

A Reconstructed Stratigraphic Succession For The Type Area of The Wai Luli Formation, Timor-Leste

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A reconstruction of the stratigraphic succession found in the Wailuli Valley furthers the understanding of the Gondwana Sequence in Timor-Leste. The reconstruction is based on detailed stratigraphic analyses of strata in the valley involving the classification of facies and the recognition of facies associations. Seventeen facies were recognised from field and laboratory observations comprising carbonate, siliciclastic and mixed carbonate/siliciclastic lithologies. Deposition by a range of processes from suspension settling to debris flows was interpreted for these facies. Five facies associations (FA1-FA5) were recognised and biostratigraphic correlations, based on a variety of fossil groups, indicate that each association represents a limited time interval.

FA1 comprises graded siliciclastic sand to shale packages. It is interpreted to be the result of turbiditic-like deposition in a lower delta-front to upper transitional zone environment of a fluvial-dominated delta within lower inner-neritic to upper mid-neritic water depths. Deposition by fluvial-generated traction currents in the lower transitional zone environment of a fluvial-dominated delta, at lower inner to mid-neritic water depths, is interpreted for the mixed siliciclastic/carbonate sandstone and siliciclastic shales of FA2. Deposition in a range of environments from the upper transitional to the upper prodelta zones of a fluvial-dominated delta, at lower inner to mid-neritic water depths, by hemipelagic suspension settling, fluvial-generated traction currents and turbidite-like flows is interpreted for the interbedded siliciclastic sandstone and shales of FA3. FA4 comprises rhythmically bedded wacke-mudstones, calcareous shales and siliciclastic shales deposited in mid to outer-neritic water depths under anaerobic bottom conditions by hemipelagic suspension settling and limited traction currents. FA5 also comprises rhythmically bedded wacke-mudstones, calcareous shales and siliciclastic shales deposited in mid to outer-neritic water

