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Determination of The Best-Fit Copula Family for Air Temperature Data of Ankara

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Abstract- In order to investigate the relationship between variables, it is necessary to reveal the dependency structure between variables and because of this reason, the concept of "copula" is being used in statistics literature in recent years. The main purpose of the copula function is to find out the multivariate distribution best suited for the observed data also by revealing the dependency structure. Copulas are used in many studies such as statistics, economics, actuary, financial and risk management, time series and modelling. In this study, an application of meteorological data with some copulas is given. These copula families are Gumbel, Clayton, Frank and Gaussian. The best-fit copula family is determined for the dependence structure of monthly lowest and highest air temperature records from 1985 to 2016 in Ankara. Akaike Information Criteria (AIC) and Bayesian Information Criteria (BIC) are used to determine the best-fit copula. According to the analysis results, the best-fit copula family is determined as Frank copula. In addition, the best-fit copula family is examined with scatter plots of the data obtained from copulas.

Keywords- copula, dependency structure, meteorological data, air temperature.

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