



Satellite information and NCEP / NCAR reanalysis application for the analysis of cyclonic activity in the Mediterranean-Black Sea region

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The aim of the research is to verify the regional characteristics of the parameters of cyclones in the Mediterranean-Black Sea region calculated on the basis of NCEP/NCAR reanalysis data sets by the satellite data for the further study of climate variability of cyclonic activity.

The following data sets for the Black Sea and Mediterranean region were used in the study.

NCEP/NCAR reanalysis data sets on the 1000 hPa geopotential height on $2,5 \times 2,5^\circ$ grid in 1948 – 2008 were used to detect cyclones and calculate their parameters (frequency, number of days with cyclones and area). The specific methodology (after Bardin, 1995) was applied.

Meteosat 2 – Meteosat 8 satellite images in the visible and infrared ranges from the EUMETSAT archive for 1996 – 2008 were used too. To detect cyclones and their parameters (frequency, square, etc.) the specific hardware-software complex was created (Ratner, et al., 2011).

Results and conclusions.

In the result of comparison of data sets of the parameters of cyclones estimated on the basis of NCEP/NCAR reanalysis and satellite images their good matching was found. In particular it was shown that the average number of days with cyclones in January by reanalysis is 6 days less than by satellite images; the corresponding area of cyclones is 1,084 million square km less. So, the correction coefficients for the data sets by NCEP/NCAR reanalysis were estimated for the each month in the different parts of the studied region. The attention was put on the significant overestimates of the calculated winter frequency of cyclones in the south-eastern part of the Mediterranean-Black Sea region. These overestimates occur probably due to the insufficient quality of the pressure field data over the deserted parts of the mainland.

Thus, it is possible to conclude that NCEP/NCAR data sets is quite good for the analysis of low-frequency variability of cyclonic activity in the Black Sea and Mediterranean region after their temporal-space correction.