P45. SITE-SPECIFIC EQUATIONS OF STATE FOR COASTAL SEA AREAS AND INLAND WATER BODIES

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This article presents a new method of laboratory density determination and construction equations of state for marine waters with various ionic compositions and salinities was developed. The validation of the method was performed using the Ocean Standard Seawater and the UNESCO thermodynamic equation of state (EOS-80). Density measurements of water samples from the Aral Sea, the Black Sea and the Issyk-Kul Lake were performed using a high-precision laboratory density meter. The obtained results were compared with the density values calculated for the considered water samples by the EOS-80 equation. It was shown that difference in ionic composition between Standard Seawater and the considered water bodies results in significant inaccuracies in determination of water density using the EOS-80 equation. Basing on the laboratory measurements of density under various salinity and temperature values we constructed a new equation of state for the Aral Sea and the Black Sea water samples and estimated errors for their coefficients.