



Dynamics of large-scale atmospheric circulation over Siberia using NCEP/DOE AMIP-II reanalysis data and synoptic maps

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In this paper a comparative analysis of cyclones and anticyclones characteristics, which defined circulation conditions over Siberia (50-70°W, 60-110°N) in the period of 1976-2011 was carried out using synoptic maps and NCEP/DOE AMIP II reanalysis data.

The analysis has shown the ambiguous relationships in the results of the comparison. The number of cyclones and anticyclones, obtained from synoptic maps exceeds on an average by 1.2 times the number of pressure formations, determined from reanalysis data. This tendency is, probably, due to the fact that in general NCEP/DOE AMIP-II reanalysis data, like other reanalysis datasets, represents large pressure systems better than small systems. Such result is in a good agreement with studies of other authors.

The pressure in the cyclonic centers varies from 996.7 to 1006.0 hPa using synoptic maps and from 992.4 to 1000.3 hPa using reanalysis data. As for anticyclones the pressure in the centers varies from 1026.3 to 1034.2 hPa and 1022.9-1028.1 hPa according to synoptic maps and reanalysis data, respectively.

The average pressure in the cyclonic centers for the period of 1976-2006 was 1000.9 hPa ($\sigma = 2.0$ hPa) according to synoptic maps, and 996.6 hPa ($\sigma = 1.9$ hPa) according to reanalysis data. The average pressure in the anticyclonic centers was 1029.9 hPa ($\sigma = 1.8$ hPa) and 1026.0 hPa ($\sigma = 1.4$ hPa), respectively. Therefore, cyclones, obtained by synoptic maps, are not deep and anticyclones are more intensive in comparison with pressure formations from reanalysis data.

The average annual number of days with cyclones over the territory of under study is less than that with anticyclones, i.e. during the period of 1976-2006 anticyclonic weather conditions dominated over cyclonic circulation, and there is a tendency of increase in the number of days with anticyclones by the end of the period of under study over Siberia.

In conclusion we can say that after this comparative analysis an objective representation of intra- and interannual variability was obtained in the frequency and other characteristics of pressure formations, which defined climatic conditions over Siberia in the period of 1976-2006 using synoptic maps and NCEP/DOE AMIP-II reanalysis data.