



## Marine Climate Change Impacts Partnership

Dear MCCIP news subscriber,

The MCCIP website has recently been updated with new marine climate change news and events. Below is a brief summary of the new items that have been added. For more details on all of the items listed below, simply go to [www.mccip.org.uk](http://www.mccip.org.uk) and go to the relevant links in the 'news and events' box on our homepage. Please note that the material presented in MCCIP news does not necessarily reflect the views of MCCIP.

- **[Marine defaunation: Animal loss in the global ocean](#)**

Human-caused animal loss in the oceans emerged forcefully only hundreds of years ago, whereas terrestrial defaunation has been occurring far longer. Humans have caused few global marine extinctions, however we have profoundly altered the functioning and provisioning of services in every ocean. Current ocean trends, coupled with terrestrial defaunation lessons, suggest that marine defaunation rates will rapidly intensify as human use of the oceans industrializes. Though protected areas are a powerful tool to harness ocean productivity, especially when designed with future climate in mind, additional management strategies will be required. Overall, habitat degradation is likely to intensify as a major driver of marine wildlife loss. Proactive intervention can avert a marine defaunation disaster of the magnitude observed on land.

- **[Greenland Ice: The warmer it gets the faster it melts](#)**

Melting of glacial ice will probably raise sea level around the globe, but how fast this melting will happen is uncertain. In the case of the Greenland Ice Sheet (GIS), the more temperatures increase, the faster the ice will melt, according to computer model experiments by geoscientists. Satellite observations and paleo-data suggest that the GIS loses mass in response to increased temperatures. The time scale of mass loss and sea level rise are deeply uncertain, and are often assumed to be constant. However, previous ice sheet modelling studies have shown that the time scale of response likely decreases strongly with increasing temperature anomaly. This study maps the relationship between temperature anomaly and the

time scale of the GIS response. Results suggests that the benefits of reducing greenhouse gas emissions, in terms of avoided sea level rise from the GIS, may be greatest if emissions reductions begin before large temperature increases have been realized. Reducing anthropogenic climate change may also allow more time for design and deployment of risk management strategies by slowing sea level contributions from the GIS. [Patrick J. Applegate, Byron R. Parizek, Robert E. Nicholas, Richard B. Alley, Klaus Keller. Increasing temperature forcing reduces the Greenland Ice Sheet's response time scale. *Climate Dynamics*, 2014; DOI: [10.1007/s00382-014-2451-7](https://doi.org/10.1007/s00382-014-2451-7)]

- **[Arctic warming will promote Atlantic-Pacific fish exchange](#)**

For millions of years, large parts of the marine biotas of the North Atlantic and North Pacific have been separated by harsh climate conditions in the Arctic. Throughout much of the Quaternary Period, inhospitable environmental conditions above the Arctic Circle have been a formidable barrier separating most marine organisms in the North Atlantic from those in the North Pacific. A new study underlines that climate change has begun to weaken this natural barrier promoting the interchange of fishes between the two oceans along with many ecological and economic consequences. Arctic warming will promote Atlantic–Pacific fish interchange. Rapid warming has begun to lift this barrier, potentially facilitating the interchange of marine biota between the two seas. This exchange of fish species may trigger changes for biodiversity and food webs in the North Atlantic and North Pacific, with ecological and economic consequences to ecosystems.

- **[Predicting climate-driven regime shifts versus rebound potential in coral reefs](#)**

Climate-induced coral bleaching is among the greatest threats to coral reefs, causing widespread loss of live coral. Conditions under which reefs bounce back from bleaching or shift to algal dominance are unknown, making it difficult to predict reef responses under climate change. This paper documents and predicts long-term reef responses to a major climate-induced bleaching event that caused unprecedented mortality of Indo-Pacific corals. A range of factors are identified that accurately predicted ecosystem response to the bleaching event. Recovery was favoured when reefs were structurally complex and in deeper, nutrient-poor water, with high density of juvenile corals and herbivorous fishes. Although conditions governing regime shift or recovery dynamics were diverse, pre-disturbance quantification of simple factors such as structural complexity and

water depth accurately predicted ecosystem trajectories. These findings foreshadow the outcomes for reef ecosystems in response to climate change, thus guiding management and adaptation.

- **[Public belief in climate change reaches 10-year high](#)**

In December 2013 and January 2014, an exceptional run of winter storms hit the UK, leading to widespread flooding. Although it is very difficult to attribute any single set of weather events to climate change, such extremes of weather are predicted to be more frequent and severe in the UK under a changed climate. A research team from Cardiff University's School of Psychology, set out to understand how the British public had responded to the flooding last winter. The results of the research study, funded by ESRC, show that the British public's belief in the reality of climate change and its human causes rose significantly last year - and is now at its highest since 2005. The research team also found that more people are prepared to accept the reality of climate change; the flooding events were seen as a sign of things to come; and flood-affected people were even more certain about climate change.

- **[Planning for Climate Change Conference Series. Dublin 12th March 2015 & London 25th June 2015](#)**

Conferences of the Planning for Climate Change Series are being held in 2015 and 2016 in London and Dublin. At these Conferences, the key issues relating to climate change adaptation and mitigation are discussed and debated by a range of contributors from the policy, research and academic sectors. If you are interested in developing strategies that support sustainable communities and economies within the context of an ever changing climate, then the Planning for Climate Change Conference is an ideal event to attend.

**News stories:** If there are any relevant news items or events that you would like to highlight on the MCCIP website please contact Susana Lincoln at [office@mccip.org.uk](mailto:office@mccip.org.uk). New items will be added to the website next month.

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