

Paleostructures in the Paraná Basin, Brazil: their meaning to petroleum accumulation favorability

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The importance of regional structures for petroleum accumulation in structural traps, at intracratonic basins, has been emphasized by several authors. Structural features and their spatial relations with oil fields in productive basins are very well documented. Paleostructures were defined in the Paraná Basin by several means, mainly using geostatistical analysis of thickness and gravimetric data and also remote sensing images. The paleolineaments so defined in this study were compared with structures revealed by similar treatment and analysis of gravimetric data. This was done in order to associate paleostructures with basement structures and with structures identified by other authors using remote sensing and other different techniques.

Having in mind the possible importance of paleostructures in petroleum occurrence, as controlling reservoir, heat from basic magma intrusions, drainage flows, trapping structures, we have investigated the most favorable combination of evidences and the sites where they are present, using conditional probability and Belief function, for two petroleum systems: (1) source in Devonian shales and accumulation in Pennsylvanian sandstones; (2) source in Devonian or Permian shales and accumulation in Permian sandstones. The results strengthen the importance of Paleozoic NE and Mesozoic NW faults, NE intrusions zones and NE gravimetric highs as good ge indicators of petroleum occurrences. (Supported by PADCT 65.91.0303 and Petrobrás)