



## Atlantic interhemispheric sea surface temperature contrasts as a potential proxy for the Atlantic Meridional Overturning circulation

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We analyze 28 climate model simulations that cover a wide range of those boundary conditions that controlled the climate of the last 10 million years. Using a coupled general circulation model, different mean climates, either in equilibrated and transient states, are generated by changing atmospheric greenhouse gas concentration, orbital parameters, geometry of the Indonesian passages, the existence and depth of a Central American Seaway (CAS) or the existence of North American ice sheets. In all of these experiments we find the Atlantic Meridional Overturning Circulation (AMOC) is tightly related to the Atlantic interhemispheric sea surface temperature (SST) contrast in the mean state as well as on multi-decadal to centennial timescales. This finding is encouraging as the SST-contrast and AMOC strength relationship is independent of the external forcing imposed on the climate model. Therefore, we suggest that these SST based indices may provide a proxy for the AMOC strength from SST paleo reconstructions.