

Study of variations in physical parameters in the southern coastal waters of the Caspian Sea

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Abstract

The southern coastal areas of the Caspian Sea play important role for using marine resources of the sea. According to the importance of the monitoring and gathering good data about the above mentioned area, study on physical parameters and characteristic was considered. Variations of physical parameters in the southern coastal waters of the Caspian Sea was studied based on the field measurements. In addition, forming and destructure of thermocline and pycnocline, and stability of water column were evaluated. Field investigations were carried out by CTD profiling in the coastal waters of Nowshahr port and Anzali and Torkmen areas. Measurements were conducted on fixed sampling stations. Data collections in March, April, May, June, August, September, October 2014 January and February 2015 were performed.

Results showed that the sea surface water temperature ranged between 9 and 30°C, approximately in the southern coastal waters during the year. Stratification in the water column in the southern coastal waters of the Caspian Sea starts early spring with gradual warming of the air in the region, and then it reached to the strongest situation in the middle month of summer. Destruction of thermal stratification in water column was occurred during late autumn to winter. The most variations of physical properties of seawater were occurred across the upper 100 m layer. A seasonal thermocline was detected with 30 m thickness between 20 and 50 m depths in summer. Vertical density variation, considering small vertical salinity variations, was highly correlated with vertical temperature variations. The vertical

variations of water density was agreed with the variations of temperature in water column, and a strong pycnocline layer was observed at the location of the thermocline layer. Measured water salinity in the coastal waters of Turkmen port in February was more than that in May.

Keywords

Caspian Sea, Physical Parameters, Temperature, Stratification, Physical Structure, Water Column.