



Intermodel Variability of the Poleward Shift of the Austral Jet Stream in the CMIP3 Integrations Linked to Biases in 20th Century Climatology

Joe Kidston (1) and Edwin Gerber (2)

(1) Princeton University, Princeton, USA (joekidston@yahoo.co.uk), (2) New York University, New York, USA (gerber@cims.nyu.edu)

Future climate predictions by the global circulation models in the Coupled Model Intercomparison Project Phase 3 (CMIP3) archive indicate that the recent poleward shift of the eddy-driven jet streams will continue throughout the 21st century. Here it is shown that differences in the projected magnitude of the trend in the Southern Hemisphere are well correlated with biases in the latitude of the jet in the simulation of 20th century climate. Furthermore, the latitude of the jet in the model's 20th century climatology is correlated with biases in the internal variability of the jet stream, as quantified by the time scale of the model's annular mode. Thus an equatorward bias in the position of the jet is associated with both enhanced persistence of the annular mode, and an increased poleward shift of the jet. This suggests that the fidelity of a model's simulation of the 20th century climate may be related to its fitness for climate prediction. The cause of this relationship is discussed, as well as the implications for climate change projections.