Turbidites Systems of the East Andaman Basin (Myanmar) - Impacts on Exploration

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ABSTRACT

From Middle to Late Paleogene, the collision occurring between Indian and Southeast Asia plates led to a continuous subduction along the southern margin of the Sunda and Eurasian plates. The proto-Irrawaddy river, draining the already uplifted Shan plateau, sourced the Oligocene deltaic units and its associated turbidites deepward. Immediately after the Paleogene, the Irrawaddy deltaic system was the result of the immature drainage network generated by the young Himalaya reliefs. During the Neogene, the uplift of the Indo-Burma range cut off the Irrawaddy from the Himalayan sediment sources. The Indo Burma range became the main sediment source of the Irrawaddy River, which started feeding a newly generated North-South basin bounded respectively by Arakan ranges to the West and Sunda reliefs to the East. In spite of the strong subsidence and the vast accommodation space, the huge amounts of sediments (around 15 km thick) available constantly filled the new North-South trending receiving basin. The Irrawaddy behaved as an axial distributary system, mainly feeding the main North-South elongated basin and also regularly bypassing any saddle to the West, entering directly into the Bengal Gulf. The Neogene transgressive-regressive cycles of the Kyaukkok Fm and the Irrawaddy Group in the Gulf of Moattama show that the progradation of the deltaic sediments occurred through rapid pulses. Individual parasequences correlate, and therefore traveled for 100 km or more from North to South, providing abundant sediments at the shelf-edge during relative sea level lowstands. The role of eastern sediment sourcing after the Middle Miocene of this basin is unclear because the eastern side of the basin appears globally sediment starved. The present day features of East Andaman Basin, a number of channel levee complexes coming from the North are observed along the slope and probably extending in abyssal plain. Similar channel levee systems are also observed in the Pliocene section and possibly deeper thanks to a recently acquired seismic data. Although not proven yet, this rather hefty and complex accumulation of sand bearing turbidites is expected to have filled the deep East Andaman basin. The critical question for the emerging exploration in deep water of East Andaman Basin is the occurrence, besides the channel-levees, of lobe systems at the toe of slope that may represent an additional target. The extension to the South of these systems is an important issue as well: the Andaman Basin is confined, and therefore the turbidite flows may have been funneled along the axis. Strong subsidence may have however trapped most of the sediments on the shelf and the size of flows may not have had the time and the energy to travel significant distances.