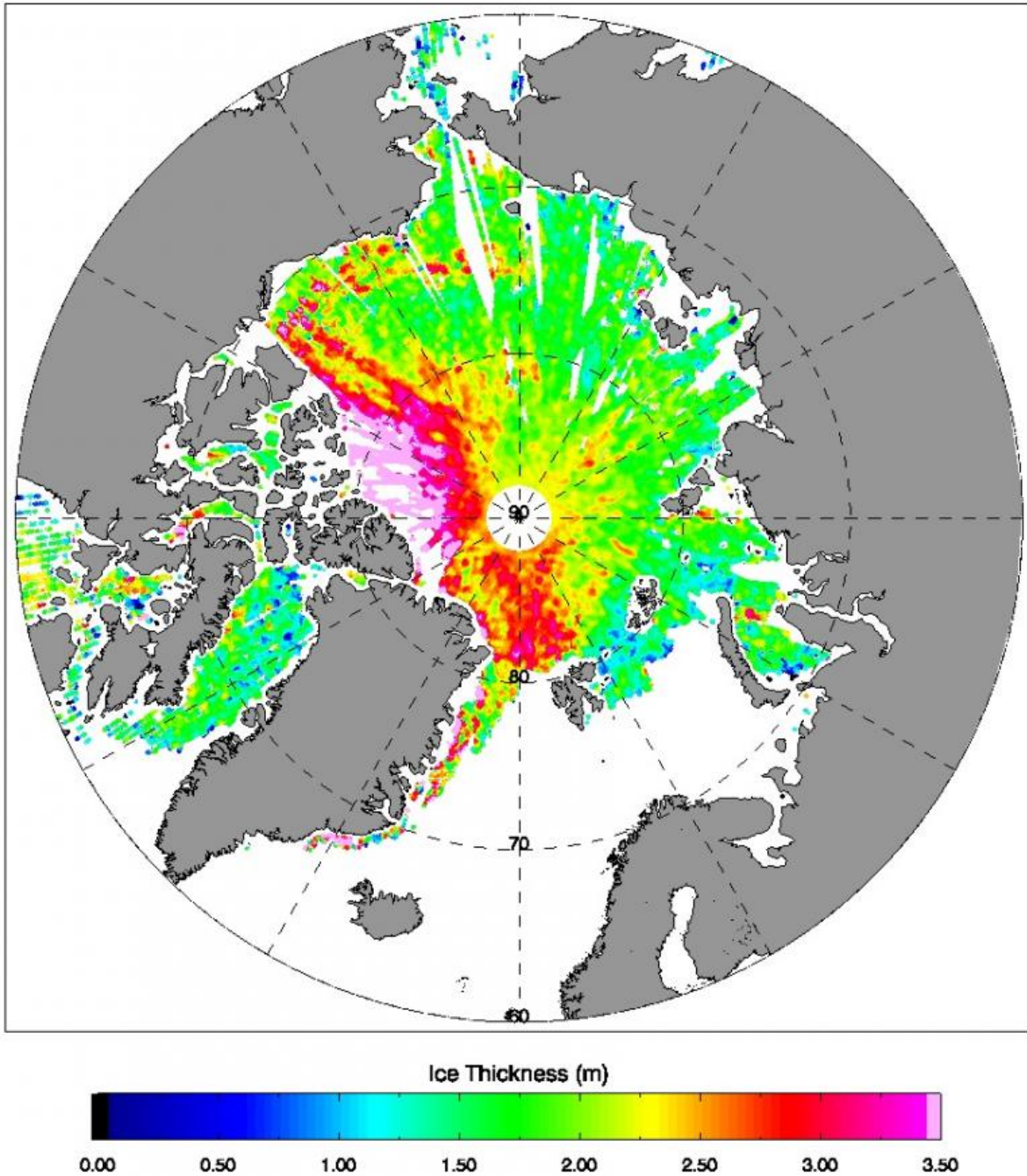


Fast access to CryoSat's Arctic ice measurements now available

April 17 2015



This image demonstrates the latest 28-day (18 March to 14 April 2015) Arctic sea-ice thickness measurements from CryoSat, now available via a new website. The interactive map allows users to zoom in on various regions of the Arctic for a closer look at ice thickness. Credit: ESA/CPOM

ESA's ice mission has become the first satellite to provide information on Arctic sea-ice thickness in near-real time to aid maritime activities in the polar region.

Marking five years in orbit just last week, CryoSat is the first mission to deliver complete maps of Arctic sea-ice thickness – a key indicator of [global climate change](#) and of the state of the Arctic itself.

The satellite carries a radar altimeter that can 'see' through clouds and in the dark, providing continuous measurements of polar ice thickness.

With specialist data processing provided by the UK's Centre for Polar Observation and Modelling (CPOM), these measurements can now be delivered within two days of acquisition through a [website launched today](#).

The rapid data processing is important for managing and planning activities affected by Arctic sea ice, such as shipping, tourism, Arctic exploration and search and rescue.

"This new capability goes far beyond CryoSat's original purpose, which was to collect measurements for scientific research," said Professor Andy Shepherd, CPOM Director and the CryoSat's principal scientific advisor.

"The mission is now an essential tool for a wide range of services operating in areas of the planet where sea ice forms."

With the rapidly increasing economic growth in the Arctic, timely and routine information on sea-[ice thickness](#) will help to ensure that users of the Arctic can plan and carry out their operations safely and with care.



The CryoSat mission provides data to determine the precise rate of change in the thickness of the polar ice sheets and floating sea ice. It is capable of detecting changes as little as 1 cm per year. The information from CryoSat is leading to a better understanding of how the volume of ice on Earth is changing and, in turn, a better appreciation of how ice and climate are linked. Credit: ESA – P. Carril

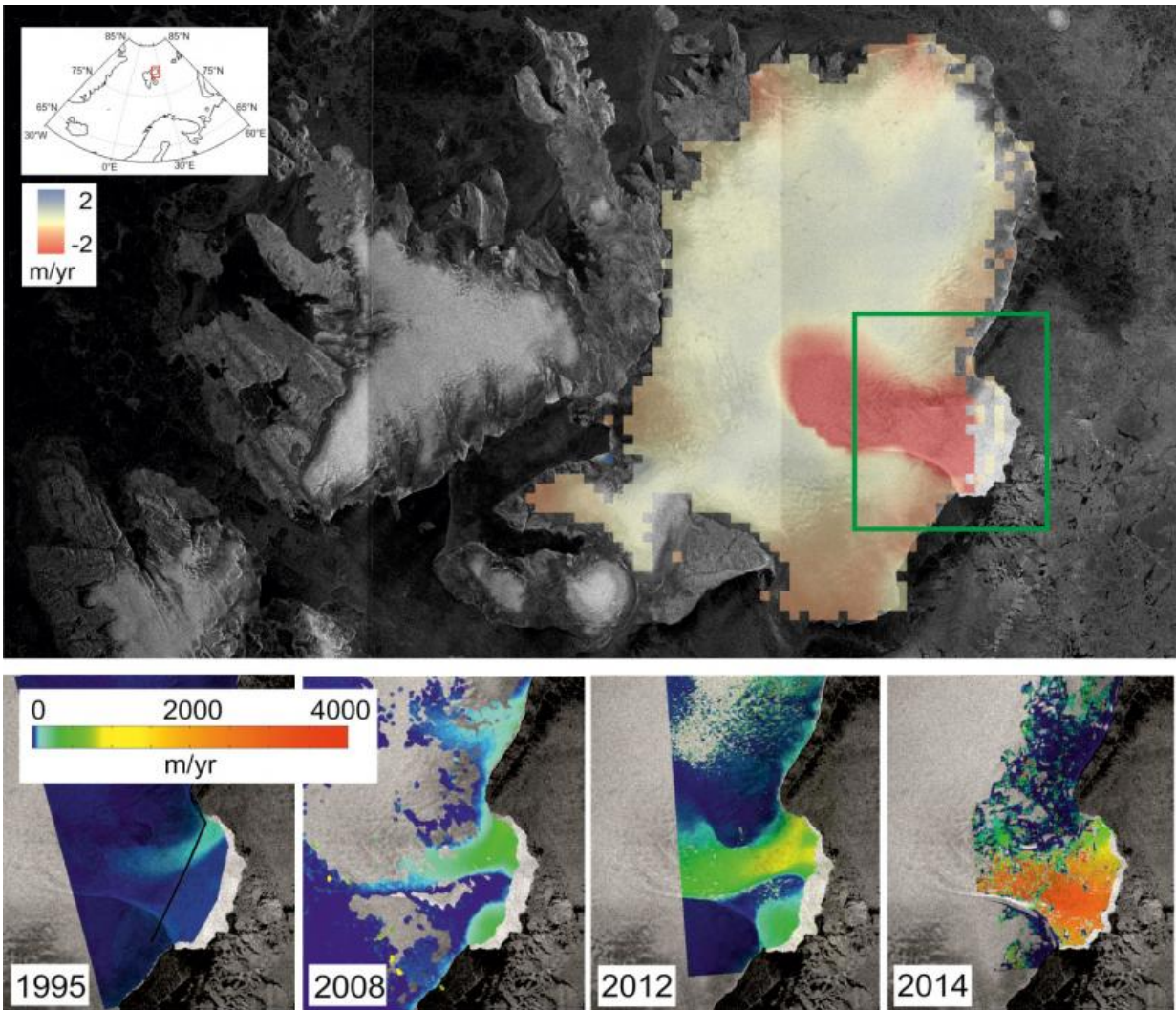
The rapid access to data will also ease scientific research in the [polar region](#), improving our understanding of how this sensitive environment is responding to climate change.

"We've already found that, although Arctic sea ice set a record this year for its lowest ever winter extent, it was about 25 cm thicker, on average,

than in 2013, when CryoSat recorded its lowest winter volume," explained CPOM researcher Rachel Tilling.

The latest measurements available on the new website also show that sea ice around Norway's Svalbard Archipelago is today only a metre thick – approximately half of what it was in the winter of 2011 just after CryoSat was launched.

Professor Shepherd noted, "The thinner ice around Svalbard coincides with a warming of the surrounding Barents Sea.



The main figure (top) shows the rate of ice cap elevation change between 2010 and 2014 observed by CryoSat, overlaid on an image acquired by Sentinel-1A (in 2014). Red indicates that the ice surface is lowering. In the southeast region (green box) ice thinning far exceeds the colour scale of 2 m per year. A closer look at the southeast region is shown in the four smaller figures below. These figures show the evolution of ice velocity over the last two decades. Ice velocity in 2014 was mapped using Sentinel-1A and the DLR German Aerospace Center's TerraSAR-X mission. Credit: CPOM/GRL

"We've already seen the impact of this change in ocean conditions on Svalbard's Austfonna ice cap, where glaciers have speeded up at unprecedented rates, and the rapid retreat of sea ice in this sector of the Arctic is almost certainly down to the same thing."

CryoSat's realtime measurements were first trialled in the spring of last year, to guide a scientific experiment north of Greenland led by CPOM. The service will be tested next week when the Norwegian Polar Institute's Young Sea Ice mission carries out experiments in the [sea-ice](#) pack north of Svalbard.

"After five years of exploitation, CryoSat has provided important answers but also has exposed our lack of knowledge on several fundamental scientific questions," said Tommaso Parrinello, CryoSat Mission Manager.

"Similarly, CryoSat has shown the importance of its measurements for current and future operational and forecasting services on all Arctic latitudes, paving the way for the development of similar missions in future."

Provided by European Space Agency

Citation: Fast access to CryoSat's Arctic ice measurements now available (2015, April 17)
retrieved 24 April 2024 from <https://phys.org/news/2015-04-fast-access-cryosat-arctic-ice.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.