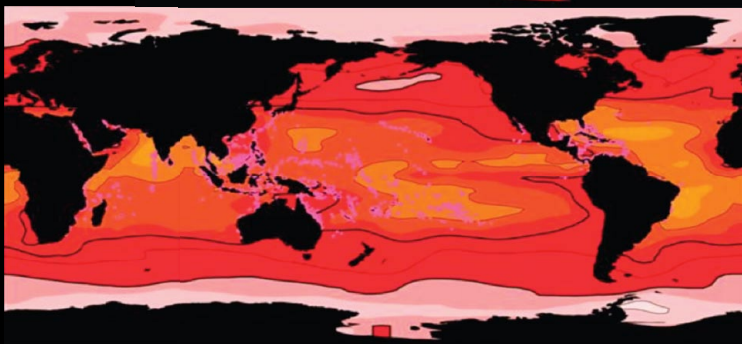
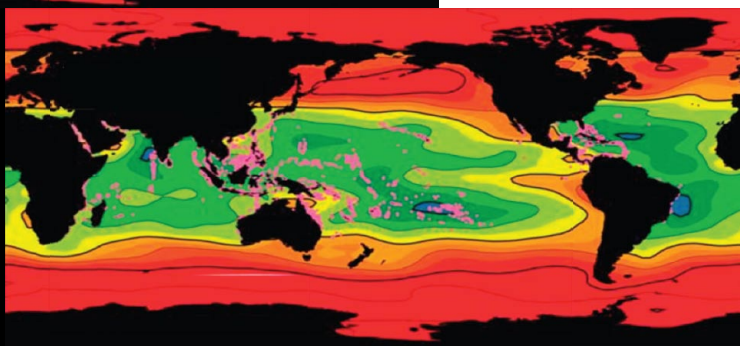
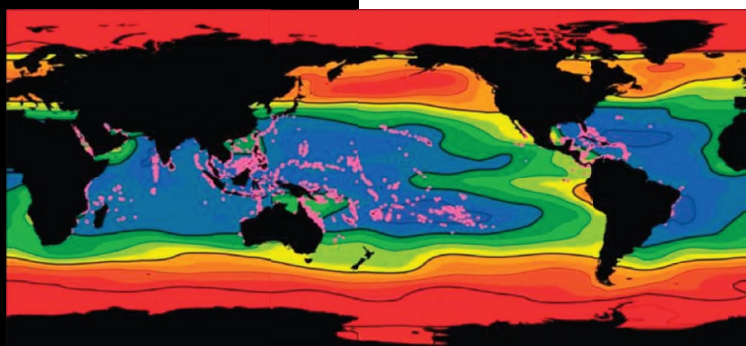




46

Scientific Synthesis of the Impacts of Ocean Acidification on Marine Biodiversity



Convention on
Biological Diversity



UNEP



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**Scientific Synthesis of the
Impacts of Ocean Acidification
on Marine Biodiversity**

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Front cover: Maps of aragonite saturation state at increasing atmospheric carbon dioxide (CO₂) stabilization concentrations. The value in each of the scenarios is derived from the year used for each CO₂ stabilization pathway in the described model, i.e. top: pre-industrial (280ppm in 1765), middle: present-day (380ppm in 2010*), and bottom: a future projection (750ppm in 2250). The year 2250 is derived from the extrapolation that the pathway will increase by 50ppm every 25 years starting from 450ppm in 2100.



* atmospheric CO₂ concentrations are currently 387 ppm (2009)

Credits: Maps: Cao, L and Caldeira, K. (2008). Atmospheric CO₂ stabilization and ocean acidification, *Geophysical Research Letters* 35:L19609, pp. 5. Photograph: Jason Hall-Spencer *et al.* 2008

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FOREWORD

Over the past decade, the Conference of the Parties (COP) to the CBD has consistently raised its concerns about the threats of climate change on biodiversity and provided relevant policy guidance. As a result, significant efforts have been made to raise awareness of the adverse impacts of climate change on biodiversity and the significant role of biodiversity in climate change adaptation and mitigation.

At its fourth meeting, in 1998, the COP expressed its deep concern over the extensive and severe coral bleaching occurring at that time and noted that this event was a possible consequence of global warming. At its fifth meeting, in 2000, the COP urged the UN Framework Convention on Climate Change (UNFCCC) to take all possible actions to reduce the effect of climate change on water temperatures and to address the socio-economic impacts on the countries and communities most affected by coral bleaching.



Recently, in its ninth meeting, the COP raised its concerns about the potential impacts of ocean acidification, a direct consequence of increasing atmospheric CO₂ concentrations, occurring independently of climate change. This publication was prepared as a direct response to a request made by COP 9 to compile and synthesize available scientific information on ocean acidification and its impacts on marine biodiversity and habitats, which is identified as a potentially serious threat to cold-water corals and other marine biodiversity.

Among others findings, this study shows that increasing ocean acidification reduces the availability of carbonate minerals in seawater, important building blocks for marine plants and animals, and that by 2100, 70% of cold-water corals, key refuges and feeding grounds for commercial fish species, will be exposed to corrosive waters. Furthermore, given current emission rates, it is predicted that the surface waters of the highly productive Arctic Ocean will become under-saturated with respect to essential carbonate minerals by the year 2032, and the Southern Ocean by 2050, with disruptions to large components of the marine food web.

This initial effort, produced jointly with the UNEP World Conservation Monitoring Centre (UNEP-WCMC), confirms that there is an urgent need to establish a joint expert process within the CBD, in collaboration with other relevant UN/international organizations, to monitor and assess the impacts of ocean acidification on marine and coastal biodiversity, and to raise the awareness of policy-makers on its possible ecological and socio-economic implications, with a view of promoting a joint work programme between the two sister Rio Conventions, UNFCCC and CBD.

A handwritten signature in black ink, appearing to read 'A. Djoghlaoui'.

Dr. Ahmed Djoghlaoui
Executive Secretary
Convention on Biological Diversity

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