Robot 'Dolphins' Give Clues to Antarctic Melt in Data Revolution

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An international study led by the California Institute of Technology used three yellow "gliders", about 2 metres (6 feet 6 inches) long and each costing $240,000, to measure temperature and salinity in the depths of the Weddell Sea off Antarctica.

The measurements showed how vast eddies drive heat into shallower waters around Antarctica, helping thaw coastal ice.

The findings, in the journal Nature Geoscience, back up theories about how heat moves south and set benchmarks to track climate change. The U.N. panel of climate scientists says both Greenland and Antarctica are losing mass, raising sea levels.

"A revolution is underway in Antarctic data," Karen Heywood, a co-author of the study at England's University of East Anglia, said of how such battery-powered robots are raising the amount of data collected and cutting costs.

One of the three gliders got lost, but Heywood said it still worked out cheaper than a similar trip in 2007 which required a ship costing $30,000 a day, with many stops, to collect less data. Robot gliders can be left for months, diving and surfacing with tiny adjustments to buoyancy.

"We call them mechanical dolphins," she told Reuters of the gliders made by Norway's Kongsberg. Other makers are U.S. Teledyne Technologies and France's Alcen Group.

Elsewhere, about 3,600 free drifting "Argo floats" have been deployed worldwide since 2000 to

help monitor temperatures and salinity in the seas. In the air, drones have also been used by organisations such as NASA to monitor ice.

Katharina Nygaard, of Kongsberg's subsea division, estimated the firm had a quarter of a world market of 800 gliders. Demand "is growing in the marine research world along with small but noticeable uptake by defence and commercial operators," she said.

In the Arctic, gliders are tracking higher temperatures that are driving fish stocks north. "We've moved from prototypes to the more regular use of gliders in the last year," said Peter Haugan, professor at the University of Bergen in Norway.