



## **Impact of Tibetan Plateau on Meridional Overturning Circulation (MOC) since Eocene**

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In the past, several studies have pinpointed the role of mountains uplift on the large-scale of ocean dynamics, for instance, the uplift of the African rift on Benguela upwelling system, Andes on the Humboldt Current, ENSO, and the Rockies on the Gulf Stream at the end of the Cenozoic. Here we show that the Tibetan Plateau (TP) uplift has major consequences on the Pacific Meridional Overturning Circulation (PMOC) and the Atlantic one (AMOC). In this study, we first perform a long-term integration of a coarse resolution version coupled climate model CESM from NCAR, which features reasonably realistic circulation in the North Pacific and Atlantic. Branching off the control simulation, we then flatten the TP topography. Within a few decades after the TP removal, the MOC begins to appear in the North Pacific, and the Atlantic MOC is reduced. This feature may contribute to explain the drastic modification of ocean circulation that occurred since Eocene.