



Simulation of El Niño Modoki in the INM_CM5 model.

Polina Afonina and Dariya Gushchina

Lomonosov Moscow State Lomonosov University, meteorology and climatology, Moscow, Russian Federation
(info@geogr.msu.ru)

Simulation of El Niño Modoki in the INM_CM5 model.

Afonina P., Gushchina D.

Lomonosov Moscow State Lomonosov University, geographical faculty, department of meteorology and climatology.

It is well known that El Niño statistics exhibits variations on decadal timescale. The properties of El Niño exhibited changes before and after the late 1970s, but another shift of ENSO characteristics was observed more recently, during the late 1990. Concomitantly recent studies has argued the existence of two types of El Niños: the canonical El Niño which is characterized by SST anomalies located in the eastern Pacific and so-called central Pacific El Niño (also termed the dateline El Niño, El Niño Modoki or warm pool El Niño) with anomalous SST shifted toward the dateline and cooler water located to the east and to the west. Moreover some observation and modeling studies demonstrated that the ratio of Modoki El Niño versus canonical event has significantly increased during the last decade. Taking into account the fact that El Niño dynamics is tightly linked to equatorial ocean mean state this raise the question of whether the observed global warming may be responsible for such modification of El Niño phenomenon and whether the future climate change may influence the ENSO “flavors”.

The full physics coupled model INM-CM5 was used to simulate the various climate scenarios and estimate the ENSO modulation under the global warming conditions.

Firstly the evolution of atmosphere circulation associated to two types of El Niño was analyzed. It is shown that INM model is capable to reproduce the two types of El Niño both in the atmosphere and ocean. Then the 2CO₂ experiments were carried out and modification of ENSO characteristics is evidenced.