Why Postprocessing?
Probability forecasts derived from ensembles directly are often biased and underdispersive. This can result in poor forecast skill:

- Identify such short-comings based on past forecasts and observations
- Adjust future forecasts accordingly

Regression Type Approach

Goal: Transform the ensemble forecasts into calibrated predictive probability distributions.

Conditional distribution model
Conditional distributions of precipitation amounts are modeled via censored, shifted gamma distributions (CSGDs).

Ensemble statistics
- Consider all forecasts in the vicinity of the location of interest
- Use them to calculate informative statistics about mean, spread, etc.

Heteroscedastic Regression
- Link CSGD parameters to ensemble statistics
- Plug new forecasts into regression equations to obtain predictive CSGD distributions

Forecast Verification
- Prediction: GEFS ensemble forecasts (½ deg. grid)
- Verification: Climatology corrected precipitation analyses (¼ deg. grid)
- Training: Cross-Validation with reforecasts (12 years) (for each year, fit model with data from other years)

Reliability for 25mm threshold

Future plans
- Transition to NOAA/MDL (“Blender project”)
- Application in reservoir management: calculate non-exceedance probabilities of n-year recurrence levels

Conditional distributions of precipitation amounts are modeled via censored, shifted gamma distributions (CSGDs).

Forecast products
http://www.esrl.noaa.gov/psd/forecasts/reforecast2/

High resolution precipitation forecasts based on NCEP GEFS reforecasts and CCPA.