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Landslide risk analysis in the Mailuu-Suu valley (Kyrgyzstan) by means of remote sensing techniques

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Mailuu-Suu is a former Uranium-mining area in Kyrgyzstan (Central Asia), at the northern border of the Fergana Basin. This region is particularly prone to landslide hazard and, during the last 50 years, it has experienced severe disasters related to landslide activation and the presence of numerous nuclear waste tailings. Due to its critical situation, the Mailuu-Suu region was and still is the target area for several risk assessment projects.

The present work was conducted to analyze the Landslide Susceptibility by means of remote sensing. The study was carried out with standard remote sensing tools for the processing of satellite image data and the construction of digital elevation models. The data set consisted of Landsat, ASTER, SPOT-4 and -5 images as well as a 30m resolution SRTM digital elevation model. Spectral and geomorphologic analysis was conducted on the processed images and digital elevation models in order to characterize the influence of geological, morphological and spatial factors upon landslide occurrence. CORONA images and aerial photographs were used to complete the analyses at higher resolution. The processed inputs were combined on a GIS platform with digital landslide distribution maps of 1962, 1977 and 2003, digitized geological and geographic maps and information from landslide monitoring and geophysical investigation. As a result, various types of landslide susceptibility maps are computed on the basis of a statistical method, a conditional analysis method applied to a subdivision of the area into unique condition units (Clerici et al., 2002).

In addition, the river damming and flooding risk as well as the impacts on inhabited areas and the nuclear waste storage zones will be analyzed. Current research is car-

ried out about the modelling of river damming following landslide movement and the associated flooding upstream and downstream after breaching of the dam.

References

Clerici A, Perego S, Tellini C, Vescovi P (2002) A procedure for landslide susceptibility zonation by the conditional analysis method. Geomorphology, 48:349-364