



Doctoral Thesis Proposal: Using satellite images for the study of natural hazards in the upper part of the basin of the Mapocho River, Metropolitan Region, Chile

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Abstract: Chile, by its configuration and geographic location is permanently affected by natural phenomena that trigger disasters or catastrophes of various sizes. The natural hazard studies focus on the existence of situations of potential threat, which may be related to seismic, volcanic, meteorological, landslides and other gravitational processes, among others.

This study focused regional character and environmental aspects, it aims to raise, organize and analyze database information, using satellite imagery of the components of geology, geomorphology, hydrology and vegetation from which can be established diagnoses of the various phenomena of natural hazards that may affect the study area. On the basis of these records will enable analysis of possible hazards in the area, it is a sector susceptible landslide.

The methodology involves the generation of base map on which the analysis was performed, including digital terrain elevation model allowing analyze the topography with contour detail every 5 meters. The modeling of the dangers of mass removals, meanwhile, includes the use of a DEM of SAR interferometry (30x30 meters), optical DEM (5x5 meters) and using the software Ramms (Rapid Mass Movements), commercial software developed in Switzerland to model various types of mass removals.

Finally, modelling will identify and map the areas likely to be affected by natural hazards mass removals. This, in order to carry out the evaluation of the base of natural hazards in the study area line, and from which guidelines aimed at minimizing the susceptibility of occurrence of phenomena identified in accordance with national and international experience will be established in studies with similar characteristics.

Available Means: SAR images (ERS1 and ERS2) for the years 1995-1997, Pleiades images 2014 and 2015, 2014 and 2015. LIDAR data The project is associated with a study requested by the miner Anglo American Sur SA in which I am the director, The study began in September 2015 and ends in May 2017.

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