



## **20th Century Coupled Regional Climate Simulations**

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Coupling a land-atmosphere regional climate model with an ocean model improves the realism of the modelling system in the representation of the regional climate system, but it adds complexity and uncertainty to the modelling system too. We demonstrate the stability and validity of a newly developed coupled regional climate system using COSMO-CLM, NEMO, and TRIP coupled with OASIS3-MCT for Europe including the marginal seas (North-, Baltic, and Mediterranean Seas) driven by two different 20th century reanalyses (NOAA 20CR and ECMWF ERA20c) and atmospheric horizontal grid-spacings of 0.11 and 0.22°. We discuss the difficulties because of added variability (deviation from the driving model), because of using and evaluation complexity of the system, and in the interpretation of the results. We also show examples of better simulated extreme event climatologies with the regional coupled climate system model and discuss the added value of closed budgets within the modelling domain (without going global).