

THE THERMAL AQUIFER AND THE SPRINGS OF THE SERRA DE CALDAS AREA – GOIAS – BRAZIL

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One of the biggest thermal water springs with a flow up to $1.66 \text{ m}^3/\text{s}$ is situated at the Serra de Caldas in central Brazil.

The occurrence of the warm water is not linked to volcanism or geothermal anomalies but to depth of the aquifer and a complex geology.

The interpretation of the hydrogeochemical data makes it possible to understand the hydraulic system. Three main aquifers can be identified due to different groundwater quality.

The top aquifer of the Araxa group mainly shows little influence of the thermal water, is cold and hydrochemically wide spread. The aquifer underneath also of the Araxa group is located in the mylonite zone of up to 100 m thickness where Araxa overthrusts the Paranoá group. The groundwater is confined and affected by the dissolution of minerals which are not typical for this group. Therefore the recharge takes place in other areas which are linked through NNW striking fault and fracture systems.

The deep aquifer is recharged on the Serra de Caldas, a big quartzite structure of the Paranoá group which is surrounded and covered by the Araxa schists, phyllites and with quartzite and limestone banks. The thickness of the quartzite over the basement is not known. The silica content of deep wells in the Paranoá aquifer (850 m deep, 58°C) indicates temperatures of over 100°C in the thermal water or over 2000 m depth. Reactivated deep fractures on the margin of the structure give pass to the thermal water where it occurs in the springs.