Gravity-wave activity throughout the Antarctic upper stratosphere and lower mesosphere (USLM) is investigated using temperature data collected with a Rayleigh lidar at Davis, Antarctica (69°S, 78°E) during the 2007 and 2008 winters. Potential energy per unit mass shows a seasonal cycle throughout the USLM with the winter peak resulting partially from gravity-wave Doppler shifting by the strong background winds. Significant variability in gravity-wave activity occurs on short time scales between observations (between one day and one week apart). The stratopause temperature and height vary on scales of several kilometres and tens of Kelvin due to the passage of inertia-gravity waves (during an observation session) and planetary waves (between observation sessions). Gravity-wave dissipation occurs in the winter mesosphere, but there is no detectable dissipation during autumn in the lower mesosphere. Temporally filtered data with ground based periods of 2 – 6 hours are examined in addition to the non-filtered data, with similar seasonal cycles and short-term variability observed. The gravity-wave potential energy and power spectra at Davis are generally similar to those recorded at other high-latitude sites.