Mesozoic Deposystems and Evolution of the Qamdo Basin, Eastern Tibet

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The Qamdo basin, located in eastern Tibet, contains well-exposed Mesozoic sediments which offer great opportunity to conduct detailed facies and paleoenvironmental analyses. Sedimentological studies reveal that from Late Triassic to Early Cretaceous, basinal depositional systems shifted from deep-marine/marginal-marine, to lacustrine, then to alluvial fan systems, indicating a continuous shallowing-upward trend over about 100 million years.

The lower Upper Triassic Jiapila Formation is comprised of massive black shale with thin turbidite sandstone interbeds, indicating a clastic deep-marine environment. The overlying bioclastic, fossiliferous middle Upper Triassic Bolila Formation formed as carbonate platform and reef deposits. The Duolagai Formation which situated in the top of the Triassic strata, is thought to formed in a clastic marginal-marine setting as indicated by mixed river and wave influenced deltaic depoysystem.

Overlying these marine-dominated strata are the ≤ 5000 m of Jurassic lacustrine deposits of the Chaya Group, including fine to medium grain-sized sandstone, siltstone, and paleosol. The transition from marine to terrestrial environments is marked by well-developed paleosol layers at the base of the lower Chaya Group. The sandstone/ mudstone cyclothems in the Jurassic lacustrine strata occur at all scales from centimeter to regional-scale cycles of basin filling, which may reflect both regional climatic variations and tectonic-driven signals. Mud-crack structures are abundant and tend to increase upward in stratigraphic sections which suggests that the basin experienced periodic desiccation during Jurassic.

The Lower Cretaceous Xiangdui Formation comprises large amount of clast-supported conglomerates, cross-stratified pebbly sandstone, and red paleosol layers, indicating the deposition occurred proximal to source areas under arid climatic setting. The compositionally immature conglomerates are interpreted as debris flow deposits in a proximal fan setting, whereas the paleosol layers probably formed as aeolian loess deposits. Erosional surfaces can often be found at the top of the paleosol layers, indicting the influence of periodic flood events.

**Key words:** Qamdo basin, depositional environment

**References**


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