

SESSION: (B2) Modelling issues in S2D prediction

(B2-06)

SEAS5: The new ECMWF seasonal forecast system

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In this presentation we will describe SEAS5, ECMWF's fifth generation seasonal forecast system, which became operational on Nov. 5, 2017. Compared to its predecessor, System 4, SEAS5 is a substantially new system which includes upgraded versions of the IFS atmosphere and NEMO ocean models at higher resolutions, and introduces the LIM2 interactive sea ice model.

We will discuss SEAS5's performance, and how it compares to System 4. Many aspects of forecast skill have improved, but there are a few exceptions where forecast skill decreases. SEAS5 tropical SST biases have significantly improved over System 4, including a two degree improvement in the equatorial Pacific. Two-metre temperature prediction skill in the tropics has improved and there are also improvements in some aspects of ENSO forecast skill. The increased ocean resolution in SEAS5 changes SST biases in the northern extratropics, especially in regions associated with western boundary currents. In the Northwest Atlantic, SEAS5 poorly captures observed decadal variability of the subpolar gyre, which results in a local degradation of DJF 2-metre temperature prediction skill. Introducing the prognostic sea ice model gives SEAS5 the ability to forecast sea-ice cover in the coming seasons. In summary, SEAS5 continues to be a state-of-the-art seasonal forecast system, with a particular strength in ENSO prediction.

SEAS5 data and graphical forecast products are available to the public, under free access licence, through ECMWF's Copernicus Climate Change Service (C3S). We will present the multi-system seasonal forecast service of C3S, to which ECMWF is a core contributor and SEAS5 is one of the components. A brief description of the other participating forecast systems will be presented, as will the set of graphical and data products currently available and planned for the near future.