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## Joint examination of climate variables, Standardized Precipitation and Temperature Index (SPTI)

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The joint examination of the climate variables may be efficient methodology for the characterization of extreme weather and climate events. In general the main difficulties are connected with the different probability distribution of the variables and the handling of the stochastic connection between them. The first problem can solved by the standardization procedures i.e. to transform the variables into standard normal ones. For example there are the Standardized Precipitation Index (SPI) series for the precipitation sums assuming gamma distribution, or the standardization of temperature series assuming normal distribution. In case of more variables the problem of stochastic connection can be solved on the basis of the vector norm of the variables defined by their covariance matrix. According to this methodology we have developed a new index that is Standardized Precipitation and Temperature Index (SPTI) in order to examine the precipitation and temperature variables jointly. We present SPTI with the mathematical background furthermore some examples for spatiotemporal examination of these indices using our software MASH (Multiple Analysis of Series for Homogenization; Szentimrey) and MISH (Meteorological Interpolation based on Surface Homogenized Data Basis; Szentimrey, Bihari).