



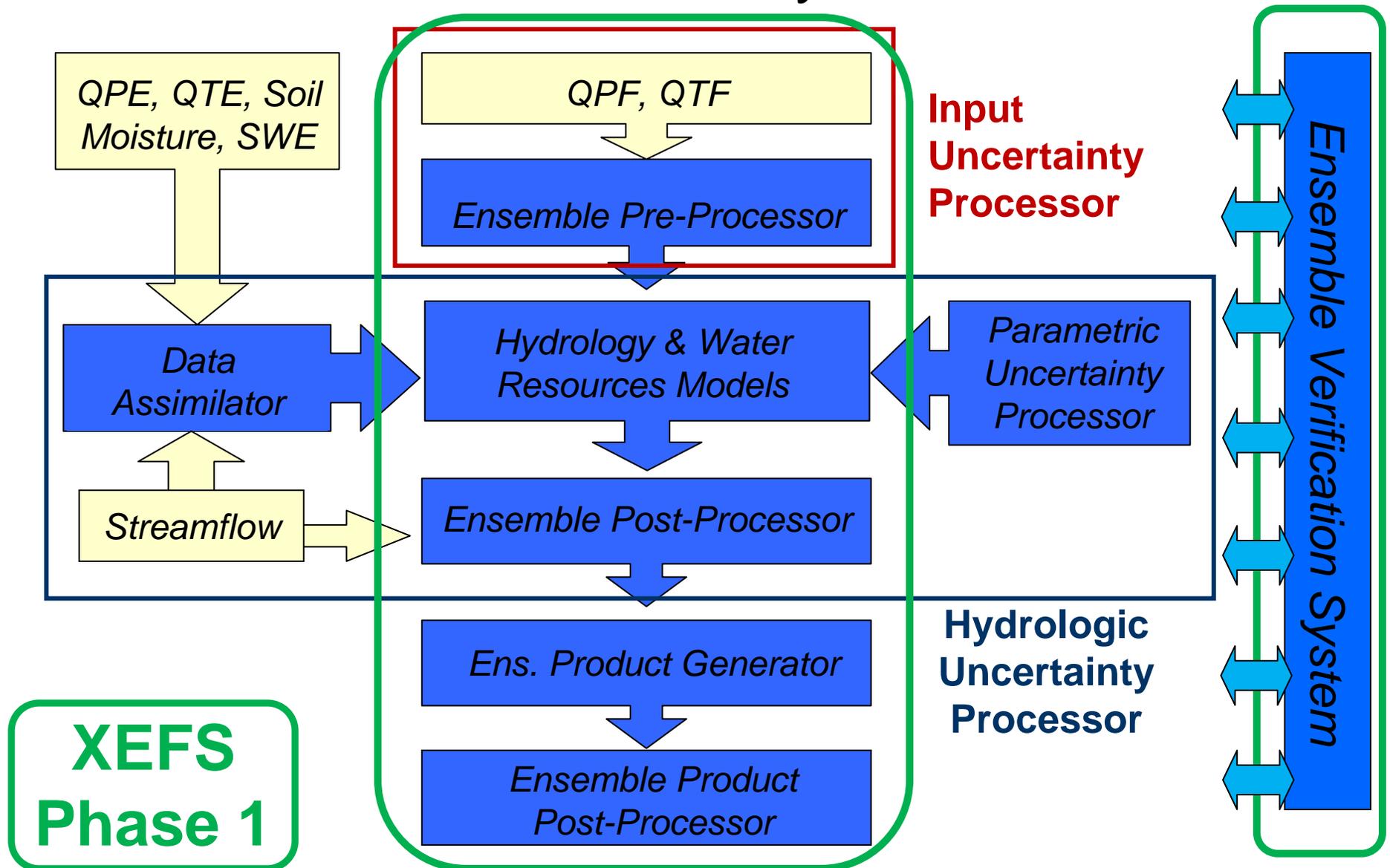
Hydrologic Ensemble Processing Overview

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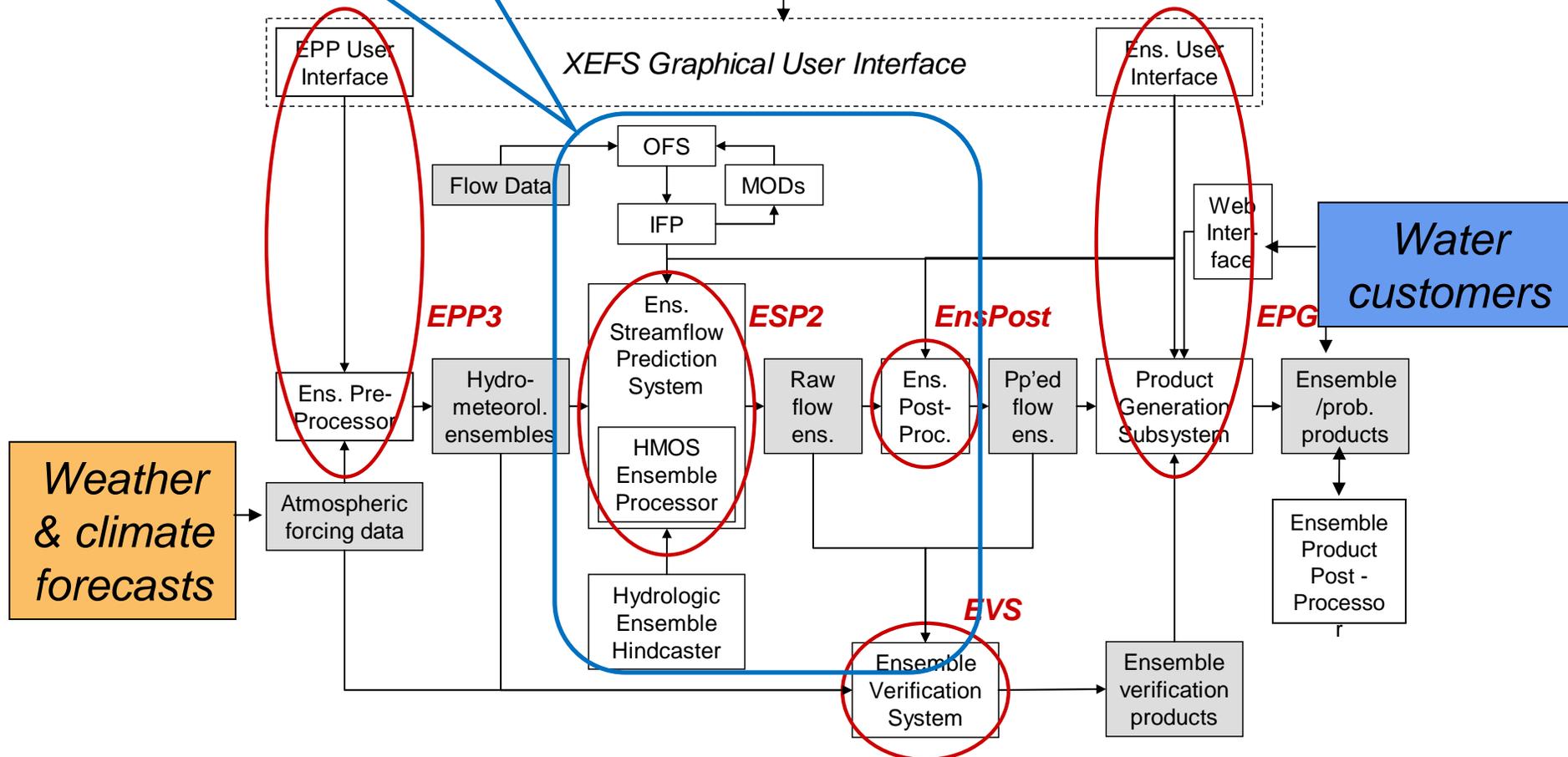
Elements of a Hydrologic Ensemble Prediction System



Hydrologic Ensemble Processing



Forecasters add value



XEFS will enable seamless hydrologic ensemble prediction from weather to climate scales and translate weather and climate prediction into uncertainty-quantified water information



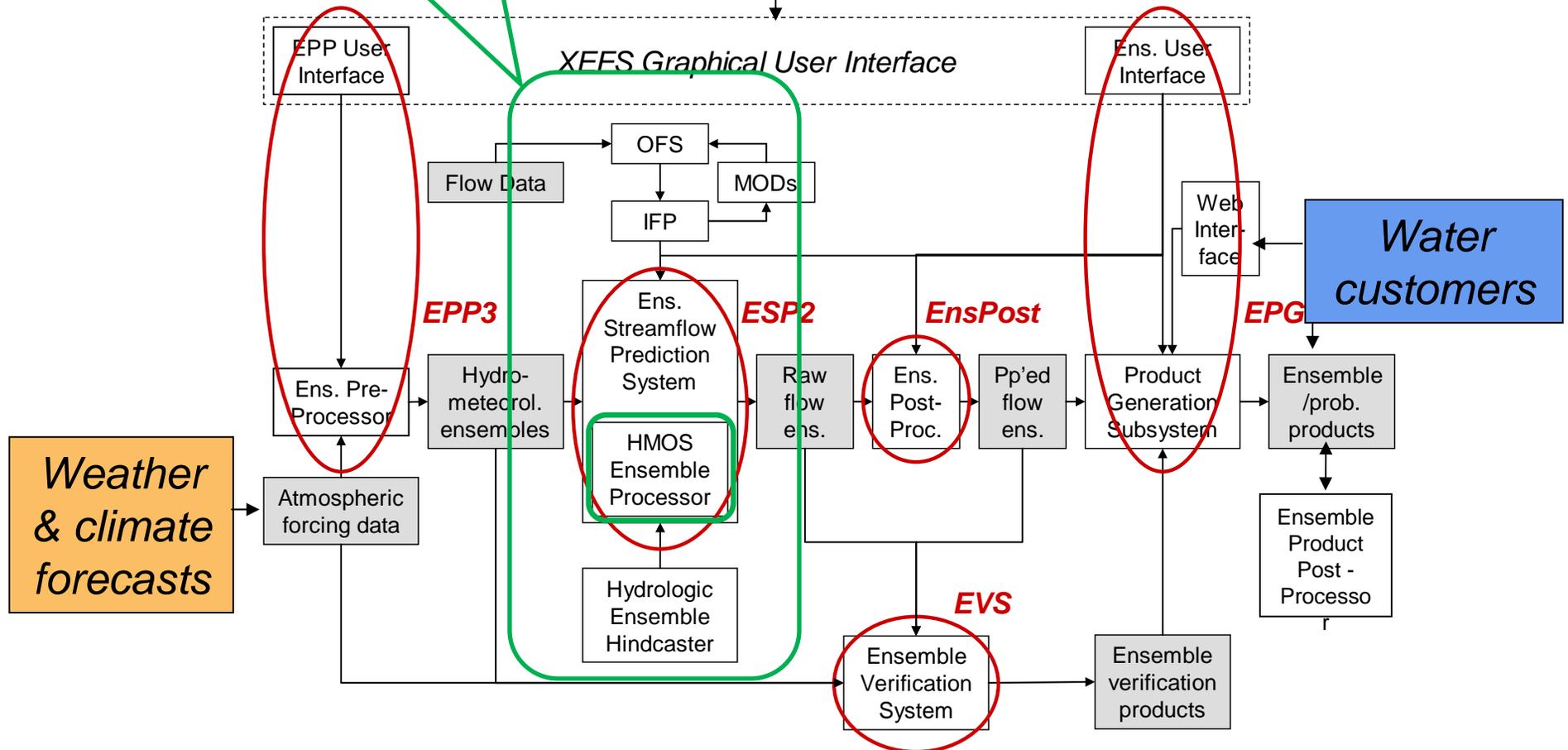
Hydrologic Ensemble Processing

- Ensemble Streamflow Prediction System II (ESP2)
 - CHPS basic functions
 - Hydrologic Model Output Statistics Streamflow Ensemble Processor (HMOS)
- Ensemble Post-Processor (EnsPost)
- Data Assimilator (DA) (Phase 2)
 - To be described and discussed in XEFS/Phase-2 conf calls

CHPS basic functions

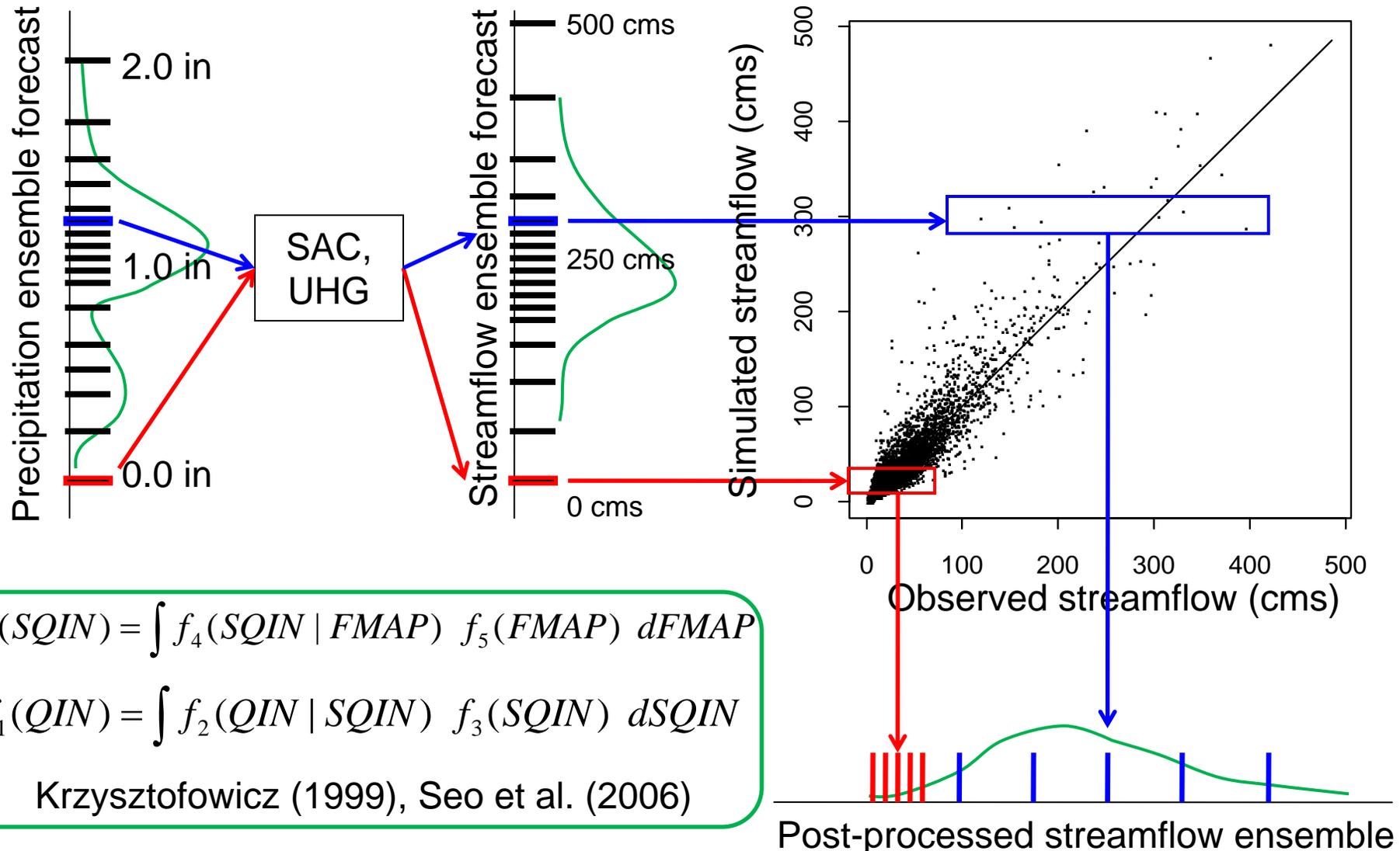


Forecasters add value



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Integration of input and hydrologic uncertainties





HMOS vs. Full-Blown Hydrologic Ensemble Processing

HMOS

- Models total (input + hydrologic) uncertainty in the single-value flow/stage forecast directly
- Limited effective lead time (~ lead time of QPF + hydrologic memory)
- Not as simple as it may seem
 - Lead time-dependent statistical modeling
 - Disparate error structure in the single-value forecast over different lead times
- A less expensive substitute for the full-blown ensemble processing

Full-Blown

- Models separately input uncertainty in the forcing and hydrologic uncertainty in the flow/stage simulation
- Lead time ~ lead time of reliable and skillful ensemble forcing + hydrologic memory
- Not as complex as it may seem, but
 - Can become computationally very expensive
 - Complete accounting of MODs may be tricky



End of slides