



Soil hydrologic features in the evaluation of the water basin losses

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In the last decade the progress of the calculation systems has given the possibility of reproducing more and more complex physical phenomena in the development of rainfall-runoff simulation models, that have become much more consistent in the representation of the several hydrologic variables involved. In the present work it is underlined the importance of a detailed knowledge of the soil features for the improvement of the evaluation of the water balance at the basin scale. Soil moisture controls water fluxes (e.g. the several runoff components: superficial, subsuperficial, deep runoff) and energy fluxes (e.g. evapotranspiration). A correct modelling of the water content variation processes has a double role: it is fundamental for an accurate evaluation of the surface water resources availability as a support for the planning and management practice and it also represents a potential monitoring instrument during possible dry spells. The study area is the Agri river basin at Tarangelo (Basilicata, Italy), with an extension of about 507 km². The available cartographic data are represented by a digital elevation model, a land use map (Corine) and a land system map useful for the evaluation of the thickness and the texture of the soils. The daily simulation model used is a "bucket" kind, initially applied on the whole basin in a concentrated configuration and successively in a semi-concentrated one based on the subdivision of the thickness classes identified in the land system map. The application of the semi-concentrated configuration is based only on measures of basin physical features derived from the available cartography and not from calibration parameters. It has shown a valuable improvement in the reproduction of the observed discharge at the daily time scale as a result of a much more accurate reproduction of the runoff components and, as a

consequence, of the variables involved in the water and energy balance.