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The deformation behavior of Babaoshan Fault in Beijing and its correlation with precipitation and groundwater inferred from long historical observations

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Babaoshan fault is a notable active fault locating in the west of Beijing city. Investigations based on the mobile observation data of deformation, gravitation, and geomagnetism along this fault show that the Babaoshan fault is in the condition of squirm or alternating motion (Che et al., 1997). In this paper, we investigate the effects of rainfall and groundwater on fault deformation behaviors through systematically analyzing the long history observation data in a permanent station named as Dahuichang which is located in the middle section of Babaoshan fault from 1971~2003. The results show that (1) the pore pressure of Babaoshan fault is closely related the precipitation, and (2) the fault deformation behaviors are controlled by the rainfall manner through the pore pressure (groundwater level) changes.