



## **Decrease of permeability induced by earthquakes in a hot spring, Yunnan, China**

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Earthquake induced hydrological phenomena have been documented for thousands of years, these including changes in water level, temperature, flow rate, stream flow etc. Changes of discharge at springs following earthquakes is among the more interesting hydrological response to earthquakes because the changes are often persistent and can be observed directly. The mechanism of the changes, however, are in debate. Furthermore, most of the observed discharge changes are increasing, very few discharge decrease are documented. In this study, we documented the coseismic springs discharge decrease following three earthquakes (1976 Longling earthquake, 1996 Lijiang earthquake and 2005 Sumatra earthquake) and we use three models to explain these response. The three models are permeability decrease model, transient permeability model and localized coseismic pressure changes model. Our results show that the transient model is better to explain these response and 1976 Longling caused the largest permeability changes. And we can also see that the permeability of the spring is changing with time.