



ENSO events are induced by the Global Atmosphere Oscillation

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The large-scale anomalies in the planetary fields of the principal hydro-meteorological characteristics were found to appear prior the beginning and during the main phase of the El Niño - Southern Oscillation (ENSO) phenomenon in the Pacific Ocean. The anomalies were interpreted as manifestation of the interannual Global Atmosphere Oscillation (GAO) in dynamics of the modern climatic system. The key feature of the GAO baric structure is a large-scale positive anomaly in tropical area (30N-30S, 50W-170E) surrounded by negative anomaly bending its outer boundaries. Eventually, such reconstruction of the atmospheric pressure field over tropical zone as a consequence of the GAO leads to Walker circulation cell reversal which is immediately followed by the next El Niño process starting. Spatio-temporal structure of the anomalous hydro-meteorological fields developing under impact of the GAO was analyzed using the monthly-mean atmospheric pressure data at sea level (HadSLP2) and near-surface temperature (CRUTEM4) prepared by GB Met Office Hadley Centre for period of 1948-2012, also we used wind data from US NCEP/NCAR reanalysis for the same period.

Due to the presence of feed-forwards and feedbacks in the climate dynamics, the large-scale anomalies of characteristics appearing after the GAO cause their back effect on the system of interaction of the ocean-atmosphere-land. This is the secondary impact which can be implemented either by direct exchange of properties between the adjacent areas (this is seen most explicitly in the Indo-Pacific Region), or owing to teleconnections between the concrete climatic subsystems in different parts of the Earth. It is apparently that the secondary, or indirect, GAO impact spreading through the system of general atmospheric circulation has a certain phase shift in different areas, which depends first on the distance from the respective climatic anomalies, in particular, from the most intensive of them, appearing in the equatorial zone of the Pacific. From here the hypotheses was suggested that the whole known complex of events related to the ENSO phenomenon in the Pacific is a consequence and a regional link of the general planetary structure of the GAO.