
Downscaling model errors in the Bay of Biscay

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Abstract

As part of a coastal data assimilation study, we have been running ensembles of realistic, high-resolution experiments with the Symphonie model of the coastal region about the Landes Plateau in the Bay of Biscay. The ensembles are formed by perturbing the wind forcing and by applying open boundary conditions from an ensemble of lower resolution experiments. This technique allows us to explore model uncertainties more broadly than if we only perturbed the wind, in which case the processes driven mainly by forcing from the open boundaries, such as the slope currents in winter, would remain comparatively unchanged across ensemble members; it may equally be thought of as a way to downscale the parent model's errors. We present diagnostics over a 3-month period, mainly focussed on SST and SSH.

The next step, currently underway, is to perform a series of twin experiments, where synthetic data of SSH and SST are assimilated into the model using an ensemble Kalman filter.

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