



|Decadal to centennial scale variability in sub Antarctic surface and intermediate water properties during the mid Holocene

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We report sub-decadally resolved planktonic and benthic foraminiferal oxygen isotopic proxy reconstructions of surface and intermediate ocean properties during the mid Holocene from ODP Site 1233 (41°00'S, 74°27'W, 838m). The sedimentation rates at this site (~1.5m/kyr) allow us to achieve sub decadal resolution with 1cm sample spacing. By comparing multiply replicated, multi-species records, we assess both the changes in near surface and intermediate ocean properties in the Southeast Pacific as well as the fidelity of our proxies themselves. Our initial results show that the amplitude of decadal-centennial scale variability in sub Antarctic Pacific surface and intermediate water physical properties is significantly reduced in the mid Holocene relative to the late Holocene. The reduced amplitude of mid Holocene multi-decadal variability in the Antarctic Circumpolar Current and in Antarctic Intermediate Water is reminiscent of that found in low latitude records of El Nino variability. We discuss the implications our findings have for the role of the Southern Ocean and tropical-extratropical coupling in multi-decadal climate variability—in particular the influence of Antarctic water masses as a feedback on the tropical thermocline.