

Outcrop sequence stratigraphy of Cretaceous sediments: A case study from Kallankurchchi. Fm. Tiruchirapalli, South India.

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The outcrop sequence stratigraphy model of Kallankurchchi Fm, (Upper Cretaceous), has been constructed with the help of Foraminiferal and sedimentological data. Cobble conglomerate above the Sillakudi Fm. indicates break in the sedimentation, developed as a result of relative sea level fall during early Maestrichtian period, which marks the sequence boundary (SB1). The deposition of ferrugeneous limestone above the unconformity indicates first flooding event of sea level on that area and the base of those formation forms the transgressive surface. The Ferrugenous limestone indicates rise in sea level and marks the TST, while highly ferruginised materials indicate oxidizing conditions. Further, deposition of arenaceous limestone indicate continued rise in sea level. Microfacies studies reveal that they are formed in quiet water environment with less wave action. The top of the limestone is very rich in bivalves and benthic foraminifera indicating of upward increase bathymetric trend. The top of the fossil rich zone is marked by MFS. Below MFS megafossils present abundantly, while directly above this surface onwards they show termination of micro and megafossils and high percentage of terrigenous input, indicate the beginning of HST, represented by prograding arenaceous limestone. The possible causes for development of HST in Kallankurchchi Fm. is by rise of an advected relict hot mantle plume leading to basinal rise around 67.5 – 68.5 Ma and a major regressive phase of global nature with a drop in sea level, which caused the upper formed sequence boundary. The base of Cuddalore Fm. present above the arenaceous limestone marks the sequence boundary (SB2). The integrating data of microfacies and biofacies of this formation gives that Kallankurchchi Formation is formed in Continental shelf area.