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Impact of the Reanalyses on Regional Climate over Europe.

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Satellite observations are considered into the data assimilation process to update the atmospheric state provided by the numerical models. The outcome of this data assimilation process, the so-call reanalysis, is then used to force the atmospheric state of the regional models. The leading meteorological centres have put their effort in improving the reanalyses since this would lead to an improvement of their forecasts. As a result, different reanalyses datasets, such as the ERA-Interim provided by the ECMWF or the 20th Century Reanalyses from NCEP, can be used as an input of our regional models. Due to the coarse grid of these datasets, they need to be downscaled for regional purposes.

In the SPATE project, we aim to better understand the atmospheric drivers of extreme floods in Europe. Therefore, we have to better understand the air-sea interactions and feedbacks between the atmosphere and the European Marginal Sea (Mediterranean and North- and Baltic Sea). With this aim, we have run an atmospheric-ocean coupled model during the last decades, using different reanalyses. The regional climate COSMO-CLM model is coupled with the NEMO ocean model via the OASIS3-MCT coupler for the so-called EURO-CORDEX domain. We investigate the performance due to the increase of resolution, as well as a comparison in terms of the reanalyses used.