



Impacts of the Atlantic Equatorial Mode in a warmer climate

Elsa Mohino (1) and Teresa Losada (2)

(1) Universidad Complutense de Madrid, Madrid, Spain (emohino@fis.ucm.es), (2) Universidad Complutense de Madrid, Madrid, Spain (tldoval@fis.ucm.es)

The main source of Sea Surface Temperature (SST) variability in the Tropical Atlantic at interannual time scales is the Equatorial Mode or Atlantic El Niño. It has been shown to affect the adjacent continents and also remote regions, leading to a weakened Indian Monsoon and promoting La Niña-type anomalies over the Pacific. However, its effects in a warmer climate are unknown.

This work analyses the impact of the Equatorial Mode at the end of the 21st Century by means of sensitivity experiments with an Atmosphere General Circulation Model. The prescribed boundary conditions for the future climate are based on the outputs from models participating in the Coupled Model Intercomparison Project – Phase V.

Our results suggest that even if the characteristics of the Equatorial Mode at the end of the 21st Century remained equal to those of the 20th Century, there will be an eastward shift of the main rainfall positive anomalies in the tropical Atlantic and a weakening of the negative rainfall anomalies over the Asian monsoon due to the change in climatological SSTs. We also show that extratropical surface temperature anomalies over land related to the mode will change in regions like Southwestern Europe, East Australia, Asia or North America due to the eastward shift of the sea level pressure systems and related surface winds.