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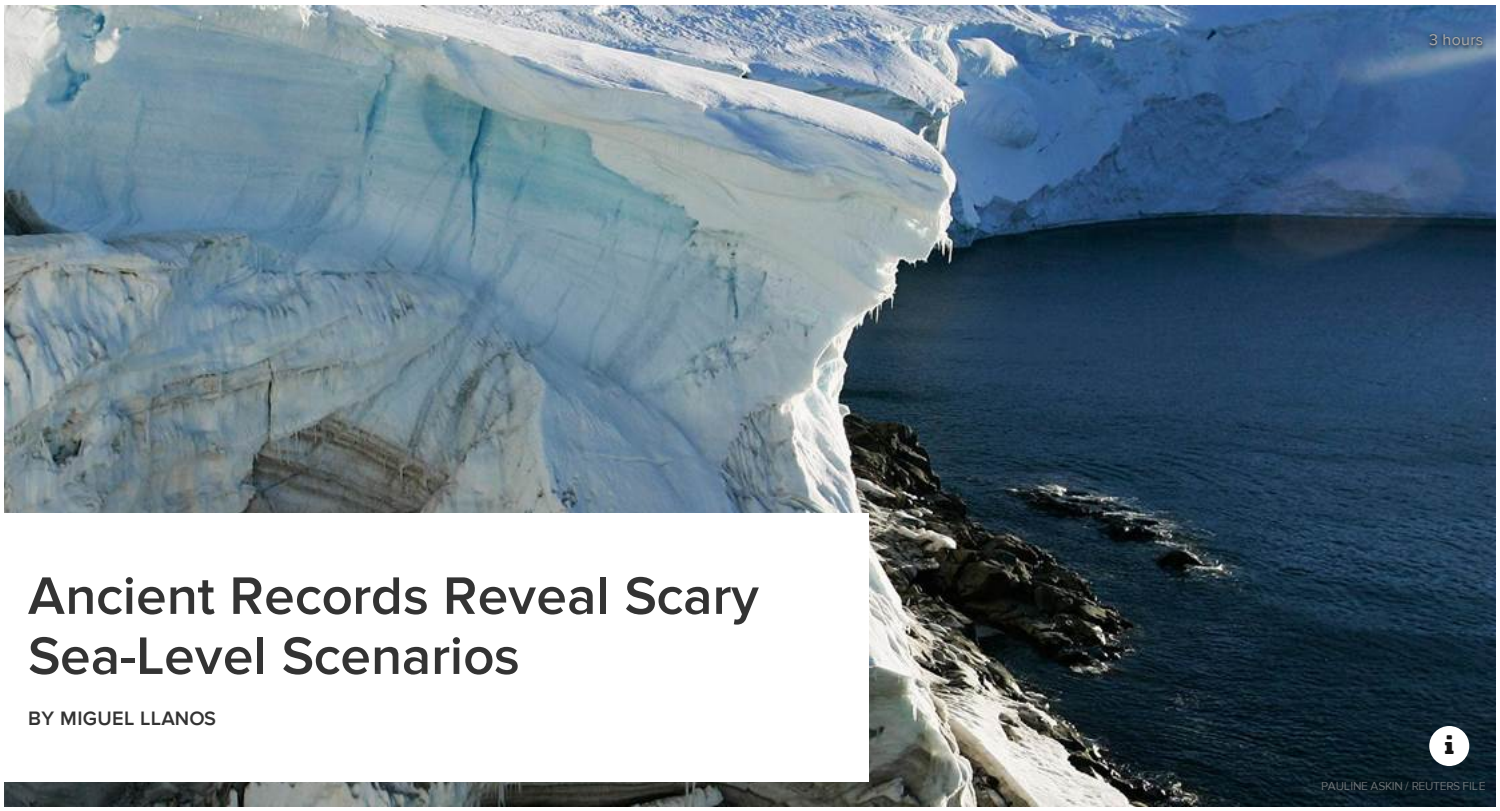


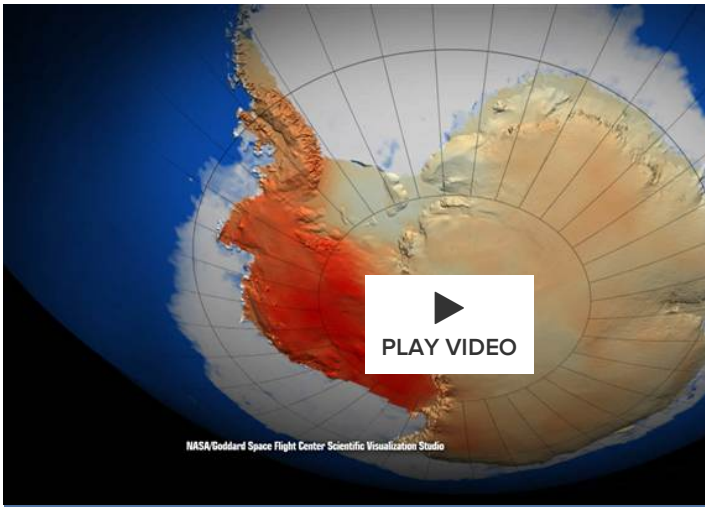
Ancient Records Reveal Scary Sea-Level Scenarios

BY MIGUEL LLANOS

Sediment cores from below the Red Sea bolster two key tenets of climate experts, scientists reported Thursday: A three-foot sea level rise in a century is by no means extreme, and once ice sheets start to melt, that process is likely to accelerate for several centuries.

Using 500,000-year-old sediment cores, scientists from Australian National University reported that data covering more than 120 episodes of sea level change support those predictions of what Earth's near future might hold.

"We can quantify how fast sea level rose in the past, in response to natural climate processes," study co-author Katharine Grant, a climate researcher at the Australian National University, told NBCNews.com.



Antarctica Ice Sheet Is Disintegrating

NIGHTLY NEWS

And that, the team said, offers parameters for what to expect in a world that most scientists believe is warming because of man-made emissions of greenhouse gases.

“Times with close to the modern amount of ice on Earth show sea-level rise rates of up to about 1 meter per century,” Grant said. “This is in the range of sea-level rise predictions for the coming century, so what our study shows is that rise rates of this order of magnitude are not at all excessive or extreme but within the range of ‘normal’ climate variability for present-day-equivalent ice volumes.”

Co-author Eelco Rohling, also of the Australian National University and the University of Southampton, said the study is the first to show how long ice-sheet melting can persist.

"This happened within 400 years for 68 percent of all 120 cases considered, and within 1,100 years for 95 percent,” he said in a statement issued with the study. “In other words, once triggered, ice-sheet reduction, and therefore sea-level rise, kept accelerating relentlessly over periods of many centuries."

What does that mean for Earth today? "Man-made warming spans 150 years already and studies have documented clear increases in mass-loss from the Antarctic and Greenland ice sheets,” Rohling said. “Once under way, this response may be irreversible for many centuries to come."

Economy in Peril from Global Warming

NBCNEWS.COM

The study also supports a 2013 study by Rohling and others that looked at how modern sea-level trends compare with those before any human influence. The earlier work “found that modern sea-level rise seems to be conforming to what we would expect from high-end 'natural-style' responses to warming,” Rohling told NBCNews.com. “That is, after 150 years of increasing warming, the ice sheets would only recently be reaching a level of noticeable contribution.”

Published in the peer-reviewed journal Nature Communications, the study details how the team used data from sediment cores under the Red Sea, an area sensitive to sea-level changes because its only connection with the open ocean is through a shallow strait.

The cores record wind-blown dust particles, which the team then linked to a well-dated climate record from Chinese stalagmites. Pronounced changes of dust and stalagmite records were seen at the end of each ice age, allowing the team to date the sea-level record in detail.

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MIGUEL LLANOS

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ENVIRONMENT

an hour

Perovskites? New Rock Star Gives Lower-Cost Solar Power a Boost: Study

A common mineral structure, not some expensive metal, has been used to capture energy from the sun and store it as hydrogen, bolstering a new research path toward affordable and clean fuel, scientists reported Thursday. The new rock stars of the hydrogen field are perovskites. Made from various common chemical constituents, perovskites were combined with inexpensive catalysts to split water into hydrogen and oxygen. The system converted 12.3 percent of the sun's energy into hydrogen –- the highest efficiency so far for abundant materials, the scientists at a Swiss research lab reported in the peer-reviewed journal Science.

"Both the perovskite used in the cells and the nickel and iron catalysts making up the electrodes require resources that are abundant on Earth and that are also cheap," researcher Jingshan Luo said in a statement. "However, our electrodes work just as well as the expensive platinum-based models customarily used." The team noted that conversion to hydrogen solves a bottleneck for solar power: how to store the energy.

Even the 12.3 percent is "impressive given that this is in the early stage of research," said Dana Christensen, deputy director for science and technology at the National Renewable Energy Laboratory in Golden, Colo. "I would not categorize this as a 'breakthrough' but neither would I categorize it as 'another small step' — it is much more than that," Christensen told NBC News. The potential, he added, is that the abundance of perovskites "opens the door to cheaper solar cells and, therefore, more cost-effective manufacturing and deployment."

IN-DEPTH

- Tim Cook: Apple's New HQ Will Be 'Greenest' on Planet