

## **Groundwater in the Southern Canyons Pathways UNESCO Global Geopark – Brazil**

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The Southern Canyons Pathways Global Geopark endorsement by UNESCO in April 2022 placed this region among destinations that are exemplary in sustainable development focused management. This Geopark became a territory of international geological relevance and officially part of the Global Geoparks Network. Located in southern Brazil, this Geopark covers an area of 2,830.8 km<sup>2</sup> of the Atlantic Forests, one of the planet's richest ecosystems in terms of biodiversity. The Geological Survey of Brazil is currently carrying out the Geodiversity Survey Program in some Brazilian UNESCO Global Geoparks, such as Seridó and Southern Canyons, in order to characterize and understand the geological environments diversity and its suitability and limitability in relation to urban occupation, agriculture, water resources, mineral resources and geotourism. Among the themes covered in this survey, the hydrogeological study on a 1:100,000 scale stands out. In this study we did an inventory of water wells and water springs, alongside fieldtrips to the area, and delimited the aquifers in terms of potential, water quality and natural vulnerability. Our findings show that sedimentary rocks from the Parana Basin and unconsolidated Quaternary sediments constitute the porous aquifers in the area. Groundwater from the porous aquifers is potable; however, excess Cl<sup>-</sup>, Fe and Mn may occur in coastal sedimentary deposits. Approximately 70% of the territory is covered by fractured aquifers formed by volcanic rocks of the Serra Geral Group with highly variable productivity depending on the relief and tectonic conditions. Under this fractured unit lie aeolian sandstones of the Guarani Aquifer System which, besides having good potential, outpours its waters into the region's escarpments in the form of water springs. Our results show that groundwater plays a fundamental role in the Southern Canyons Pathways Geopark, supplying human and pastoral uses, as well sustaining the region's surface water network.