Modelling Southern Ocean acidification: methods and applications

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Establish environmental variability around the Antarctic continent

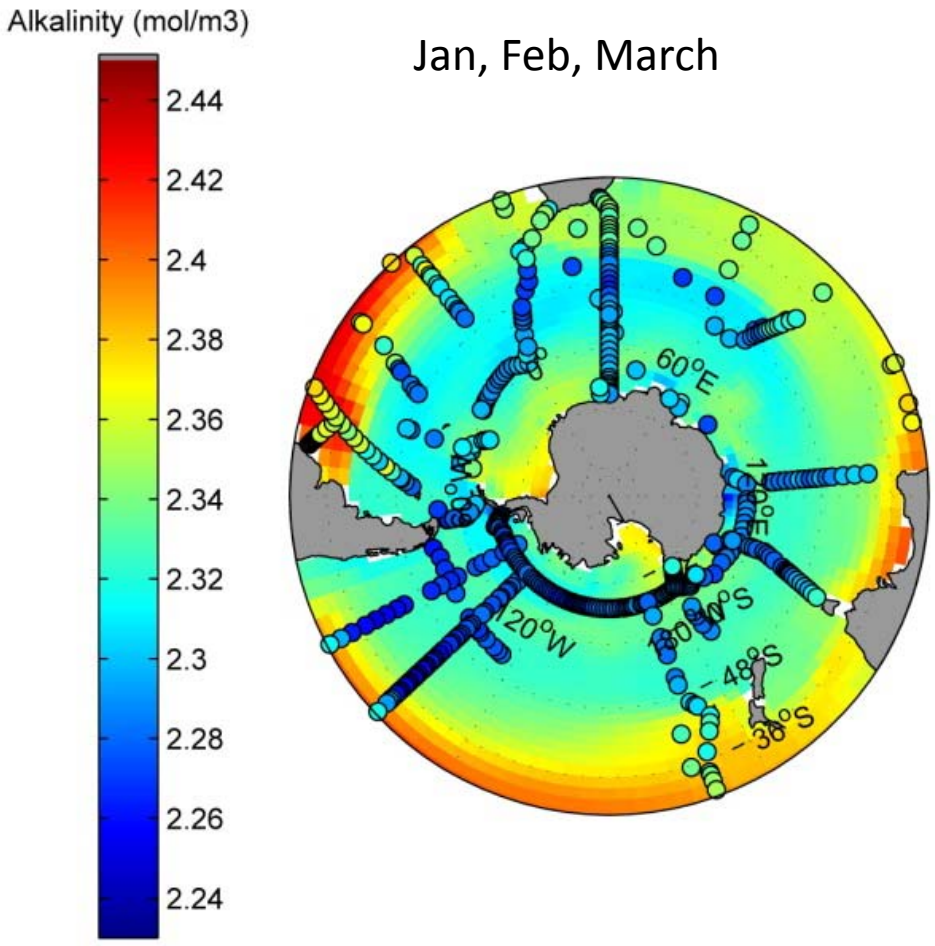
Identify highest risk areas for organism survival in a changing climate

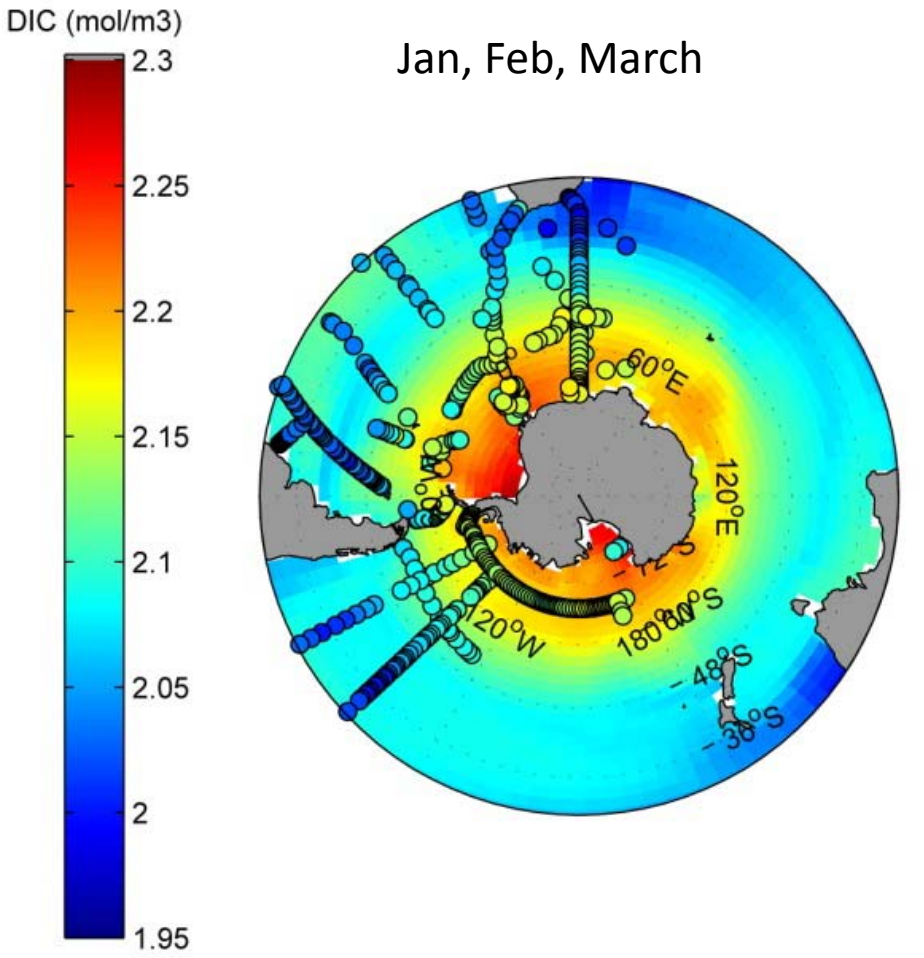
Uvic Earth Systems Model

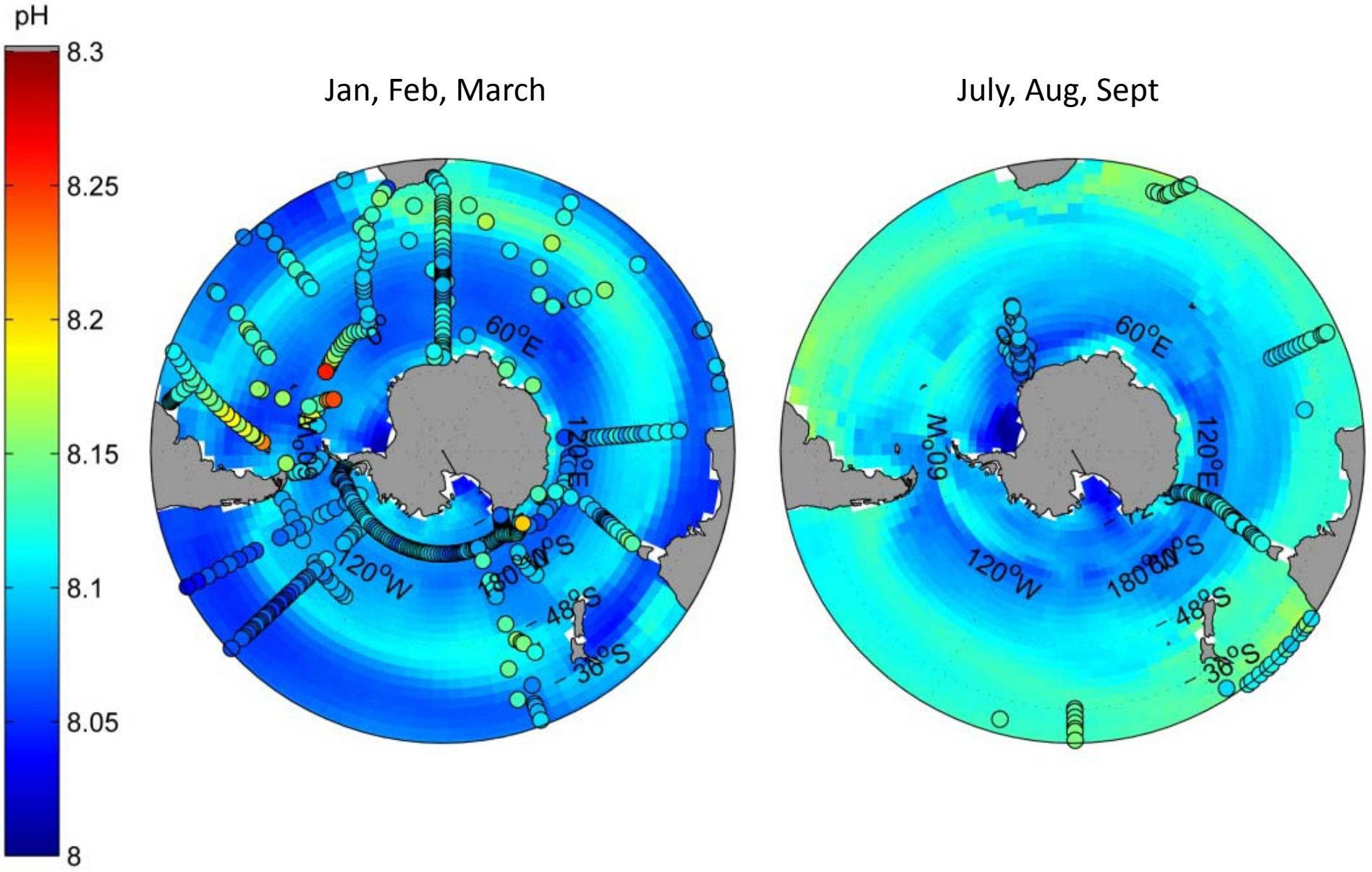
(University of Victoria)
Version 2.9

- Intermediate complexity model
- 3-D complex ocean
- Thermodynamic/dynamic sea ice model
- Simple atmosphere
  - Capturing surface balances
  - Heat feedbacks
  - Freshwater
  - Momentum

Data: Model comparison of carbonate chemistry






pH
8.3
8.25
8.2
8.15
8.1
8.05
8
Jan, Feb, March
July, Aug, Sept
60°E
120°E
120°W
180°
60°S
48°S
30°S

Ocean Acidification: A Historic Perspective

Left: Bivalve samples from the British Antarctic Survey collection. From top left to bottom right, *Cyclocardia astartoides*, three *Limopsis marionensi*, *Limutula cf hodgsoni*

Above: sub-fossil Drake Passage bivalve shells.