ESTIMATE OF SEDIMENT TRANSPORT RATE AT THE MOUTH OF THE ANNUNZIATA RIVER (RC)

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1. Abstract

The Annunziata River is situated in the Northern part of the city of Reggio Calabria near the city port, its morphology changes rapidly from mild, near the coasts, to steep in the inland. Due to the presence of an high relief energy and erodible rocks, there are many rills and gorge in the inner part of the basin.

The Annunziata river is, at the same time, source of danger and an important environmental and hydrological resource for the city of Reggio Calabria. That's why this work tries to analyze the phenomena of sediment transport estimated at the river mouth.

The headwater of the river is at 1360 m above sea level, in the Aspromonte Mountains. The geomorphologic parameters have been evaluated using 1:25'000 IGM maps. The river arrives to the coastal plain after about 20 km, great part of its course develops among tablelands and versants and it flows into the Stretto di Messina Sea, near the Reggio Calabria harbour. There are several tributaries that flow into the main stem but they are quite short, the most important of them are on the right part of the main stem.

A long term analysis has been done using the Gavrilovic (1959) multiparameter model modified by Zemljic (1971) and a new model proposed by Barbaro and Martino (2008).

The first model has been developed in the mediterranean area, studying the behavior of small torrent-like basins. For this reason it is appropriate to this case study.

The longshore sediment transport rate has been evaluated using the Barbaro and Martino (2008) formula. This model has been calibrated using 4 databases containing 170 measurements of total longshore transport rate. These databases are: Schoonees and Theron (1993), Wang et al. (1998), Sandyduck (Miller, 1999) e Duck85 (Kraus et al., 1989).

The longshore transport rate model is based on the sea state theory and it is suitable for the wind waves.

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