

Estudio hidrográfico del Río Basento (Italia).

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ABSTRACT

In the analysis of a territory considered from the point of view about morphology, environment and landscape study, the use of informatics instruments for the production of tridimensional models is catching on more and more. It is just on that field that this thesis has been developed.

The objective of this hydraulic study is the development of an inundation simulation in the plane of river Basento, in the southern Italy, through the use of two software: Arc-GIS and Hec-RAS.

This tridimensional model Arc-GIS, software belonging to Gis-systems family for the establishment, visualization and geographical data treatment, has been utilized in order to create a digital terrain model (DTM) by means of the triangular irregular network (TIN).

After a detailed treatment of DTM in order to display the geometry of the river and its banks, perfectly visualized in the TIN, about 200 sections have been chosen and marked, to reconstruct the centerline of the river in the single dimensional calculation software Hec-RAS.

By means of Hec-RAS calculation the hydric height and the water velocity have been obtained in every section of the river at issue.

A lightly superior flow to that one of ordinary flood corresponding to $Tr=5$ years has been utilized.

This flow allows to prove, after calculating the inundation trace, the risks caused by lightly superior flows to the standard one of the river, and besides to have a precise picture of the flooded areas.

The results obtained in Hec-RAS have been transferred in GIS for the graphic visualization of the inundation trace by means of GRID and orthophotomaps of the drainage-basin.

Consequently the risky areas have been framed.

The starting data of the work have been provided by the University of Basilicata (Italy). They have placed at our disposal:

- Images LIDAR (obtained with air survey of a part of the drainage-basin of the river Basento above all of the final part) used for the establishment of DEM.
- Topographical data (obtained with manual survey of the entire river Basento, including transversal sections (more than 400) and the entire longitudinal section.
- Information and measurements about the distinctive features of the river Basento and its drainage-basin (obtained by hydrological studies).
- Orthophotomaps of the tested basin.