



## **Interacting Loop Current variability and Mississippi discharge over the past 400 kyrs**

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The Loop Current mediating the oceanic heat and salt flux from the Caribbean Sea into the Atlantic and its interference with the Mississippi discharge are critical for Gulf of Mexico sea surface temperature variability not only affecting regional climate but also driving water vapor transport towards high northern latitudes. Our 400-kyr high-amplitude sea surface temperature and salinity records imply that the forcing of the Loop Current is amplified by migrations of the Intertropical Convergence Zone. Northward extensions of the Loop Current during interglacials/interstadials allowing northeastern Gulf of Mexico surface hydrographic conditions to approach those of the West Atlantic Warm Pool, forced the diminished Mississippi discharge westward. During peak glacial periods, instead, the significantly strengthened Mississippi outflow spread widely across the Gulf favored by the less established Loop Current. Deglacial megadischarge events described further to the west did not affect the northeastern Gulf of Mexico hydrography implying that meltwater routing from the Laurentide Ice Sheet *via* the Mississippi is unlikely to have affected Atlantic Meridional Overturning Circulation.