



Manifestation of climate change and variability in inequality of precipitation in the Ukraine

O. Vyshkvarkova, A Polonsky, and E. Voskresenskaya

Marine Hydrophysical Institute of National Academy of Sciences of Ukraine, Sevastopol, Ukraine (aveiro_7@mail.ru)

The aim of presentation is to study the typical daily precipitation inequality over the Ukraine and discuss its space-time change and variability associated with global climatic processes.

Daily data on precipitation from 12 hydrometeorological stations of Ukraine in XX-XXI centuries were analyzed. The method based on Gini index or concentration index (CI) was used for estimation of inequality of frequency distribution of daily precipitation. In our case, CI characterizes the contribution of heavy rainfall to the total precipitation. At the same time, the standard statistical methods were used for analysis too. CI spatial distributions and trends were analyzed for annual values, each month (from January to December), winter (DJF) and summer (JJA) seasons using the data for each station. The spatial CI distribution over the Ukraine demonstrates the differences of CI space patterns for different periods of XX-XXI centuries. Trends of annual CI are negative (about $-0,0005/100$ years) for the most subregions of the country, including the Carpathians, forest and forest-steppe zones. However, the CI trends are positive in the steppe regions of Ukraine. They increase towards the south and reach $0,0003 /100$ years in the seaside of the Crimea. In summer, over the most territory of Ukraine (except the steppe zone) CI trends are much smaller than in winter. The opposite situation is in the southern regions. In summer, contribution of the heavy precipitation to the total amount of precipitation is 2-3 times is more than in winter.

In addition to century-scale CI changes, there is strong interannual and decadal CI variability. Decadal-scale variations of CI exceed the trend like changes at the most stations. This demonstrates the importance of natural processes in the coupled ocean-atmosphere system for the regional precipitation inequality in XX-XXI centuries.