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TITLE: Coral mound development at the Campeche cold-water coral province, southern Gulf of Mexico: Implications of Antarctic Intermediate Water increased influence during interglacials

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ABSTRACT:

Coral mounds formed by framework-forming scleractinian cold-water corals (CWC; mainly *Lophelia pertusa*) are a common seabed feature along the Atlantic continental margins. While coral mound areas in the NE Atlantic reveal a climate-dependent temporal pattern of CWC occurrence and mound aggradation that is related to distinct environmental conditions (e.g., productivity, water mass properties, hydrodynamics), the long-term development of CWC and coral mounds at the western side of the Atlantic is less well documented and understood. Here, we present a 260-kyr coral record from the recently described Campeche CWC province in the southern Gulf of Mexico, combined with a reconstruction of the paleo-environmental conditions for the last 140 kyr. Uranium-series dating of 26 coral samples reveals that CWC growth predominantly coincided with interglacial periods. Highest vertical mound aggradation rates of 34 to 40 cm kyr⁻¹ occurred during the Holocene. The reduced occurrence of CWC and the concurrent almost complete stagnation in mound aggradation during glacial periods could be linked to a diminished presence of Antarctic Intermediate Water at those intermediate depths in which the coral mounds occur. Such setting would have caused a less dynamic bottom current regime resulting in a reduced food supply to the CWC along the Campeche Bank.

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