Geogr. Fis. Dinam. Quat.
24 (2001), 71-83, 10 figg., 5 tabb.

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ASSESSMENT OF WATER EROSION PROCESSES AND DYNAMICS IN SEMI-ARID REGIONS OF SOUTHERN AFRICA (KWAZULU/NATAL, RSA, AND SWAZILAND) USING THE EROSION RESPONSE UNITS CONCEPT (ERU)

ABSTRACT: MÄRKER M., MORETTI S. & RODOLFI G., *Assessment of water erosion processes and dynamics in semi-arid regions of southern Africa (Kwazulu/Natal, RSA, and Swaziland) using the Erosion Response Units Concept (ERU)*. (IT ISSN 0391-9838, 2001).

Land resources management is becoming an important issue in regions affected by natural hazards. The sustainable development of land resources depends on the understanding of the processes and dynamics active within the landscape. In southern African countries soil erosion and the related problems such as water quality issues or decreasing soil productivity are the main problems affecting the inhabitants of rural and urban areas.
Therefore increasing attention has been focussed on the problems related to soil erosion over the last few years. This can also be seen from the increasing number of erosion studies and the development and application of erosion models.
This study deals with the identification of spatially distributed erosion forms and processes in the Mkomazi-river catchment (KwaZulu/Natal-South Africa) and the Mbuluzi-river catchment (Kingdom of Swaziland).
The study was carried out within the framework of an interdisciplinary EU-funded Project aimed at developing an Integrated Water Resources Management System (IWRMS) for water resources analyses and prognostic scenario planning in semi-arid catchments of Southern Africa.
Within this more general framework, a concept was drawn up, that integrates the information about the spatial and temporal distribution of soil erosion phenomena.
Once the areas subject to different erosion processes and dynamics have been identified, this information can be used in the erosion modelling process, thus providing a fully distributed modelling structure.
This structure consists of entities with the same behaviour in terms of their erosion process dynamics and therefore they are called Erosion Response Units (ERUs). Consequently the concept of Erosion Response Units can be utilized to identify the distribution of erosion processes in a river catchment and to model the different erosion processes active within the catchment.
The examples from Southern Africa show the methods used to delineate these erosion response units. Furthermore the concept was successfully applied for modelling the soil erosion processes in the catchment.

KEY WORDS: Erosion Response Units (ERUs), Erosion, Erosion modelling, Regionalisation, Swaziland, Southern Africa.

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