



## **Not anymore without the GIS (JGrass)**

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This contribution describes the experience of using JGrass in a class of basic hydrology, and discusses the characteristics that are deemed necessary for a GIS to be used in a class, and were therefore at the basis of the design of this GIS. Among these characteristics, the Authors believe that the system should have been Free Software (and Open Source), developed by free software, and thus they are developing JGrass which is licensed on LGPL3 and based on various Open Source contributions. This, was also encouraged by the idea in such a way, a professional tool could be distributed with no fee to users in developing countries. Besides, the GIS system had to be easily expandable to embed hydrological models of various complexity, with a customizable interface, for eventually simplifying some interactions, and supporting a modern scripting language to make able the students to master the model and the data in non-standard situations. The first issue has been solved by adopting the modeling-by-component paradigm through the creation of commands which are in fact OpenMi 1.4 components, the second by adoption Eclipse as interface, the third by creating a Groovy console.

This structure of the system is clearly also close to the requests made by researchers, and this adaptability (to the needs of students, researchers and professionals) is, in the opinion of the Authors, the key to cope the tool with a fast evolving science.

While mostly transparent to students, the system had to embed a data base in order to teach the student how to structure the data, and eventually prepare them to the mastering of massive data sets, as those coming from satellites and modern laser altimetry, which should not be foreign anymore to students in the web 2.0 age.

Finally, JGrass is part of an ecosystem of tools (with BeeGIS and GEOPaparazzi) designed to cope with field activities that can thus be immediately transported into the main system. Experience of the use of these tools in university and professional classes, developing countries, and in the field are reported.