

Mapping of hydrogeology, hydrolytic domains, soils, soil infiltration capacity and explored volumes in Londrina, Paraná State, Brazil

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Londrina is a municipality located in South region of Brazil, in the northern region of the State of Paraná. According to IBGE estimates for 2020, it was 575,377 inhabitants, being the second most populous city in the state and the fourth in the South Region, after the state capital, Curitiba, Porto Alegre and Joinville. The objective of this work is to present and discuss the maps of hydrogeology, hydrolytic domains, soils, soil infiltration capacity and explored volumes of the municipality of Londrina, in State of Paraná (Brazil). The altimetry variation of the Londrina is 495m, ranging from 356m in East to 851m on South of municipality. 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 hydrogeology 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 Londrina shows the fractured unit (Fr) of moderate productivity in more than 95% of the territory of the municipality, with a small portion, in the southwest of the municipality of Londrina on the border with the municipality of São Jerônimo da Serra, of granular unit (Gr) of productivity generally very low. The infiltration capacity of the soil is very good in most of the municipality and a small part, in the southwest of its territory, is considered moderate. The hypsometry of this study used images made available by the American Geological Survey (USGS) in 2014, the SRTM 30 meters. The hydrogeology, hydrogeology 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 map with the location of the municipality of Londrina, in the state of Paraná, can be downloaded from: <https://drive.google.com/file/d/1PTSkL5EVMqXMqGhCMEB6ref2wcSFlo94/view?usp=sharing>. The hypsometric map of Londrina can be downloaded from: <https://drive.google.com/file/d/1jnPWVpTCJ28ixi1R5vemhOBoXlb3IpTY/view?usp=sharing>. The hydrogeological map of the basin can be downloaded from: https://drive.google.com/file/d/1e8-HxIJmSZogP3gqxACze-Y_z_FK_cfy/view?usp=sharing. The hydrolytic map of the basin can be downloaded from: <https://drive.google.com/file/d/1BzTXF7h48rORmKAIBrpfIL3DGaZOKqIK/view?usp=sharing>. The soil map in the basin can be obtained in: <https://drive.google.com/file/d/1zBe6PtqfLOzKhmMwg5M1vX1w2-pg51FI/view?usp=sharing>. The soil infiltration capacity map can be downloaded from the following link: <https://drive.google.com/file/d/1N-5A5YVoMd2B7SxgU50fNVvC8eSrm7u3/view?usp=sharing>. The explored annual volume map can be downloaded from: https://drive.google.com/file/d/1_eGbDaVYXePSBo18RKd35HNpI-V11ivj/view?usp=sharing.