QUANTITATIVE CALCULATION OF SEA-LEVEL DROP DISTANCE: END-PERMIAN

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The distance of sea-level drop can be calculated from the formula H = Tm + D or H = Td + D or H = (Tc - Tf) + D where Tm is the thickness from reef top to the bottom of mixing-water dolostone zone, D the water depth on reef top, Td the thickness from the top of reef core to the bottom of meteoric dissolution zone, Tc the thickness from the tidal deposits on reef core top to the index lithologic bed or fossil-zone boundary, Tf the thickness from the tidal deposits on reef front to the same index lithologic bed or fossil-zone boundary in reef front.

According to paleoecological studies, the water depths at which biorudstones, cemented calcisponge framestones, micritic calcisponge framestones, calcisponge bafflestones, calcisponge prebafflestones are formed are about 0~5, 5~10, 10~20, 20~30, 30~40 m, respectively.

The loss in the thickness of the reef core, due to erosion, should be considered in the calculation using the formulae. The identity or similarity between the sea-level drop distances calculated from the different reefs in the same sea can distinguish eustatic or regional sea-level drops from local sea-floor rise.

The sea level of the ancient Tethys Sea might fell at least 79.8 kilometers at the end-Permian (end-Changhsingian), as calculated from two Upper Permian Changhsingian (Palaeofusulina zone) reefs in southern China, the reefs of Ziyun, Guizhou province and of Lichuan, Hubei province, which are 432.5 kilometers apart from each other.