Ocean-Excited Plate Waves in the Ross and Pine Island Glacier Ice Shelves

Zhao Chen, Peter D. Bromirski, Peter Gerstoft, Ralph A. Stephen,

Douglas A. Wiens, Richard C. Aster, Andrew A. Nyblade

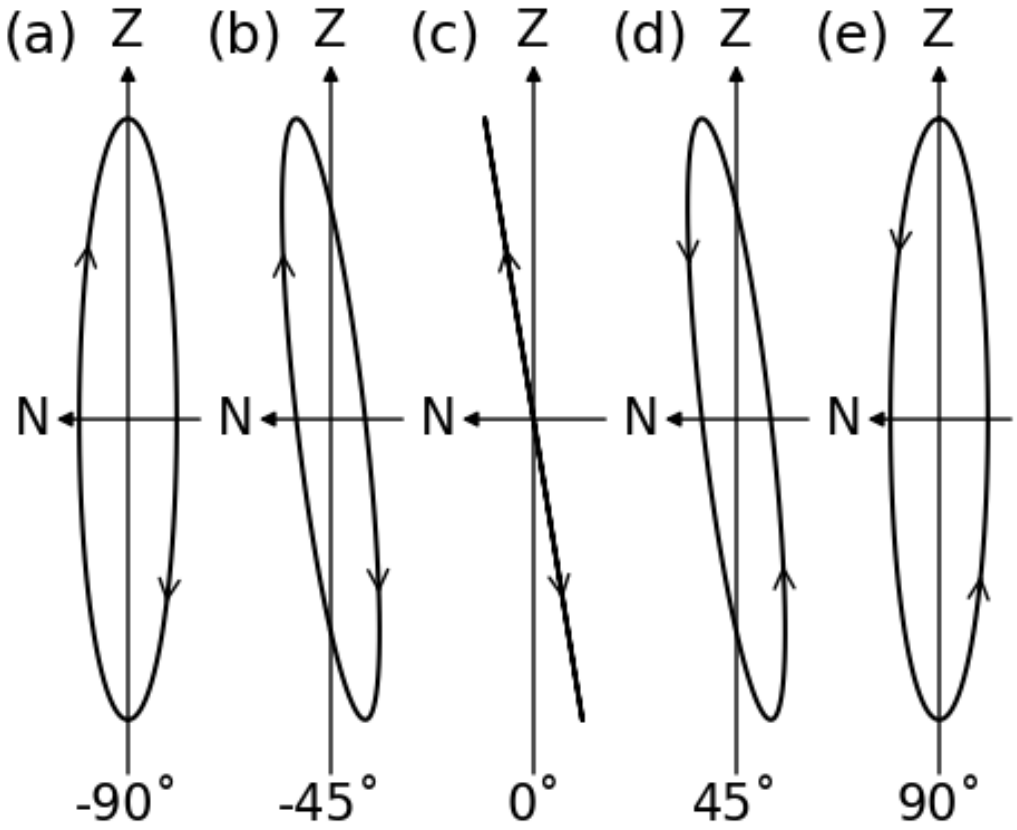

Fig. S1. A sketch of retrograde (a, b), linear (c), and prograde (d, e) particle motions with the corresponding phase difference between vertical and north components indicated, assuming the signal is propagating from north to south.

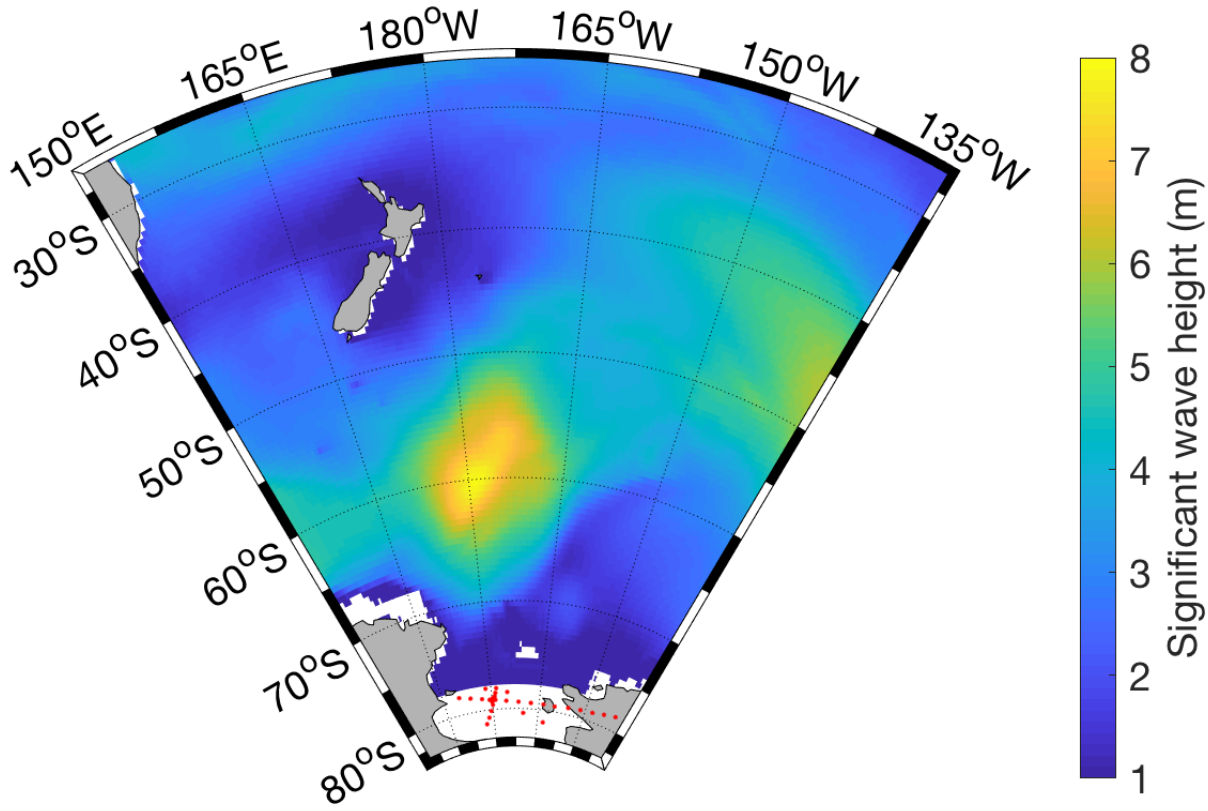

Fig. S2. WAVEWATCH III significant wave height hindcast model (Tolman, 2009) at 00:00 on 19 February 2015. The seismic stations are indicated by the red dots.

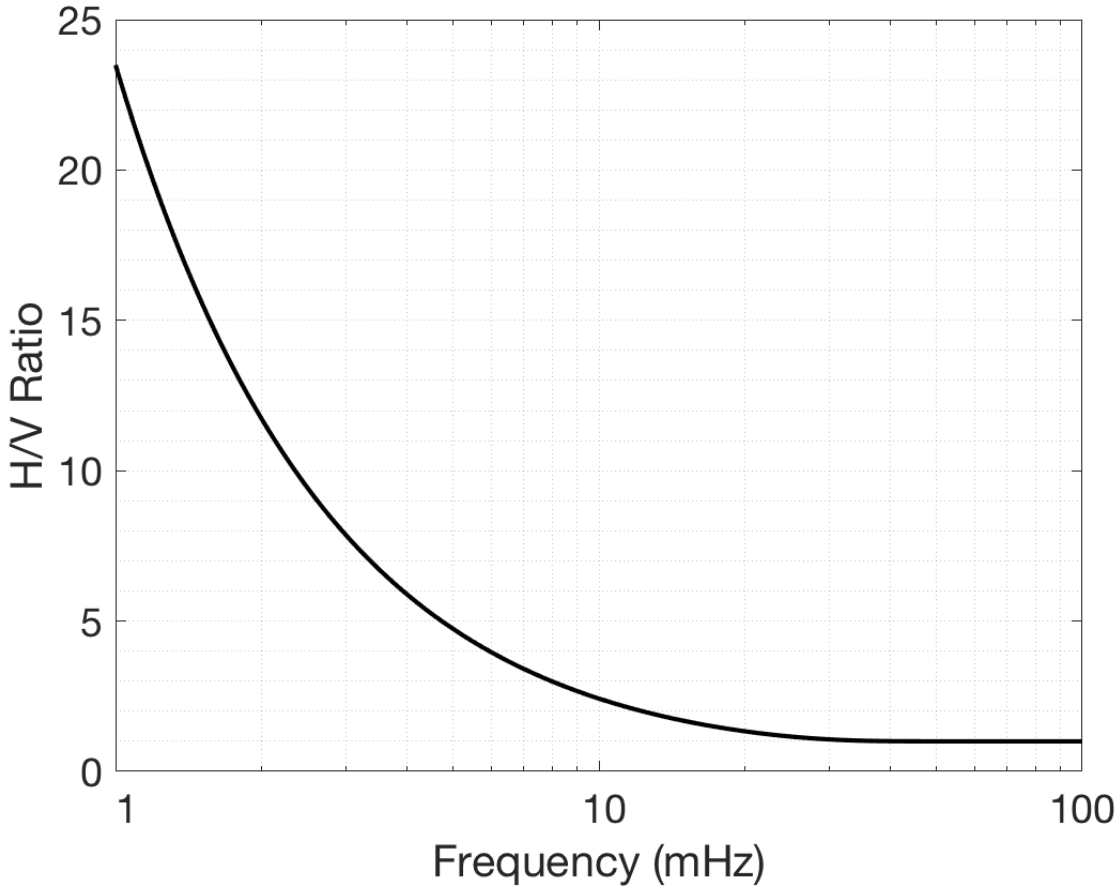

Fig. S3. Horizontal-to-vertical (H/V) ratio of gravity-wave particle motions at the ocean surface, for a water depth of 450 m.

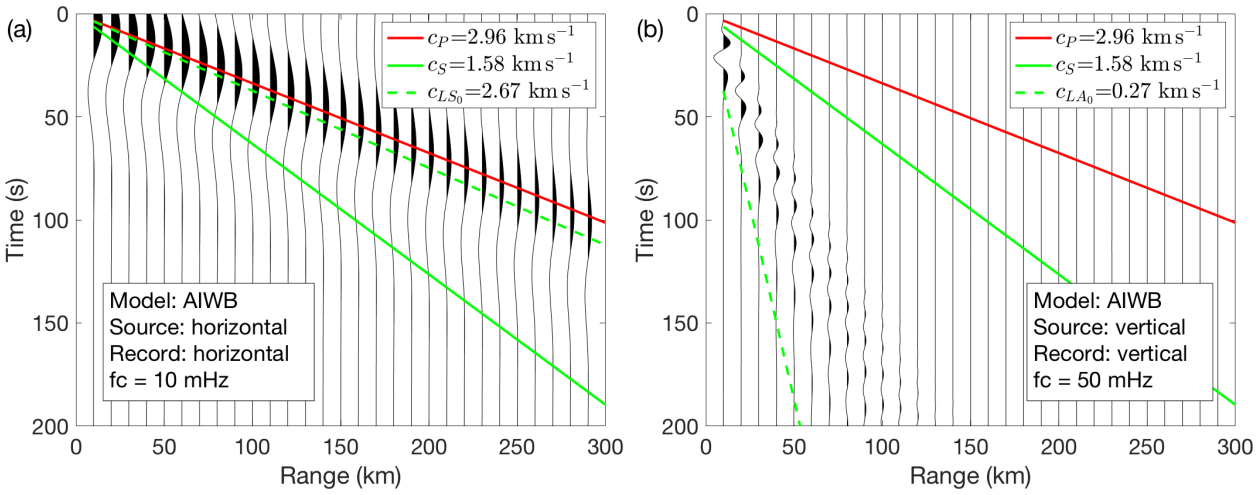

Fig. S4. (a) Synthetic seismograms of the horizontal (radial) component on the ice-layer surface in the AIWB model (Fig. 3). The source function is a Ricker wavelet centered at 10 mHz, with a horizontal point force. (b) Synthetic seismograms of the vertical component on the ice-layer surface in the AIWB model. The source function is a Ricker wavelet centered at 50 mHz, with a vertical point force. The normalization factor of (b) is 100 times that of (a). P-wave speed (c_P, red solid), S-wave speed (c_S, green solid), and fundamental free-space Lamb-wave phase speeds (c_{LS_0} and c_{LA0}, green dashed) at the corresponding Ricker wavelet center frequency are indicated.