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GIS Mash-ups in the Cloud: Visualizing Online Data using HydroShare and Tethys Platform

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Abstract: HydroShare is a web based data management system for climate and water data that includes a web-services application programmer interface (API) to allow third party programmers to access and use its open data resources. To provide end users with data analysis and visualization tools for HydroShare resources, we have implemented an online web app development system called Tethys Platform and have developed several apps that utilize the HydroShare API. Tethys Platform is an open source software package based on the Django framework and Python programming language. The Tethys software development kit allows users to create web apps for visualizing, analyzing and modelling hydrologic data. Our HydroShare web app portal includes a geographic information system (GIS) app that provides visualization mash-ups of both spatial and temporal data resources. This is accomplished by accessing the extensive spatial metadata contained within the HydroShare resource data model and overlaying datasets as layers within the OpenLayers JavaScript library. Data are passed from the HydroShare GIS app to a GeoServer data server and shared as web mapping services (WMS) layers. The approach allows users to easily build map projects or “mash ups” from various data sources registered in HydroShare. The approach presented here can be extended for use by other agencies and organizations to provide relatively simple online data visualization and exploration in an interactive GIS environment. This presentation will demonstrate the HydroShare Tethys Portal with specific focus on the HydroShare GIS app and the cyber-infrastructure that supports it.

Keywords: GIS; cloud computing; water data sharing; open source software