Geophysical Research Abstracts
Vol. 16, EGU2014-15360, 2014
EGU General Assembly 2014

Assessing the drift of seasonal forecasts

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The systematic drift (bias dependence on the forecast lead-time) present in state-of-the-art coupled general circulation models is an inherent feature of global seasonal forecasts. Usually, anomalies (relative to the model climatology) obtained from an ensemble of hindcasts are used to correct this drift. However, this procedure has not been systematically explored across different forecasting systems so far. Moreover, costly approaches for seasonal impacts forecasting, such as dynamical downscaling, would benefit from drift removal strategies involving smaller ensemble sizes.

The full thirty-year (1981-2010) hindcast of the System 4 ECWMF (in particular the 15-members seasonal experiment) was considered to address these issues over two regions of interest for the EU project EUPORIAS, Europe and East Africa. The mean climatology for each calendar month was computed at seven different lead-times (each member was initialized the first of each month and was run for seven months). For instance,the climatology of January was computed considering the forecasts initialized the first of January (lead-month 0), December (lead-month 1) and so on until July (lead-month 6). Results show important drifts for some cases. Moreover, the differences between members are statistically not significant in general, what suggests that considering a single member may be enough to robustly remove the drift.

In the near future, additional forecasting systems involved in EUPORIAS will be compared with System 4 in order to unveil possible commonalities in the drift climatology.