Hydrology Seminar

The Distributed Large Basin Runoff Model: a Tool for Hydrologic and Water Quality Assessment

Dr. Carlo De Marchi

School of Natural Resources and Environment
University of Michigan / NOAA Great Lakes Environmental Research Laboratory

Agricultural non-point source contamination of water resources by pesticides, animal wastes, and soil erosion is a major problem in much of the Great Lakes Basin. Point source contaminations, such as combined sewer outflows, also add wastes to water flows. Sediment, waste, pesticide, and nutrient loadings to surface and subsurface waters can result in oxygen depletion (BOD and COD loadings) and eutrophication in receiving lakes, as well as secondary impacts such as harmful algal blooms and beach closures due to viral and bacterial and/or toxin delivery to affected sites. Prediction of various ecological system variables or consequences (such as beach closings), as well as effective management of pollution at the watershed scale, require estimation of both point and non-point source material transport through a watershed by hydrological processes.

The Great Lakes Environmental Research Laboratory is developing an integrated, spatially distributed, physically-based water quality model to evaluate both agricultural non-point source loadings from soil erosion, animal manure, and pesticides, and point source loadings at the watershed level. Such model combines an existing physically based distributed surface/subsurface hydrology model (the Distributed Large Basin Runoff Model) with databases for animal manure, fertilizers, and pesticides distributions in the watershed, soil erosion models, and pollutant and sediment transport models.

The seminar will focus on the development and application of the DLBRM hydrologic model and on the expansion of its capabilities to water quality. Further, an example of the combination of the DLBRM with a lake circulation model will be presented.

Dr. De Marchi graduated at the University of Padova, Italy, in System Engineering, and received a master degree in Engineering from the University of California, Davis, and a Ph.D. in Civil Engineering from the Georgia Institute of Technology. He also worked at International Institute for Applied System Analysis in Vienna, Austria, and is currently a Research Investigator at the School of Natural Resources and Environment of the University of Michigan. Dr. De Marchi has worked on remote sensing of precipitation using satellite images in the Nile River basin and in watershed hydrology and water quality modeling in the Lagoon of Venice, Eastern Europe, and the Great Lakes regions.

Date: Monday, February 12, 2007
Time: 2:00 – 3:00P.M. (EST)
Location: NWS Headquarters
1325 East West Highway, SSMC#2, Room 8246
Silver Spring, Maryland

Contact: Pedro Restrepo
Pedro.Restrepo@noaa.gov