

# Oceans may rise over a metre by 2100, five metres by 2300

World

Science

Climate change

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Oceans are likely to rise as much as 1.3 metres by 2100 if Earth's surface warms another 3.5 degrees Celsius, scientists warned Friday.

By 2300, when ice sheets covering West Antarctica and Greenland will have shed trillions of tonnes in mass, sea levels could go up by more than five metres under that temperature scenario, redrawing the planet's coastlines, they reported in a peer-reviewed survey of more

than 100 leading experts.

About 10% of the world's population, or 770 million people, today live on land less than five metres above the high tide line.

Even if the Paris climate treaty goal of capping global warming below 2C is met - a very big "if" - the ocean watermark could go up two metres by 2300, according to a study in the journal *Climate Atmospheric Science*.

Earth's average surface temperature has risen just over one degree Celsius since the pre-industrial era, a widely used benchmark for measuring global warming.

"It is clear now that previous sea-level rise estimates have been too low," co-author Stefan Rahmstorf, head of Earth system analysis at the Potsdam Institute for Climate Impact Research (PIK), told AFP.

The new projections for both the 2100 and 2300 horizons are significantly higher than those from the UN Intergovernmental Panel on Climate Change (IPCC), including a special report on oceans it released in September.

"The IPCC tends to be very cautious and conservative, which is why it had to correct itself upwards already several times," Rahmstorf said.

### **Ice sheets the main driver**

Sea-level projections in the IPCC's landmark 2014 Assessment Report were 60 percent above those in the previous edition, he noted. A new Assessment will be finalised by the end of next year.

While less visible than climate-enhanced hurricanes or persistent drought, sea level rise may ultimately prove the most devastating of global warming impacts.

Indeed, it is the extra centimetres of ocean water that make storm surges from ever-stronger tropical cyclones so much more deadly and destructive, experts say.

Benjamin Horton, acting chair of the Nanyang Technical University's Asian School of the Environment in Singapore, led the survey to give "policymakers an overview of the state of the

science", a statement said.

Across the 20th century, sea level rise was caused mainly by melting glaciers and the expansion of ocean water as it warms.

But over the last two decades the main driver has become the melting and disintegrating of Earth's two ice sheets.

Greenland and West Antarctica are shedding at least six times more ice today than during the 1990s. From 1992 through 2017 they lost some 6.4 trillion tonnes in mass.

Over the last decade, the sea level has gone up about four millimetres per year. Moving into the 22nd century, however, the waterline could rise ten times faster, even under an optimistic greenhouse gas emissions scenario, the IPCC has said.

The Greenland and West Antarctic ice sheets hold enough frozen water to lift oceans about 13 metres. East Antarctica, which is more stable, holds another 50 metres' worth.

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