



Antarctic Peninsula's ice shelves

— USGS

Ice shelves are retreating in the southern section of the Antarctic Peninsula, according to a recent report released by the U.S. Geological Survey. The USGS study is the first to document that every ice front in the southern part of the Antarctic Peninsula has been retreating from 1947 to 2009, with the most dramatic changes occurring since 1990. The USGS previously documented that the majority of ice fronts on the entire Peninsula have also retreated during the late 20th century and early 21st century.

The ice shelves are attached to the continent and already floating, holding in place the Antarctic ice sheet which covers about 98 percent of the Antarctic continent. As the ice shelves break off, it is easier for outlet glaciers and ice streams from the ice sheet to flow into the sea. The transition of that ice from land to the ocean is what raises sea level.

“This research is part of a larger ongoing USGS project focused on studying the entire Antarctic coastline in detail,” said USGS scientist Jane Ferrigno. “This is important investigation because the Antarctic ice sheet contains 91 percent of Earth’s glacier ice. Moreover, the loss of ice shelves in Antarctica may be the harbinger of other changes. We need to be alert and continually observe how our climate system is changing.”

Given that the southern part of the Antarctic Peninsula has the coolest temperatures, the retreat of ice shelves in this area is surprising. From among the five major ice shelves in this southern section—Wilkins, George VI, Bach, Stange and the southern portion of Larsen Ice Shelf—the ice lost since 1998 from the Wilkins Ice Shelf alone is conspicuous, totaling more than 4,000 square kilometers—an area larger than the state of Rhode Island.

The USGS is working collaboratively on this project with the British Antarctic Survey, U.K.’s Scott Polar Research Institute, and Germany’s Bundesamt für Kartographie und Geodäsie. The research is also part of the USGS Glacier Studies Project, which is monitoring and describing glacier extent and change over the entire planet using satellite imagery.

The report, “*Coastal-Change and Glaciological Map of the Palmer Land Area, Antarctica: 1947—2009*,” is available online at <http://www.glaciers.er.usgs.gov>.