Jun 26th, 5:00 PM - 7:00 PM

New hydrologic model performance evaluation methodologies

Samuel Saxe
USGS, ssaxe@usgs.gov

William Farmer
USGS, wfarmer@usgs.gov

Lauren Hay
USGS, lhay@usgs.gov

Terri Hogue
Colorado School of Mines, thogue@mines.edu

Julie Kiang
USGS, jkiang@usgs.gov

See next page for additional authors

Presenter/Author Information

Samuel Saxe, William Farmer, Lauren Hay, Terri Hogue, Julie Kiang, and Jessica Driscoll

iEMSs International Congress on Environmental Modelling and Software

9th International Congress on Environmental Modelling and Software
Fort Collins, Colorado, USA, Mazdak Arabi, Olaf David, Jack Carlson, Daniel P. Ames (Eds.)
https://scholarsarchive.byu.edu/iemssconference/2018/

New Hydrologic Performance Evaluation Methodologies

Samuel Saxe[a], William Farmer[a], Lauren Hay[a], Terri Hogue[b], Julie Kiang[c], Jessica Driscoll[a]

[a]USGS Water Resources Mission Area, Lakewood, Colorado, USA (ssaxe@usgs.gov, wfarmer@usgs.gov, lhay@usgs.gov, jdriscoll@usgs.gov), [b]Department of Civil and Environmental Engineering, Colorado School of Mines, Golden, Colorado, USA (thogue@mines.edu); [c]USGS Water Mission Area, Reston, Virginia, USA (jkiang@usgs.gov)

Abstract: Many modeled and reanalysis products estimate water balance components, such as precipitation and evapotranspiration, across a wide variety of spatiotemporal scales. When selecting datasets for use in model simulation and calibration, modelers are faced with the dilemma of selecting a product to use that best fits their needs in terms of accuracy, reliability, and usability. In this study, we review methodologies that can be used to 1) inter-compare products for a water budget component across temporal and spatial scales, 2) evaluate region-specific product metrics based on observational data, 3) identify outlying or unexpected values, and 4) describe product functionality in terms of scale, resolution, and ease of usability. We do not seek to identify a "best" product in terms of accuracy, but rather suggest methods that modelers can use to select the product that best fits their unique model requirements, whether the desired product is to be used as forcing data or to set range limits for calibration.

***Keywords**:* Calibration, hydrologic modeling, water budget, runoff, evapotranspiration, precipitation, estimation, components