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Complex geohazard susceptibility zoning for effective landuse planning and catastroph prevention in developing countries

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The Czech Geological Survey conducted projects of geological mapping and complex geohazard susceptibility zoning in Nicaragua in the years 1997-2009. For selected areas in vicinity of major cities and towns basic geological maps at a scalle 1:50,000, maps of geomorphic features (Geomorphic Inventory Maps), Morphostructural Maps of estimated fault zones, and derived Geohazard Susceptibility maps were done. These maps were prepared during field campaigns by direct field mapping, analysis of remote-sensing data, communicating the local authorities, interwieving the local inhabitants and with very close cooperation with the local partner of the projects – the Instituto Nicaragüense de Estudios Territoriales (INETER).
The resulting maps and explanatory reports presented the dangerous natural processes that occurred in each respective area in the past and proposed preventive measures in detail. Zones evaluated as highly susceptible, e.g., to (i) mass movements, (ii) large inundations, (iii) torrential flooding, (iv) seismogenic liquefaction, etc., were presented in bold colours on the maps. Such maps and reports were presented to local authorities and inhabitants of respective cities during public breefings at the end of each mapping campaign. In such a way, areas of Pacific volcanic ridge (1997-2003), Jinotega (2004), Somoto (2005), Estelí (2006), Boaco and Santa Lucia (2007, 2008), Sebaco (2008) and Jalapa (2009) were elaborated. The maps then served to the INETER for implementation into the landuse plans, evacuation routes and other preventive measures to protect and save human lives and inftrastructure. This approach could serve as a muster for a simple, cost effective and relatively fast geohazards susceptibility evaluation of any area in any developing country. The projects also paid attention to capacity building of our Nicaraguan partners.
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