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Melting in Antarctica from space-borne microwave data: 2008 updated trends

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Observing snow melt extent and duration over the Antarctica ice sheets is fundamental for many reasons. With a surface size about 1.5 times the size of the U.S., Antarctica contains 90 percent of Earth's fresh water, making it the largest potential source of sea level rise. Some of the liquid water from snowmelt flows into the ocean, directly contributing to sea level rise; snowmelt on ice shelves can lead to melt ponds, with melt-water filling small cracks and eventually causing larger fractures in the ice shelves, which act as brakes for glaciers and keep warmer marine air away from glaciers.

The Special Sensor Microwave Imager radiometer (SSM/I) aboard the Defense Meteorological Satellite Program's satellites (DMPS) provides daily measurements of brightness temperatures at several microwave frequencies. Microwave data have the great advantage of not being affected by sun or clouds presence and, differently from visible data, can detect melting occurring below the surface. In this talk, I discuss updated melting trends over the Antarctica ice sheets as derived from 19.35 GHz SSM/I brightness temperatures updated to 2008. I will discuss extreme melting events and report anomalies for both melt extent and index (e.g., melting days x melting area).