Residual Currents in the Northern Adriatic over the Year-long Season

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Sea currents in the northern Adriatic (particularly along the west Istrian coast, Croatia) were frequently measured, at different positions, and in different seasons (KONRAD, PRECALI ed., 1985-1991). Because of specific purposes (ORLIC, 1988; CEROVECKI, 1991) these measurements were usually carried out for one to two months continuously. We were interested in the residual currents variability over the year-long season. Therefore, in May 1989 we started to measure continuously sea currents at one position of the northern Adriatic.

The position of the fixed station (A) was φ=44° 47.27' N, λ=13° 30.00' E (15 NM west of Pula in Istria, 43 m depth).

Measurements were made in the surface (6 m) and bottom layer (37 m) by AANDERAA RCM-4 current meters. The sampling interval was ten minutes.

After decoding of data, twelve hours average values of u and v (i.e. E, N) components were found, and then the five day-moving average was made. In effect this was an equivalent to apply one low-pass filter on the time series data. To express the results of these procedures it is very suitable to plot a progressive vector diagram - hodograph of the residual currents during an one year period. We chose the year 1990, of the surface layer of a considerable station, and the progressive vector diagram hodograph is given in Fig. 1.

We must notice that the thin dot line in Fig. 1. corresponds to the intervals with no measurement data. Because of some technical disturbances during the measurement period (damages of rotor, loosing instruments, etc.) some gaps in the time series exist. We fulfilled the missing data with the curve got by the following method: In every missing data period we interpolated the velocity vectors with the average value of the velocity in the periods of the same duration before and after of the missing data period. (The reason for the use of this method of interpolation was the analysis of intensity of the current vectors during the whole period).

An analysis of the global flow i.e. long-term current variabilities (in the northern Adriatic) could be very important for the analysis and explanation of many annual and long-term processes, for example: for bio- and eutrophication cycles as well as for transport and long-term sedimentation processes.

The long-term variation of the residual currents of the bottom layer and for other periods when the currents were also measured will be presented at the October's ICSEM session.

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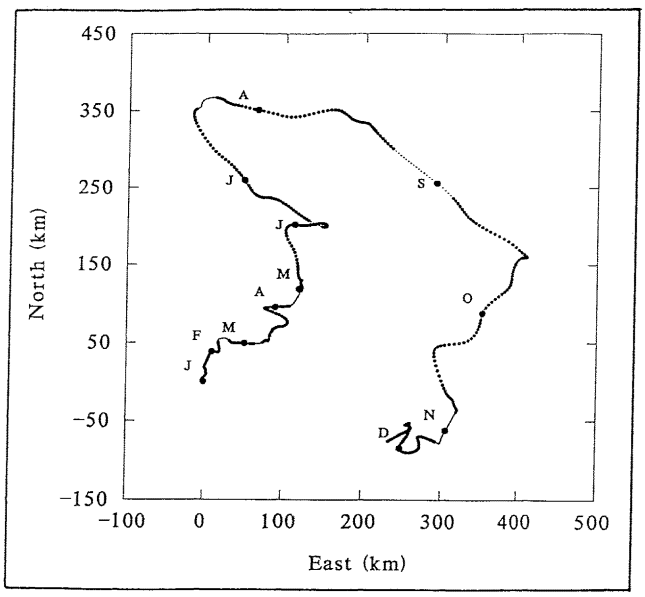

Figure 1. Progressive vector diagram - hodograph of the residual currents in the surface layer at station A.

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