

HidroSIG: a Hydrological Toolbox

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Abstract

The Universidad Nacional de Colombia's Environmental and Geosciences Department has been developing open source, free distributed plug-ins for Map-Window enclosed in a toolbox called HidroSIG. These tools have been divided into three main groups: hydrological analysis, operative tools and data exploration. The first group offers a set of utilities to fulfill tasks like: water availability analysis, water discharge estimation, delineation of basins and river channels. It also has a collection of DEM processing functions made with a methodology which suggests a new correction and flow accumulation approach based on the physical processes that take place on river networks and their geomorphological tendencies due to the work done by long term erosive processes. Some maps that may be obtained when using these functions are: flow direction, flow accumulation, maximum and total upslope river length, and river network. The second group is made-up of general purpose tools like: a raster calculator, a longitudinal profile delineator, and an integrator which aggregates the raster values enclosed inside of a polygon. The last group provides tools to explore data. These tools may be enclosed in two different blocks: the first one provides a way to create data sources through an assistant developed so that there may be interoperability with other GIS following OGC specifications. The second allows the visualization of these data sources through plug-ins like a time series plotter and a points of interest tracer.

Keywords: GIS, HidroSIG, Hydrological Toolbox, DEM processing functions, OGC