

# **A methodology for the vegetational stress assessment in Mediterranean areas**

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The study deals some aspects concerning the desertification risk assessment through the study of the climatic evolution effects on the vegetational species. A Vegetational Stress Index (VSI) has been developed and applied to a test case area located in the south-east part of Basilicata Region territory, southern Italy. VSI depends on the existing cultures characteristics, the amounts of really absorbed rainfalls by the vegetation and the cultural evapotranspiration. Index and of the deficit in irrigation temporal maps have been produced in order to describe the stress level in different seasons and its evolution over the period from 2002 up to 2006. The results show that natural bushes and Mediterranean scrub are the most easy-fitting species to the characteristics of large part of analysed territory, while medium levels of vulnerability especially refer to olive tree and cereals cultivations. Stress value scale does not match to the water demand in irrigation, due to the different needs for the existing vegetational species. Thus planning actions must taking into account the necessary equilibrium from water quantity and product quality, including in this way socio-economical aspects for both large scale and local policies. The proposed methodology addresses a key value of a Decision Support System aiming sustainable development strategies for the mitigation and the prevention of scenarios related to environmental risks, such as land cover changes and productivity loss of the soil, generally. This methodology could support planners in the definitions of the actions on territorial systems with respect to agricultural resources, soil characteristics, irrigation water demand in a global view of sustainable use of water resources.