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EARTHQUAKE LOSS MODELLING FOR LOW SEISMIC REGION OF EASTERN AND NORTHERN EUROPE

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Catastrophe loss modelling has been under rapid development in the recent years. This is mainly due to significant demands for natural catastrophe models and their applications in the financial and insurance industry. Due to the high severity and low frequency of natural catastrophe such as earthquakes, the use of traditional actuarial methods based on historical loss records is inadequate and incomplete. Computer risk models today are used to evaluate potential losses from future events and provide facilities for better controlling exposure to potential losses. These computer models provide sound basis for risk pricing for insurance and reinsurance portfolio management. Information obtained from this type of modelling is ideally suited to the regional risk consideration of traditional financial entities as well as to the growing insurance catastrophic market in the region. The first generation of the earthquake loss model for European region was developed in the late 1990?s and has been used by many insurance and reinsurance companies for various insurance portfolio analyses. In this paper the methodology and preliminary results for a new earthquake model for the European region is presented. The seismic hazard, the built environment inventory and the building vulnerabilities are probabilistically convoluted to estimate probabilistic losses. Such results once implemented in user friendly financial software, are used by insurance and reinsurance companies to estimate their potential exposure to seismic hazards. The main advantages of this model are its high resolution stochastic event set, detailed seismic model, and a range of vulnerability functions describing various building types and contents. The new model uses the latest information on regional seismotectonic to develop a new regional seismic hazard model for continental Europe. This model benefits a high geographical resolution for the underlying administrative units to capture detailed variation of seismic hazard and to enhance the modelling of soil effect