

Neotectonic (Shmax direction) On Brazilian Basins From Breakout

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Neotectonic is the portion of the geologic knowledge concerned with understanding and explaining the causes of various phenomena, sometimes dramatic, that occur in our planet and modify the physiography around us.

One of the methods used to determine the directions of the stresses that cause these alterations is the Breakout.

In this work 546 wells (663.3 km) have been analyzed, located in different Brazilian basins. According to the criteria defined by the World Stress Map: 28 were classified as **A**, 52 as **B**, 100 as **C**, 209 as **D**, and 157 as **E**.

The first outcome is that this technique shows results with great accuracy to the directions of the maximum stress (Shmax).

A second conclusion is related to the observation of region pattern of horizontal stress direction. For the west Amazon the Shmax is NE (N48.6°); for the middle is NW (N124.6°), and for the east is NE (N51.4°). On the equatorial margin there is a strong trend to NW. In Maranhão is N121.9°; in Ceará is N124.4°; and in Rio Grande do Norte is N130.5°. On the East margin, the Shmax presents variations. In Alagoas is E-W (N103.4°). In Sergipe is NE (N61.1°) with a secondary variation to NW (N159.9°). In Bahia is NE (N22.0°), very well defined. On the Southeast margin the direction of Shmax is resultant of two local directions. In Espírito Santo there is a secondary N-S (N5.8°) with a predominant E-W (N91.9°). The same is observed in Rio de Janeiro: a N-S (N171.9°), and one predominant, E-W (N88.4°). In the Paraná Basin there is a strong tendency to NE (N34.5°). The data were not conclusive for the Santos Basin.

A third outcome of this work, and the most important, is that on the Southeast margin, in basins that suffered halokinesis process, there is a stress decollement. Above the salt there is no preferential direction for Shmax. Below the salt, that direction reflects the pushing of the meso-oceanic chain with a very well defined East-West direction.

Finally, due to the severity of the data treatment, we can conclude that the Breakout, sometimes, can be induced by the well deviation.