Timely Decision Support for Watershed Management with WEPPcloud

Erin Brooks\textsuperscript{1}, Mariana Dobre\textsuperscript{1}, Roger Lew\textsuperscript{1}, Chinmay Deval\textsuperscript{1}, Anurag Srivastava\textsuperscript{1}, and Pete Robichaud\textsuperscript{2}

\textsuperscript{1}University of Idaho, Moscow, ID, USA
\textsuperscript{2}USDA-Forest Service Rocky Mountain Research Station, Moscow, ID, USA

Since the development and availability of GIS-based software and satellite imagery, there has been a vision that watershed managers would have near-real-time, three-dimensional hydrologic and soil erosion models that could easily assess impacts of watershed management decisions at high spatial resolutions across multiple scales. Our research team has made significant advances to address this challenging problem especially in the forest environment. The technology and data retrieval and access has dramatically improved to the point where it is possible to provide useful, near-real-time, geospatial decision support for watershed managers. This talk describes an online watershed model called WEPPcloud, widely used by the Forest Service and one of the FSWEPP suite of watershed tools, which is based fundamentally on a process-based hydrologic, soil erosion model (WEPP, Water Erosion Prediction Project). WEPPcloud is driven by discoverable, data-rich geospatial mapping products (e.g. soils, topography, satellite-based vegetation characteristics) and management libraries. It accesses daily grid-based historical and future projected climatic data to provide a comprehensive spatially and temporally explicit assessment of the impacts of management decisions on hydrologic response and sediment transport. Currently, WEPPcloud can be applied throughout the continental US, and beta versions are available for Australia and Europe. We will demonstrate this tools’ development and application to guide pre-fire fuel management and post-fire mitigation, flood risk for communities where drinking water supplies and water resources are vulnerable to wildfire. We will discuss the ongoing limitations, challenges and opportunities towards more fully incorporating geospatial hydrologic and soil erosion models into watershed management decisions.