



Benefits of resolution increase for seasonal forecast quality in EC-Earth

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The resolution in climate models is thought to be an important factor for advancing our seasonal prediction capability, crucial in a changing climate. We assess here a unique subset of 10-member retrospective initialized seasonal predictions (1993-2009) carried out with the European community model EC-Earth in three different configurations: coarse resolution ($\sim 1^\circ$ and ~ 60 km in the ocean and atmosphere models, respectively), mixed resolution ($\sim 0.25^\circ$ and ~ 60 km) and high resolution ($\sim 0.25^\circ$ and ~ 39 km). The increased resolution leads to a substantial reduction of Sea Surface Temperature (SST), 2m-temperature, precipitation and wind biases. More specifically, the cold tongue bias is reduced, the Somalian upwelling is better represented and the excessive precipitation over the Indian Ocean and over the Maritime Continent are decreased. In the Tropical Indo-Pacific, the skill of SST and precipitation, including the Indian Monsoon, are improved. Over mid-latitudes and polar regions, we find hints of improvements in the skill of the North Atlantic Oscillation and sea ice, as well as the representation of the mean atmospheric blocking.