

## **Coupled errors of the UKMO GCMs and of other CMIP5 GCMs in the tropical Atlantic sector**

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An analysis of the errors that affect the simulations by the HiGEM coupled atmosphere-ocean GCM in the tropical Atlantic, a documentation of the coupled-error growth in the UK Met Office GloSea seasonal hindcasts, and an initial assessment of such errors in the CMIP5 group of coupled GMCs are presented. We study the sensitivity of the errors in HiGEM to the horizontal resolution of the grid for either atmospheric and oceanic components, by analysing the relationships between ocean mixed-layer temperature tendencies, surface fluxes, and oceanic advection. Increasing the resolution of only one component can result in larger coupled errors in this model. We then show results from an analysis of the pattern of error growth through late boreal Spring and Summer in GloSea hindcasts, inferring the sequence of processes that control it. From this analysis we speculate on possible mechanisms responsible for the error growth between boreal Spring and Summer. Finally, we turn to the CMIP5 set, for which we discuss the general statistics of the phenomenological errors in terms of spatial patterns and temporal evolution.