

→ SNOW AND ICE

Earth's snow and ice-covered areas are mainly found around the poles but these frozen places also extend across the globe, with glaciers found right up to the equator. Satellite observations are key for monitoring the changes occurring across these often inhospitable areas.

Until recently, only a third of the world's 200,000 glaciers had been mapped but now, partly thanks to the efforts of the Climate Change Initiative Glaciers team, there exists a globally complete inventory of glaciers.

Alongside the mapped area, satellites can provide information on glacier volume and the speed that they shrink or grow. CCI researchers estimate 9,000 gigatonnes of glacier ice has been lost since 1961, contributing 27 mm to global sea level rise.

Another big influence on future sea level rise is the change in the amount of ice stored in Antarctica and Greenland. These ice sheets, found at the south and north poles respectively, contain 99% of the world's freshwater ice. It's often hard to tell from conventional maps but the Antarctic Ice Sheet is over 8 times larger than the Greenland Ice Sheet.

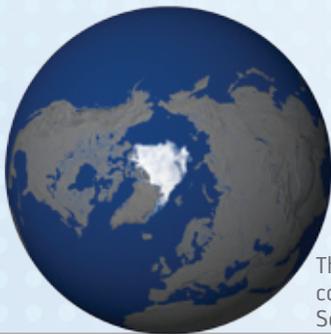


Satellites routinely monitor the rate at which ice flows through, and is lost, from the polar ice sheets. The amount of ice lost from Greenland and Antarctica has increased recently, with the ice sheets now losing almost three times as much ice as they were in the early 1990's.

Surrounding the ice sheets at both poles you can find sea ice, which grows and melts on a seasonal basis. In the Arctic, the ice pack can cover around 15 million square kilometres by the end of winter, melting to a quarter of this size by the end of the summer.

Satellites provide the only observations good enough to assess sea ice changes over long time periods. Space-borne measurements show a significant loss of ice in the Arctic in recent years while in the Antarctic there has been a slight increase.

Snow and permafrost are the subject of two new CCI projects. Dominating large parts of the land surface at high latitudes, both variables are expected to be affected in a warming climate. Using satellites data, these new long-term global maps will help to more fully understand and model our past, current and future climate.



The Arctic Sea Ice minimum concentration, summer September 2012.

