

## Homogeneity analysis of air temperature and wind speed records of the Azov-Black sea region

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In the study a homogeneity of long-term hydrometeorological data series of monthly air temperature and wind speed was tested using routine observations at thirteen sea coast stations of the Azov-Black Sea region for the whole period. Test for time-series homogeneity was carried out by method introduced by Wang et al. who used penalized maximal t - and F-tests to detect mean value shifts in the data with lag-1 autocorrelation. The method is implemented as a recursive testing algorithm within RHtestsV3 package for R software environment for statistical computing and graphics. Detection of inhomogeneity by means of RHtestsV3 was carried out in the mode “with a reference series” for monthly air temperature and in the mode “without a reference series” for monthly wind speed. As a result, inhomogeneity shifts supported by metadata were detected and adjusted. The main sources of heterogeneity of meteorological observations are as follows: meteorological site relocation, changes in instrument exposure due to urbanization, changes in instrument mounting and sheltering, changes in type of the instrument and terms of observations. Only 3 among 13 stations have homogeneous data series both for air temperature and wind speed. For all the rest stations, only homogeneous data series more accurately reflect climate change dynamics general for the Azov-Black Sea region. Therefore, application of adjusted climatic data series instead of initial one is reasonable for inference making about climatic tendencies in the region under study and is necessary stage of climate treatment. The validity of ready-to-use algorithm was confirmed enabling RHtestsV3 introduction into climatological datasets processing.

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