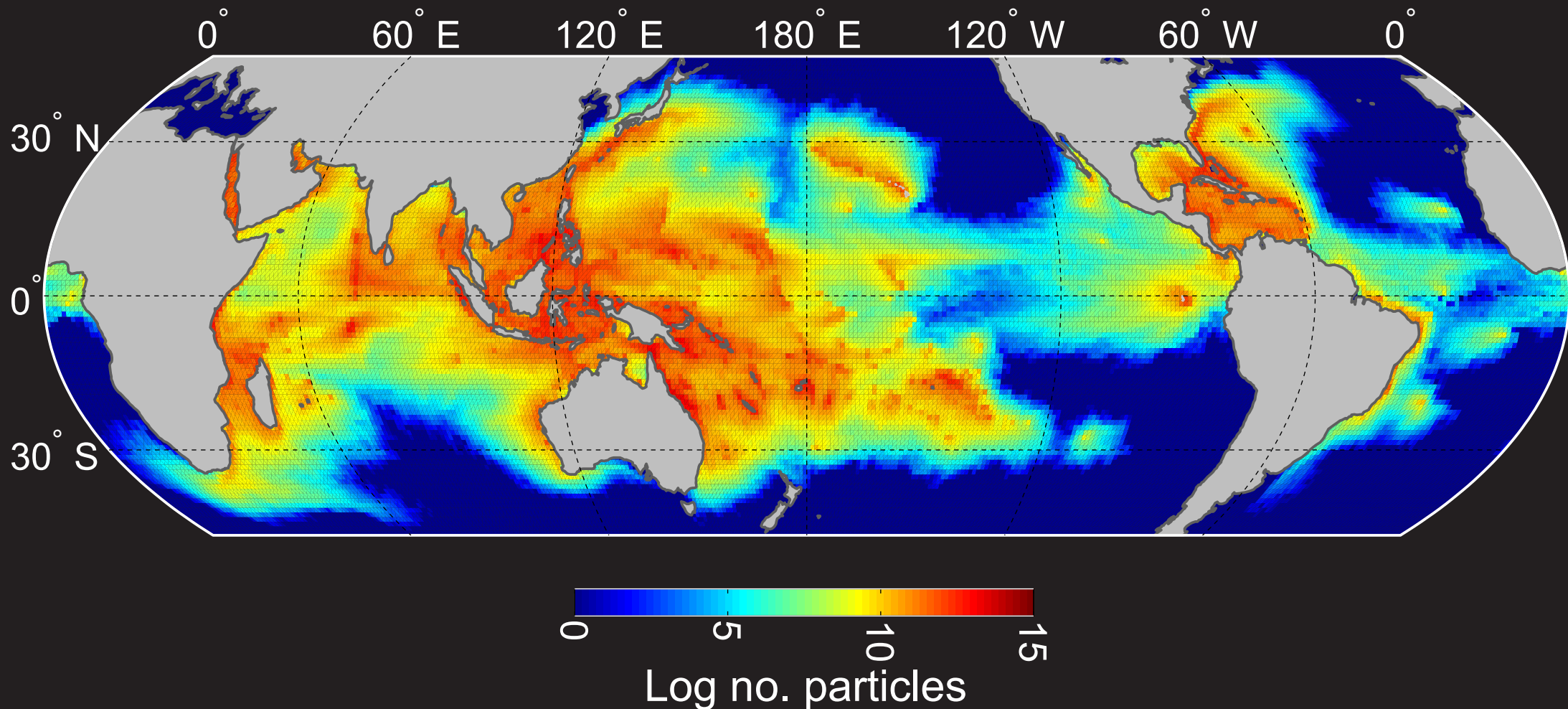


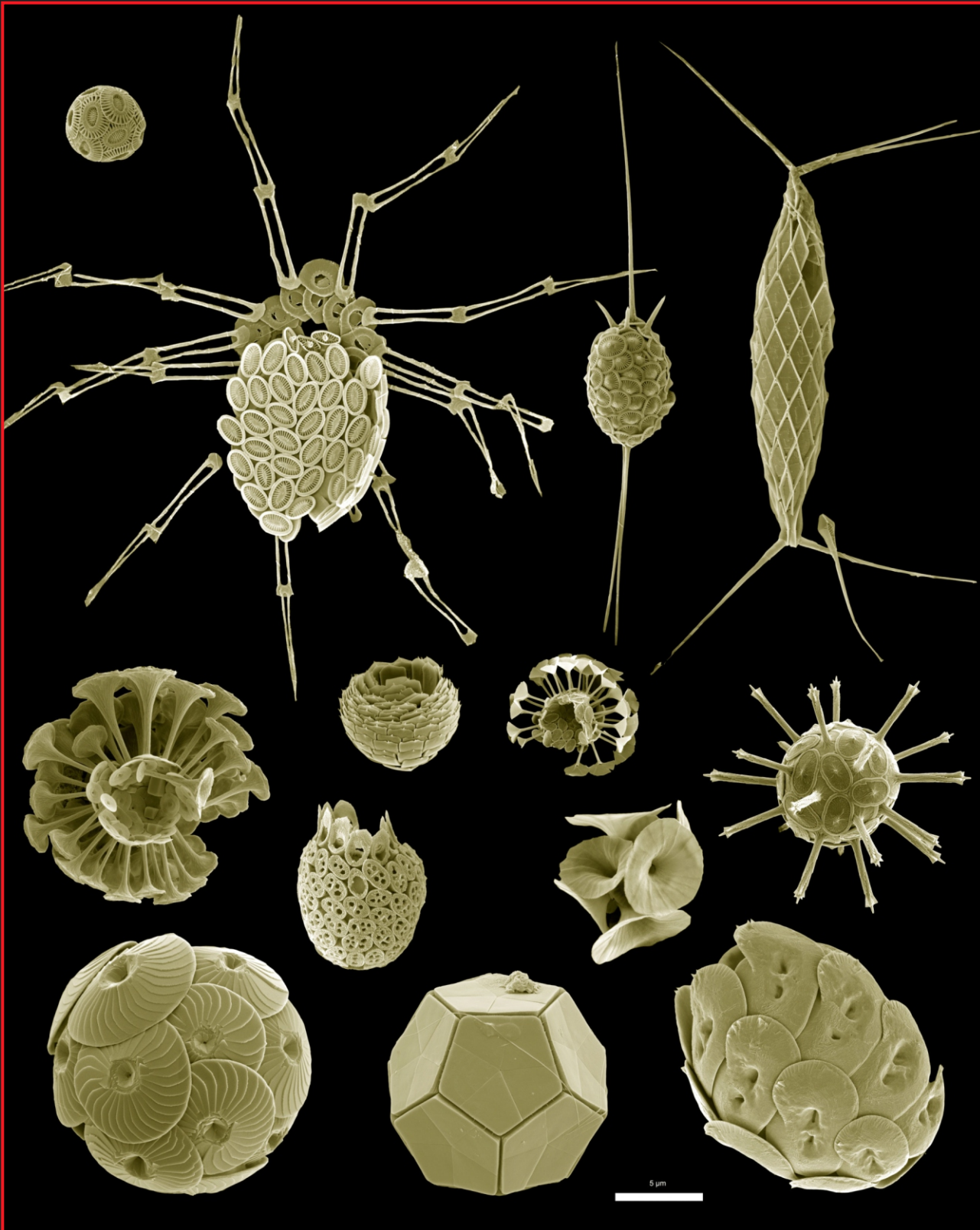
MaxEnt SDM



# Tropical coral 'connectivity'

Sally Wood, Erica Hendy, Claire Paris (RSMAS, Miami), Andy Ridgwell





## AVA activity:

‘Why do coccolithophores calcify?’

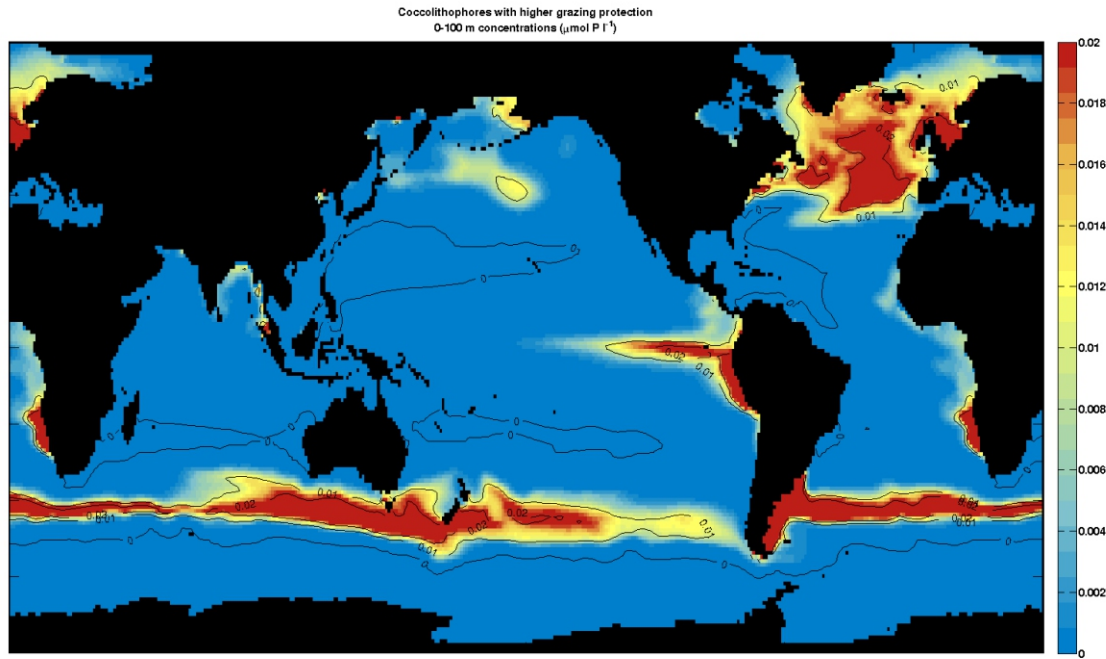
Dr. Fanny Monteiro & Andy Ridgwell

- ◆ 2-day workshop in September 2012
- ◆ ~30 UK-OA + international participants spanning ecology/physiology/genetics/evolutionary history and ... modellers ...
- ◆ Review paper currently in prep
- ◆ Follow-up (also AVA-funded) meeting planned by Toby Tyrrell

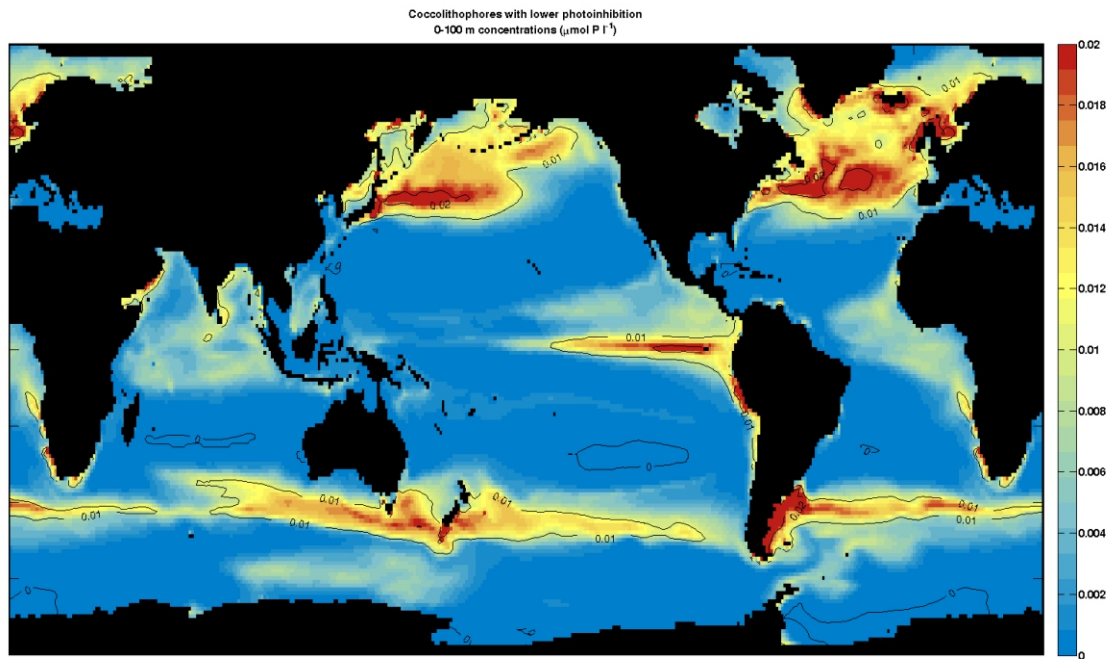




increased  
grazing protection



lower  
photoinhibition



**‘Why do coccolithophores calcify?’**

Effectively a question of ‘trade-offs’ – i.e. what is the advantage(s) conferred by calcification compared to the energetic cost?

Question of trade-off lend themselves to testing/exploring in the ‘Darwin’ self-assembling ecosystem model (where species are governed by a series of trade-offs).



<http://oaviewer.ggy.bris.ac.uk/>



UK Ocean Acidification  
Research Programme

# C4I

Ocean Acidification Model Data Viewer



UK Ocean Acidification  
Research Programme

HOME

ABOUT

TIME SERIES

LAT/LONG MAPS

DEPTH PLOTS

DATA

CONTACT

## Welcome to the ocean acidification viewer!

These webpages present output of carbonate chemistry simulated by an Earth System Model, the UVic-ESCM (<http://climate.uvic.ca/model/>). In particular, you can find historical and future projections of climate and ocean carbonate chemistry state. The pages enable you to easily visualise, extract and download model data in formats available to all.

The ocean acidification viewer enables you to easily visualise, extract and download model data in formats available to all. You can view CO<sub>2</sub> concentrations, ocean temperature, and various carbonate chemistry variables.

This website has been produced as part of the UK Ocean Acidification Research Programme (<http://www.oceanacidification.org.uk>) jointly funded by the Department for Environment, Food and Rural Affairs (Defra), the Natural Environment Research Council (NERC) and the Department of Energy and Climate Change (DECC).

