



Atmospheric circulation remote response during two types of El Niño in changing climate

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The ENSO is the general mode of interannual climate variability. Studies of the last decade revealed that there are two different types of El Niño (Central Pacific and Eastern Pacific), and the effect of these two phenomena on atmospheric circulation differs significantly [Ashok et al., 2007; Weng et al., 2009; Zheleznova and Gushchina, 2015; Zheleznova and Gushchina, 2016]. This study investigates the changes in characteristics of the remote response on two types of El Niño in the context of climate warming in the 21st century, using CMIP5 climate models data.

The ability of CMIP5 coupled ocean-atmosphere general circulation models (CGCMs) to simulate two flavors of El Niño was estimated in preliminary researches [Matveeva and Gushchina, 2015; Zheleznova et al., 2015]. It was shown that only 14 of the 20 CGCMs realistically reproduce SST anomalies distinctive for two types of El Niño. Further research carried out among these models have shown that only three CGCMs are capable to reproduce features of the response of the global, regional and vertical atmospheric circulation on the two flavours of El Niño. These CGCMs are MIROC 5, GFDL-ESM2M and CESM1-CAM5.

Changing remote response features under climate change (based on the RCP group of experiments) was assessed on the basis of the data of these CGCMs. It was noted a general weakening of the remote response intensity, reducing its duration, as well as explore its change depending on the "rigidity" of the experiment.

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