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PROTOTYPE SERVIR ANALYSIS AND PRODUCT TOOLBOX (APT):DEVELOPMENT OF A DATA ACCESS PLATFORM IN ARCGIS FOR RAPID AND AUTOMATED REMOTE SENSING PRODUCT DISSEMINATION.

Abstract

The construction and implementation of the Analysis and Product Toolbox (APT) will streamline the methodology of Earth observing researchers by providing products directly into ArcGIS. The APT retrieves remote sensing data products used primarily by SERVIR, the Regional Visualization and Monitoring System Program jointly supported by NASA and the US Agency of International Development, but this paper will show the procedures to build a custom set of tools to retrieve any remote sensing data available through servers or on websites.

The SERVIR program uses satellite observations to enable scientists and policy implementers to better assist in disaster mitigation, such as detailing floods, earthquakes, and fires and address both current and future environmental challenges, like worsening soil conditions for agriculture and changes in ecosystems and biodiversity. SERVIR has an online interactive map application that collects and displays geospatial data within the internet browser for a suite of remote sensing products. The products collected include data sets such as the Moderate-Resolution Imaging Spectroradiometer (MODIS) hot spot analysis tool identifying wild fires from the last 24 hours, the Tropical Rainfall Measuring Mission (TRMM) derivative products showing daily rainfall totals for tropical regions, and the Fifth-Generation Penn State/NCAR Mesoscale Model (MM5) climate monitoring tools. These products are useful, but somewhat static in that they are not easily manipulated or further processed for more complex analysis at the user's desktop computing environment. The APT enables the researcher to utilize the remote sensing data and data-derived products to their fullest extent through application of the many geoprocessing, model building, and statistical analysis tools available through ArcGIS.

The APT will contain three tool sets, one for each region currently being studied by SERVIR, with each set containing custom tools that will retrieve remote sensing data relevant to that region into ArcGIS for further analysis. This paper will focus on the creation and implementation of one Python-based tool in the Central America tool set that gathers MODIS hot-spot data for global wild fires for the past 24 hours. The investigation will describe how the tool downloads and displays the Web Map Service (WMS) point data of the fire locations in the ArcGIS environment. This research is intended to aid the efforts of SERVIR, but also those of all Earth observing researchers because without difficulty, the APT can be modified to recover any remote sensing products so that they are more readily accessible to analyze.