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Uncertainty attribution to the sea level during the last interglacial

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Paleoclimatic sea-level analysis is based upon the evaluation of sparse indirect observational data, the sea-level indicators, and models for sea-level fluctuations, with a wide range of complexity. Individual records of paleo sea-level depend not only upon the change in global ice volume, but also on the crustal deformation and gravity changes that are significant both near the glaciers and around the world. Understanding of these processes for the past is essential for interpreting the observations in order to generate better estimates for the future.

As part of the NERC-funded iGlass consortium, we compare sea-level indicators and model generated sea-level estimates. The forward-model predictions allow for the assessment of geographic variations in sea-level, accounting for crustal deformation and geoid changes. Furthermore, statistical ensemble methods will be used to analyse a large number of different realisations of the models, their input parameters and observations. The calibration procedures will lead to uncertainty estimates of the model parameters and allow a further evaluation of predefined scenarios, such as the source of higher-than-present-day sea-levels during the last interglacial.

This contribution gives an overview over the framework in which the comparison between model and observational data take place. We demonstrate the application of this method using data for the last interglacial. Apart from an estimate for the development of the sea-level during that time the approach is able to classify the different sources of uncertainties, such as observations, ice histories and model parameters.