

Doomsday Glacier's melting forces captured by skinny robot



The Thwaites ice shelf in Antarctica, also known as the Doomsday Glacier, is melting so quickly that it is shattering, leading to a significant rise in sea levels say scientists. They used a four-metre robot called Icefin to explore the grounding line, where the ice first protrudes over the sea, and discovered a critical point where the glacier is breaking up much faster than previously thought. Despite finding that much of the flat underwater area explored by the robot is melting slower than anticipated, researchers warn that the melting is still accelerating and will remain a significant issue a century from now.

The glacier earned its Doomsday Glacier nickname due to the massive amount of ice it holds and the potential for sea levels to rise over 60 centimetres if it all melts, which could take hundreds of years. The melting of the glacier is primarily caused by basal melting,

where warmer water eats away at the ice's bottom.

The research is part of a US\$50 million international research effort aimed at better understanding Thwaites. The good news is that researchers found that much of the flat underwater area explored by the robot is melting much slower than anticipated. However, this does not change the amount of ice coming off the land and driving up sea levels, according to Peter Davis, an oceanographer at the British Antarctic Survey and a lead author of one of the studies.

Complicated study areas

The robot explored the eastern, larger and more stable part of Thwaites, and while researchers found staircase-like steps, or crevasses, in parts of this more stable eastern side, the main trunk – which is breaking up much faster – was too dangerous to reach. Landing a helicopter on the ice to observe the melting from below would be incredibly difficult, according to Eric Rignot of the University of California Irvine, a co-author of the studies.

Thwaites is rapidly changing – much more rapidly than when researchers began this work five years ago or even when they were in the field three years ago, said Oregon State University ice researcher Erin Pettit, who was not involved in the studies. Although the results help increase understanding of how Thwaites is diminishing, it will still be a major issue a century from now, said Ted Scambos of the National Snow and Ice Data Center.

When the Icefin robot travelled through the hole in the ice made by a jet of hot water, it revealed not just melting water, crucial crevasses and seabed, but also creatures, particularly sea anemones, swimming beneath the ice. The discovery was unexpected, but Britney Schmidt, the robot's creator and a polar scientist at Cornell University, described it as a “really wild experience”.

