

Hydrolithology, Hydrogeology, Annual Exploited Volumes and Soils of the Tietê River Basin, São Paulo, Brazil

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The Tietê River rises in the Serra do Mar in the municipality of Salesópolis/SP, cuts across the entire State of São Paulo from East to West, and is considered its main river, flows into the left bank of the Paraná River on the border between the State of São Paulo and Mato Grosso do Sul, helping making up the Paraná basin, which is the second largest hydrographic basin in South America to its confluence in the Atlantic Ocean. The Tietê River basin, whose area is approximately 72,000 km², has most of its territory in the State of São Paulo and a small portion in the extreme south of Minas Gerais. The objective of this work is to present and discuss the maps of hydrogeology, hydrolithology, explored annual volume and the soils of the Tietê river hydrographic basin. The altimetry variation of the basin is 1,783m, ranging from 256m in its confluence in the municipality of Itapura/SP to 2,039m in its small part in the State of Minas Gerais, with an average altitude of 592m. The hydrogeological map is represented by a set of hydro-stratigraphic units, obtained from each existing aquifer, explaining their spatial variations in productivity and generating hydrogeological polygons. According to information from the Hydrogeological Map of Brazil to the Millionth, published by the Geological Survey of Brazil, hydro-stratigraphic units represent geological formations or parts of them, which store and transmit groundwater in a similar way and with productivity of the same order of magnitude, that is, considering aquifers in places where they do not suffer variations in their productivity. The hydrolithology of the basin was separated by the grouping of geological units that store and transmit groundwater in a similar way, being the porous or granular, karst and fractured units. The hydrolytic map of the basin shows the granular unit (Gr) with an area greater than 80% of the entire basin, while the fractured unit (Fr) shows an area less than 20%. The hypsometry of this study used images made available by the American Geological Survey (USGS) in 2014, the SRTM 30 meters. The hydrogeology, hydrolithology and explored annual volume maps that used the data provided in the Hydrogeological Map of Brazil, all published by the Geological Survey of Brazil. The population density map of the Tietê River basin can be downloaded from: <https://drive.google.com/file/d/10yZftJwJxf3dQhzF6dWXB60FibJQvMNV/view?usp=sharing>. The hypsometric map of the basin can be downloaded from: <https://drive.google.com/file/d/1bBA6ggcDU2fu1vU15T2IO6oWMhm0TfM1/view?usp=sharing>. The hydrolytic map of the basin can be downloaded from: https://drive.google.com/file/d/1w_irw2Zu7gZn6aOUTMZkMbzSa4vTpIuK/view?usp=sharing. The hydrogeological map of the basin can be downloaded from: <https://drive.google.com/file/d/1pWSrCIRNTny-IzAG8U3qmG31aZ9T74K5/view?usp=sharing>. The explored annual volume map can be downloaded from: <https://drive.google.com/file/d/1y58XPH8wXMYqsg3r-DFOBexLfcY-5B7/view?usp=sharing>. The soil map in the basin can be obtained in: https://drive.google.com/file/d/1vveCBo4vgtcbkkgOF_8RGoJ_SJ0it5Yq/view?usp=sharing.