



USDA-CSREES 2007 National Water Quality Conference

Using an Automated Geospatial Watershed Assessment Tool to assist with Rapid Watershed Assessments

Rapid watershed assessments are being conducted by the USDA Natural Resources Conservation Service (NRCS) to provide initial estimates of where conservation investments would best address landowner concerns as well as those of conservation districts and local stakeholders. Assessments provide summaries of resource concerns and opportunities and enable local stakeholders and landowners to set priorities to meet resource conservation goals. The Automated Geospatial Watershed Assessment tool (AGWA) is being used to support the rapid watershed assessment process on an 8-digit HUC watershed in north central Wyoming. AGWA is based on ESRI's ArcView GIS application and performs hydrologic model parameterization and visualization of watershed characteristics and model results. AGWA uses widely available standardized spatial datasets, such as STATSGO and SSURGO soil data and land cover datasets produced by the US Multi-Resolution Landscape Consortium (MRLC, NALC) that can be obtained via the internet. Additional spatial data sets can easily be incorporated and used by the tool. The data are used to develop input parameter files for two watershed runoff and erosion models: KINEROS2, and SWAT. KINEROS2 is an event oriented, physically-based model that simulates the processes of interception, infiltration, surface runoff and erosion from small watersheds, while SWAT is a quasi-distributed model developed to predict the impact of land management practices on water, sediment and agricultural chemical yields in large (basin scale) complex watersheds with varying soils, land use and management conditions over long periods of time. Coupling these two hydrologic and erosion models in the same geospatial assessment tool allows the users to evaluate the conditions and responses of their watersheds at different temporal and spatial scales. Using AGWA allows landowners and other stakeholders to enhance their knowledge of watershed characteristics and processes, and to evaluate how various environmental and land use changes may affect water quantity and quality within the watershed.

Author: Ginger Paige

University Affiliation: University of Wyoming

Co-Author(s): D. Phillip Guertin and Phil Gonzales