

## **Using Spatial Remote Sensing and DEM to Map the Landslides Hazard in the Tangier Peninsula (Northern Morocco)**

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The Tangier peninsula is subject each year of a significant number of landslides due to its geological, morphological and climatic complexity. The landslides occurrence increased by the starting of the management plan of the northern Morocco. This phenomenon is caused by the changes in the slopes during the construction of an important network of roads, highways and railways. The combined use of ERS-1 SAR and LANDSAT TM data, aerial photographs, associated to geological data of the area (maps and ground truth), allowed to carry out maps of lithology, land cover and fault networks. Geology, DEM, rainfall and seismicity in association with the previous results allowed to map the landslides hazard. The accuracy of the results was tested by the overlapping of the 1451 inventoried landslides. The principal results show that: 15 % of the landslides are in areas of high landslide hazard, 55 % are in areas of intermediate landslide hazard and only 30 % are in areas of low landslide hazard. The landslide hazard map can be used in management plan of the Tangier peninsula.

Key words: ERS-1 SAR, LANDSAT TM, aerial photographs, landslides, hazard, Rif, Morocco