Intervention Pattern and Detection Analysis for Anomaly Gorundwater Level Time Series

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The anomaly of time series is considered as the impact from intervention event. On the condition that the intervention time-point known, the intervention analysis model is used to find and quantify the anomaly of seismic groundwater level variation. The observation wells in alluvial fan of Cho-Shui watershed in Taiwan is the study area and the 921 chi-chi and 331 Cha-I earthquakes is the events analyzed. A large amount of data is shown that two earthquakes have two anomaly patterns, step-change and the surge-flush. They can be described by single transfer function of intervention analysis model. Moreover, if the intervention event is unknown, the study uses many statistical test methods to check the anomaly phenomena or not. The simulation data and observed data are used to identify the methods. It is expected that we can obtain the specific response function from the seismic groundwater and testing the anomaly of groundwater and provides a quantitative and subjective procedure for seismic groundwater dynamic analysis.