

LONG-TERM EARTHQUAKE FORECAST FOR IRAN

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ABSTRACT

We present a model of earthquake forecasting in Iran to assess the long-term probabilities of future earthquakes with moderate and large magnitudes ($M \geq 5.5$). The model estimates a coupled rate of magnitude, space and time for future seismicity using a spatial-temporal Poisson process. We applied the ISC bulletin for the selected region (latitude 25- 41° and longitude 43.5- 64°) in the period of 1970 to 2012. Our results show a meaningful correlation between anomalies of the forecasted seismicity map and the epicenters of target events occurred from 2013 to 2014. Based on the results, we have concluded that the anomalies of the forecasted map should be considered as high risk regions.

INTRODUCTION

Iranian plateau is one of the most seismically active regions in the world and it frequently suffers catastrophic earthquakes. They cause heavy loss of human life along with lots of property damages because of the poor quality of constructions in Iran.

In this study, we have investigated the occurred earthquakes in this region from 1970 to 2012 in order to estimate the probability of future moderate and large magnitude events ($M \geq 5.5$) in a five-year period (forecasted seismicity map). The earthquakes occurred in the period of 2013-2015 has also been applied for validity test of the forecasted seismicity map.

DATA

We applied the regional data sets of the International Seismological Centre (ISC). This catalog is available at <http://www.isc.ac.uk/>. The ISC's reviewed earthquake origins are typically available about two