

POTENTIAL ENERGY ANOMALY AND HEAT DISTRIBUTION IN THE GULF OF TRIESTE (NORTHERN ADRIATIC) DURING THE SPRING-AUTUMN PERIOD

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The distribution of Potential Energy Anomaly -PEA- (ELLIOT and CLARKE, 1991) and heat content of the Gulf of Trieste were deduced from the thermohaline structure recorded in the frame of the Alpe Adria project from 1991 to 1993.

In the northern shallower part of the Gulf of Trieste, where the depths are less than 10 m, the PEA reaches higher values than those in the southern part of the gulf due to the spring and autumn pronounced riverine outflows. During the spring-autumn period the only efficient agent for mixing the water column is the wind. Estimations of mixed areas are obtained from charts of PEA distribution calculated at several depths and from wind data. In periods of low wind intensity the energy supplied by wind may not be sufficient to mix the surface part of the water column.

In periods of pronounced peaks of riverine discharge the surface part of the water column is almost in geostrophic equilibrium and other nonlinear terms together with the term of local acceleration in the equation of motion may contribute up to 10% of Coriolis term. Therefore, the first approximation of water transport based on a stationary geostrophic equilibrium sounds reasonable. The procedure for the calculation of the barotropic and baroclinic components of volume transport is developed. The barotropic component depends on the horizontal gradient of vertically averaged density, while the baroclinic component is proportional to the gradient of PEA. The relation between the PEA and the JEBAR term (MERTZ and WRIGHT, 1992), which plays a role in a depth-averaged vorticity equation, is also analyzed.

REFERENCES

- ELLIOT A. J. and CLARKE T., 1991. Seasonal stratification in the northwest European shelf, *Cont. Shelf Res.*, 11: 467-492.
MERTZ G. and WRIGHT D.G., 1992. Interpretation of the JEBAR term, *J. Phys. Oceanogr.*, 22: 301-305.