

GIS Applications in Hydrology and Hydraulics Questionnaire

March 31, 2009

The Subcommittee on Hydrology set up a workgroup to organize and publicize information on GIS applications in the fields of hydrology and hydraulics. This scope has been expanded to include related water quality, watershed management, and ecological sciences GIS applications. This work is intended to make information on GIS applications in hydrology and hydraulics more generally available. This questionnaire is designed to gather limited but key information about a particular GIS application in order for a potential user to decide if the application fits his/her computer system, data requirements, and physical system to be modeled.

These applications should be public domain and supported by user documentation. Availability on the web is not necessary if the application can be distributed on CD ROM or through e-mail requests. If a short abstract, fact sheet, or technical paper is available on the application, please attach a copy.

Name of Application, date, version number:

Automated Geospatial Watershed Assessment Tool (AGWA)

- **AGWA 2.0 for ArcGIS 9.x, latest update 12/31/2008**
- **AGWA 1.5 for ArcView 3.x, latest update 1/9/2009**

Contact (with e-mail, web site, and/or phone number):

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Web site: <http://www.tucson.ars.ag.gov/agwa> and <http://www.epa.gov/esd/land-sci/agwa/>

Brief Description:

The Automated Geospatial Watershed Assessment (AGWA) tool is a Geographic Information Systems (GIS) interface jointly developed by the U.S. Department of Agriculture (USDA) Agricultural Research Service (ARS), the U.S. Environmental Protection Agency, and the University of Arizona to automate the parameterization and execution of the Soil and Water Assessment Tool (SWAT) and KINematic Runoff and EROSION (KINEROS2) hydrologic models. The application of these two models allows AGWA to conduct hydrologic modeling and watershed assessments at multiple temporal and spatial scales.

- **SWAT2000: a river basin scale model developed to quantify the impact of land management practices in large, complex watersheds.**
- **KINEROS2: A distributed-parameter, event-based rainfall-runoff-erosion model (this model is being coupled with OPUS to form a continuous model with nutrient and carbon cycling, common pesticides, and common cultivated and range management practices – anticipated release date – mid 2009)**

Platform/operating system:

Software

- **Windows 2000 and newer (Windows Vista is untested)**

Hardware:

- **Dictated by the GIS software platform (ArcGIS 9.x or ArcView 3.x)**

Web-based or desktop application:

Desktop application is ready for use and web-based application is at prototype/proof of concept stage.

Data Requirements:

- **Digital elevation model (DEM) for watershed delineation and discretization**
- **STATSGO, SSURGO, or FAO soils for parameterization**
- **Classified land cover for parameterization**
- **Multi-year daily precipitation for SWAT**
- **Event-based precipitation for KINEROS2**

Data format and compatibility:

All GIS data must be projected. DEM and land cover must be GRID-based. Soils data must be feature-based. Precipitation data must be in DBF format and follow the structure defined in the documentation and examples.

Will the application import and export data files?

Data may be imported/exported to/from different formats, but there are no application specific imports/exports.

Is the application flexible to couple with external programs and user created executables?

Yes

Are system and user documentation available?

Yes

Are example applications available?

Yes

Does the application require prior installation of ESRI software?

Yes

If so, which products?

AGWA2 for ArcGIS 9.x

- **ArcGIS 9.x**
- **Spatial Analyst Extension for ArcGIS 9.x**
- **3D Analyst for ArcGIS 9.x (optional - only required for Thiessen polygon weighting)**

AGWA 1.5 for ArcView 3.x

- **ArcView 3.x**
- **Spatial Analyst Extension for Arcview 3.x**

Is there a user group or hotline-type support?

Yes

<http://www.tucson.ars.ag.gov/agwa>

Click on 'Forum'

Please return the questionnaire to William Merkel at william.merkel@wdc.usda.gov. If there are questions or concerns please contact him at 301-504-3956. Thank you.