



## **Decadal slowdown in global air temperature rise triggered by variability in the Atlantic Meridional Overturning Circulation**

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Various explanations have been proposed for the recent slowdown in global surface air temperature (SAT) rise, either involving enhanced ocean heat uptake or reduced radiation reaching Earth's surface. Among the mechanisms postulated involving enhanced ocean heat uptake, past work has argued for both a Pacific and Atlantic origin, with additional contributions from the Southern Ocean. Here we examine the mechanisms driving 'hiatus' periods originating out of the Atlantic Ocean. We show that while Atlantic-driven hiatuses are entirely plausible and consistent with known climate feedbacks associated with variability in the Atlantic Meridional Overturning Circulation (AMOC), the present climate state is configured to enhance global-average SAT, not reduce it. We show that Atlantic hiatuses are instead characterised by anomalously cool fresh oceanic conditions in the North Atlantic, with the atmosphere advecting the cool temperature signature zonally. Compared to the 1980s and 1990s, however, the mean climate since 2001 has been characterised by a warm saline North Atlantic, suggesting the AMOC cannot be implicated as a direct driver of the current hiatus. We further discuss the impacts of a warm tropical Atlantic on the unprecedented trade wind acceleration in the Pacific Ocean, and propose that this is the main way that the Atlantic has contributed to the present "false pause" in global warming.