Stochastic models of time series and fields of daily precipitation sums

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In the work some questions associated with stochastic simulation of time series, spatial and time-spatial fields of daily precipitation sums for uniform grid and for not uniform grid with regards to observation data are considered. Some different models are considered. For example for not uniform grid or for weather-station system models are constructed taking into account the heterogeneousness of fields. For uniform grid the approximation by homogeneous field are considered. Models are based on nonlinear transforms of Gaussian series and field. In parameters of models are univariate distributions of precipitation sums, correlation matrixes and correlation functions of indicator processes and fields and also spatial correlations of precipitation sums under condition of their fall out. The accuracy of estimates and reproduction accuracy required input characteristics in models are investigated. As approximation for univariate distributions of precipitation sums the cubic polynomials are used in combination with spatial functions for approximation for tail of distribution. The model verification are carried out for test characteristics which are not in parameters of model. These characteristics are estimated with the help of real data and with the help of modeling realizations. Becoming results of comparison of these estimations are presented in the work. On basis of the models some statistical properties of precipitation extremes are investigated.