

عنوان مقاله:

Spatial and temporal variations of the electrical conductivity and magnetic field of the Caspian Sea using Princeton Ocean Model

محل انتشار:

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خلاصه مقاله:

In this study, changes in the magnetic field and electrical conductivity across the Caspian Sea Basins were investigated using the Princeton Ocean Model (POM). In this model, bathymetry, temperature and salinity and atmospheric flux data were collected from GEBCO⁰⁸, WOA and ECMWF databases, respectively. This model was implemented for ten years (۲۰۰۹-۲۰۱۹), and temperature, salinity and current velocity were extracted from the model output to calculate the electrical conductivity and simulate the magnetic field anomalies of the Caspian Sea. The calculated electrical conductivity indicates that the dominant factor in electrical conductivity was temperature. In the study area, the highest and lowest electrical conductivity were in the southern Caspian basin (SCB) with a value of ۲.۳ S/m in summer and in the northern Caspian basin (NCB) about ۰.۸ S/m in autumn. Also, the results show the highest and lowest magnetic fields in the SCB were ۱۶ nT in March and ۱۲ nT in November, respectively. The distribution of magnetic field anomalies with different values in the middle Caspian basin (MCB) can also be observed for all months. According to the results, the dominant factor in the magnetic field anomalies is the current velocity, which has the most effect on the magnetic field in the western part of the Caspian Sea.

کلمات کلیدی:

Magnetic field anomaly, Electrical conductivity, Electromagnetic Induction, POM model, Caspian Sea

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