Recent observations show that WAIS is influenced by sea swell generated in tropics and in Northern hemisphere

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To investigate the source of 'iceberg tremor', we deployed seismometers on the Ross Ice Shelf and on various icebergs adrift in the Ross Sea (including B15A, a large fragment of B15, which calved from the Ross Ice Shelf in March, 2000). The data reveal that the most energetic vibrations in the 0.01 to 0.5 Hz band are associated with sea swell generated in the Pacific Ocean – as far away as the Gulf of Alaska. In one example, a strong storm in the Gulf of Alaska on October 21, 2005, approximately 13,500 km from the Ross Sea, generated swell that arrived at B15A immediately prior to and during its spectacular break-up off Cape Adare on October 27, 2005. Although this temporal coincidence is likely fortuitous, as the iceberg was also grounding on sea-bed shoals at the time, it motivates us to conjecture that long-term exposure to swell can contribute to Antarctic iceberg calving. This would link polar ice sheets to tropical and opposite-hemisphere weather systems, and imply a control on ice-sheet mass balance capable of global teleconnection. If true, then synchronous pulses of iceberg calving on widely separated margins of the North Atlantic ice sheets during Heinrich events, for example, could be explained by increased storm conditions in the Atlantic driven by atmospheric climate change. This presentation will review various case studies of sea-swell influences on the glacial regime of the Ross Sea as well as review historical microseism data from Scott Base to motivate the conjecture that the original calving of B15 was sea-swell induced.