



Sensitivity of seasonal predictability to atmospheric and oceanic model evolution

Jean-François Guérémy (1), Michel Déqué (1), Lauriane Batté (1), Constantin Ardilouze (1), Clotilde Dubois (2), Danila Volpi (1), and Laurent Dorel (1)

(1) Météo-France, CNRM, Toulouse, France (jean-francois.gueremy@meteo.fr), (2) Mercator Océan, Ramonville, France

In the framework of the EU Copernicus Climate Change Service (C3S) program, a new coupled system has been developed at Météo-France to carry out seasonal forecasts at a 7-month range. Starting from a current system (called syst5), including ARPEGE-Climat (T1255191 and CMIP5 physics), NEMO 3.2 (1°142 used in CMIP5) and the OASIS coupler, a new system has been set up in 2 steps. Firstly, the atmospheric component has been upgraded using ARPEGE-Climat at T1359191 with the new CMIP6 physics, to get an intermediate system (called pre-syst6). Secondly, the oceanic component has been changed to NEMO 3.6 with an improved geometry (1°175 to be used in CMIP6), to obtain the new system (called syst6). The seasonal forecast ensemble is initialized with ECMWF analyses in the atmosphere and MERCATOR analyses in the ocean; the dispersion is ensured through an atmospheric stochastic dynamics method. Spatial and temporal correlation scores will be shown for the 3 systems, over the re-forecast period starting in 1993. Furthermore, anomaly maps of SST, precipitation and Z500 for selected years of the re-forecast dataset, will be discussed to get an insight on the improvements obtained in the successive systems.