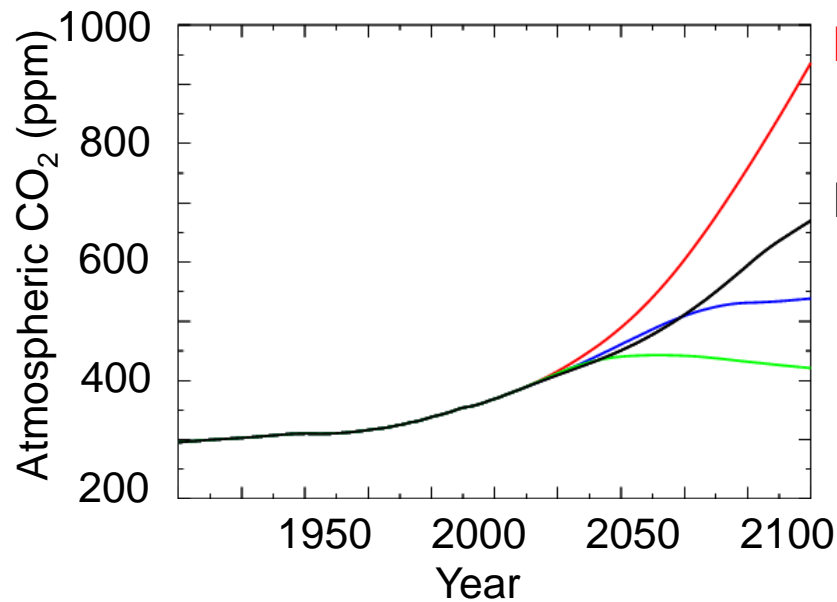


The ocean is changing, what can be done?



Latest IPCC Scenarios : Representative Concentration Pathways (RCPs)



RCP8.5: CO₂ = 936 ppm in 2100

RCP6.0: CO₂ = 670 ppm in 2100

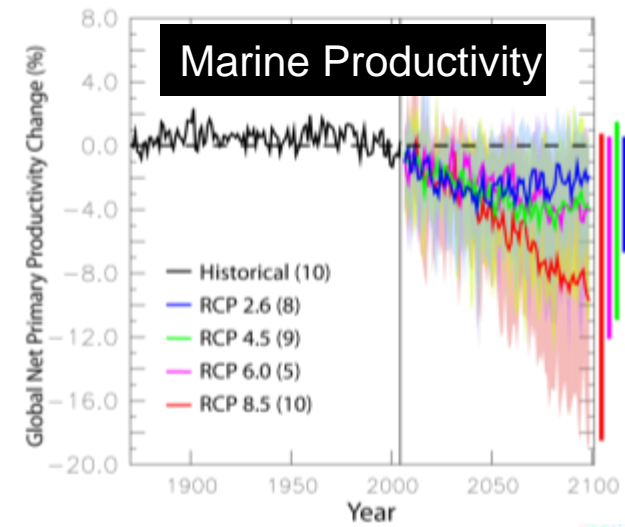
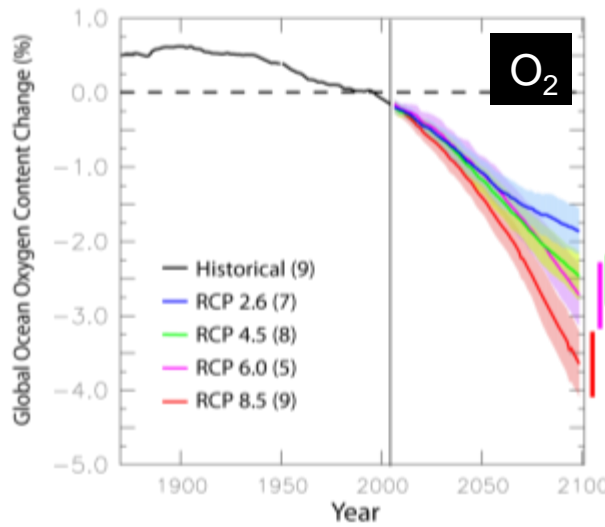
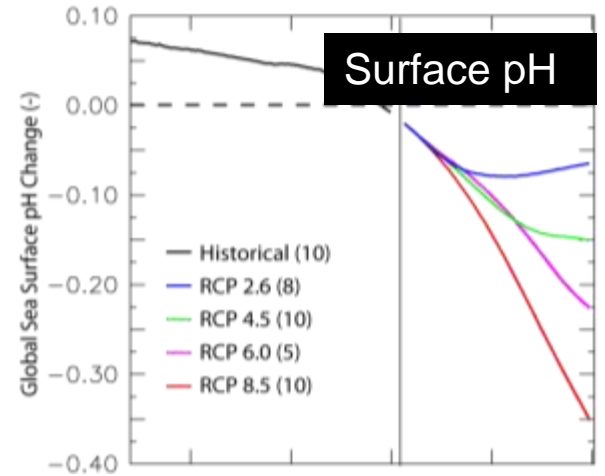
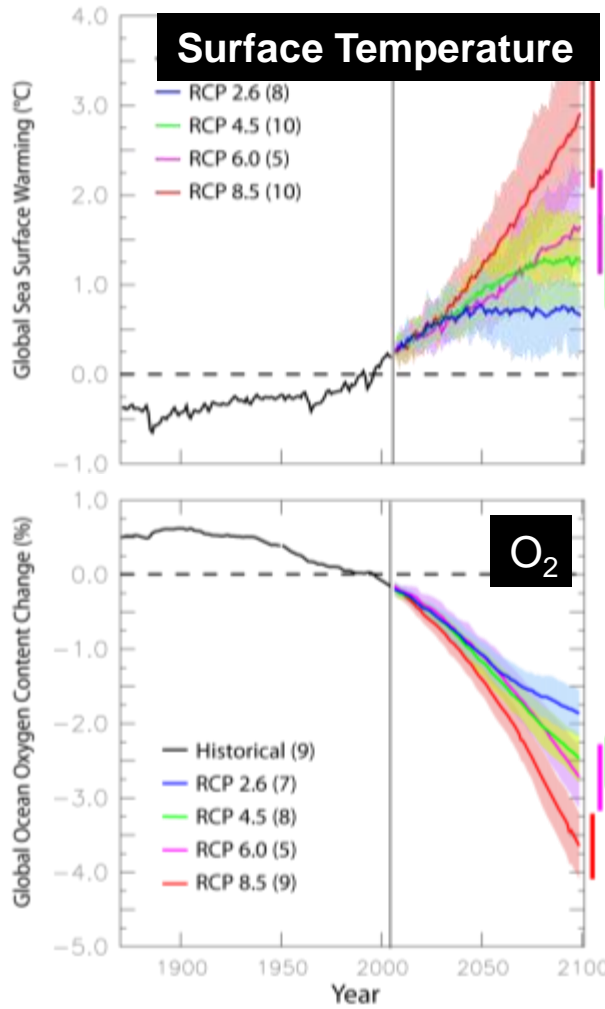
RCP4.5: CO₂ = 538 ppm in 2100

RCP2.6: CO₂ < 450 ppm

(CMIP5, Taylor et al. 2009)

Used to force simulations with latest generation of “Earth System Models”

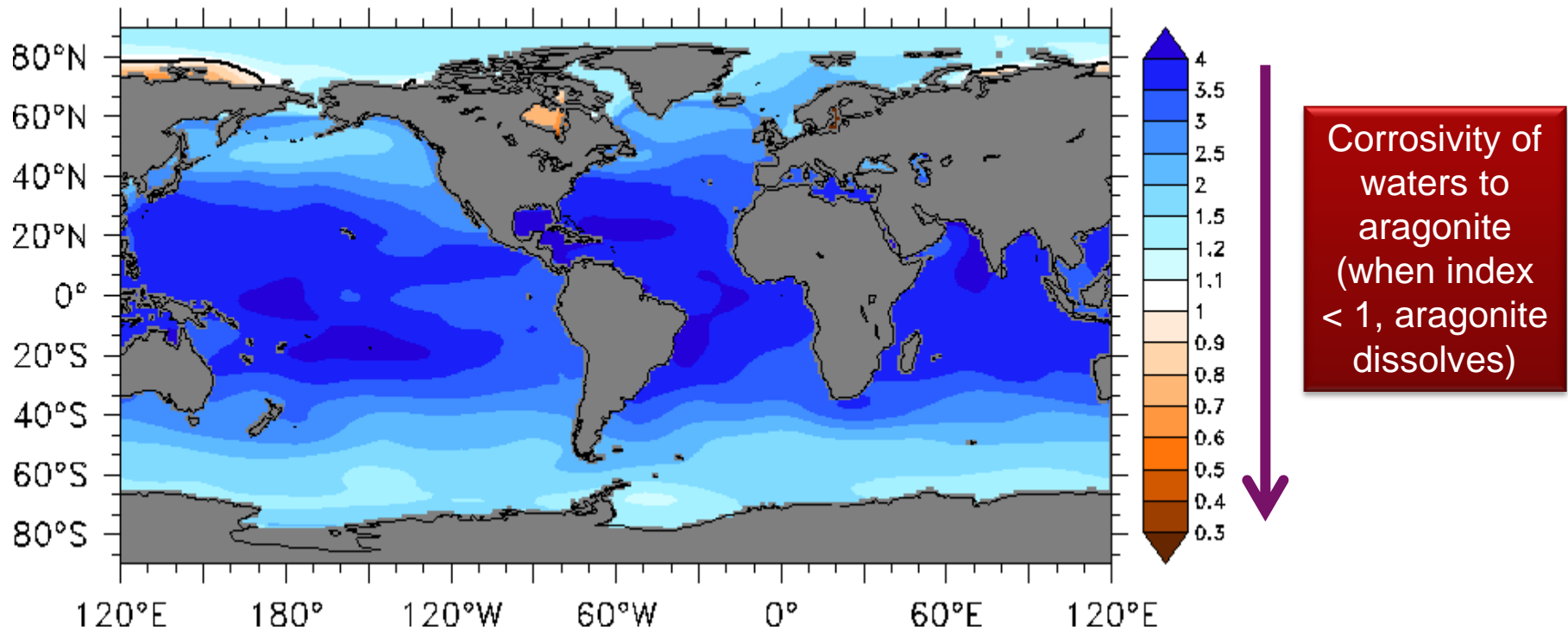
Future ocean will be warmer, more acidic, less oxygenated, and less productive



Models project that polar oceans will become corrosive to aragonite within decades

Saturation index of aragonite (a form of CaCO_3):
state-of-the art models forced by IPCC RCP8.5 scenario

Year 2006



Confirms original warning from Orr et al. 2005 (Nature)



Movie credit: Brad Seibel

Orr et al. (2005) LSCE/CEA

Fabry et al. (2008)

Comeau et al. (2009, 2011, 2012)
LOV/CNRS



Day 1



Day 2



Day 16

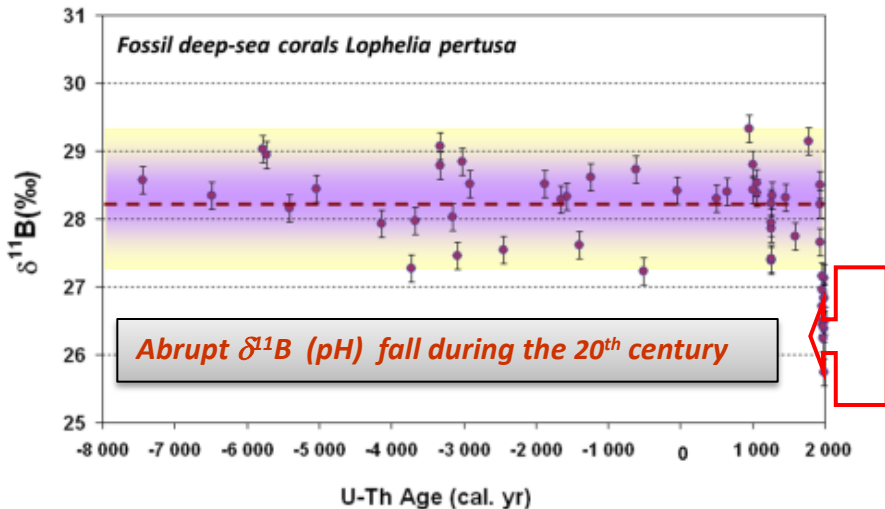
Boron isotopes indicate rapid decline in seawater pH during 20th century

In tropical corals

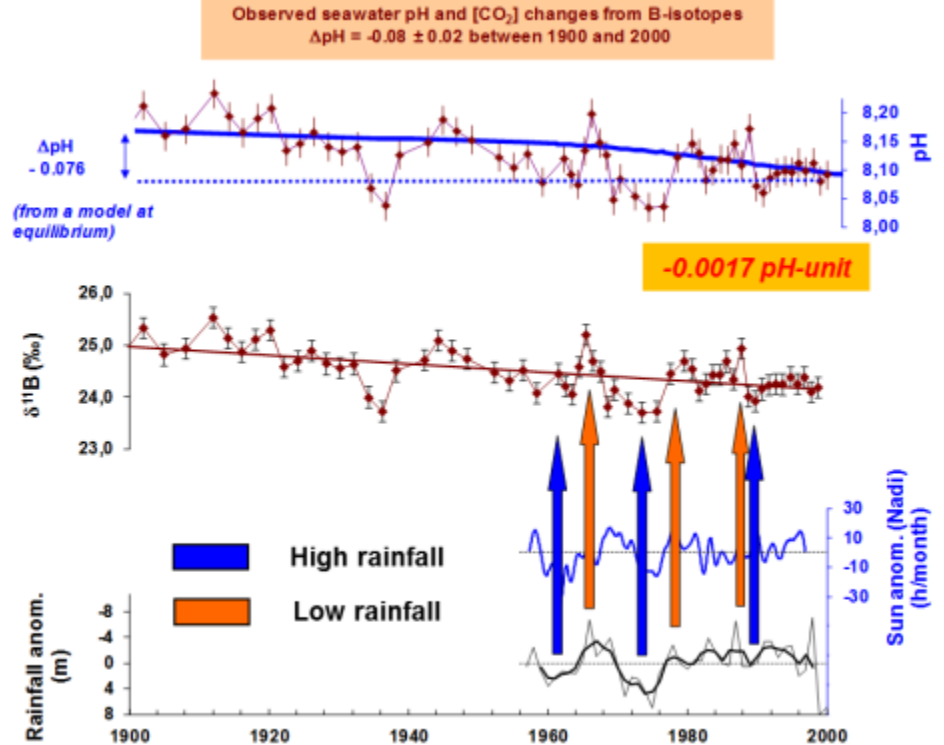


Fiji (Yasawa Isl.)

MC-ICPMS (Neptune^{plus})



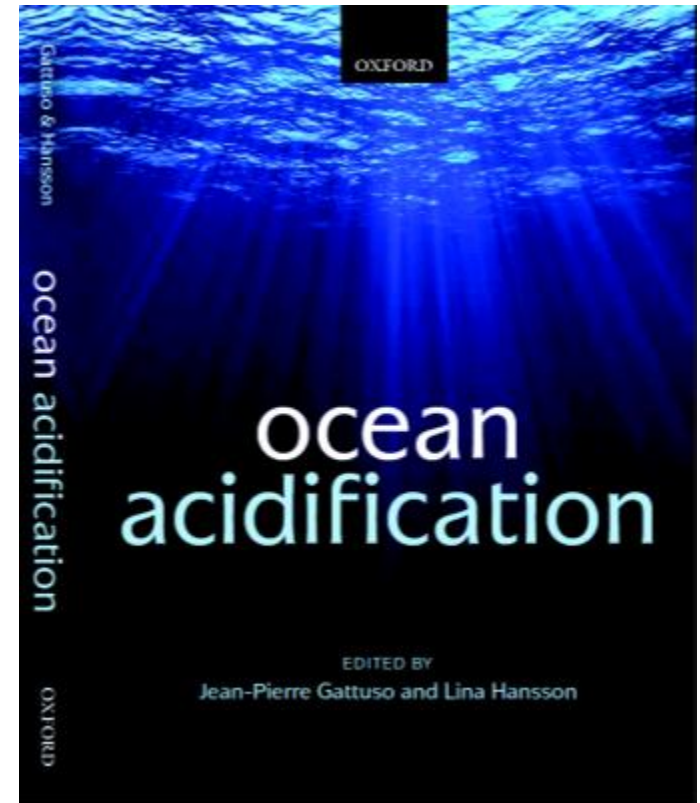
In deep sea corals (high latitudes)



First book on ocean acidification research, a landmark for scientific review & synthesis



- Edited by Jean Pierre Gattuso (EPOCA coordinator and program manager, LOV/CNRS)
- On going IPCC AR5 assessment :
A synthesis of ocean acidification research by international panel



Oxford Univ. Press
326 pages | 75 illustrations
September 2011



The banner features the IAEA logo and text: "IAEA International Atomic Energy Agency Atoms for Peace". The main title is "Ocean acidification" in large white letters. Below it, a subtitle reads: "An information outlet on ocean acidification provided by the Ocean Acidification International Coordination Centre (OA-ICC)". On the right, a white box contains the IAEA logo and the text "Ocean Acidification International Coordination Centre OA-ICC". At the bottom, a row of logos includes SOLAS, IMBER, BIOCID, US Ocean Acidification Research Program, MedS, NOAA, cea, ENEA, FONDATION BNP PARIBAS, and ACE.

www.iaea.org/ocean-acidification

Objectives:

- Promote scientific collaboration at the international level
- Encourage best practices
- Improve observational capacities and database
- Facilitate communication and outreach, especially with policymakers



Scientific Coordinator: James Orr (LSCE/CEA, France)

Project Officer: Lina Hansson (IAEA)

Programme Manager : Michel Warnau (IAEA)

Support : USA, Monaco, France, Italy, Australia, Germany, UK, Spain, New Zealand, China, IAEA, IMBER, SOLAS

Advised by leading world scientists