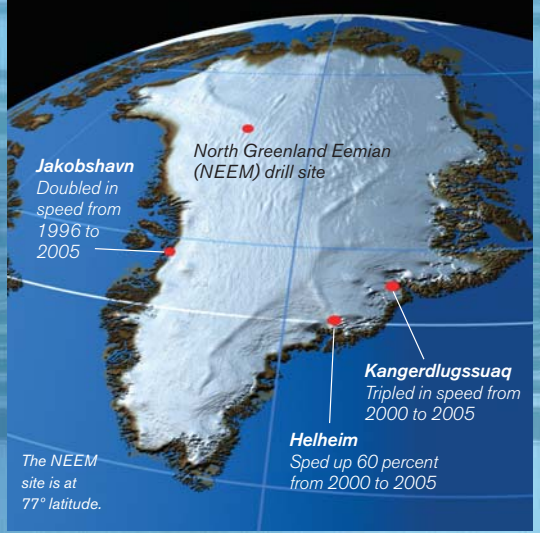
Quest for Ancient Ice

To understand how quickly ice sheets will deteriorate, thereby raising sea levels, scientists want to know more about the Eemian interglacial, a period of geologic history between 130,000 and 115,000 years ago. During that period, eccentricities in Earth's orbit caused Greenland's temperatures to jump 7 to 8 °C, and sea levels rose at least three to five meters higher than they are now. Surviving Eemian ice would contain a trove of information about the temperatures and atmospheric conditions of the time. But ice from the entire Eemian has never been recovered in Greenland. Using advanced radar, scientists this year chose a new spot to seek it.

A team of scientists plans to return next summer to an encampment in northern Greenland and drill down 2,500 meters (red line) through the ice cap to search for Eemian ice.

Accelerating Glacier Loss

Across southern Greenland, vast glaciers—including the three shown below—have been flowing toward the sea much faster in recent years. By trying to understand the underlying processes, scientists hope to improve predictions of sea-level rise.



Deep ice layers—invisible to the naked eye—become visible thanks to advanced radar and postprocessing software. The layers represent changes in the electrical conductivity of the ice, which are primarily due to increased acidity from past volcanic activity. Seeing such layers can help scientists tell whether ice from a particular period is intact or distorted by glacial movements or melting.

Scientists believe that a 120-meter-thick chunk of ice, from near the bottom of the 2,500-meter-thick ice sheet, may contain intact ice from the entire Eemian period.

JOHN MACNEILL