Improving the characterization of sea-level projection uncertainties

Objective

Quantify the effects of common methodological choices on projection uncertainties using the example of sea-level changes

Approach

- Implement three commonly used approaches to data-model fusion
- Apply these approaches to a published data set and model structure
- Assess the approaches in terms of hindcasts and projections

Impact

Improving the representation of the statistical properties of the data-model discrepancies can increase the upper tail projection.
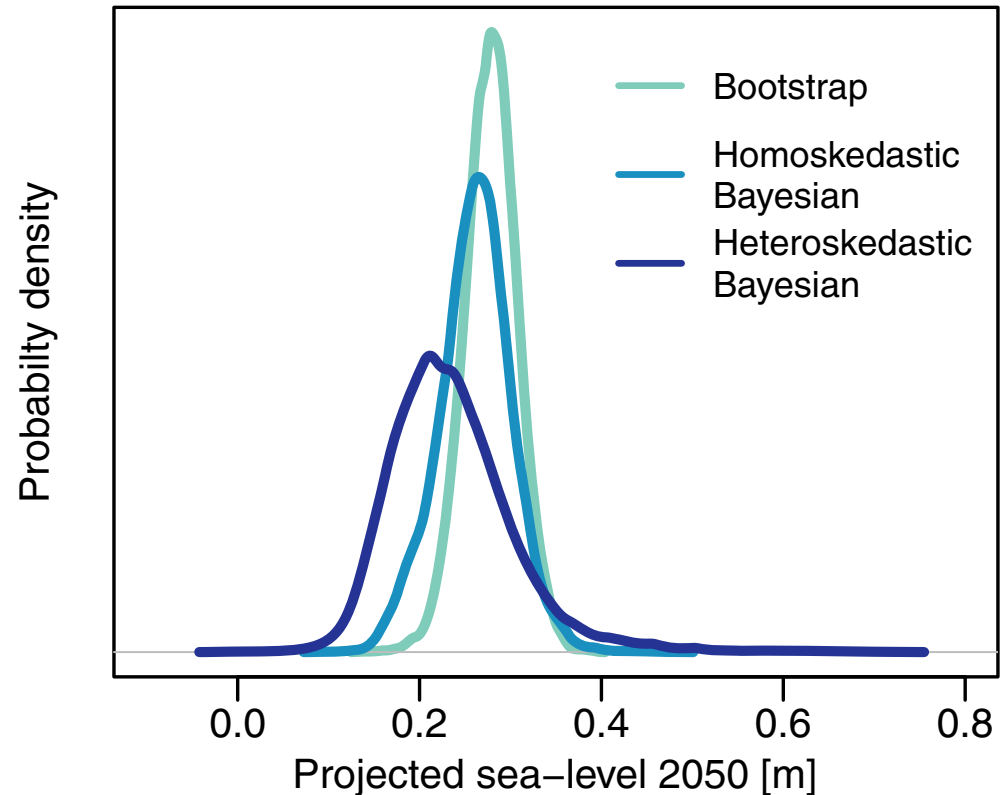
Comparison of the projected sea-level changes from three data-model fusion approaches. The heteroskedastic Bayesian method (dark blue line) best represents the properties of the data-model residuals within the considered methods and suggests an increased upper-tail projection.