USDA-CSREES 2006 National Water Quality Conference

Weather Monitoring for Water and Environmental Management

With the advancement of computer technology and simulation models for water, pollution and environmental management, it has become critical to have access to accurate weather data that are a required input for these models. These include not only local rainfall and precipitation, but also other variables. One of the main sources of historical weather data is the National Climatic Data Center (NCDC) of the National Oceanic and Atmospheric Sciences Administration (NOAA). However, access to the data is cumbersome and not very timely and the variables that are available are limited. Several universities have, therefore, developed automated weather station (AWS) networks that allow for timely dissemination of weather data for water and environmental management. One of the largest networks in the southeastern United States is the Georgia Automated Environmental Monitoring Network (AEMN). It was initiated in 1991 and has grown to more than 65 stations in 2005. Variables that are recorded include not only rainfall and temperature, but also solar radiation, wind speed and direction, relative humidity, soil temperature at three different depths and soil moisture. Sensors are scanned at a one-second frequency and summaries are calculated every 15 minutes. At midnight the daily extremes and daily total are also determined. Most weather stations have a dedicated telephone line and modem and data are downloaded to a central computer at least hourly. After processing the data are immediately pushed to a web server and disseminated via the World Wide Web (www.Georgiaweather.net). Web-based tools have developed that allow the user to summarize the data. More advanced tools for irrigation scheduling are also being developed. The web page is used extensively by many users, ranging from policy and decision makers to local producers, with approximately 250,000 page views per month.

Author: Gerrit Hoogenboom
Coauthor(s): J.O. Paz J.M. Edenfield D.D. Coker C. Fang D.M. Evans