



Antarctic role in multi-centennial climate variability

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Proxy-based reconstructions have revealed an important lack of multi-centennial climate variability in global climate models. Here we use a high-resolution ice-sheet model in combination with global climate simulations to show that internal variability in discharge of the West Antarctic Ice Sheet is a potentially important driver of multi-centennial climate variability. Variations in discharge impact the formation of Antarctic Bottom Water, that in turn impacts the climate at the earth's surface and in the deep ocean, in both near-field and far-field regions, through variations in the strength of the Atlantic meridional overturning circulation. If indeed interactions between the West Antarctic Ice Sheet and the climate on multi-centennial timescales are important, studying them in high resolution climate records has good potential to provide constraints on the dynamics of the West Antarctic Ice Sheet and its contribution to future sea-level rise.