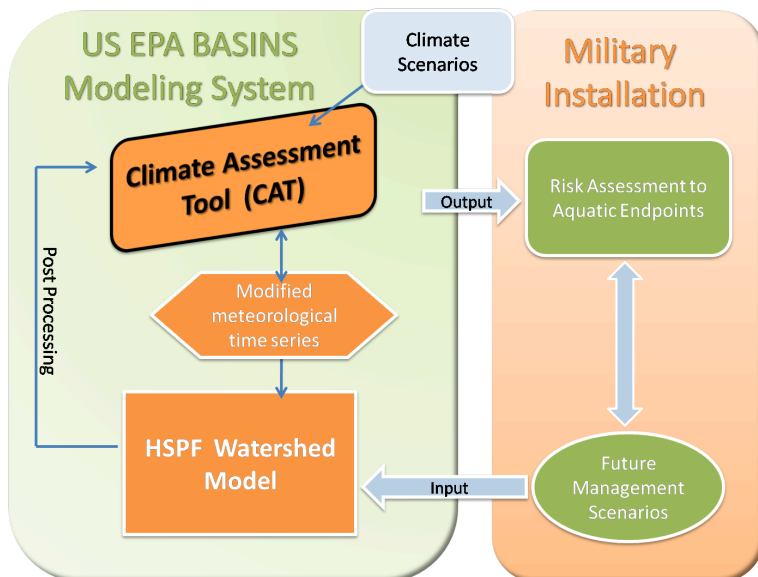


# The U.S. Environmental Protection Agency Climate Assessment Tool (CAT) to Facilitate Climate Change Assessments at the Watershed Scale

Eileen C. Regan, AQUA TERRA Consultants

U.S. Environmental Protection Agency (EPA) funded the development of the Climate Assessment Tool (CAT) in response to a widely acknowledged need for tools and information to help watershed managers assess and manage the impacts of climate variability and change. As one of a variety of modeling tools housed in the US EPA BASINS Modeling System (BASINS), CAT is not a standalone model, but is designed to work specifically with the watershed modeling codes in BASINS. This presentation offers an overview of BASINS to demonstrate the utility of using BASINS' tools, specifically CAT, to facilitate climate change assessments.

BASINS is a non-proprietary, open-source modeling system which houses: (1) a comprehensive collection of national cartographic and environmental databases, (2) environmental assessment tools (to summarize results; establish pollutant source/impact interrelationships; and selectively retrieve data); (3) utilities (e.g., import tool, download tool, grid projector, post-processor, and land use, soil classification and overlay tool); (4) automated watershed characterization reports (for eight different data types); and (5) a suite of watershed models. The main interface to BASINS is provided through a non-proprietary, open-source Geographic Information System (GIS), MapWindow. The GIS provides a framework for linking BASINS modeling tools with environmental data.



The Hydrological Simulation Program-FORTRAN (HSPF) (Bicknell et al., 2005) is the main watershed modeling code in BASINS. It is a comprehensive, process-based mathematical model developed under joint U.S. EPA and U. S. Geologic Survey sponsorship for simulating hydrologic and water quality processes in natural and man-made water systems. CAT incorporates climate change scenarios by selecting and modifying a user-defined base period of historical temperature and precipitation data from HSPF meteorological input data to reflect desired future changes.

Using CAT jointly with the capabilities of HSPF allows the ability to assess the combined impacts of climate change, land use change, implementation of best management practices, and other watershed management concerns. HSPF allows for the development of watershed models that represent an extensive mix of land uses and management practices and a robust list of hydrologic, chemical and biological processes and endpoints. By linking CAT to a comprehensive model such as HSPF, the watershed impacts of climate change can be assessed in a comprehensive manner, while at the same time individual applications are directed at specific endpoints.