DEM analysis as support in geomorphic features recognition

C. Cipolloni (1), A. Cecili (1), A. Cinnirella (1)

LabGIS of the Department of Geological Sciences, "Roma Tre" University, Italy
(cipollon@uniroma3.it /Fax +390654888201)

The aim of this work is to highlight how HR-DEM and Satellite images can support geomorphic features extraction through the morphometrical analysis.

We have performed HR-DEM (10x10 meters) analysis in two different zone: one in the Potenza wathershed (Marche region, central Italy) and one in the La MARE Glacier (Trentino region, Northern Italy).

In detail, we focused on several parameters: slope gradient, aspect and its changing, residual relief and roughness. These parameters, widely presented by Cipolloni (2003) and Cipolloni & Cinnirella (2004) permit to easily discriminate the geomorphic features using the topographic variations and the potential energy values.

In the Potenza watershed area we identify the degradation ridge and the active cut valley (V-shape valley) using three different algorithms: slope gradient, measure of the aspect angle changing and residual relief. After the geomorphic features extraction, a field check and a 3D GIS visual control have been performed.

In the La MARE Glacier area we have elaborated several HR-DEMs from a time series of aero-photos and satellite images, supported by a strong GPS campaign, to evaluate the glacier's evolution and to highlight some glacial geomorphic features and their evolution, such as moraine bars, U-shape valley and seasonal avalanche bodies.