

## **Induced Seismicity by Underground Water Wells in the Parana Basin**

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The seismicity level in the Brazilian territory is low, typical from intraplate regions. In the Parana Basin the seismic activity is represented by a significant number of tectonic shocks that occur mainly at its borders and many small magnitude events that occur in the inner part of the basin, almost all of them induced by human activities such as hydroelectric power plants and drilling of underground water wells. It is possible to infer that most of the energy release, and therefore, most tension is present under the eastern and western borders of the Parana Basin, but at depths that reach the basement.

The accumulation of energy in the inner part of the basin seems not enough to be released as natural tectonic earthquakes, however it is released as small-induced shocks. We show in this work that there are specific geologic and hydrogeologic conditions necessary to induce seismic activity, therefore it occurs only in some places of the Parana Basin, although the many hydroelectric power plants and a lot of tubular wells drilled in this region. The hypocenters of these events are located inside basalt packages and probably they are related to structural lineaments in the basin. We will be presenting in this work two cases of seismicity related to the drilling of underground water wells and to their exploitation, one in Nuporanga and the other in Presidente Prudente, localities of the Northeast and Southwest of the São Paulo State, respectively.