



United States Department of the Interior
U.S. Geological Survey
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Maryland-Delaware-District of Columbia
Water Science Center
Seminar

Monday, October 27, 2014, 1:00-3:00 p.m.

Mapping Fluvial Landforms in Floodplains in the Chesapeake Bay Watershed
Sam Lamont, Visiting Scientist, West Virginia University

To inform the future generation of watershed models and data used by the Chesapeake Bay Program Partners, USGS is collaborating with the Natural Resource Analysis Center (NRAC) at West Virginia University (WVU) to demonstrate the feasibility of mapping fluvial geomorphic features to better represent locations of sediment erosion and deposition in the watershed. Essential ecosystem functions provided by fluvial geomorphic features include sediment retention, minimization of storm flow, nutrient retention and transformation, and provision of wildlife habitat. Key metrics relating to sediment supply, transport, and deposition including stream channel width, channel slope, floodplain width, and bank height have been estimated in nine small watersheds. Several existing GIS tools and methods were explored using 10m, 3m, and <3m Digital Elevation Models (DEMs). Ultimately, a new set of algorithms was developed by combining and expanding on these tools, allowing for the automated detection of features throughout entire small watersheds.



The output of the developed tool has been compared to field measurements collected in several locations with promising results. To evaluate the representativeness of the nine small watersheds, their general characteristics (e.g., drainage area, slope, flow, and geology) were compared to the characteristics of all other small watersheds within the same ecoregions. This presentation will summarize work completed in Phase I of the project and present the goals and objectives of Phase II, which will begin Nov. 1st, 2014 and end Apr. 30th, 2015.

Sam Lamont has over 12 years of varied experience among the fields of hydrologic modeling; scenario analysis and decision support systems using geographic information systems; data collection and assimilation; and software development, testing, and deployment. He received a bachelor's degree in Mechanical Engineering from Pennsylvania State University and master's and doctorate degrees in Civil and Environmental Engineering from West Virginia University. He is currently a visiting scientist at the Natural Resource Analysis Center at West Virginia University where his work focuses on regional, multi-scale modeling and spatial analyses to better understand the effects of human activities on hydrologic systems.



Presentation will also available remotely via Webex: <https://usgs.webex.com/>
Call in number is 605-475-4000 Code: 838548#

For directions to the USGS MD-DE-DC WSC: <http://md.water.usgs.gov/directions/baltimore.html>.