# Environmental indices through LandSAT images

The Spanish National Research Council (Consejo Superior de Investigaciones Científicas, CSIC) has developed the software GINASAT version 1.0 (Semi-Automatic Generation of Environmental Indices by Landsat), to automate the extraction of information from Landsat satellite images downloaded from USGS (US Geological Survey) server (http://earthexplorer.usgs.gov/). The program has been developed in version 1.0 and it runs integrated into ArcGIS©, for different versions from 10.

*An offer for software licensing*

## An innovative technology to classify data from satellite, integrated into ArcGIS

GINASAT v1.0 includes four subprograms: 1) **Download**: it allows Landsat images downloading from EarthExplorer (http://earthexplorer.usgs.gov/), georeferenced in WGS84; 2) **Composite**: multiband image generation; 3) **Correction**: radiometric correction of Landsat Thematic Mapper (4 and 5) and Landsat 7ETM+); 4) **Indexes**: calculation of two indexes for environmental applications, normalized difference vegetation index (NDVI), and Tasseled Cap transformation, developed to reduce multispectral data down to three main components, namely brightness, greenness and moisture. The program takes the metadata from the original header files.

GINASAT v1.0 facilitates processing of time series of satellite images in order to obtain spatial information in a systematic way so as to manage areas of interest. It allows monitoring of physical variables related to land cover and vegetation significantly reducing time spent processing data.
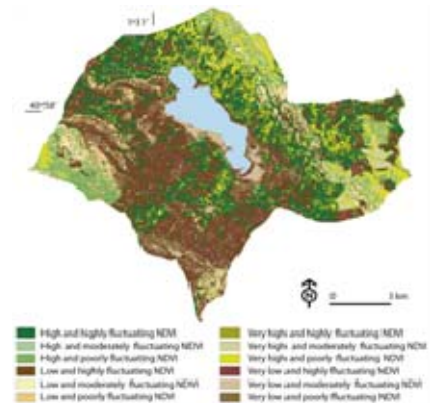


Vegetation persistence and vigor in the municipalities of the Natural Reserve of Gallocanta Lake

## Main innovations and advantages

Developing chain function for raster objects within ArcGIS provides three key elements:

- Increase the versatility of ArcGIS with the raster domain.
- Saves time by automating the processing and at the same time maintaining the consistency and compatibility of data within ArcGIS.
- Upgradeable and accesible as it is written in Python language.

No similar tool is known in image processing programs, comercial or free, and even less in GIS programs.

## Patent Status

Registered software in 2015.

## For more information, please contact:

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