Building the large-scale specific yields over the Zhuoshui river alluvial fan and Minzhu basin with gravimetric technique

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This study estimates the large-scale specific yields (S_y) of the aquifer in the Zhuoshui river alluvial fan and its upstream, Minzhu basin, by gravity data combined with groundwater level data and electrical resistivity tomography (ERT) data. The S_y results from gravimetric technique are rigorously compared with those from hydraulic technique. There are eight gravity stations over the Zhuoshui river alluvial fan, and four over the Minzhu basin.The distribution of all gravity stations is shown in the attached figure. The ERT data are only used for S_y estimation in the "SMOF" gravity station in the Minzhu basin. The strategies for modeling groundwater level changes include the terrain correction method and the Bouguer correction method. The environmental factors influencing the S_y estimation are also discussed. We expect that the groundwater resources in the Zhuoshui river alluvial fan and Minzhu basin can be accurately explored by this study and the results can provide an important reference for groundwater resource management.

Keywords: Gravimetry, Large-scale specific yield, Groundwater resource