Incorporating Spatio-Temporal Variability in Earthquake Socio-Economic Impact Modeling

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This presentation introduces a framework for incorporating spatial and temporal features associated to seismic events as they relate to social and economic outcomes. It departs from the traditional convolution of hazard and vulnerability for a selected potential earthquake source, at a specific point in time, and instead relies on methods that assess changes in earthquake vulnerability, and thus risk, which are connected to dynamic and spatial changes in the size and distribution of human capital, physical capital and other resources that enter, hypothetically, into a country's production function. In particular, population cohort models with human capital co-flows are introduced for individuals; perpetual inventory methods and capital vintage models are introduced for physical capital; and exhaustible and non-exhaustible models are presented for natural resources. Such methods are being currently developed under the scope of the Global Earthquake Model (GEM) initiative (www.globalquakemodel.org), in what refers to the modeling of social and economic impacts. Suggestions on how to use outcomes for social and economic modeling are presented.