



Robust averaging of ensembles of opportunity

Martin Jukes

SSTD, BADC, Chilton, Didcot, Oxon, United Kingdom (martin.jukes@stfc.ac.uk)

This poster investigates options for finding the best estimate of projected global mean temperature from the IPCC 4th Assessment ensemble of climate models. Such ensembles are often known as ‘ensembles of opportunity’ because they make use of what is available rather than an ensemble explicitly constructed to sample the uncertainty in the problem. If the error covariance among the models were known then a mean weighted by the inverse error covariance would be the best approach. However, the same is not true when the true error covariance is approximated with a sample covariance: in this case a simple composite may be more accurate. An analysis suggests that an improvement over the composite mean can be obtained by using a robust and conservative estimate of the error covariance derived by enforcing sphericity on the covariance sub-space spanned by statistically insignificant eigenvectors of the sample covariance.