Geophysical Research Abstracts
Vol. 15, EGU2013-5380, 2013
EGU General Assembly 2013

The representation of the zonal-mean tropical circulation and its variability in GCMs.

Thomas Toniazzo
University of Reading, Meteorology, Reading, United Kingdom (t.toniazzo@reading.ac.uk)

CMIP5 models suffer from a systematic bias in the representation of the meridional distribution of surface winds (Bracegirdle et al. 2013). In this paper, we investigate the mean characteristics and the intrinsic variability of the Hadley circulation in GCM integrations. The mean and the joint variability of atmospheric zonal-mean water, heat and momentum transport is considered in idealised integrations of varying complexity and in CMIP-type fully coupled integrations. Taking the Global Wind Oscilllation paradigm of Weickmann and Berry (2008) as a starting point, our analysis aims at understanding the sensitivity of the representation in GCMs of the Hadley cell to tropical convection, its relation with mid-latitude exports, and the respective roles of SSTs, land-mass distribution, orography, and air-sea coupling in determining its mean and variability.