

Tahoe Science Program Quarterly Progress Report

P084: Development of an Online Watershed Interface to predict the effects of forest and fire management on sediment and phosphorus loads in surface runoff in the Lake Tahoe Basin

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QUARTER: January - March, 2015

Deliverables	Task	Start Date	End Date	Status Update	Percent Complete
IGO, Task Order, or Initial Funding Transfer	Initiate project	7/1/12	11/20/12	Received first and second year's funding. Still awaiting final year's funding	80%
Agreements	Establish agreements	1/1/13	5/30/13	Complete	100%
Inventory/assessment/monitoring	Install a server specific for this project	1/1/13	12/31/13	Complete	100%
	Carry out rainfall simulations on landings	9/1/12	12/31/13	Complete	100%
	Carry out concentrated flow simulations on landings	10/1/12	1/31/13	Complete	100%
	Incorporation of DEM and Soil layers on server	2/1/13	7/31/13	Complete	100%
	Incorporation of groundwater flow	2/1/13	7/31/13	The computer codes for incorporating the base flow are nearly complete.	80%
	Incorporation of nutrient and fine sediment prediction into WEPP output	2/1/13	7/31/13	Preliminary work shows that P budget is a mix of particulate and dissolved components, varying with watershed and season.	70%
	Incorporate flood and sediment routing	7/1/13	1/31/14	The new WEPP model with the sediment routing developed by Wang, 2010 is uploaded on the server	75%
	Validation	7/1/13	1/31/14	Awaiting completion of interface	

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Scientific reports, systems, or related products	Draft peer-reviewed manuscript	2/1/14	9/30/14	Working towards a publication of a WEPP watershed assessment of hydrology and sediment transport for five watersheds in Tahoe Completed and submitted a proceedings paper on modeling P delivery in the Tahoe Basin	70%
	Final report	6/1/14	4/30/16	Project Extended due to delayed funding	
Stakeholder Meetings		1/1/13	12/31/14	Two onsite meetings completed with stakeholders	100%
Outreach/training	Workshop	4/1/14	7/31/14	Planning on October, 2015 Workshop	
Contract Administration	Quarterly report	1/1/13	12/31/14	This is ninth of 13 reports	69%
	Yearly report	1/1/13	12/31/15	Two out of three reports completed	67%

The overall goal of this project is to develop an online watershed GIS interface to predict the effects of forest and fire management on sediment and nutrient loads in surface runoff in the Tahoe Basin. A secondary goal was to compare the performance of two styles of rainfall simulator that had been used for past research in the basin.

Project Management

The second stakeholders’ meeting was proposed to be a virtual meeting, but sufficient funds were available to allow a live, more interactive meeting. We agreed to a project extension until April 30, 2016 to allow completion of the interface, holding a workshop, and completing the final report. Note the increase in quarterly reports in the above accomplishments table.

Joint Interagency Sedimentation/Hydrology Conference

The proceedings paper for this conference was completed and submitted. It will be submitted with this quarterly report.

Databases

There are two different soil databases in the Tahoe Basin, The NRCS SSURGO database and the NRCS Tahoe Basin Soil survey. The format of the two surveys is not quite the same, and there are a few GIS pixels that do not have both surveys. To address this, we have developed “pedotransfer functions” to obtain or approximate the soil information that is needed after accessing both soil databases. The soil properties needed by the WEPP model are converted by the pedotransfer functions into the required format.

Canopy Database

Due to variability in climate and soil characteristics, the forest canopy cover varies widely within the Lake Tahoe basin. Since canopy cover influences the distribution of incoming radiation and snowmelt rates we used 30-m resolution maps of canopy cover, created from the National Land Cover Dataset for 2001 (<http://www.mrlc.gov>), to calculate the average percent cover for each hillslope. Algorithms were developed to automatically assign a unique canopy cover to each hillslope in the model.

Manuscripts

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Peer-review comments were requested, and incorporated into a proceedings paper. The paper has been submitted to the Federal Joint Interagency Sedimentation and Hydrology Conference to be held in Reno in April, 2015.

A manuscript entitled "*Watershed-scale evaluation of the Water Erosion Prediction Project (WEPP) model in the Lake Tahoe basin*" was under author review and being formatted for the Journal of Hydrology.

Next Quarter

The proceedings paper will be presented at the Joint Interagency Sedimentation and Hydrology Conference in Reno. Elliot and Flanagan will visit the Tahoe basin and meet with other PIs following the completion of the conference. The Journal of Hydrology Manuscript will be completed. Work on testing and improving the online watershed interface will continue.