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Changes in precipitation variability in Croatia for 1951-1980 and 1981-2010 periods

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The precipitation variability, i.e. the inter-annual changeability of precipitation amount, is one of the most significant features of precipitation. The precipitation variability has a great impact on Croatian economy – mainly on the tourism sector on the coast and on the agriculture in the eastern part of the country. Therefore, the analyses of the features of precipitation variability and its long-term changes are of great importance for the economy and infrastructure planning. The paper deals with the precipitation variability change in Croatia for two thirty-year periods: 1951-1981 and 1981-2010. The analyse is carried out using data for annual, seasonal and monthly precipitation amounts of 31 meteorological stations in Croatia for which the 1951-2010 data series could be obtained. As a measure of variability a standard deviation and coefficient of variation were used, since the latter allows comparison of variability of stations with different precipitation amounts. The Tension Spline Method of software package ArcGis 10.0 is used in order to analyse spatial differences of annual, seasonal and monthly precipitation variability in Croatia.

The analyse has shown that there are two areas with the significantly different type of annual course of precipitation variability in Croatia. In the southern part of the country, which is mostly influenced by the subtropical high pressure, the maximum of precipitation variability is in the summer months, while the minimum is in December or April. In the rest of the country maximum precipitation variability usually occurs in the autumn (mostly in October), while minimum occurs in the spring or early summer (mostly in April or June). Months in which the maximum and minimum in the annual course of the precipitation variability occur has changed in 1981-2010 period for some stations. Also, for most of the analysed stations a decrease of annual precipitation amount was determined. The changes in precipitation variability were detected as well. The annual precipitation variability for most of the stations increase in the 1981-2010 period in comparison to 1951-1980 period. But in a number of stations where the annual precipitation amount decreases the annual precipitation variability decreases, also. The areas, with the significant change in annual precipitation variability, were depicted. Additionally, the analyses of spatial changes of precipitation variability in Croatia were carried out for the seasonal and monthly values.