

# COMPARATIVE ANALYSES OF MEASURED EVAPOTRANSPIRATION FOR VARIOUS LAND SURFACES

Suat Irmak<sup>1</sup>

There is a significant lack of continuously measured ET data for multiple land surfaces in the same area to be able to make comparisons of water use rates of different agro-ecosystems. This research presentation will provide continuous evapotranspiration and other surface energy balance variables measured above multiple land use and management practices. The presentation is a part of a large surface energy balance and associated variables measurement network [Nebraska Water and Energy Flux Measurement, Modeling, and Research Network (NEBFLUX)]. NEBFLUX is a statewide network that is designed to measure evapotranspiration, microclimatic and climatic variables, plant physiological parameters (yield, biomass production, plant height, leaf area index, leaf stomatal functions, leaf temperature, etc.), soil water content (every 0.30 m down to 1.8 m from soil surface on an hourly basis throughout the year), and other surface characteristics for various vegetation surfaces under different tillage, irrigation and rainfed management settings. It is a network of micrometeorological tower sites that mainly uses advanced instrumentation such as Bowen ratio energy balance systems (BREBS) and Eddy Covariance System to measure surface water and energy fluxes between terrestrial agro-ecosystems and microclimate. Vegetation surfaces include center pivot-irrigated maize and soybean rotation under disk-till, no-till, and ridge-till, rainfed winter wheat, subsurface drip-irrigated winter wheat, subsurface and center pivot-irrigated continuous maize, center pivot-irrigated seed maize/cover crop rotation, irrigated continuous soybean; center pivot-irrigated grassland; rainfed grassland; alfalfa, rainfed switchgrass, riparian vegetation comprised of Phragmites (*Phragmites australis*)-dominated cottonwood (*Populus deltoides* var. *occidentalis*) and peach-leaf willow (*Willow salix*) plant communities.

---

<sup>1</sup>Harold W. Eberhard Distinguished Professor of Biological Systems Engineering, College of Engineering, University of Nebraska-Lincoln, Lincoln, NE 68583

*Citation for proceedings:* Stringer, Christina E.; Krauss, Ken W.; Latimer, James S., eds. 2016. Headwaters to estuaries: advances in watershed science and management—Proceedings of the Fifth Interagency Conference on Research in the Watersheds. March 2-5, 2015, North Charleston, South Carolina. e-Gen. Tech. Rep. SRS-211. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 302 p.