

Some observations on the relationship between wind and currents in the North Adriatic*

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In the period 1978–1982, winds and currents were measured in the North Adriatic from the platform "Panon".

The platform changed position several times in that period so that the depth over which it was placed ranged from 40 to 70 m. Residual flow shows clearly that the wind has much stronger influence on the current field during the winter than during the summer.

Signal in the current field induced by the bora wind is the most prominent. Along the north coast of the basin and at the southern boundary bora-induced flow is in a down-wind direction. The vertical shear is small. During summer, large part of the wind energy is transferred to inertial oscillations which show two-layer vertical structure. Generally speaking, summer is characterized by the weak bora-wind forcing, and consequently residual currents induced by the wind are poor. Therefore data from the winter period when the platform was located in the northernmost part of the North Adriatic have been chosen for the analysis of the relationship between wind and currents. Some previous analyses showed that the wind-induced signal in the current field became stronger than the background noise for the wind speeds over 5 ms^{-1} .

For the analysis of wind-current relationship only wind events with the wind speed over 5 ms^{-1} have been chosen. For these situations linear correlation coefficient between the wind speed and surface current is very high. The ratio of wind speed to current is in good agreement with the values found in some other areas. Between the surface and mid-depth the shear is much greater than the shear between the middepth and bottom layer.

The duration of the bora wind is several days, but it changes speed rapidly because it is a typical gusty wind. During the wind speed increase the current speed increases linearly as a function of wind speed for the interval from 5 to 11 ms^{-1} . During the wind speed decrease the change in the current speed is not proportional to the wind speed changes. Some of the energy left in current field is probably associated with the geostrophic motion in balance with the sea surface slope.

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