THE NATIONAL HYDROLOGIC MODEL AND STREAMSTATS APPLICATION FOR ASSESSING WATER AVAILABILITY, SUSTAINABILITY, AND EXTREME EVENTS

John F. Stamm
U.S. Geological Survey, Caribbean-Florida Water Science Center, Lutz, FL, USA

The U.S. Geological Survey (USGS) has developed tools for assessing water availability, sustainability, and extreme events. These tools include the National Hydrologic Model (NHM) and the StreamStats application. The NHM provides a modeling infrastructure for the evaluation of hydrologic processes at multiple scales across the continental United States (CONUS). The NHM infrastructure includes a geospatial fabric of spatial features, attributes of features, and default parameter values for hydrologic modeling. The NHM provides nationally-consistent datasets (such as temperature, precipitation, hydrography, model parameters) for national and local application of the Precipitation-Runoff Modeling System (PRMS), which computes water budgets and daily streamflow at the watershed scale. Potential applications include estimates of daily streamflow in ungaged parts of watersheds, and detailed simulations of a watershed's response to extreme events such as hurricanes and droughts. The results of application of NHM to PRMS for CONUS are available as a USGS data release and is referred to as the NHM-PRMS. An overview of the NHM-PRMS will be presented. The Caribbean-Florida Water Science Center is currently expanding the NHM infrastructure to Puerto Rico and the Virgin Islands and will also improve representation of coastal processes in PRMS.

A second USGS tool for assessing water resources is StreamStats (https://streamstats.usgs.gov/ss/), which is a web application used to delineate watersheds, tabulate watershed characteristics, and provide estimates of flow statistics, such as peak-flow and low-flow frequencies, for the delineated watershed. StreamStats allows estimates of streamflow statistics to be made for ungaged parts of watersheds on the basis of regional-regression curves. The availability of StreamStats varies from state to state and is currently not available for Florida. The Caribbean-Florida Water Science Center is developing StreamStats for Puerto Rico, based on regional regression curves developed for peak-flow and low-flow frequencies. Examples of StreamStats applications will be presented.

PRESENTER BIO: Dr. John Stamm is a Supervisory Hydrologist with the U.S Geological Survey, Caribbean-Florida Water Science Center. His research and expertise includes paleoclimatology, global and regional climate modeling, stream hydrology, geostatistics, GIS, and geomorphology.