



Remote Sensing for Landslide Impact Assessment

I.G. Fourniadis and J.G. Liu

Department of Earth Science and Engineering, Royal School of Mines, Imperial College
London, London SW7 2BP, UK (ioannis.fourniadis@imperial.ac.uk)

Landslide impact assessment investigates the adverse effects that landsliding can have on the local life and economic activities of a region. Due to its multi-temporal nature and synoptic coverage, remote sensing is an effective tool for the regional assessment of landslide impact at low cost and high accuracy. Only a few examples exist of the use of remote sensing for the estimation of environmental factors that can affect landslide impact, however, despite the paucity of published geological and geomorphological data for most of the developing regions of the world where the impact of landslides is often greater.

Our studies on regional land instability assessment in the Three Gorges area of China using imagery data from the Advanced Spaceborne Thermal Emission Radiometer (ASTER) have led to the development of a model that integrates land instability with several factors that can relate hazard to human life, such as slope failures occurring in proximity to built-up areas and roads, and areas of high landslide risk along the bank of Yangtze and its major tributaries.

The method correctly identifies some of the known destructive landslides in the region, like Qianjiangping and Huangtupo, as belonging to areas of potentially high landslide impact. Our results suggest that several population centres, including the towns of Wushan and Badong, are rated at high landslide hazard levels and could experience damage due to landslides during major landslide-triggering events (prolonged rainfall, high-intensity rainstorms, reservoir impoundment and withdrawal).

This study highlights the importance of differentiating between landslide types within susceptibility assessment, and identifies those locations in the Three Gorges where the probability of landslide occurrence with negative impact to life and property is greatest.