



Millennial scale variability of sea surface hydrography in the northeastern Gulf of Mexico linked to ITCZ and Mississippi discharge dynamics during the late Quaternary

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The dynamic evolution of the West Atlantic Warm Water Pool enables oceanic heat transfer towards high northern latitudes and thus, considerably affects the subpolar North Atlantic oceanography and climate in NW-Europe. The evolutionary history of the warm pool on short time scales and its role for the climate variability in the North Atlantic Ocean area are not well understood.

Geochemical proxy data, foraminiferal Mg/Ca and oxygen isotopes, grainsizes, organic carbon and carbonate content were analysed from core MD02-2575 taken in the DeSoto Canyon, Gulf of Mexico (GOM). The age model is based on radiocarbon ages and correlation of the benthic foraminiferal isotope record with global stacked records. The core spans the last 170,000 years with sedimentation rates up to 35 cm/1000 years and covers the last glacial-interglacial cycle.

Comparison of our oxygen isotope record measured of *G. ruber* (white) with an earlier record on *G. ruber* (pink) from the same location shows a constant offset, which is interpreted as a seasonality effect between both species.

Sea-Surface-Temperature and –Salinity calculated from the paired measurements of Mg/Ca and oxygen isotopes, show millennial scale variabilities during the last glacial cycle. Distinct differences in amplitude and timing of the variations are recognized between our core and records from the Louisiana slope and the Orca Basin. These differences are explained with the dominance of the Loop Current dynamics in the

eastern GOM and its changing northward extension. The western locations are considered to be more and strongly influenced by the Mississippi discharge. The recent Loop Current extension is linked to variations and latitudinal position of the Intertropical-Convergence-Zone (ITCZ). Differences between cores to the east and to the west of the Mississippi also demonstrate that the GOM cannot be considered as thoroughly equal reacting on climatic changes. Instead of this different regional influences need to be considered.