

## Volume flux measurements in the Bosphorus using an acoustic doppler current profiler

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The exchange of waters between the Black and the Mediterranean Seas takes place through the Strait of Bosphorus. The inflow to the Black Sea through the lower layer has been found to occur essentially on a continuous basis through the year (LATIF *et al.*, 1991), and based on long-term salinity data the volume fluxes have been determined as 612 km<sup>3</sup>/yr for the upper layer and 310 km<sup>3</sup>/yr for the lower layer (UNLUATA *et al.*, 1990). Direct measurements of the flows in the two layers have been carried out utilising an acoustic doppler current profiler (ADCP). The series of measurements, which commenced in April 1991, have indicated that the volume flux in each layer varies in a wide range, both seasonally and in response to the prevailing meteorological conditions at the time of the measurements. High values of the outflow from the Black Sea, corresponding to about 700 km<sup>3</sup>/yr, were observed in April and August, while the maximum values of the inflow to the Black Sea, corresponding to about 350 km<sup>3</sup>/yr, were observed in October. The lowest discharge values in either layer were between 50-100 km<sup>3</sup>/yr. The surface flow velocities in the northern entrance of the Strait are typically about 20-50 cm/s (Fig. 1). The velocities increase towards the south, due to the shallowing of the interface. Particularly high velocities, of about 150-200 cm/s, exist in the constriction region in the southern part of the channel.

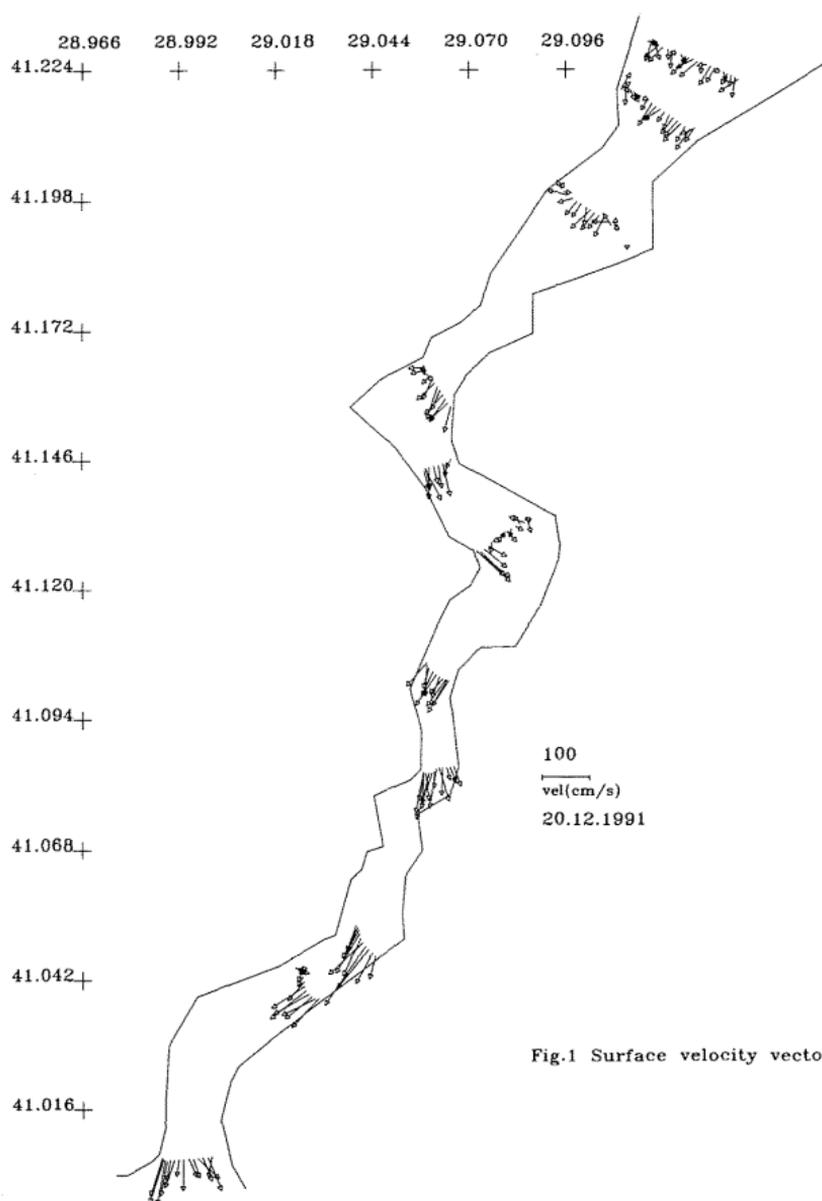


Fig.1 Surface velocity vectors

### REFERENCES

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UNLUATA U., OGUZ T., LATIF M.A. and OZSOY E., 1990.- On the physical oceanography of the Turkish Straits, in: *The Physical Oceanography of Sea Straits*, L.J.Pratt, editor, NATO ASI Series, Kluwer, Netherlands.