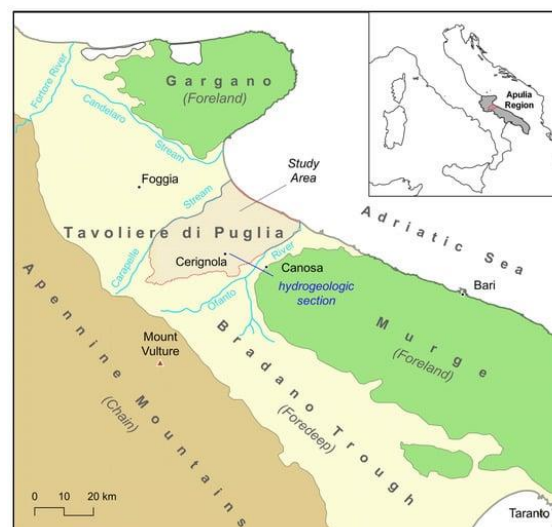


Application of Hydrological and Hydrogeological Models for Evaluating Groundwater Budget in a Shallow Aquifer in a Semi-Arid Region Under Three Pumping Rate Scenarios (Tavoliere di Puglia, Italy)

Summary

We analyze the variation in groundwater budget by modeling an aquifer in a semi-arid region in southern Italy, using different good pumping scenarios. This aquifer is overexploited due to the agricultural vocation of the area. We propose an integrated method to assess the distribution of hydrogeological parameters and the recharge rates. The hydrogeological parametrization is performed through a hydrostratigraphic approach using the geostatistical tool. Recharge rates are computed through a soil water balance application, using different monitoring stations over the area for the whole period of interest. Integrating the results of this analysis with pumping scenarios based on the water irrigation requirement of the main crops in the area, different water budgets are estimated. The results show how different pumping scenarios affect the availability of water resources and thus underline the importance of management. This integrated hydrogeological model can be applied to other areas with similar hydrogeological characteristics, and it can be considered a valuable tool for evaluating sustainable groundwater management strategies, considering land use practices and socio-economic factors.



Location of the study area.

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