Geophysical Research Abstracts
Vol. 14, EGU2012-1126, 2012
EGU General Assembly 2012

A rainfall calibration methodology for impact modelling based on spatial mapping

F. Di Giuseppe (1), F. Molteni (1), and A.M. Tompkins (2)
(1) ECMWF, Reading, United Kingdom (nen@ecmwf.int), (2) ICTP, Trieste, Italy

A spatially-based precipitation bias correction is introduced that generalises existing approaches. The method consists of projecting observed precipitation anomalies onto the models modes of variability for a large set of model hindcasts to produce artificial mapped empirical orthogonal functions, which can then be used to bias correct forecasts. Similar to previous spatially based methods, the scheme can shift displaced anomalies, associated with the West African monsoon progression for example, to their correct location, and by construction produces a corrected field with a zero-mean bias with respect to the observations.

The new method has the advantage that it only applies corrections to modes of variability for which the model has proven skill, and does not rely on a one-to-one direct correspondence between the observational and model modes, a restriction of previous methods. By processing the precipitation fields in sequences of seven pentad averages, it is also possible to including variability on shorter than monthly timescales, important if the end product is to be used for end-user impacts focused research.

The method is tested for various EOF-defined climate macro-regions within Africa and is shown to reduce biases while also improving threat skill scores over a range of thresholds and forecast lead-times. Results for the regions that contain Senegal, Ghana and Malawi will be shown with special emphasis, as it is in these three countries that the corrected forecasts will be used to drive a prototype malaria prediction system in the project *Quantifying the impact of Weather and climate on health in developing countries (QWeCI)*.