



Lacustrine limestones from the northern Tibetan plateau and its paleoclimatic and tectonic significance: Qaidam vs. Hoh Xil basin

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Eocene to Miocene lacustrine limestones from the Qaidam and Hoh Xil basins were studied in order to assess the depositional environment and to reveal the mode and timing of surface uplift of the Tibetan plateau. The Qaidam basin (now at an elevation of ca. 3000 m) and Hoh Xil basins (at an elevation of ca. 4,500 m) are separated by the Kunlun Mountain Range. The Eocene to Miocene carbonate layers and lenses of the Qaidam basin and intercalated within thick clastic sediments and show a facies variation from a high-energy near shore environments with oolites to low-energy micrite, all deposited within the euphotic zone. In the Miocene Hohxil basin, carbonates were also deposited in a near shore-environment. The similar oxygen isotopic composition of similar aged Late Oligocene to Early Miocene lacustrine limestones from the Qaidam and Hoh Xil basins proves that both basins were likely formed at the same elevation. The carbon isotopy of both is different and proves that they were separated by a ridge, namely the future Kunlun Mountains. The sedimentary succession and particularly carbonates of the Qaidam basin reveals significant cyclicity during Oligocene times. The stable isotope data of the Qaidam basin shows the same kind of cyclicity, the cause of which is still to be determined, but is most likely of climatic nature.