

THE DEPOSITIONAL FACIES ARCHITECTURE OF A DEVONIAN STORM-DOMINATED GONDWANIC EPEIRIC SEA, AND ITS PALEOGEOGRAPHIC SIGNIFICANCE: THE FURNAS FORMATION, PARANÁ BASIN, BRAZIL

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Faciologic analysis of the Furnas Fm. (Paraná Gp, Devonian) carried out in outcrops of the eastern border of the Paraná Basin, Paraná State, Brazil, reveals 5 architectural elements, described by 14 facies and an hierarchy of 3 bedding surfaces. These architectural elements are named: Channel (Ch), Vertically Accreted Rudites (VAR), Vertically Accreted Arenites (VAA), Vertically Accreted Lutites (VAL), and Frontally Accreted Arenites (FAA). They are interpreted as channels cut by storm rip currents, and filled up by tide- and storm-current transported sands (element Ch); gravelly beaches accumulated as high-density turbidity flow deposits reworked by storm waves and currents (element VAR); sandy beaches accumulated by storm to fairweather waves and currents (element VAA); lagoonal deposits accumulated as decanted muds and washover turbiditic sands (element VAL); and storm-tide current generated 3D sandwaves (element FAA). Paleogeographically, sandwave fields record sand transport by winter storms across the Devonian Gondwanic epeiric sea, according to the accommodation space available in the basin. Due to reducing accommodation space, sandy beaches may develop as a by-pass zone (sand flats), or channels may be cut (ravinements) into the sandwave field. Also, coastal lagoons may be developed in response to the shoaling sandwaves, in inter-sandwave areas. Gravelly beaches record the early transgression of that sea on weathered basement areas, particularly in the lowermost Furnas Fm. Paleocurrent data reveal a SW mean direction of sediment transport, to the western Gondwanic margin.