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Coastal oceanography

The Assessment Of Impact Of Atmospheric Processes On The Caspian Sea

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The main reason for oceanic water circulation is the uneven distribution of flows of heat and moisture across the ocean surface. Water dynamics in mediterranean seas is mainly conditioned by spatial – temporal variability of fields of wind and atmospheric pressure. It is difficult to estimate the amount of motion the atmosphere passes on to the water column in retrospect. The solution of this problem is important for the study of long-term variability of productivity and quality of the marine water, taking into account that kinetic energy of water masses serves as an energy flow for biological processes. This problem is especially vital for the Caspian Sea, which ecosystem functions mainly due to vertical and horizontal water circulation because of poor stratification. If there are no available meteorological observations which can be used as an index of amount of motion the atmosphere passes on to the water column, we offer to use dispersion or peak-to-peak fluctuation of the sea level calculated for every month (data on the sea level are available starting from 1900). If there are meteorological observations available to solve this task we can use the data on wind speed and atmospheric pressure at the sea level within principal synoptic terms (00, 06, 12, 18). On the basis of these data average wind speed, and latitudinal and meridional gradients of atmospheric pressure are calculated for the sea as a whole and its separate parts (North, Middle and South Caspian). The calculated data are later summarized for periods which length can vary depending on the research objectives. Hydrological and meteorological parameters of impact of atmospheric processes on the Caspian Sea well correlate with each other. Keywords: Caspian Sea, atmospheric processes, water circulation, productivity, water quality