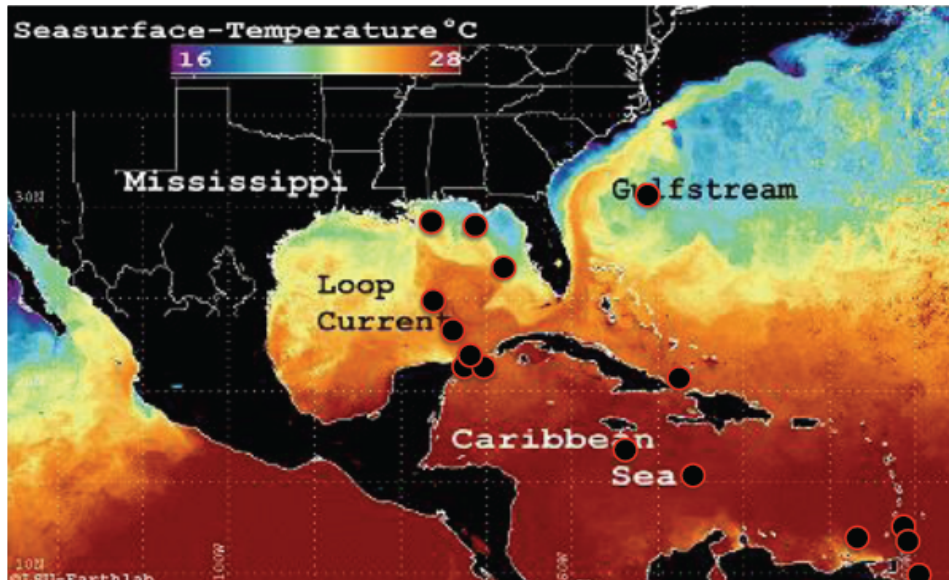


# The Atlantic „heat pump“: Late Pleistocene to Holocene changes in the upper ocean thermal structure of the Caribbean and Gulf of Mexico

The central research objective of this study is to reconstruct the subtropical W-Atlantic, Caribbean and Gulf of Mexico upper ocean variability on millennial timescales over the last two glacial/interglacial changes, to test the sensitivity of the Atlantic meridional overturning circulation to climate perturbations (encompassing their beginning and ending) that have occurred during the past, and to determine the role of surface and subsurface temperature and salinity variability for interhemispheric heat exchange, thermocline variability, and AMOC. We will gather new proxy data from newly recovered sediment records and complement them by existing proxy data already produced in our working group and/or published by others.



**Fig. 1:** Sea surface temperature chart of the Caribbean and the Gulf of Mexico showing locations of available paleo-records, which will be focus of this study.

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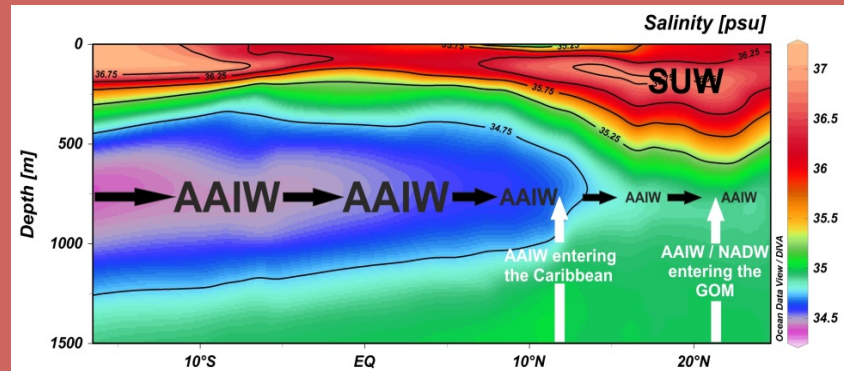
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**Fig. 2:** S-N-trending salinity-profile from ~20°S to ~25°N showing Antarctic Intermediate Water (AAIW) entering the Gulf of Mexico via Yucatan Strait, Subtropical Underwater (SUW), and North Atlantic Deep Water (NADW).

## Research aims:

- reconstructions of the Late Pleistocene to Holocene surface and subsurface ocean hydrographic variability in the Caribbean and Gulf of Mexico
- reconstruct the (sub)seasurface temperature, salinity, thermocline and pycnocline depths and gradients, marine productivity, and terrigenous flux at high temporal resolution