Institut für Geographie
Universität Innsbruck
Innrain 52
A-6020 Innsbruck

Jenewein, S., M. Rinderer, A. Ploner u. T. Sönser (2003): PROMABGIS: A GIS-based tool for estimating runoff and sediment yield in running waters. EGS-AGU-EUG Joint Assembly 2003, Nice, 6. - 11. April 2003, Poster.

Abstract

In recent times settlements have expanded, traffic and tourist activities have increased in most alpine regions. As a consequence, on the one hand humans and goods are affected by natural hazard processes more often, while on the other hand the demand for protection by both technical constructions and planning measures carried out by public authorities is growing. This situation results in an ever stronger need of reproducibility, comparability, transparency of all methods applied in modern natural hazard management.

As a contribution to a new way of coping this situation Promab-GIS Version 1.0 has been developed. Promab-Gis has been designed as a model for time- and spacedependent determination of both runoff and bedload transport in rivers of small alpine catchment areas.

The estimation of the unit hydrograph relies upon the "rational formula" and the timearea curves of the watershed. The time area diagram is a graph of cumulative drainage area contributing to discharge at the watershed outlet within a specified time of travel. The sediment yield is estimated for each cell of the channel network by determining the actual process type (erosion, transport or accumulation). Two types of transport processes are considered, sediment transport and debris flows. All functions of Promab-GIS are integrated in the graphical user interface of ArcView as pull-up menus and tool buttons. Hence the application of Promab-GIS does not rely on a sophisticated knowledge of GIS in general, respectively the ArcView software. However, despite the use of computer assistance, Promab-GIS still is an expert support system. In order to obtain plausible results, the users must be familiar with all the relevant processes controlling runoff and sediment yield in torrent catchments.