Geophysical Research Abstracts,
Vol. 11, EGU2009-1841-1, 2009
EGU General Assembly 2009

Rainfall variability over southern Africa: an overview of current research using satellite and climate model data

C. Williams (1), D. Kniveton (2), and R. Layberry (3)

(1) NCAS-Climate / Walker Institute, University of Reading, Reading, UK (C.J.R.Williams@reading.ac.uk), (2) Department of Geography, University of Sussex, Brighton, UK (D.R.Kniveton@sussex.ac.uk), (3) Environmental Change Institute, University of Oxford, Oxford, UK (russell.layberry@ouce.ox.ac.uk)

It is increasingly accepted that any possible climate change will not only have an influence on mean climate but may also significantly alter climatic variability. A change in the distribution and magnitude of extreme rainfall events (associated with changing variability), such as droughts or flooding, may have a far greater impact on human and natural systems than a changing mean. This issue is of particular importance for environmentally vulnerable regions such as southern Africa. The subcontinent is considered especially vulnerable to and ill-equipped (in terms of adaptation) for extreme events, due to a number of factors including extensive poverty, famine, disease and political instability.

Rainfall variability is a function of scale, so high spatial and temporal resolution data are preferred to identify extreme events and accurately predict future variability. In this research, satellite-derived rainfall data are used as a basis for undertaking model experiments using a state-of-the-art climate model, run at both high and low spatial resolution. Once the model's ability to reproduce extremes has been assessed, idealised regions of sea surface temperature (SST) anomalies are used to force the model, with the overall aim of investigating the ways in which SST anomalies influence rainfall extremes over southern Africa.

In this paper, a brief overview is given of the authors' research to date, pertaining to southern African rainfall. This covers (i) a description of present-day rainfall variability over southern Africa; (ii) a comparison of model simulated daily rainfall with the satellite-derived dataset; (iii) results from sensitivity testing of the model's domain size; and (iv) results from the idealised SST experiments.