

Investigation of current Eustasy absolute value by the shore sea level observing system

G. Metreveli^a, N. Tsivtsivadze^b, M. Goginava^c, R. Diasamidze^d, M. Beridze^d

e-mail: giorgi.metreveli@tsu.ge

^{ab} 3, I.Chavchavadze ave., Tbilisi, Georgia, Tbilisi State University;

^c55, Zeragia st., Poti, Georgia, Oceanography station,;

^d51, Rustaveli st., Batumi, Georgia, Oceanography station

The current climate eustasy (E_c mm/year) is the World Ocean (WO) level secular rise due to WO waters thermal expansion and shift of the freshwater balance between WO and Earth.

A study E_c can be performed using a statistical series of mean sea levels, as they are most informative about the current process. Statistical series with duration of ≥ 100 years contain information before and in the period of the eustasy. Such series should be divided in two fragments – in the first $E_c < 0$, in the second $E_c > 0$ and every from each must be analyzed separately.

Therefore, it is necessary to create new and improve the proven methods in order to obtain from the series new information of sea surface rise relative to its initial position (absolute eustasy- E_a), as well as to the shore (relative eustasy- E_r). These problems solving is complicated by the fact, that measuring systems, installed on the shores, exposed to a secular vertical movement together with the Earth. Due to the last, their indications contain an error, equal to the land' movement velocity C (mm/year). Therefore, for calculation of E_c value it is necessary to use the below given relations:

$$E_{Ca} = E_{Co} + C, \quad \text{for elevating shore (1)}$$

$$E_{Ca} = E_{Co} - C, \quad \text{for sinking one' (2)}$$

From these relations the following important conclusions can be made:

1. $E_{Ca} > 0$ and cover all region of the WO;
2. If the analyze of statistical series shows that the tendency of process development is neutral, values of E_r and C are equal, $E_{Ca} = C$.
3. In the regions with high glacioisostatic movement $E_{Ca} > 0$, but where $C > E_{Ca}$, imaginary sea level reducing, due to $C > E_c$, is observed ;
4. The most exact calculation of the WO current E_c is possible by the using of E_{Ca} local values.