

SALINITY CHANGES MEASURED BY ICHNOFABRICS: A KEY TO IDENTIFY ESTUARINE SYSTEMS

NETTO, R. G.; ROSSETTI, D. F.

A salinity gradient occurs from the outer marine dominated-zones to inner fluvial dominated areas in estuarine environments. Faunal distribution varies according to salinity fluctuations and distinctive biogenic reworking can be preserved in the substrate. Ichnofabric analysis is a useful tool to characterize salinity gradients, considering tiering of burrows and the ichnofaunal composition. The Miocene Pirabas/Barreiras succession from the Alcântara region, north of Maranhão State, Brazil deposited in an estuarine environment that reveals tiering of trace fossil suites recording salinity changes across the sedimentary succession. From the bottom to the top, a dominant *Thalassinoides*-*Ophiomorpha* suite gives place to a *Rhizocorallium*-*Teichichnus* suite, with associated *Diplocraterion*, *Planolites*, *Palaeophycus*, *Arenicolites* and *Rosselia*/*Cylindrichnus*. Open marine components (*Rosselia*/*Cylindrichnus*) of this suite are replaced by *Taenidium*, representing impoverished Cruziana Ichnofacies. The *Rhizocorallium*-*Teichichnus* suite is reworked by a *Gyrolithes*-*Taenidium* suite that gives place to a *Glossifungites* assemblage. Above this suite, a monospecific *Taenidium* assemblage is the only evidence of substrate reworking. The ichnofabric tiering reveals that shallow marine assemblages (*Thalassinoides*-*Ophiomorpha* suite) are replaced by tidal assemblages recording lagoon deposits (low diversity Cruziana suite). The establishment of a *Glossifungites* Ichnofacies on the top reflects sea level falls, allowing the bioturbation of firmgrounds on shoreline coast, whereas the *Taenidium* suite characterizes the inner mangrove areas.