Geophysical Research Abstracts
Vol. 17, EGU2015-8625, 2015
EGU General Assembly 2015
© Author(s) 2015. CC Attribution 3.0 License.

Glacial-interglacial sea level reconstruction of the last 570 ka: Inferences from a new benthic d18O record of IODP Site U1386 in the Gulf of Cadiz

Stefanie Kaboth (1), Bas de Boer (2), and Lucas J. Lourens (1)

(1) Department of Earth Sciences, Faculty of Geosciences, Utrecht University, Budapestlaan 4, 3584 CD Utrecht, The Netherlands. (S.Kaboth@uu.nl), (2) Institute for Marine and Atmospheric research Utrecht (IMAU), Utrecht University, Princetonplein 5, 3584 CC Utrecht, The Netherlands.

Changes in sea level are an integral measure of global climate change. Sea level reconstructions derived from geological records provide both insight into the sensitivity of sea level to past climate change but also offers context for our understanding of current changes and the evaluation of projected future changes.
To reconstruct glacial-interglacial sea level variations, we generated a new benthic d18O record of IODP Site U1386 in the Gulf of Cadiz for the past 570 ka. We used an inverse forward modeling approach to estimate ice volume and temperature from the benthic d18O data. The coupled model includes four ice-sheet-shelf components that simulate glaciation on Eurasia, North America, Greenland and Antarctica, thereby explicitly accounting for all individual ice-volume contributions over the past 570 ka.
Site U1386 is located in the Gulf of Cadiz Contourite Depositional System (CDS). These sediments are characterized by high sedimentation rate (∼35 cm/ka), providing an opportunity to study sea level oscillations in high resolution. Besides its sensitivity to open ocean signal this site is also directly influenced by Mediterranean Outflow Water (MOW), a source for warm and high saline water in contrast to the colder and less saline prevailing water masses of the North Atlantic. Due to its position within the MOW flow core, our results suggest that the d18O from site U1386 may strongly correlate to changes in density (salinity and temperature) on glacial-interglacial time scales and hence provide a sensitive recorder of climate and sea level change. We further investigate this correlation by comparing our initial findings with existing open ocean and regional sea level estimates for the last 570 ka to provide new insights into the sea level evolution on glacial-interglacial timescales.