Time Series Analysis to Determine the Aquifer Properties of a Fractured Aquifer

報告者：Wi-Ki Li
指導教授：Chuen-Fa Ni
報告日期：2011/11/24

Abstract

This study demonstrates a time series analyze method in the NCU research well site near You-luo stream in Chien-Shin area, Shinchu country, Taiwan. The rainfall, stream water level, and well water table records from January 2010 to November 2011 were used for analyzing the aquifer properties, i.e. the hydraulic conductivity. Considering an aquifer nearby a stream, the input stress (far field rainfall) causes a rising of the water level in the stream. Wells with different distances from the stream will obtain the water table variations after the raising of water levels in the stream. The aquifer parameters can then be estimated by the time difference of the response between stream and the wells. The low-pass filter in signal processing also find out the frequency in observed data is higher than 0.001 Hz. Preliminary results show that the hydraulic conductivity in the well field is 2973 m/day. The scale effect may be the reason for the four times higher value than that in previous investigation. In the future, this method will be improved by considering other physical conditions or the variation of the water fluctuation data.