



Obliquity-driven Agulhas leakage affects Atlantic Meridional Overturning Circulation over the last 800 kyrs

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The transport of heat and salt from the Indian Ocean into the South Atlantic around South Africa (the ‘‘Agulhas leakage’’) is recognized as an important modulator of global climate as the Agulhas leakage alters the buoyancy of Atlantic thermocline waters and thus is an important contributor to Atlantic Meridional Overturning Circulation (AMOC) variability. Here, we present 800-kyr sea surface temperature (SST) and salinity (SSS) records from a site located directly beneath the Agulhas corridor. These records contain strong obliquity-driven 41-kyr cycles, nearly in phase with changes in annual mean insolation and air temperature at high southern latitudes. This suggests that long-term Agulhas leakage dynamics are associated with a high latitude climate forcing rather than a tropical origin, by varying the position of the Southern Hemisphere subtropical convergence and its associated westerlies. We find that SST and SSS increases in the Agulhas system led global ice volume changes over the last 800 kyrs. We show that during the terminations Agulhas leakage was stronger triggered by increasing obliquity which exerted as a positive feedback on the global climate system through modulating long-term AMOC variations.