Geophysical Research Abstracts, Vol. 8, 09601, 2006
SRef-ID: 1607-7962/gra/EGU06-A-09601

Mesoscale surface circulation in the Black Sea: satellite observations

M. Blokhina (1), YA. Afanasyev (1)

(1) Memorial University of Newfoundland, Canada (marina@physics.mun.ca)

The circulation in the Black Sea is characterized by a strong basin-wide cyclonic current along the shore known as the Rim Current, which exhibits important mesoscale transient features such as meanders, intense jets, eddies and filaments triggered by baroclinic instabilities. A new method is developed to infer the velocity field and its variability by analyzing series of subsequent satellite observations of the sea surface temperature made by NOAA AVHRR during 2000-2002 years. The analysis is based on the Maximum Cross Correlation (MCC) and Particle Image Velocimetry (PIV) methods. The application of these two techniques to the Black Sea reveals the large scale dynamic features of the circulation, as well as many details of mesoscale vortical activity. Analysis of the instantaneous velocity and vorticity fields further reveals a distinct seasonal variability of the circulation and provides the means to estimate important characteristics of the variability of the Black Sea such as basin-integrated kinetic energy, number of eddies, and fluctuation of the Rim Current width.