

Kireeva M., Frolova N, Rets E., Telegina E.

Hydrological regime fluctuations and its dangerous consequences for the rivers of European part of Russia

Extreme hydrological events on the rivers of European part of Russia are closely related to the transformation of the hydrological regime due to the recent climate changes. Rivers in this region used to be traditionally attributed to the Eastern-European type with well-pronounced seasonal flood wave and quite low flow period. Currently, the ratio between runoff in different periods of the year is changing dramatically. Statistical and spatial analysis of data from 300 gauging stations shows, that these changes are represented by an increase in low flow and a reduced runoff during high-water period. The decline of seasonal flood is most evident in those regions where the low flow period runoff is growing the most. The main goal of this work was to determine the impact of water regime changes on the occurrence of extreme hydrological events. It should be noted that according to the calculations arising now extreme hydrological events are not exclusive. During the period of long-term observations, there are cases of deeper water shortages. All the rivers of the European part of Russia is characterized by a reduction of scarce periods. For the Volga and the Don River basin real deficits in general no longer occur since 1975-77 years mostly. For the Northern Rivers and Kama basin frequency and severity of extreme high water periods increases, while for the south and center of the European part of Russia, by contrast, is reduced.