Earthquake Hazard and Risk Assessment on Unified Scaling Law for Earthquakes: State of Gujarat, India

Anastasia K. Nekrasova (1), Vladimír G. Kossobokov (1, 2, 3), and Imtiyaz A. Parvez (4)

(1) Institute of Earthquake Prediction Theory and Mathematical Geophysics, RAS, Moscow, Russian Federation | (2) Institut de Physique du Globe de Paris, Paris, France | (3) National Research University Higher School of Economics, Moscow, Russia | (4) Council of Scientific and Industrial Research, Fourth Paradigm Institute, CSIR - 4PI, Bangalore, India

Methodology

The obtained seismic hazard, population density based on 2011 census data, and a few model assumptions of vulnerability. Finally, we present the maps of seismic risks for the state of Gujarat using the obtained seismic hazard and population density.

Seismic hazard

The seismogenic source for the Gujarat region territory for the 23 cells. The coefficient A ranging from -1.7 to 0.06. The obtained values of seismic hazard are used for estimation of risk. Any kind of risk R(g) estimates results from a convolution of the natural hazard at location g - H(g), and the vulnerability of each cell - V(g). The risk estimation of each cell is R(g) = H(g) V(g). The three types of hazards are: (i) the one resulted from the USLE application. Finally, we present the maps of seismic risks for the state of Gujarat using the obtained seismic hazard and population density.