

ICESTAR: VERTICAL COUPLING OF THE ATMOSPHERE OVER ANTARCTICA VIA ATMOSPHERIC TIDES

S.E. Palo¹, H. Iimura¹, D. Murphy², R.A. Vincent³, D. Riggin⁴, D. Fritts⁴, M. Tsutsumi⁵, T. Aso⁵, A. McDonald⁶, A. Baumgartner⁶, N. Mitchell⁷

¹*University of Colorado, Boulder, CO, United States*, ²*Australian Antarctic Division, Hobart, Tasmania, Australia*, ³*University of Adelaide, Adelaide, Australia*, ⁴*Colorado Research Associates, Boulder, Co, United States*, ⁵*National Institute for Polar Research, Tokyo, Japan*, ⁶*University of Canterbury, Christchurch, New Zealand*, ⁷*University of Bath, Bath, United Kingdom*

The atmospheric tides are a dominant and persistent feature of the mesosphere and lower-thermosphere region of the atmosphere which spans from 80 to 120km above the Earth's surface. The tides, primarily forced through the absorption of water vapor in the troposphere and ozone in the stratosphere, propagate vertically transporting heat and momentum between the lower and upper atmosphere.

Observations from a network of radars operating across the Antarctic continent are analyzed to determine the coherent spatial and temporal structures present in these tidal operations. Data includes observations from Davis, Scott Base, Rothera, Syowa and South Pole. Analysis of the diurnal and semidiurnal tides from these sites are compared using multiple years of data to determine the annual structure of the tidal oscillations. These observations are compared with the Global Scale Wave Model (GSWM) in an effort to understand how the model reproduces the observations.