The closing of the Isthmus of Panama during the Pliocene:

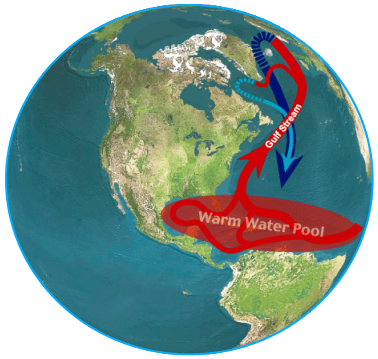
Effect of tropical gateways on ocean circulation, climate, and the formation of warmpools)

Collaborators:
R. Tiedemann
D. Nürnberg
S. Steph
J. Groeneveld
S. Koch

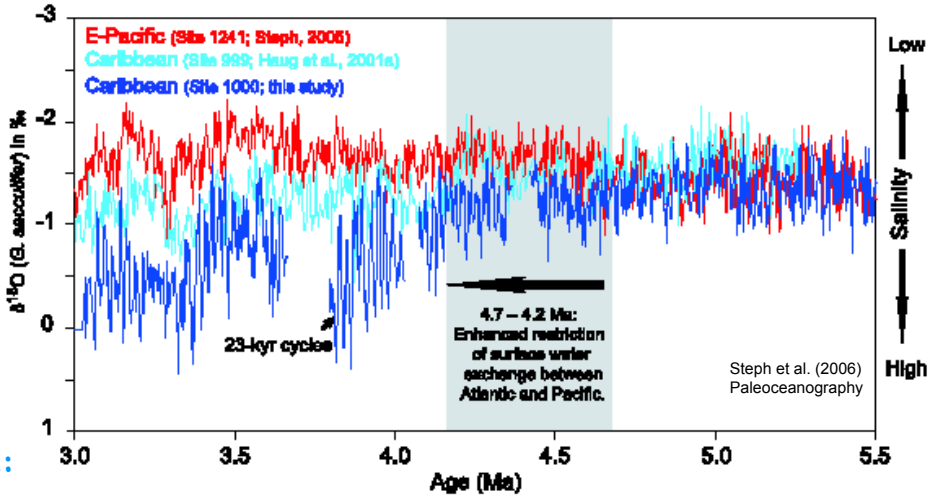
Funding:
Deutsche Forschungs-gemeinschaft (DFG)

Project:
DFG-Research-group 451 „Ocean Gateways" (2001-2006)

Today:
Panama closed



The tectonic shallowing and subsequent closing of the Panama Seaway (13-2.5 Ma) pre-conditioned the modern ocean circulation and the climatic development of NW-Europe.



early Pliocene:
Panama open

The combined analysis of Mg/Ca and stable oxygen isotopes in planktonic foraminifers allows to quantify sea-surface temperature and salinity changes during the closing of the Panama seaway.

<u>Consequences of the closing of the ocean gateway:</u>

- intensification of the Gulf Stream, which climatically influences NW-Europe,
- development of the Atlantic-Caribbean warmpool,
- development of the salinity contrast between Atlantic and Pacific,
- initiation of the thermohaline circulation and intermediate water formation in Labrador Sea.

Deutsche Forschungsgemeinschaft DFG