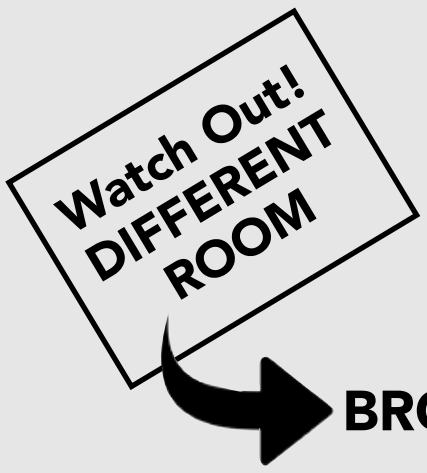

UC **SANTA BARBARA**

Department of Earth Science

Speakers Club

BROIDA 1640 • THURSDAY NOV 1st.• 2:00 PM

What was Antarctica's contribution to post LGM sea-level rise?

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The amount of sea-level rise since the last glacial maximum (LGM), 20,000 years ago, is not balanced by the amount of ice within the reconstructed LGM ice sheets. Historically, much of this discrepancy was attributed to uncertainty in the amount of ice held within Antarctica during the LGM. Over the last decade reconstructions of the Antarctic Ice Sheet have greatly improved as more data became available from the continent itself. These new reconstructions have less ice within the Antarctic Ice Sheets than earlier reconstructions. However, these estimates are based on glacial-isostatic adjustment (GIA) models largely calibrated with data from the North Hemisphere. Using new relative sea-level data from the Antarctic Peninsula, we show that the Earth beneath Antarctica is much weaker than initially thought with upper mantle viscosities as low as 1018 Pa s, more than three orders of magnitude less than those used with ICE5-G. Thus, existing Holocene sea-level data reveal little about the thickness and hence volume of ice held within Antarctica's LGM ice sheets. In addition, GIA model predictions have been used to argue for an Antarctic source for meltwater pulse 1-A, a nearly 20 m jump in sea levels around 14,500 years ago. We present new relative sea-level data from northwestern Scotland, an area thought to be sensitive to the source of meltwater pulse 1-A, that provides little support for an Antarctic (or Northern Hemisphere) source to meltwater pulse 1-A. Both of these results suggest that current models of GIA are inadequate for truly "fingerprinting" past ice-sheet reconstructions and tell us little about Antarctica's contribution to post LGM sea-level rise.