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WATER CHARACTERISTICS IN THE SICILY CHANNEL

M. ASTRALDI°, G.P. GASPARINI and G.M.R. MANZELLA
° Stazione Oceanografica, CNR, Forte S. Teresa,
Pozzuolo di Lerici (Italia)

Hydrological measurements performed during November 85 and March 86 permitted to define some characteristics of the surface and intermediate waters in the Sicily Channel.

A comparison with the hystorical data showed a low variability of the characteristics of the intermediate water accompanied by a significant seasonal change of the fluxes.

The surface water presented a very high variability due to horizontal movements or eddies related to wind forcings and a seasonal deepening.

Cross channel oscillations seem related to wind forcing too, but Levantine water was never found on the Sicilian shelf as supposed in previous work.

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THE STRAITS OF GIBRALTAR, POSSIBLE LOCATION FOR A LARGE TIDAL POWER STATION OPERATED BY TIDAL CURRENTS

Felix CANADA

In continuation of a paper published by us in 1979 on the two great currents which superimposed and inverted now circulate in the Straits of Gibraltar, as a possible and important energy source (which , after introducing some modifications to the schemes of the project, has since been proposed to various auditoria in several countries), it is proposed to utilise the tidal currents generated by the Atlantic tide in the area of the Straits, to drive a large tidal power station, the theoretical energy production of which would far exceed 10^{12} kWh per year.

For this it would be necessary to build a dyke some 40 km long, using a modular system of construction, to house some 12,000 large turbines and their corresponding gates.

The two currents circulating at present , the surface Atlantic and deep Mediterranean, the sum of the volumes of which is estimated at some 2.35×10^{6} m^3/s (a consequence of the fact that evaporation in the Mediterranean exceeds the contributions received by some 7×10^{4} m^3/s and the fact that salinity in the Mediterranean is constantly increasing) would be substituted by alternative currents derived from the Atlantic tide, the flows of which would very between 10^{7} and 1.7×10^{7} m^3/s throughout a semi-period of tides.

Calculations are made which determine the flow rates which could be used through the Straits in the course of a tidal cycle, after the construction of the dyke, and its influence on the Mediterranean tides, and also the theoretical energy developed in a year. The possibility of increasing the flow rate of the currents and the energy produced by them is also mentioned, by widening the channel of the Strait. The serious technical problems to be solved for the realisation of the project, and the geopolitical problems that could arise, are considered. An estimate of the cost of the works is made.