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Ensemble simulations of extreme weather events under nonlinear climate change (ESSENCE)

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The ESSENCE project, carried out within the Distributed European Infrastructure for Supercomputing Applications (DEISA), aims at a better understanding of forced and internally generated climate variability. A relatively large (16 member) ensemble simulation of climate change in response to the SRES-1b scenario (over the period 1950-2100) has been carried out using the ECHAM5-OM1 (MPI) model. This standard ensemble is accompanied by a set of 4 experimental ensembles that address the effect of parameter sensitivities. In this presentation we give an overview of the project and present results from the standard ensemble, focussing on (i) the forced signal versus internal variability in several important fields (surface temperature, sea ice, meridional overturning, etc.) and (ii) a comparison with observations over the last decades.