



A cool Southwest Indian Ocean connection to El Niño events

Claudia Wieners (1), Iris Manola (2), Wim Ridderinkhof (1), Henk Dijkstra (1), Anna von der Heydt (1), Benjamin Kirtman (3), Frank Selten (2), and Wilhelmus de Ruijter (1)

(1) Institute for Marine and Atmospheric research Utrecht, Department of Physics, Faculty of Science, Utrecht University, Netherlands, (2) Royal Netherlands Meteorological Institute, De Bilt, Netherlands, (3) Rosenstiel School of Marine and Atmospheric Science, University of Miami, Miami, Florida

Recent studies have shown that anomalously high sea surface temperatures (SST) in the southeastern equatorial Indian Ocean (IO) can influence early El Niño development by modulating the winds over the western Pacific. We have collected observational evidence for a dynamic connection between relatively cool SST developments in the southwestern Indian Ocean and the following years' El Niño. These cool anomalies appear over the so-called Seychelles thermocline Dome. Depending on strength and timing they generate a fast atmospheric response by stimulating an Indo-Pacific atmospheric bridge that leads to enhanced convection over the western Pacific. The slow oceanic response involves a pathway of upwelling Rossby and Kelvin waves that propagate towards and across the equator.

We will present the first results of a series of dedicated climate model experiments. They were designed to stimulate the response of the coupled system to the SST cooling using a global climate model. First results seem to support the observational analysis.