

AGENDA

1. recap reviews and consider ways forward
2. select a journal
3. suggest reviewers

RECAP

- **Paper II:** median flood estimation. Predicts η (median flood, also GEV location parameter). Compares GAM to existing models.
- **Paper III:** regional frequency estimation (get values for all return periods, not just the 2-year return period).

Uses the model from paper II to predict η and predicts in addition β , ξ using independent regression models.

Compared two different model architectures («PRT» and «QRT»). Did not compare to existing models.

WAYS FORWARD (?)

Reviewer themes:

- (i) confusion about «durations»
- (ii) hesitation towards predictor selection method

Also: wanted more return periods than just 2 year (median), didn't like use of mean annual streamflow (from a hydrologic model) as a predictor in a statistical model

Today:

- (a) discuss combining papers II & III
- (b) discuss testing / framing? performance on small catchments in addition to multiple durations

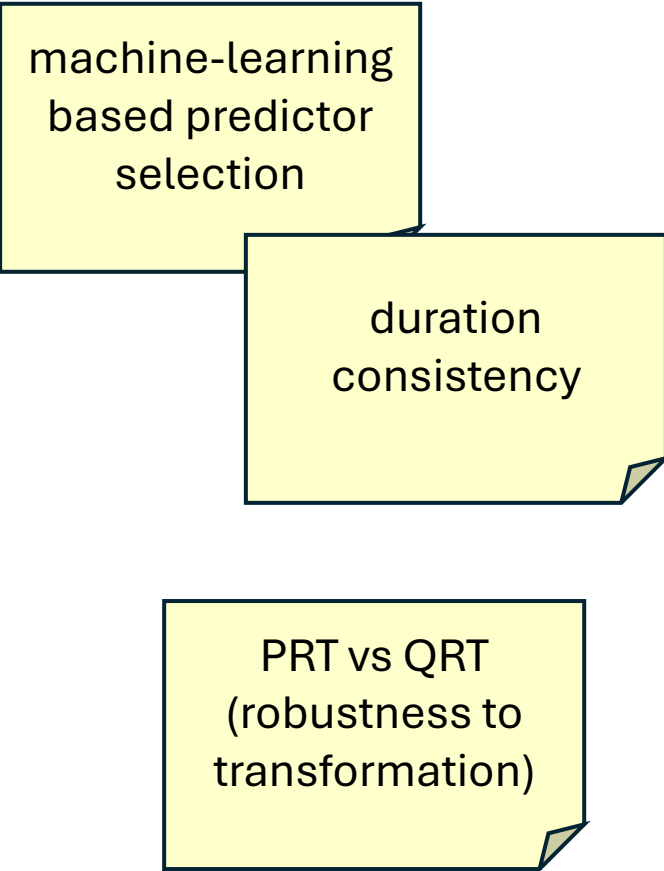
*testing for NEVINA

PAPER II

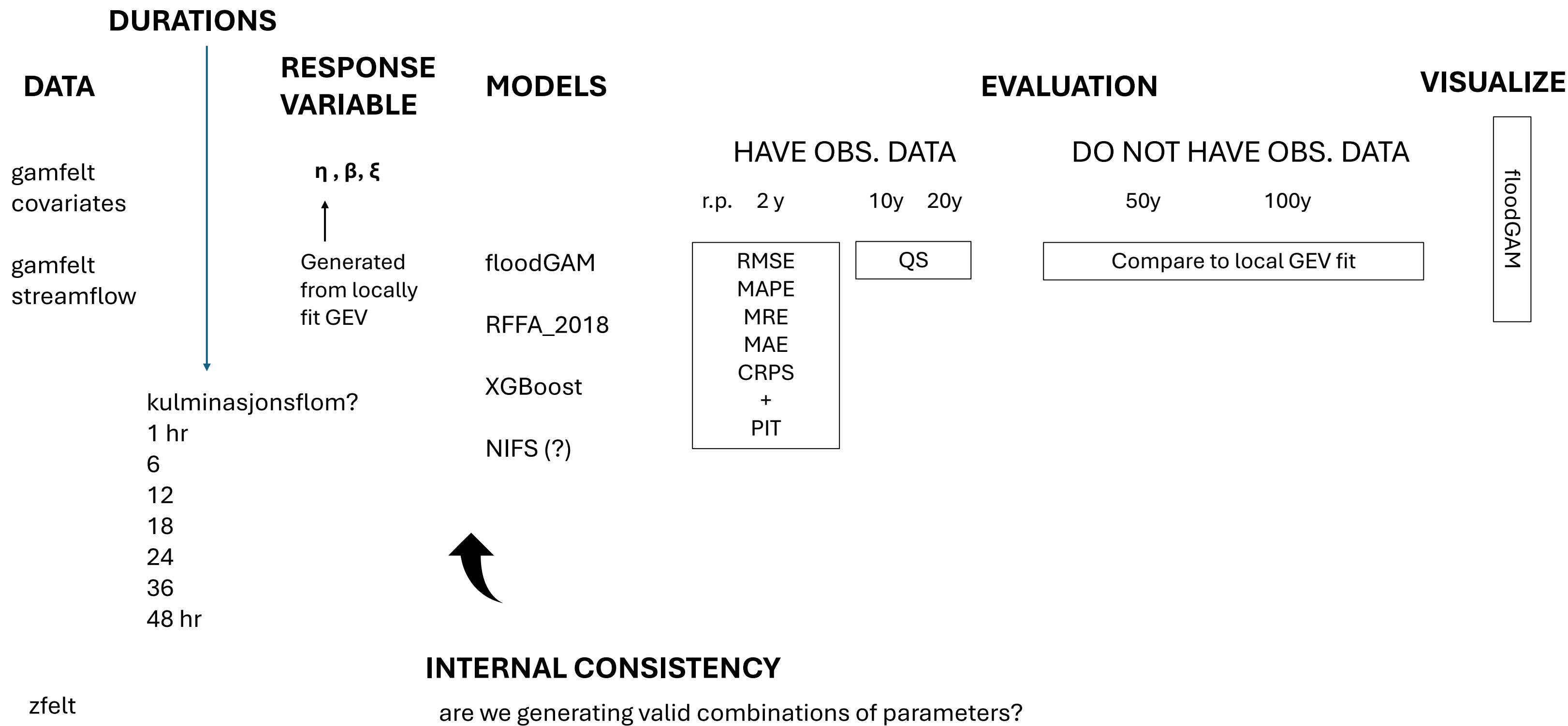
- INTRODUCTION
- DATA
 - Data quality control
 - Catchment descriptors
- STUDY DESIGN
- METHODS
 - Identification of promising predictors using a machine learning-based algorithm
 - Predictor selection for floodGAM
 - Generalized Additive Models
 - Benchmark models
 - RFFA_2018
 - XGBoost
 - Evaluation methods
 - Error metrics
 - Permutation test
 - Probability integral transform
- RESULTS
 - Predictive performance
 - Model reliability
 - Explaining the model
- DISCUSSION
 - Hydrologic interpretation of predictor-response relationships in floodGAM
 - Duration-specific differences in median flood estimation
 - Predictor selection
- CONCLUSIONS
 - Computation of minimizing quantity for relative error and absolute percent error
 - Hyperparameter tuning for XGBoost models within the IIS algorithm
 - Details of the machine learning based pre-selection step
 - Full grid output
 - Supplementary figures for model evaluation metrics
 - Regional assessment
 - Seasonal variations in hydro-climatic predictors

PAPER III

- INTRODUCTION
- DATA
 - Streamflow data
 - Catchment descriptors
- METHODS
 - At-site flood frequency analysis
 - Generalized additive models for the quantile and parameter regression techniques
 - Post-processing for quantile consistency
 - Model evaluation
- RESULTS
 - Internal model consistency
 - Predictive accuracy
 - Duration consistency
- DISCUSSION
 - Return level plots for the QRT-specific duration inconsistencies
 - Catchment descriptors for duration-inconsistent stations
 - Smooth components for GAMs in the PRT and the QRT
- CONCLUSIONS



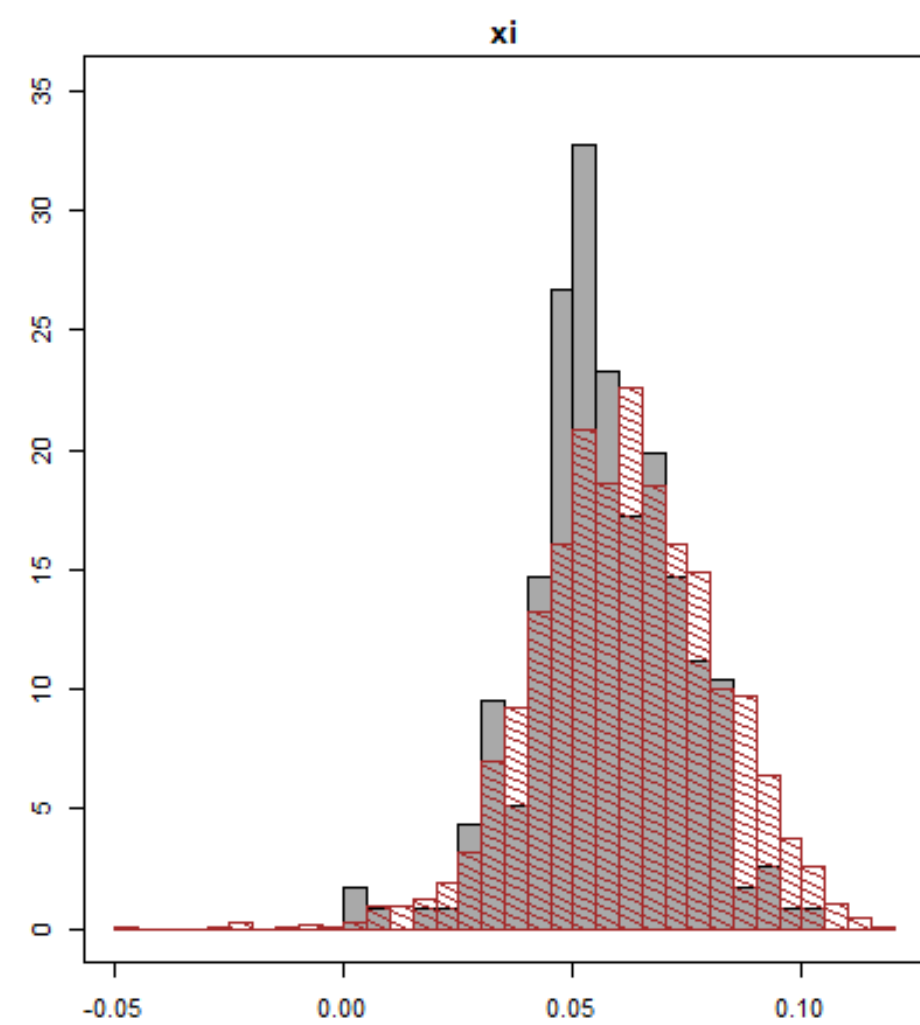
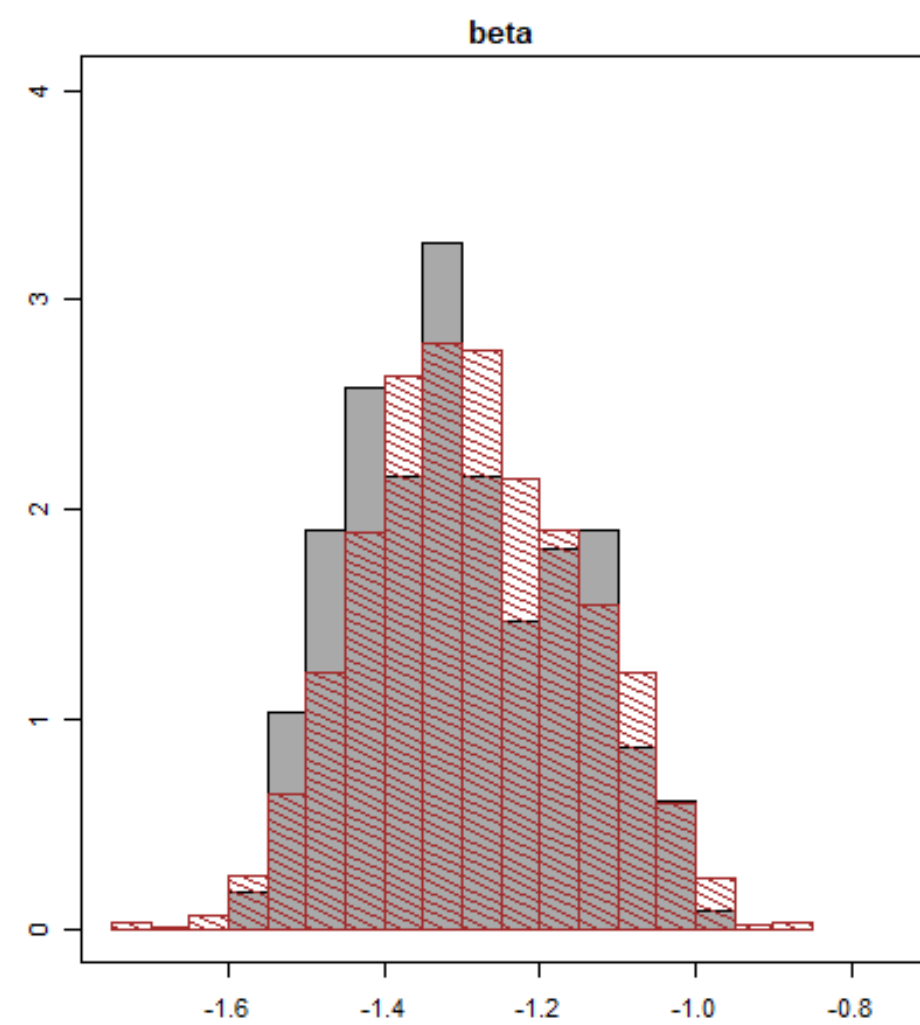
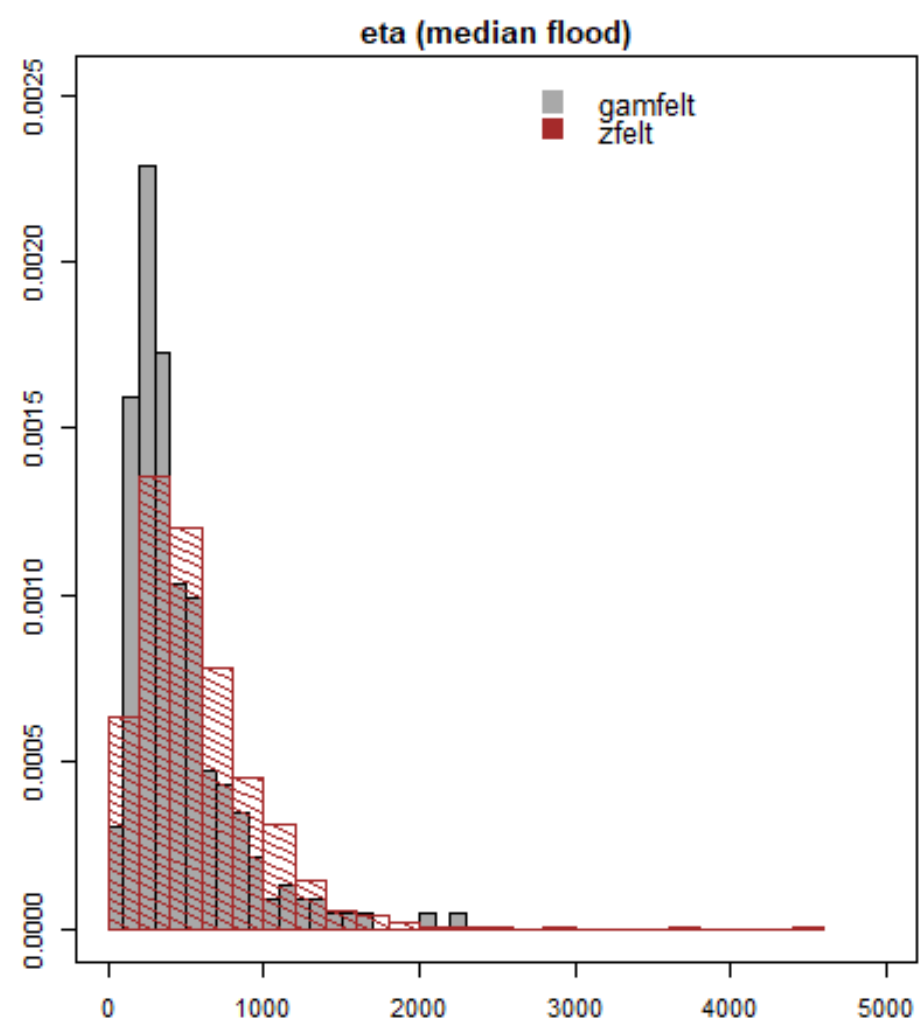
- ❑ Predictor selection
- ❑ Generation of the response variable
- ❑ Model architecture
- ❑ Checking internal model consistency
- ❑ Benchmark models
- ❑ Evaluation @ rp where we have data
- ❑ Evaluation @ rp where we do not have data
- ❑ Explaining the model

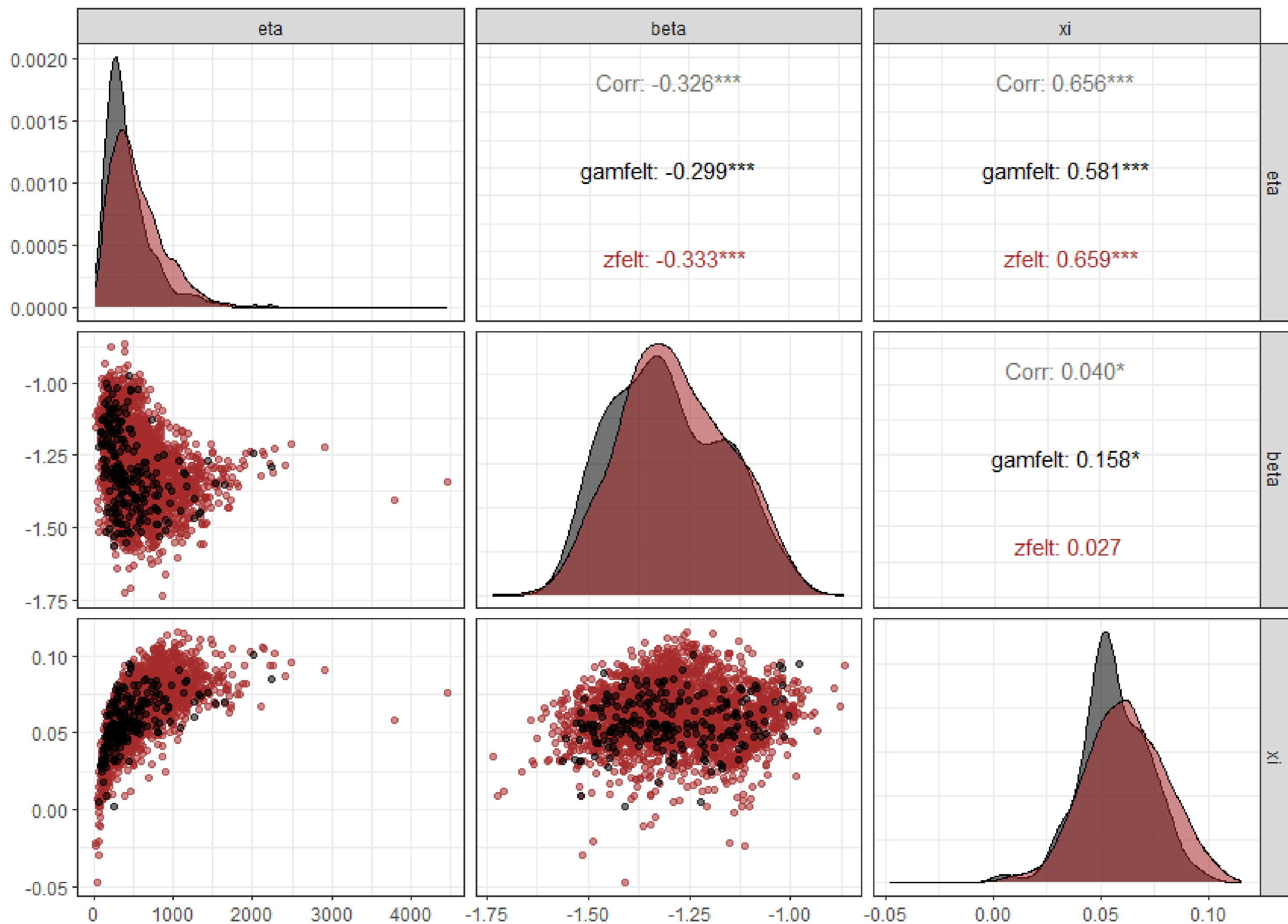


Regional flood frequency analysis with generalized additive models: approaches for short(?) (/or mulitple) durations and small (/varying) catchment sizes

Questions

- Are we cutting out too much of our earlier analysis if we combine like this? what options do we have for presenting some of the earlier work in, for example, a small internal publication?
- What journal?
- Which reviewers?





eta

beta

xi

eta

beta

xi

