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## **On the comparison between seasonal predictive skill of global circulation models: Coupled versus uncoupled**

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### **Abstract:**

The study compares one- and two-tiered forecasting systems as represented by the South African Weather Service Coupled Model and its atmosphere-only version. In this comparative framework, the main difference between these global climate models (GCMs) resides in the manner in which the sea surface temperature (SST) is represented. The models are effectively kept similar in all other aspects. This strategy may allow the role of coupling on the predictive skill differences to be better distinguished. The result reveals that the GCMs differ widely in their performances and the issue of superiority of one model over the other is mostly dependent on the ability to a priori determine an optimal global SST field for forcing the atmospheric general circulation model (AGCM). Notwithstanding, the AGCM's fidelity is reasonably reduced when the AGCM is constrained with persisting SST anomalies to the extent to which the coupled general circulation model's superiority becomes noticeable. The result suggests that the boundary forcing coming from the optimal SST field plays a significant role in leveraging a reasonable equivalency in the predictive skill of the two GCM configurations.