REFERENCE AND POTENTIAL EVAPOTRANSPIRATION, SOLAR RADIATION, AND ALBEDO OVER FLORIDA, USA, 1985-2020

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Evapotranspiration comprises a considerable portion of the water budget in Florida, sometimes returning 80 to 100 percent of rainfall to the atmosphere as water vapor. As such, estimates of potential evapotranspiration (PET) and reference evapotranspiration (ETo) are required for many resource-management activities such as water-use permitting and regulation, estimating agricultural irrigation demands, scientific evaluations of ecosystem resiliency, and calculation of hydrologic budgets using surface-water and groundwater models. The U.S. Geological Survey Caribbean-Florida Water Science Center has produced daily estimates of PET and ETo at an approximately 2-kilometer spatial grid for Florida for the period 1985-2020. PET and ETo were computed on the basis of solar radiation data from the Geostationary Operational Environmental Satellite (GOES), meteorological data from weather stations and the North American Regional Reanalysis (NARR) model, and shortwave blue-sky albedo data from the Moderate Resolution Imaging Spectroradiometer (MODIS) satellite. Both PET and ETo are highly correlated with seasonal and annual fluctuations of incoming solar radiation. The Florida PET and ETo data products have evolved over time with changes in methodology for interpolating meteorological data and sources of input data. Long-term trends could be evaluated more reliably after the dataset has been reanalyzed with a uniform methodology and input datasets.

PRESENTER BIO: Mr. Bellino is a hydrologist with 15 years of experience including groundwater flow modeling of the Floridan aquifer system, surface-water/groundwater interactions studies, bathymetric mapping, and evapotranspiration studies.