

## **Hydrochemistry of the basaltic aquifer in Mato Grosso do Sul State, Brazil.**

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The State of Mato Grosso do Sul has an area of 358,000 km<sup>2</sup>, with an urban population of about 1,650,000. Of the 103 systems of public water supply operating in the state, only 15 do not use subterranean water exclusively. The basaltic rocks of the Serra Geral Formation have an exposed area of about 40,000 km<sup>2</sup> in the state, corresponding to 11% of the total area of the latter, and harbour 60% of the urban population. Thus, this geological entity is one of the most important aquifers of the state, situated below the Bauru, and above the Botucatu, aquifers, with circulation and accumulation of water in fissure zones. The systems of public water supply use about 200 wells in the basalt, with an average flow of more than 25 m<sup>3</sup>/h. On the basis of chemical analyses carried out, the subterranean waters of the Serra Geral Formation can be classified, according to Schoeller, as calcium-magnesium bicarbonate ( $\text{HCO}_3^- > \text{Cl}^-$ ;  $\text{Ca} > \text{Mg} > \text{Na} + \text{K}$ ;  $\text{SO}_4 = 0$ ), with a mean pH value of around seven. Salinity is low, with total residue values less than 100mg/L. Samples of subterranean water were collected and analysed in order to chemically characterise the aquifer, permitting the evaluation of water/rock interrelationships, formation of neominerals, chemical equilibrium, and relative geochemical mobility, with analyses of stable isotopes (O and H), and relationships between O<sub>18</sub> and Deuterium. These data permit the interpretation of the velocity of circulation of the subterranean water in the basalt, the permeability of the rock, and the age of the water.