AN AUTOMATIC WORKFLOW BASED SYSTEM TO DOWNLOAD, PROCESS AND ANALYZE REMOTE SENSING INFORMATION: CREATING KNOWLEDGE TO FOSTER ENVIRONMENTAL DECISION MAKING

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ABSTRACT:

The impacts of global change are affecting the structure and functioning of Earth ecosystems. This will also affect their capacity to provide services to satisfy human's needs. Remote sensing can be considered as one of the most relevant tools to identify, describe and assess these impacts. The huge amount of information created by dozens of sensors and remote devices have helped to improve our understanding of the Earth System and the impacts provoked by human activity. However the transfer of knowledge from the science of remote sensing to the decision makers is far to be optimal. One of the reasons that explain this problem is the lack of awareness by users of remote sensing. Techniques to process and analyze images from remote sensing are complex for most of potential users. We are presenting an information system able to automatically process raw data from MODIS sensor yielding knowledge easily usable by decision makers. Our main objective is to provide tools to decision makers that help to "digest" remote sensing information. Our system is based in the concept of scientific workflow. We have created several workflow to automatically download, process and analyze information from several MODIS products (snow cover, vegetation indexes and land surface temperature). The system is also able to calculate indicators to simplify the information containing in the original MODIS products (e.g. duration of the snow period, melting date, phenology of primary production, etc.). This information is displayed using dynamic graphs, maps and web services that can be queried by users. This information system has been developed in Sierra Nevada mountains (South Spain. LTER site, Biosphere reserve and National Park)