



Future Minimum Water Level Prediction and Establishment of Groundwater Management Water Level : A Case Study in Zhuoshui River Alluvial Fan, Taiwan

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Groundwater resources have been well exploited in Zhuoshui River Alluvial Fan area for a long history, and is considered to be a vital source of water supply during dry seasons of each year. Variation in precipitation patterns has caused many extreme events in recent decades as well as impacts on groundwater recharge characteristics owing to global climate change. Further studies of historical groundwater records should be taken to meet the need of better groundwater management strategies for the future.

In the present study, Zhuoshui River Alluvial Fan is chosen as study area. Daily groundwater level monitoring records during 1999 and 2017 from 37 stations on this area are investigated in order to assess the overall groundwater level response to natural drought phenomena.

Firstly, groundwater level records from each of the stations are analyzed to detect groundwater drought events in short and long time scale using the Standardized Groundwater Index (SGI) method. Two SGI indicator, SGI180 and SGI360, time series are estimated from data composed with daily groundwater level accumulative sum for an accumulation period of 180 days and 360 days separately.

Secondly, trend of groundwater level during study period of 37 stations are evaluated with Mann-Kendall test, and establishing standards for groundwater management levels.

Finally, this study uses a groundwater level regression curve with a linear equation between the highest water level and the water level difference to predict the future minimum water level. Wutu station are chosen to build model and the effectiveness of model are tested.