



## **GEOMORPHIC FEATURES AND LANDFORMS ANALYSIS FOR GEOHAZARD ASSESSMENT IN EL SALVADOR AND NICARAGUA, CENTRAL AMERICA**

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Central America is, due to very high tectonic and volcanic activity in the area and its climatologic setting, very susceptible to geodynamic hazards. Fundamental topics of the Czech Geological Survey (CGS) projects have been evaluating the susceptibility to dangerous geodynamic processes, e.g., to slope instabilities, flooding, erosion, seismogenic liquefaction, etc., in the areas about 200-600 km<sup>2</sup> around the principal cities and other highly populated areas, defined by Government authorities. The projects have been executed in Nicaragua since 1997 and in El Salvador between 2003-2006.

Except geological mapping, a geomorphic analysis is the principal method for hazard assessment. The main assumption of the geomorphic analysis is the fact, that the geomorphic features and landforms reflect those processes, which have formed them in relation to the local lithologic, tectonic, geomorphic and climatic settings. The principal tools of the geomorphic analyses were:

- Satellite images interpretation: Landsat 7, SRTM (Shuttle Radar Topography Mission) with resolution of 90 m and interpolated 30 m;
- Stereoscopic photo-interpretation at scales 1:39,000 and 1:25,000;
- GIS based analyses of digital elevation model (DEM);
- Field reconnaissance, geomorphic and geological mapping, sedimentological logging, verifying and measuring the tectonic zones, paleostress and paleoseismic analy-

ses etc.

Based on the knowledge of the principal on-going hazardous processes obtained from geomorphic analysis, information about the geological structure, and analysis of seismic tremors activity and distribution, the *geohazard susceptibility map* was prepared. Several main susceptible regions were distinguished with respect to a combined quantitative-qualitative scale for different geohazard groups. Two case studies, i.e.: Metapan town, El Salvador (2005) and Esteli town, Nicaragua (2006) are presented in the paper.