



A New Application of Wavelet Analysis: Estimating Event-Timing Uncertainty in Streamflow Predictions

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Common verification metrics used to evaluate streamflow simulations do not distinguish between errors in magnitude and errors in timing. Nevertheless, diagnosing timing errors explicitly has potential benefit for both practical forecast guidance as well as for model diagnostics. In high resolution prediction, a fundamental challenge to evaluating timing errors is objectively identifying what constitutes as an event for which the timing error should be calculated. Another related challenge is that timing errors are both time and timescale dependent, meaning that their evaluation requires a localized approach in both these dimensions.

Wavelet-based approaches offer a powerful verification tool for weather and climate applications across a range of scales. This presentation will describe a novel approach that uses wavelet analysis to estimate timing errors for events in hydrologic predictions. This provides a systematic methodology that both integrates advances in statistical significance to identify events and is appropriate for benchmarking timing errors in high-resolution prediction. The approach is illustrated using synthetic as well as real simulations from the National Water Model. Results are demonstrated for several locations in the US with different hydrologic signatures (e.g., diurnal behavior and flood waves). The advantages and limitations of using wavelets for characterizing event-timing uncertainty and opportunities for improving predictions will be discussed.

Thursday, 4 April 2019, *3:00pm

****Please Note Special Time***

Refreshments 2:45pm

NCAR-Foothills Laboratory, 3450 Mitchell Lane, FL2-1022, Large Auditorium

This seminar will be webcast live at:
<http://ucarconnect.ucar.edu/live>

Recorded seminar link can be viewed here:
<https://www.mmm.ucar.edu/events/seminars>