

## **GEOLOGY AND HYDROGEOLOGY APPLIED TO SELF-SUSTAINED DEVELOPMENT FOR THE KARST OF ARCOS-PAINS-DORESÓPOLIS, MG, BRAZIL**

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This research integrates a series of multidisciplinary studies about the karstic Province of Arcos-Pains-Doresópolis, Brazil. Its goal is to suggest self-sustained development directives for this area, based on studies of karstic environmental dynamics and mapping and analysis of natural resources. This Province is located in mid-southern Minas Gerais State, near secondary development centers. Its diversity of landscapes and natural resources leads to mining and industrial activities related to limestone exploitation and also to potential touristic and recreational activities. Weather and runoff scarcity in this kind of system are important issues to groundwater use as social and economic improvement of this region. The karstic province of Arcos-Pains-Doresópolis is located far southwest from São Francisco Craton and its formation is based on the Bambuí Group carbonatic rocks. Studies about the carbonate lithofacies lead to the recognition of ancient environments, providing complementary data to the hydrological study and to the dynamics of the karst system. The paleo-environment was formed by an carbonatic platform with calcilutite, algalaminites with birdeyes and mudcracks, calcirudites and biolithites of tidal plain, platform barriers calcarenites and offshore platform calcilutites. The lithofacies formed by calcarenite are more susceptible to generate secondary porosity and karstification. The hydrological models presented in this study are based in the geology of the area and by hydraulic, chemical and lithological data from 90 tubular drills. It is presented hidric balance by Thorntwaite and Matter's method and by hydrograph separation of the superficial drainage and groundwater flow using HYSEP program of the United Service Geological Survey.