

Response of global tropical cyclone frequency to a doubling of CO₂ and a uniform SST warming - a multi-model Intercomparison

M. Zhao, G. Vecchi, E. Scoccimarro, S. Gualdi, H. Wang, A. Kumar
Y-K Lim, S. Schubert

We explore the global TC frequency response to a doubling of atmospheric CO₂ concentration and a uniform SST warming simulated by the GFDL HIRAM, CMCC ECHAM5, NCEP GFS and NASA GEOS5 model. All models produce a significant reduction in global TC frequency when both SST warming and CO₂ increase are applied simultaneously. However, when the two forcings are separated the models produce more divergence in response to individual forcing. In the case of CO₂ increase, 3 of the 4 models exhibit significant reduction with the GFS model producing insignificant change. In the case of SST warming both HIRAM and GFS show significant reduction while the other two models display insignificant changes. We explore possible reasons which may explain the different response among the models.