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b-value of local seismicity around Seymareh Dam (Zagros region-Iran), before and after impoundment

Earthquakes began to occur in Seymareh dam -Central Zagros region, in Iran- soon after the filling of Seymareh Dam in April 2012, with magnitude 4.7. In the present study, three datasets 2006/08-2011/04 (60 months before impoundment), 2011/04-2016/03 (60 months after impoundment) and 2011/04-2018/10 are analyzed to study the b-value. The b-value is calculated using the Gutenberg– Richter relationship. The estimated b-value of this region before impoundment are found to be in good agreement with previously reported studies (b-value= 0.62, 60 months before impoundment). In the subsequent years after impoundment, the b-value shows an increase (b-value=0.72, 60 months after impoundment and B-value= 0.83, after impoundment). Also, the pattern of spatial clustering of earthquakes show increase in clustering and migration along the dam site and two faults near it, called Vizenhar and Gavar faults near North-East of dam site. The results of this investigation indicated that reservoir-induced earthquakes might have resulted from the release of energy accumulated by impoundment of the reservoir, although we are just in the beginning of our long-term study.

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