

## FACIES AND ENVIRONMENT OF DEPOSITION OF UPPER PALEOZOIC DIAMICTITES IN SOUTHEASTERN PARANA BASIN, BRAZIL

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Upper Paleozoic diamictites of the Campo do Tenente, Mafra and Rio do Sul Formations, Itarare Subgroup, at the southeastern margin of the Parana Basin, Brazil, exhibit different facies characteristics, e.g.: a) massive to fissile, compact thin wedges or patches, plastered on flanks or tops of polished and/or striated small valleys or bosses of the basement, grading upwards to thick-bedded diamictite and shale; b) massive, thin to relatively thick tabular bodies, disconformably overlying sheared and faulted or polished sandstone basement; c) massive to faintly stratified, thin to thick tabular bodies which may grade upward to clast-laden rhythmite to diamictite and shale, varvite or marine siltstone; these disconformably overlie thick and deformed sandstone beds; some bear invertebrate burrows and trails and are interbedded with shale and overlain by varvite; d) massive to faintly bedded relatively thick tabular bodies, including or associated with deformed, disrupted beds, balls and folds of sandstone or rhythmite, and discontinuous boulder pavements, and sometimes faulted and cut by channel-like sandstone bodies; e) stratified, thin to relatively thick tabular to irregular bodies with bedding shown by: streaks, sometimes "sheared", lenses, or diffuse, elongate concentrations of silt-sandstone; by vertical granulometric variation; or by intercalations of beds or elongated lenses of silt-sandstone, sometimes crossbedded, often folded, or as "hooks", and faulted or chaotically mixed; f) thin to thick, regular to irregular bodies, split by numerous undulating to folded and faulted sub-horizontal joints, gradationally overlying and incorporating lenses of compact diamictite; these may cover, or be in lateral slump/fault contact with, ridges of conglomeratic sandstone and pass upward to varvite and sandstone.

Diamictites of types a and b are interpreted as lodgement/basal tills. They characterize a terrestrial/grounded glacier facies and may be associated with varvite and fluvio-glacial deposits in the basal part of the sections examined. Locally they may recur and be associated with involution-like structures, and demonstrate glacier readvances into the basin. Stratified types, such as f, are interpreted as flow-tills of the same general facies.

Other stratified bodies (c,d,e) seem to have resulted from mass gravity movements of till which may have been reworked and moved along the slope in a subaqueous, at least in part marine, environment, more or less "en masse", or as viscous flows or turbidity currents. They are locally associated with possible subaqueous fluvio-glacial sandstone, varvite and marine shale in small sub-basins.