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A new desertification map of Sicily

G. Arisco (1), G. Arnone (2), R. Favara (3), **F. Nigro** (3), M. Perricone (3), A. Pisciotta (3), P. Renda (4)

(1) via Sant'Agata alla Guilla n. 14, 90134, Palermo, Italy, (2)Assessorato Regionale Territorio e Ambiente-Sicilia, via U. La Malfa n. 169, 90146, Palermo, Italy, (3) Istituto Nazionale di Geofisica e Vulcanologia, Sezione di Palermo, via U. La Malfa n. 153, 90146, Palermo, Italy, (4) Dipartimento di Geologia e Geodesia dell'Università, C.so Tukory n. 131, 90134, Palermo, Italy

(f.nigro@pa.ingv.it / fax: + 390916809449)

Abstract

During the last centuries historical evidence shows the Mediterranean area is one the main epicentres of desertification. Now the desertification is worldwide considered as an important problem.

It is a land degradation process, prevalent in arid, semi-arid and sub-humid dry areas, due to climatic changes and human activities. The changes may run only the short term, with degraded resource recovering quickly. Moreover it may be also the precursor of a strong deterioration process and to long-term represent permanent changes in the soil quality, the reduction in water supply, the diminution of vegetation sources and biological diversity.

The aim of this study was to develop a new methodology to identify the status and trends of desertification in Sicily.

The method integrated the existing Desert Methodology with different thematic layers as: climatic, vegetation, socioeconomic and morphological and geological/structural.

The analysis process preceded five steps:

step 1: regional climatic analysis:

- annual rainfall

- aridity index
- annual evapotranspiration
- annual mean temperatures

step 2: regional analysis of vegetation coverage:

- potential vegetation
- land use
- vegetation

step 3: regional socioeconomic analysis:

- potential population development
- residential buildings
- natural reserves
- not residential buildings

step 4: regional morphological analysis:

- drainage density
- acclivity
- permeability
- geomorphology

step 5: tectonic analysis:

- lithology
- fault density
- recent uplift rate

The overlay of the thematic layers produced a desertification raster map with a grid cell of 200m.