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## Today's greenhouse gas levels could result in up to 7 degrees of warming

Lucy Cormack Published: September 27, 2016 - 1:27AM

The longest continuous reconstruction of the Earth's surface climate suggests that current greenhouse gas levels could commit the planet to as much as 7 degrees of warming in the next 1000 years.

The study, *Evolution of global temperature over the past 2 million years*, was conducted by Stanford University then doctoral student Carolyn Snyder, and marks the longest continuous reconstruction of the Earth's surface climate to date.

It comes as <u>a national poll found public support</u> for federal government-led action on climate change has bounced back, with increased support for renewable energy production.

The Climate Institute's Climate of the Nation poll found 65 per cent of Australians want their country to lead the world on climate change solutions, a marked increase since the time of divisive debates about the Gillard government's carbon tax.

Published in a report for the journal *Nature*, the study revealed that global temperatures were cooling until around 1.2 million years ago, before stalling until the present.



"This research was in response to a fair amount of great paleo-climate records that had been produced by a variety of researchers over long periods of time, but increasingly people were using different approximations for global temperature," she said.

"We didn't have a global temperature record that we could compare, so there seemed to be this gap."

Previously global average surface temperature has only been reconstructed for isolated periods, like the past 20,000 years.

However Dr Snyder's research applied a network of more than 20,000 sea surface temperature reconstructions from 59

ocean sediment cores, in order to recreate temperatures at 1,000-year intervals for the past two million years.

"One of the mysteries in the earth's past, is what the trigger was when the earth went in and out of ice ages and warmer periods like we have today," she said.

"What we've seen in the past is that in cold periods ice sheets expanded and they had an effect on the reflectivity of the earth's surface that made the earth get colder."

In contrast, she said, warmer climate states meant "less sea ice, more ocean water and varied ocean dynamics, which would in turn cause changes in the earth's temperature, because less would be reflected off the earth's surface".

"This study is not a forecast or a prediction, but it gives a ballpark context to the relationship between greenhouse gas levels and temperatures in the past ... to give as robust a picture that we can of the earth's dynamic."

In December last year Australia was among 174 signatories to the Paris Agreement, the world's first comprehensive climate agreement, setting out a global action plan to global warming to well below 2 degrees.

The Australian government has said it would seek to ratify the Paris Agreement on climate change by the end of the year. It has set a 2030 emissions reduction target of 26 to 28 per cent below 2005 levels.

A report released by a European think tank earlier this month said Australia had "a high level of responsibility for the greenhouse gases that have caused the climate problem", but acknowledged the country's wealth and technical capabilities gave it "a level of capacity to help solve it".

## THE HEAT IS ON

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Professor Eelco Rohling of the Research School of Earth Science at the Australian National University, said Dr Synder's research was valuable for being the first statistically approached temperature reconstruction over 2 million years, from multiple locations, but said the emphasis on the potential warming of the planet acted as "a bit of a red herring in the discussion".

"It takes the carbon dioxide component and compares it to climate temperature responses. As a calculation that is not wrong, but it doesn't translate to what is happening in the future, unless you make significant corrections."

"The estimate obtained is just one of a whole range of estimates ... It happens to be a higher-end estimate, and as such catches attention ... but proper, deep analysis is needed before much hay can be made of that one specific value."

This story was found at: http://www.smh.com.au/environment/todays-greenhouse-gas-levels-could-result-in-up-to-7-degrees-of-warming-20160926-grojp8.html