

AGISGRID: AN EXTENSIBLE PLATFORM TO SUPPORT SOIL MANAGEMENT AND SOIL USE

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The increasing collection and use of environmental data, scattered in diverse institutions/locations with varying access policies, in a wide range of applications concerning sustainable use of natural resources and environmental degradation is a challenging situation for the uptake and exploitation of Grid and Web 2.0 technologies.

AGISGRID (<http://grida3.crs4.it/enginframe/agisgrid/index.xml>) is the GIS computational service of the Sardinian GRIDA3 (Shared Resources Manager for Environmental Data Analysis and Applications, <http://grida3.crs4.it>) infrastructure, designed to provide authorized users the access to environmental databases and applications based on GIS technologies. AGISGRID is dedicated to support public and private users about land planning and addressing the localization of specific environmental problems.

AGISGRID uses open source GIS technologies. Two GRID nodes are directly involved in the soil applications: the application workflow is implemented at the CRS4 node and the soil database is managed at the DISTER node. The input data are files (raster ASCII format) and database tables. The raster files have been zipped and stored in iRods. The tables are imported into a PostgreSQL database and accessed by the Rule-oriented Database Access (RDA) system available for PostgreSQL in iRODS 2.0. From the EnginFrame portal it is possible to view and use the applications through three services: "Upload Data", "View Data and Metadata", and "Execute Application". Two soil applications are processed: Land Suitability and Desertification Risk Assessment.

The Land Suitability application, based on the FAO framework for land evaluation, produces suitability maps (at the scale 1:10,000), for 11 different possible alternative uses, that may be useful to direct municipal urban planning towards a rational land use. The maps, with a ASCII raster format, are downloadable by the user and viewable by Mapserver.

The Desertification Risk Assessment application produces, by means of biophysical and socioeconomic key indicators, a final combined map showing critical, fragile, and potential Environmentally Sensitive Areas to desertification that may be useful to direct land planning at catchment basin level.

The problem solving capability of the platform is demonstrated using the results of one case study deployed for each application.