

# The ticking time bomb of climate change and sea-level rise

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The 350-year window between 1750 and 2100 may seem like a long time in the context of human lifespans. However, in a seminal paper published in *Nature Climate Change*, Clark *et al.* (2016) have questioned the overemphasis in the global climate discussion on climate change as a 21<sup>st</sup> century only phenomenon, and on near term impacts up to 2100. They argue that any increases in carbon dioxide (CO<sub>2</sub>) from human activity will remain in the atmosphere and continue to affect Earth's climate for tens to hundreds of thousands of years.

The extent of potential sea-level rise projected by Clark *et al.* for the much longer time frame of 10,000 years is orders of magnitude greater than that projected for the year 2100 in the IPCC 5<sup>th</sup> Assessment Report. The authors argue that this focus on near-term impacts has given a falsely reassuring impression that the effects beyond 2100 are of lesser importance and that it may be possible to reverse the effects through later emissions reductions.

It is imperative that future global climate policy discussions are underpinned by a clear understanding that we are already committed to significant global warming and sea-level rise that will have profound impacts on future generations and on Earth's ecosystems. Moreover, that continued emissions, even if reduced, will commit us to further warming and sea-level rise. The policy discussions must also recognise and support the critical role of climate and ocean science in ensuring an appropriate, evidence based response to the changes to come. The only option to avoid catastrophic climate change is to make rapid and fundamental changes to our energy, industrial and agricultural systems such that we move towards net-zero or negative carbon emissions within 20-30 years. This may sound dramatic, but compared to the potential human cost, it is basic common sense.

This paper summarizes the key messages of a Science Commentary published in 2017 by the European Marine Board ([www.marineboard.eu](http://www.marineboard.eu)).

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