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**Title of the work:** PELIGRO SISMICO EN LA REGION METROPOLITANA  
NUEVAS PERSPECTIVAS EN UN CONTEXTO TECTONICO ANDINO: CASO  
SANTIAGO DE CHILE

**Overall project:** Risk Habitat Megacity

**Supervisor:** J. Campos

**Last update:** September 2009

Recently, new knowledge have arisen that directly affects the evaluation and characterization of the seismic hazard in the Metropolitan Region. The cordilleran zone of central Chile is considered of great strategic importance for the city of Santiago of Chile, because it is the source of the drinking water (potable) hydroelectric power and the pipe lines, which feeds the population of around 6 million inhabitants of the city of Santiago.

More over, strategic sites of the high mountain range are the location of the main Chilean economic industry: the mining industry. This zone hosts very important deposits, such as: El Teniente, Andina, Los Bronces, El Volcán, etc.

The recent installation of modern broadband seismic stations of great dynamic range, has enabled us to put in evidence a remarkable seismic activity in the Andean Cordillera, specifically in the eastern edge Santiago.

Recent tectonic studies in this region have put in evidenced a system of active faults that had previously not been considered in the evaluation of the seismic hazard. This edge of Santiago Basin is controlled by San Ramon Fault, a fault that displays morphologic recent activity that can produce a crustal event of magnitude of the order of 7.

This new scene of seismotectonic hazard it is approached in this work and the methodologies for the estimation of the seismic Hazard in the City of Santiago appear.

A complete study of the crustal seismicity (from 0 up to 30 km depth) produced in the mountain range of Central Chile, as well as of the associate Tectonics was carried out.

In order to determine the Seismic Hazard in the Santiago Metropolitan Region, two complementary models are going to be elaborated, combining tectonics and the seismicity:

1. Geologic earthquake model: A detailed tectonics analysis is going to be made of the existing faults in the zone (determination of space dimensions). From this model we will be able to be obtain maximum expected magnitudes of earthquakes, associate to each specific faults.

2. Seismic earthquake model: From different seismic catalogues (e.g. Servicio Sismológico Nacional, NEIC, SISRA, ISC) we will elaborate a complete data base of included/understood(?) crustal seismic activity. This unique catalogue will be put under several tests to verify each hypocentral location, because this information must be correlated with the tectonic model. In the same way the corresponding homologations will be made in magnitudes, such as a completeness analysis of the catalogue.

Finally, a global model connecting the previous one will be elaborated, being the starting point to calculate several seismic hazard scenarios. From these models, such as the detailed analysis of San Ramon Fault system, synthetic accelerograms will be produced to find the peak ground acceleration affecting the Santiago Metropolitan area.