

Dealing with uncertainties in flow forecasting for hydropower generation in Brazil

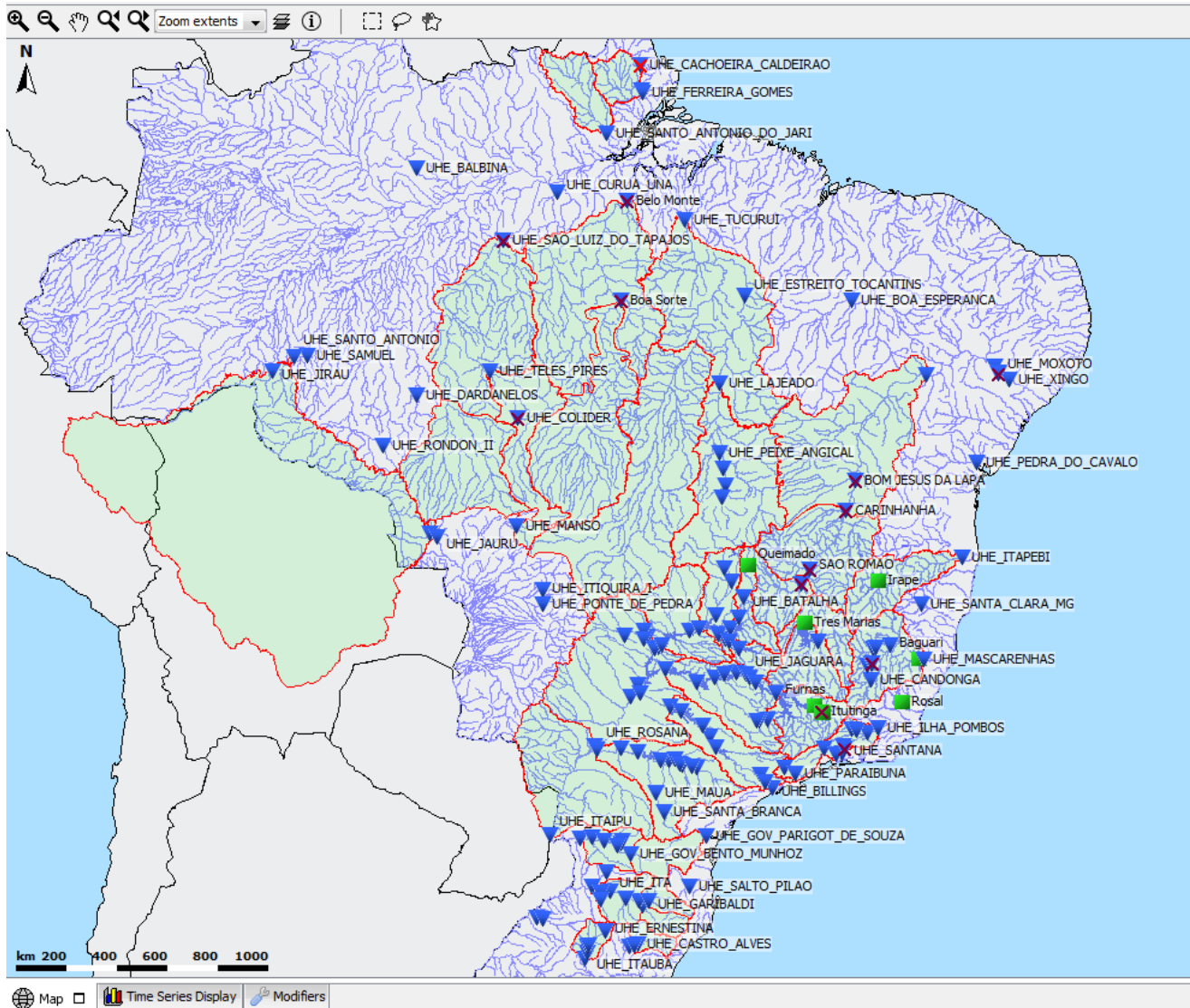
CEMIG

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Delft-FEWS User Days November 5th

Flow forecast for more than 160 HPP in Brazil



- The spot market energy price
- Long-term energy trading strategies

3 sources of uncertainty

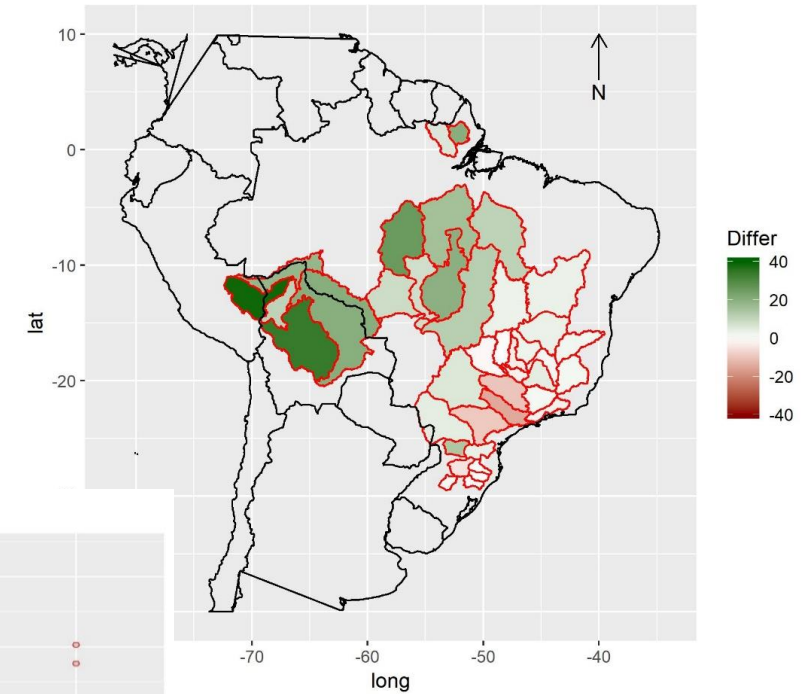
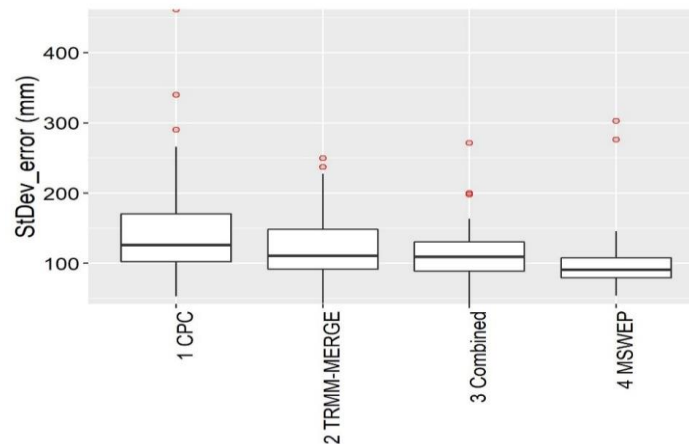
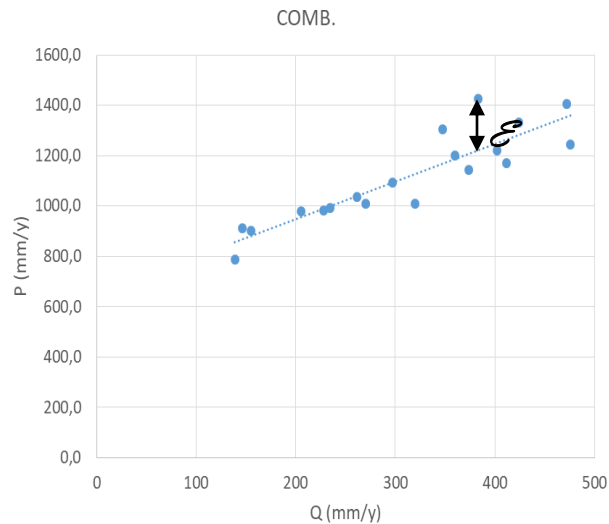
1. The observed precipitation
2. The precipitation forecast
3. The hydrological modeling

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Strategies to deal with the uncertainty at FEWS CEMIG

1. The observed precipitation uncertainty

- Combine two sources (TRMM-MERGE and CPC) weighted by the individual uncertainty

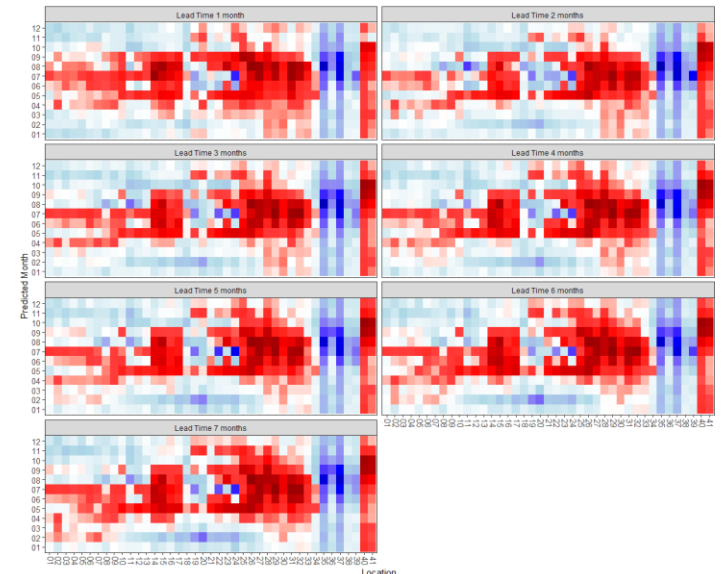
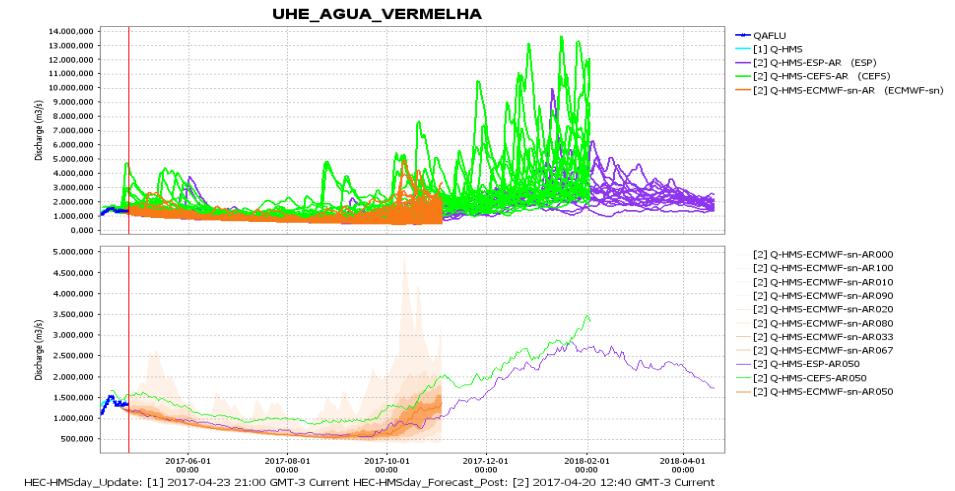
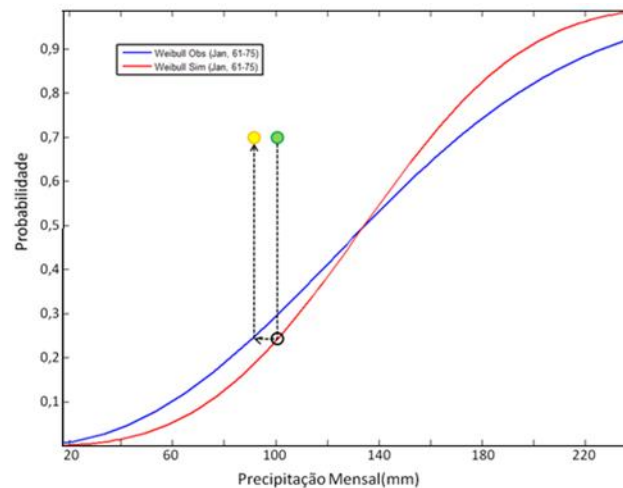
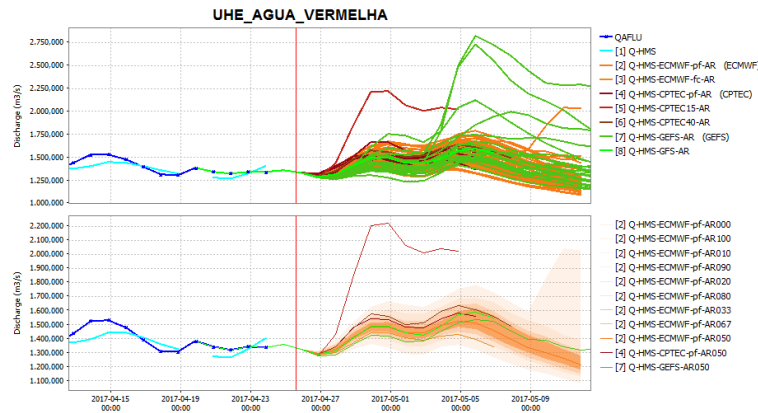


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Strategies to deal with the uncertainty at FEWS CEMIG

2. The forecast precipitation uncertainty

- Ensemble of models
- Bias correction using Quantile Mapping method
- Seamless forecast

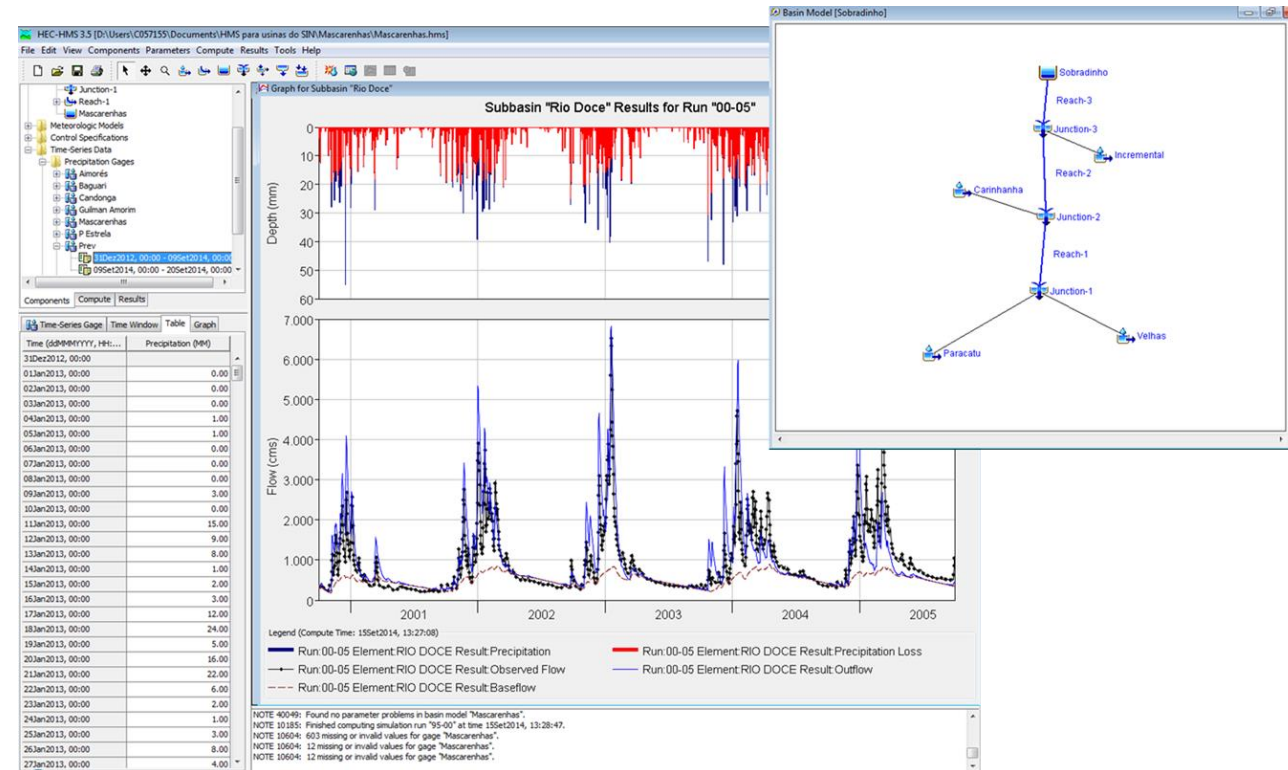


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Strategies to deal with the uncertainty at FEWS CEMIG

3. The hydrological modeling uncertainty

- Dressing forecast technique – to correct the calibration systematic bias
- Data assimilation – output error correction method





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Thank You!

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