Overview of Short-Term Ensemble Activities

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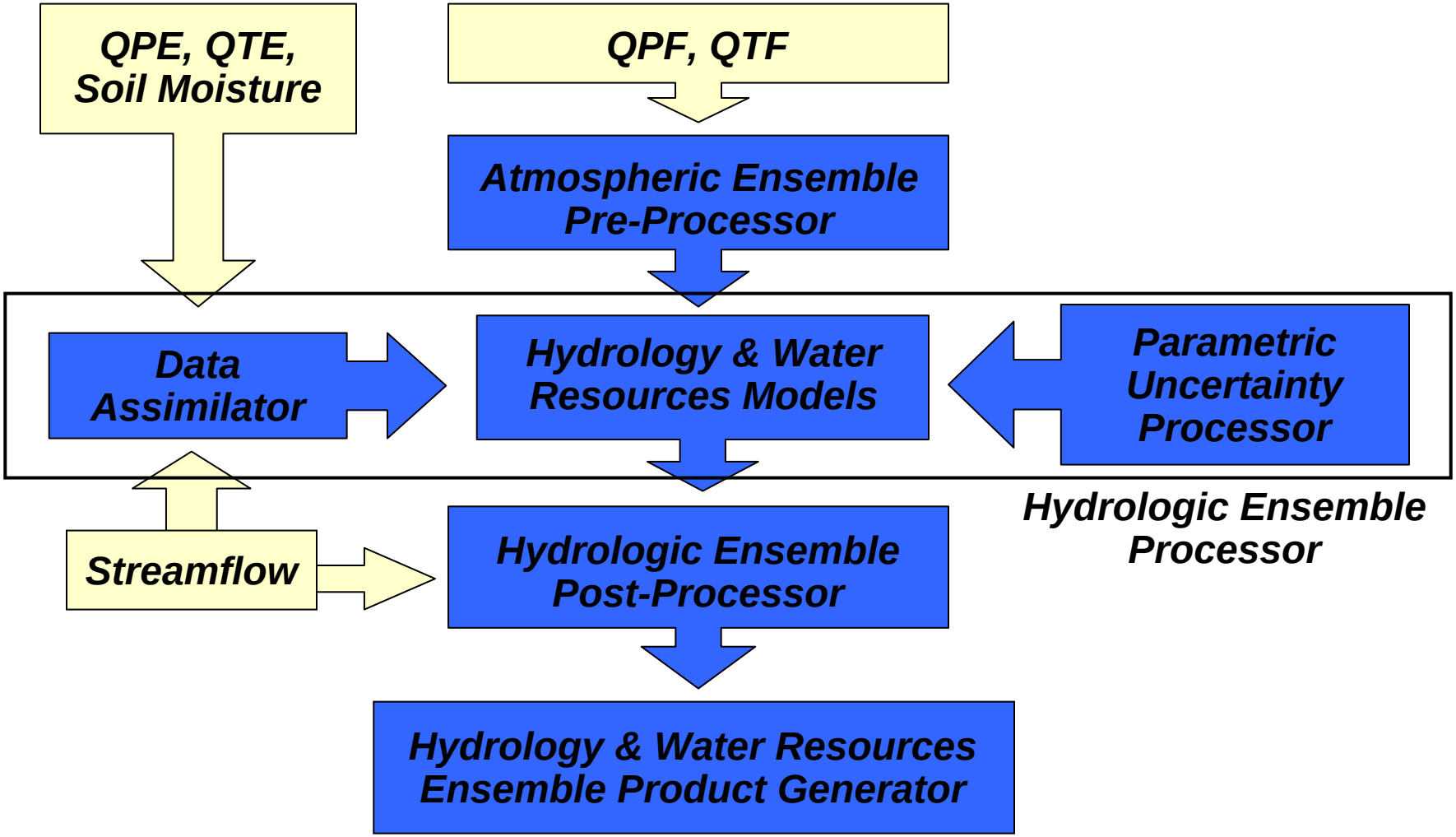
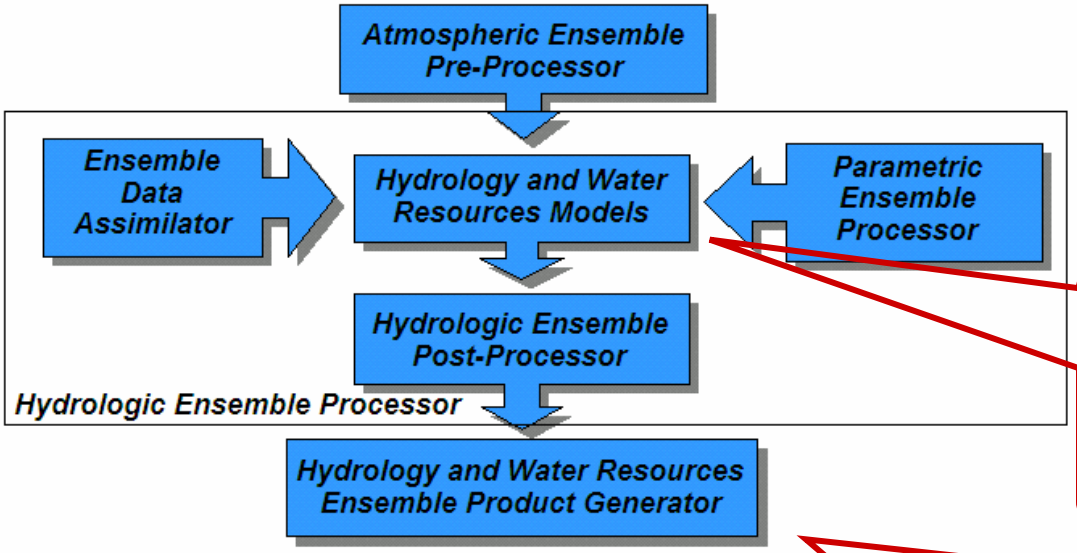
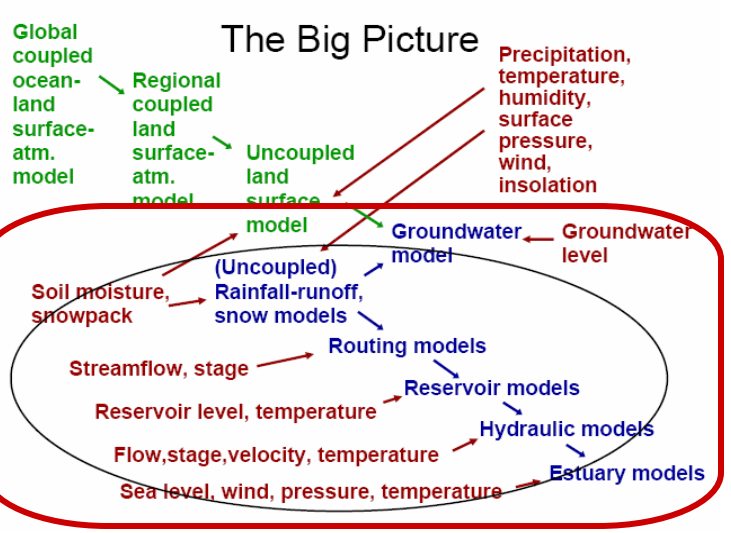
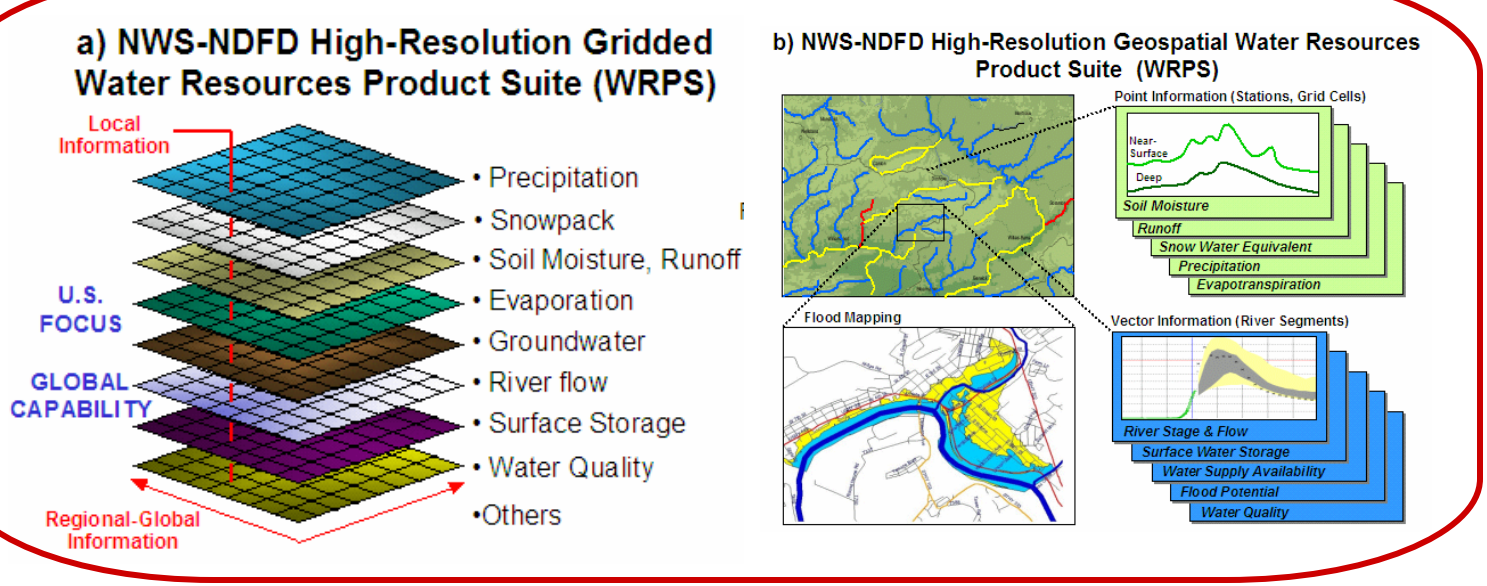
Elements of a Hydrologic Ensemble Prediction System



Vision for Ensemble & DA





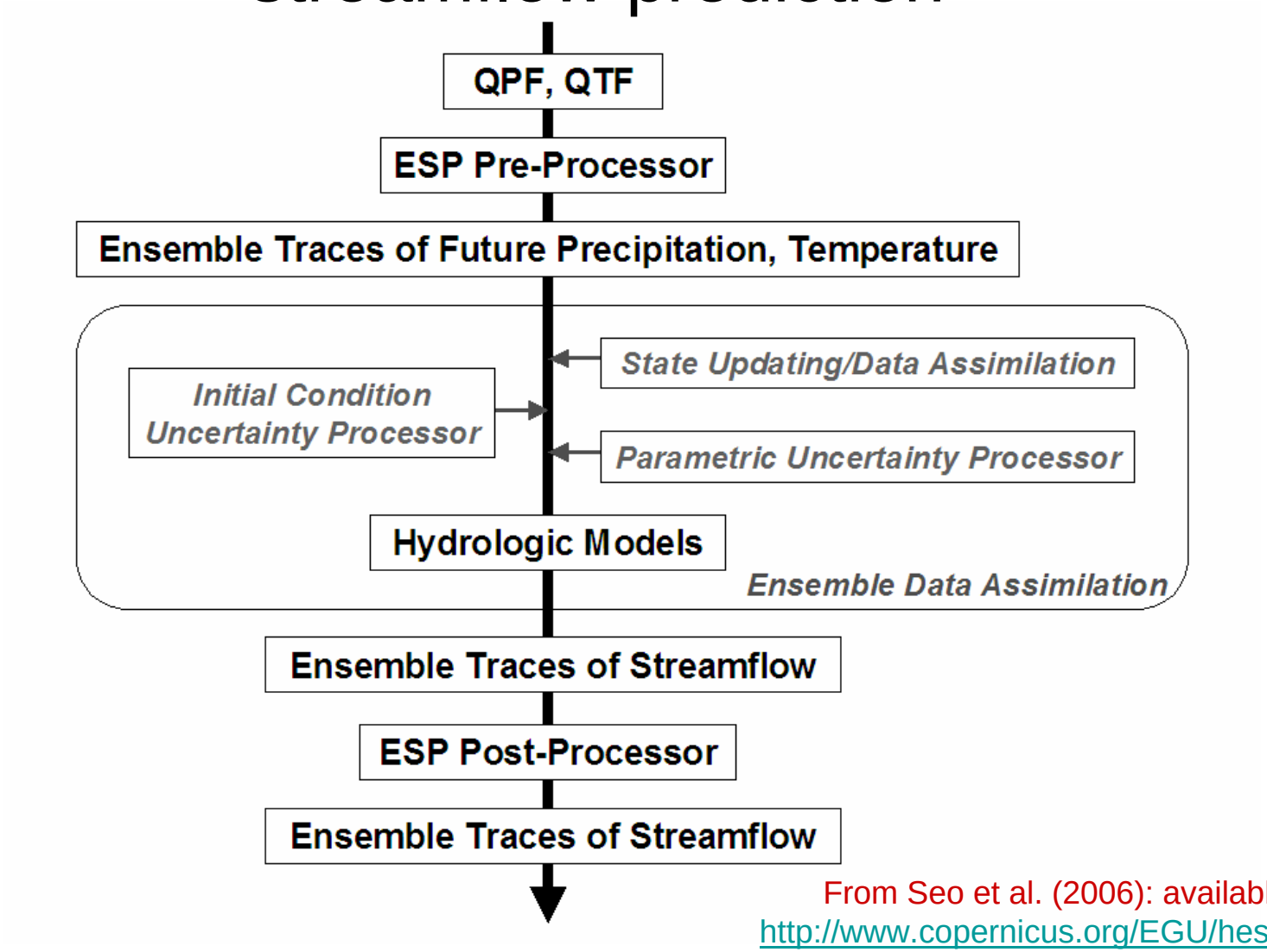


Improved accuracy, Reliable uncertainty estimates, Benefit-cost effectiveness maximized

Overall Goals & Strategy

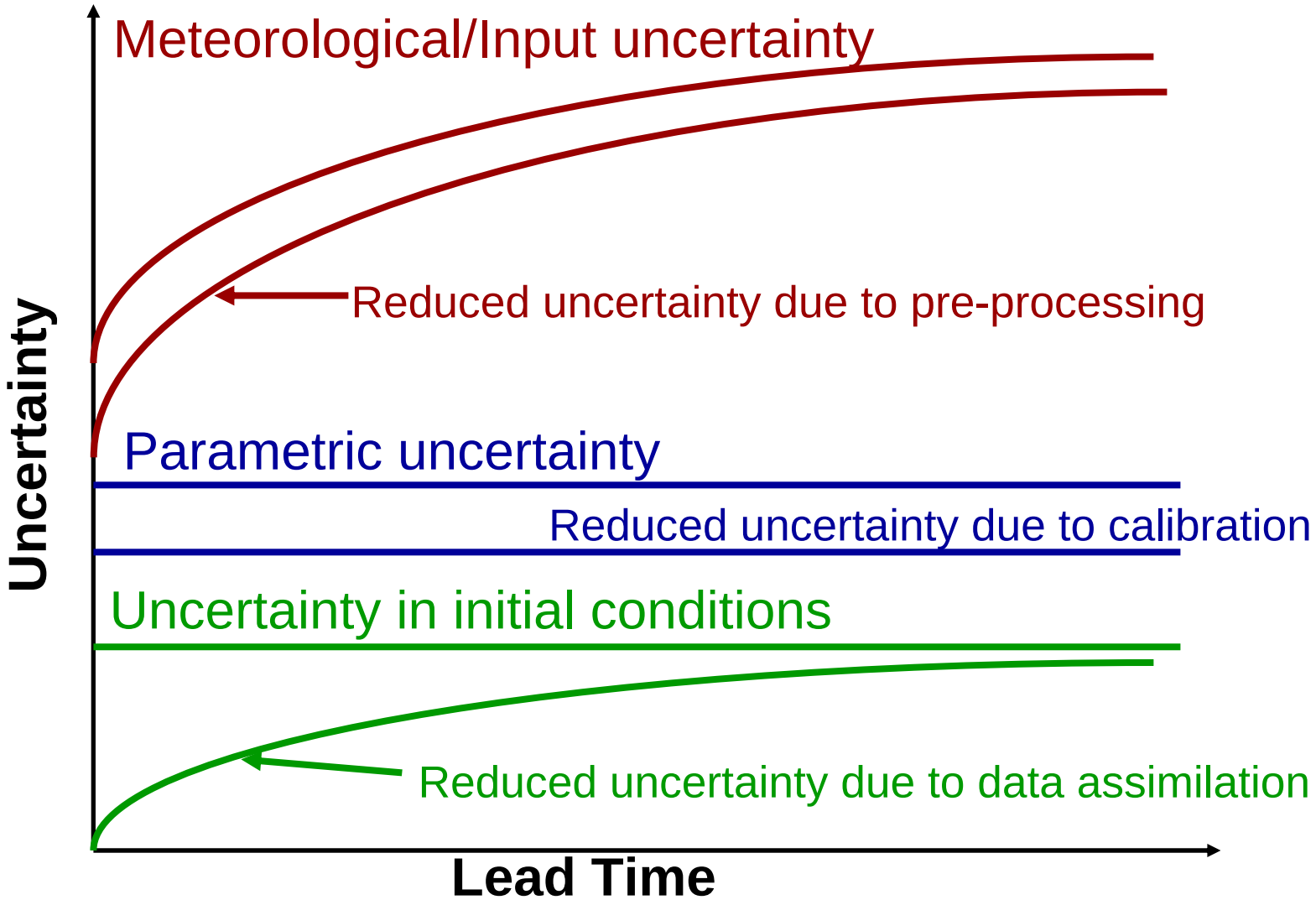
- Develop and infuse ensemble prediction and DA methodologies and techniques that are scientifically sound and benefit-cost-effective to NOAA/NWS operations
- Maintain and improve transparency and interoperability with the deterministic forecast systems and processes so that science infusion may be transferred throughout the existing as well as planned NWS operations easily
- Leverage NCPO/CPPA-funded activities for the maximum bang for AHPS
- The first priority is to produce reliable short-term ensemble/probabilistic hydrologic forecast products by (see next slide for science strategy):
  - Correcting biases in QPF and QTF and accurately accounting for uncertainties in them, and
  - Reducing and accurately accounting for hydrologic uncertainties
- Phased approach to ensemble DA
  - Develop and infuse methodologies and techniques that may support deterministic prediction with extensibility for ensemble prediction (e.g. VAR)
  - Further-develop and infuse methodologies and techniques that are geared toward ensemble prediction (e.g. Maximum Likelihood Ensemble Filter)

Science strategy for short-term ensemble streamflow prediction

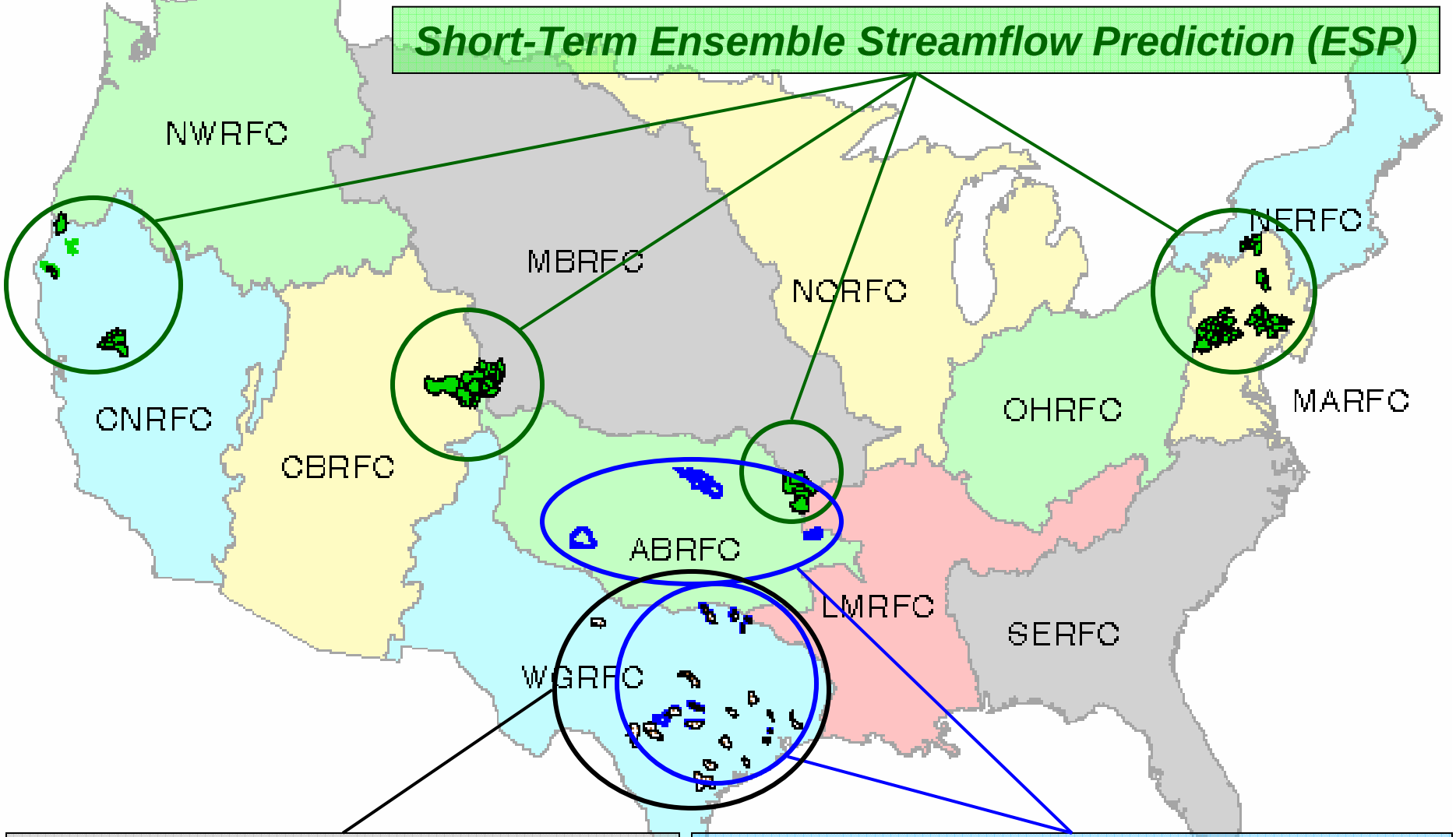


From Seo et al. (2006): available at http://www.copernicus.org/EGU/hess/hessd/3/1987/hessd-3-1987.htm

Uncertainties in Hydrologic Forecast

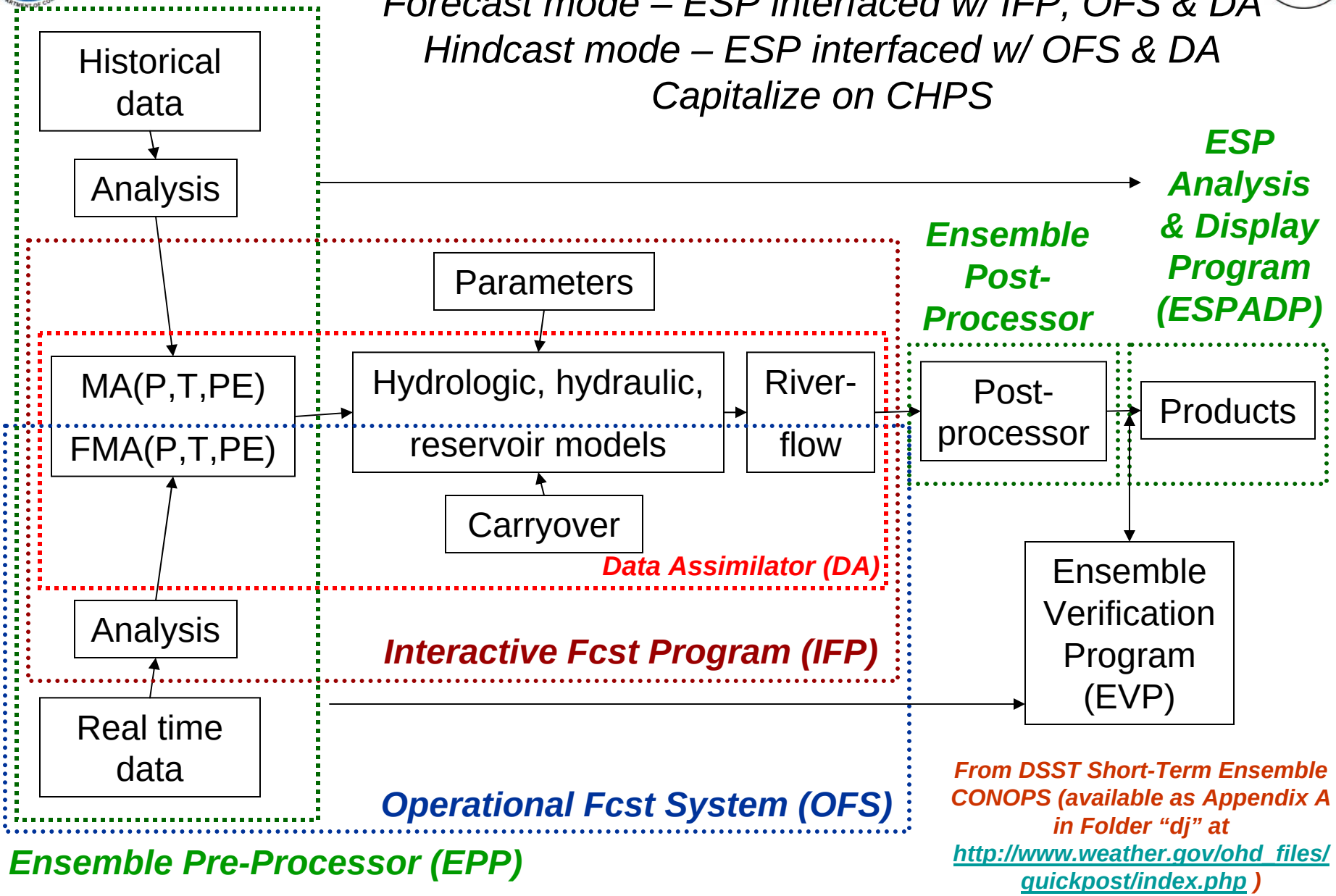


AHPS Experimental Operations



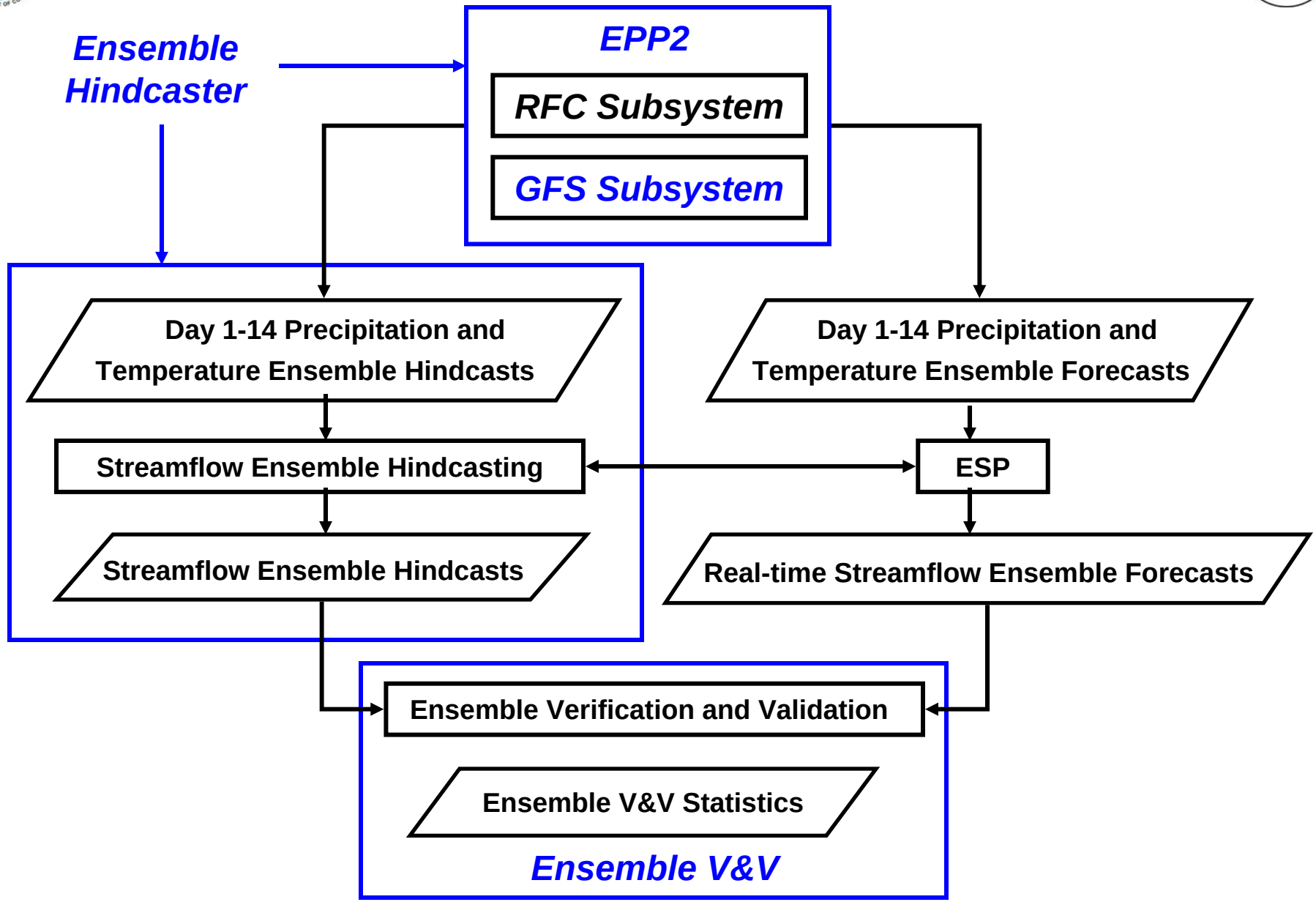
Targeted Ensemble forecast system

Forecast mode – ESP interfaced w/ IFP, OFS & DA
Hindcast mode – ESP interfaced w/ OFS & DA
Capitalize on CHPS



From DSST Short-Term Ensemble CONOPS (available as Appendix A in Folder "dj" at http://www.weather.gov/ohd_files/quickpost/index.php)

FY06 Ensemble Projects and their Relationships



HOSIP/OSIP Identification and Status

HOSIP Project Name	FY06 Funding Source	Project Leader	HOSIP Stage (as of Sep 27, 2006)	OSIP Stage
Ensemble Preprocessor II (EPP2)	AHPS	Wu	3	Combined 2 & 3
Ensemble Hindcaster	AHPS	Demargne	3	Combined 2 & 3
Ensemble Verification & Validation	AHPS	Cong / Seo / Demargne	3	Combined 2 & 3
EPP2 GFS Subsystem	CPPA, AHPS	Schaake	3	
VAR Validation, Verification and Evaluation (VAR VV&E)	CPPA	Seo	3	
Data Assimilator for Research Distributed Hydrologic Model (DA for RDHM)	CPPA	Seo	2	

EPP2 and Ensemble Hindcaster have been merged into Hydrologic Ensemble Hindcaster for OSIP

Hydrologic Ensemble Prediction (HEP) Group

- Currently made of:
  - D.-J. Seo: UCAR Project Scientist, Group Leader
  - Julie Demargne: UCAR Project Scientist
  - Limin Wu: RSIS Scientific Programmer & Software Engineer (on loan from HSEB)
  - James Brown: UCAR Visiting Scientist (started Oct 2, 2006)
  - Haksu Lee: UCAR Visiting Scientist (started Oct 16, 2006)
  - Satish Regonda: NRC Postdoctoral Associate (started Oct 16, 2006)

- Retired
  - Shuzheng Cong, UCAR Project Scientist (June 9, 2006)

- Distinguished honorary member
  - John Schaake - Science Consultant through an RTi contract

Thank you