



Carbonate drifts as marine archive of eolian input

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Terrestrial input is reconstructed back to about 100 ka BP (MIS 5) based on a sediment core from the Bahamian Santaren Drift (528 m water depth). It is shown that carbonate drifts bear a high-resolution pelagic archive of wind intensity.

Carbonate drift bodies are common around tropical carbonate platforms. They represent large-scale accumulations of bottom-current transported material, which mainly originates from the adjacent shallow-water carbonate factory as well as from pelagic production. Subordinated, there is a clay- to silt-size non-carbonate fraction, which typically amounts to less than 10 % of the sediment volume and originates from aeolian and fluvial input.

Sedimentation rates in the 5.42 m long core GeoHH-M95-524 ranges from 1.4 to 24.7 cm ka⁻¹ with lowest values during the last glacial lowstand and highest values following platform re-flooding around 8 ka BP. This documents that carbonate drifts not only resolve long-term environmental changes on the glacial-interglacial time scale but also millennial to centennial fluctuations during interglacials.

Fluvial input as indicated by the K/Ti ratio is high prior to 70 ka BP and stays low afterwards until 9 ka BP. Subsequently, there is a fast increase in fluvial input which peaks between 8 and 4 ka BP.

Eolian input as indicated by Ti/Al and Fe/Al ratios stays elevated during glacial times and reaches a minimum around 7 ka BP. Subsequently, there is a gradual increase and eolian input almost reaches early Holocene levels during the last centuries. Wind speed as indicated by the grain-size spectrum of the non-carbonate fraction is high during glacial times, as expected. During the Holocene, however, highest wind speeds occurred between 6 and 4 ka BP followed by a gradual decrease afterwards. This is in contrast with the amount of eolian input and indicates that, at least during the Holocene, wind speed and amount of eolian input are only partly linked.