Hydrogeological study of the Pirabas Aquifer in the city of Salinópolis, NE of the State of Pará-Amazon-Brazil.

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The Salinópolis region is considered one of the most important tourist centers of the state of Pará and of the Northern Region of Brazil (Amazon), due to its bucolic atmosphere and beautiful beaches. Regarding basic sanitation, it shows signs of water supply problems due to the growing population demand, especially along the summer holidays and extended weekends. The use of groundwater through deep wells for public supply, managed by COSANPA, is exploited from the Pirabas aquifer system, which has geologic marine origins with miocene age. The climatic characterization of the rainfall indices was compared with the water level measurements of the wells of the Groundwater Monitoring Network (RIMAS). In the field surveys, were registered 17 water samples from deep wells in the central urban area. Since 2010 we have monitored the quality and quantity of 03 deep wells. Optical profiling detected holes in the casings and well obstructions. The areas of recharge and discharges and the groundwater flow was defined by hydraulic potential. The electrical tomography of the terrain versus the geophysical profiles of wells allowed, through the difference of resistivity, to differentiate the layers of the aquifers, but was not possible to recognize any tectonic structures related to water systems. The water classification was made using the Piper, Stiff and Schoeller diagrams, plus the STD and the Ionic Balance, during the dry seasons of 2016, 2017 (rainy season) and 2018. The waters of RIMAS wells were classified as bicarbonated calcic, and bicarbonate sodic for the 14 pumping wells of COSANPA. The waters of Guaxini Pentagono well in the dry season of 2018 was classified as calcic mixed. By hydrogeological studies the aquifer Pirabas was divided in Lower Pirabas (characterized by the well water 14 wells of COSANPA) and Upper Pirabas (related to the wells of RIMAS). The stable isotope ($\delta^{18}O$ and $\delta^{2}D$) analyzes of the wells and the rainfall of Salinópolis showed that the GNIP (Global Network of Isotopes Precipitation) data from Belém and the Global Meteorological Line approaches, showing a direct relationship between the precipitation that occurs with the global average deriving the occurrence of rains of the same origin. It is necessary to investigate the occurrence of karst conduits that allow the entry of water of marine origin in the Pirabas aquifer system. With the results obtained in this research, it is expected to contribute to the improvement of the sanitation framework in relation to groundwater supply in the city of Salinópolis.

KEYWORDS: Hydrogeology; Groundwater monitoring; Pirabas Aquifer.