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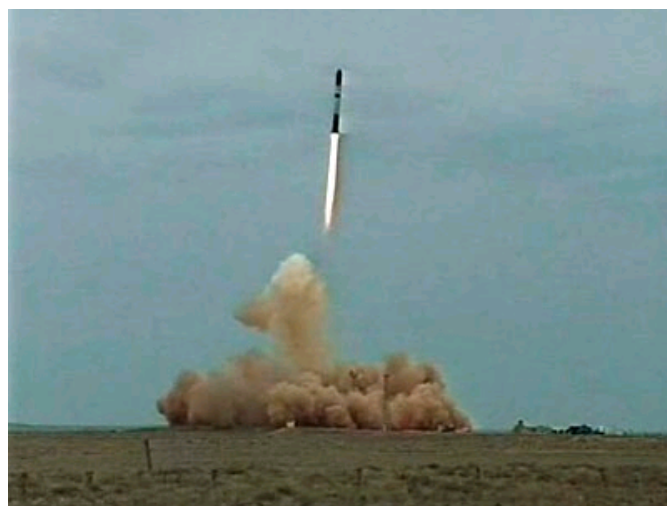
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## Ice mission blasts off

Apr 8, 2010



CryoSat-2 launches from the Baikonur Cosmodrome

A satellite that will monitor changes in land- and sea-ice levels launched from the Baikonur Cosmodrome in Kazakhstan at 15:57 CET today. The €135m **CryoSat-2** satellite, built by the European Space Agency (ESA), will be used to discover the extent to which the Antarctic and Greenland ice sheets are contributing to global sea-level rises and will also measure tiny variations in the thickness of ice floating in the polar oceans.

Around 90% of the thickness of floating sea-ice lies below sea level. This part of an ice floe is known as the "draft". The aim of CryoSat-2 is to measure the thickness of the remaining 10% of the floe that is above sea level, known as the "freeboard". Knowing the depth of the freeboard then allows researchers to work out the total sea-ice thickness and estimate the floe's mass.

Weighing 700 kg, CryoSat-2 will orbit the Earth around its poles 720 km above sea level. CryoSat-2 will measure the depth of the freeboard using its main instrument – the Synthetic Aperture Interferometric Radar Altimeter (SIRAL). What SIRAL does is to send a burst of microwave pulses every 50 microseconds towards Earth. The returning echoes are then used to measure the distance between the satellite and the sea-ice to construct a 3D map.

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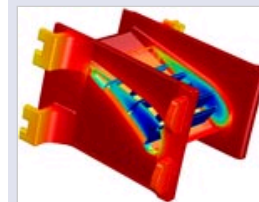
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### [CryoSat-2 will measure changes in sea-ice levels](#)

Over the next three years, CryoSat-2 will measure changes in the thickness of sea-ice to an accuracy of a few centimetres to detect whether the ice is thinning or getting thicker. CryoSat-2 will use the same technique to measure changes to the thicknesses of huge land-ice sheets such as those in the Antarctic and Greenland.

"We are very much looking forward to delivering the data the scientific community so badly needs to build a true picture of what is happening in the fragile polar regions." says physicist Richard Francis, project manager of CryoSat-2.

CryoSat-2 – the name comes from the Greek *kryos* meaning cold or ice – is the satellite's second incarnation after CryoSat-1 was destroyed by a launch failure five years ago. In 2006 the ESA decided to rebuild the satellite and launch it in 2009 but further delays have postponed the launch until today.

The mission is the third of seven Earth-monitoring satellites that form the ESA's Earth Explorer programme. The first in the series, the Gravity Field and Steady-state Ocean Circulation Explorer (GOCE) was launched in March last year, while the second, the Soil Moisture and Ocean Salinity (SMOS) spacecraft, was launched last November. Researchers expect CryoSat-2 to relay its first data in only a few days' time.

#### **About the author**

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