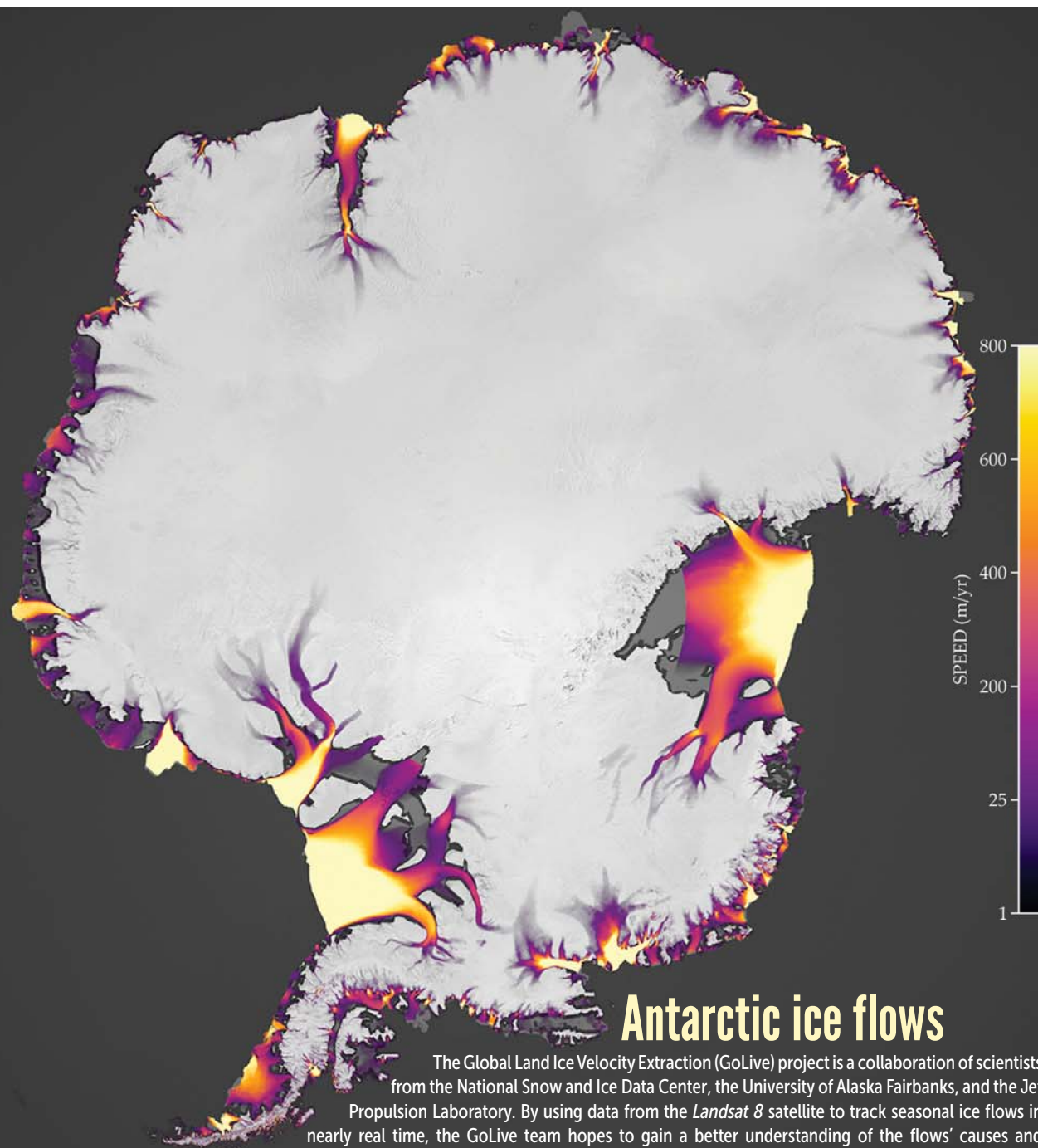




Antarctic ice flows

The Global Land Ice Velocity Extraction (GoLive) project is a collaboration of scientists from the National Snow and Ice Data Center, the University of Alaska Fairbanks, and the Jet Propulsion Laboratory. By using data from the *Landsat 8* satellite to track seasonal ice flows in nearly real time, the GoLive team hopes to gain a better understanding of the flows' causes and consequences. *Landsat 8*, a collaboration between NASA and the US Geological Survey, boasts significant improvements in radiometric and geolocation over its predecessor. From its Sun-synchronous orbit, the satellite collects up to 725 images a day (cloud cover permitting) and completes a full survey of Earth's surface every 16 days. The images reveal subtle features of shading and surface texture, and by comparing images on different dates, the GoLive team can map the motion of an ice sheet's skin with an accuracy of 5 meters per year.

Shown here is such a speed map for Antarctica. Although the color bar is truncated at 800 m/yr, some major glacier outlets reach speeds of 4000 m/yr. Almost 2000 km³ of ice flow into the Southern Ocean each year. The new measurements of continental ice speeds will allow researchers to better quantify the total amount of ice leaving the ice sheet, and by combining that information with estimates of precipitation, they can calculate how much the ice sheet is contributing to present rates of sea-level rise. (M. Fahnestock et al., *Remote Sens. Environ.* **185**, 84, 2016. NASA Earth Observatory image by Joshua Stevens, using Landsat-derived ice velocity data courtesy of Alex Gardner, NASA Jet Propulsion Laboratory, California Institute of Technology.)

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