Ground-based radar surveys are rarely conducted coincident to seismic and airborne radar surveys. A survey site on the Thwaites Glacier in West Antarctica hosted the acquisition of ground-based seismic and radar surveys during the 2008-09 Austral Summer. Airborne-radar surveys were conducted over the same site the following year. The ground-based radar data were collected with a Synthetic-Aperture Radar operating eight independently recorded receive channels from 140 MHz to 160 MHz by way of a linearly swept chirp. The processed data from this radar have been developed into a continuous three-dimension surface through tomographic methods. This product has supported results from the seismic survey and is expected to help with calibration of the airborne-radar system. Additionally, the results from the radar survey have lead to the discovery that bed roughness changes dependent on flow direction. This information may be critical in determining the boundary conditions for flow models of this glacier and the surrounding ice sheet.