

## **Structural and Sedimentary Evolution of Upper Assam Basin, India and Implications on Hydrocarbon Prospectivity**

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The Upper Assam Basin is a composite foreland basin which is located between the eastern Himalayan foot hills and the Assam - Arakan thrust belt. The basin is terminated to the northeast by the Mishimi Hills block and to the Southwest it is partly disrupted by the Shillong plateau basement uplift. The stratigraphic record of upper Assam foreland basin controlled by three variables: eustasy, tectonic subsidence and sediment supply. The sediment supply feeds the foreland basin either from NW side of Himalayan mountains or from SE side of overriding thrust belt. The Eustasy and sediment supply control the short term stratigraphic framework that superimposed over the tectonic sequences that are formed due to asymmetric slope of the basin and position of forebulge. The basal unconformity is formed due to erosion of progressively migrating forebulge and upper unconformity is formed due to tectonic effects. The sedimentary record of the basin was formed during passive margin setting in Paleogene time during drifting phase of Indian plate after detachment from Antarctica plate. Fluvial to marine coarse clastic sediments deposited in Paleocene to lower Eocene period there after widespread transgression leading to deposition of carbonate sediments in middle Eocene period and shale is dominated in upper Eocene time. During Oligocene and Miocene increased proportion of coarse clastics is attributed to the tectonic uplifts in the provenance as well as falling sea level. Successive basin wide compressive orogenic phase during late Miocene to Pliocene resulting emergence of landforms and subsequent erosion are marked by unconformable relations between Tipams and overlying sediments of Moran group.