AUTOREGRESSIVE MOVING AVERAGE MODEL APPLIED TO SPATIAL-TEMPORAL DATA ON AVERAGE MONTHLY MINIMUM TEMPERATURES

Natália da Silva MARTINS[1]
Guilherme BIZ[2]
Vitor Augusto OZAKI[3]

- *ABSTRACT: Time series models have been widely used in the study of climatological variables, focused in temperature and precipitation. However, these data, in addition to temporal correlation may also exhibit spatial correlation. The statistical models that have been used for modeling these data often do not consider the interaction between the spatial and temporal dimensions. Therefore, this article aims to adjust time series models considering the spatio - temporal correlations and thus modeling historical series of minimum temperatures from meteorological stations. Seasonal models (STARMA) were also adjusted and through the criteria BIC and the average squared residuals, we selected the model STARMA (1,0,0)\times(0,1,1_{1}). For the series of minimum temperatures considered if verify that the adequacy of the model and the accuracy of the predictions are directly related to the variation of the data in space and time. In other words , the locations where the neighbors have a spatially and temporally similar behavior shown a lower prediction error..*

- *KEYWORDS: Correlation spatio-temporal; forecasting; temperature.*

[1] Universidade Federal de Alfenas - UNIFAL, Instituto de Ciências Exatas -- ICEx, CEP: 37130-000, Alfenas, MG, Brasil. E-mail: *natalia.martins@unifal-edu.br*
[2] Universidade Estadual de Londrina - UEL, Centro de Ciências Exatas -- CCE, Departamento de Estatística, CEP: 86057-970, Londrina, PR, Brasil. E-mail: *gbiz@uel.br*
[3] Universidade de São Paulo - USP, Escola Superior de Agricultura ``Luiz de Queiroz", LES, CEP: 13418-900, Piracicaba, SP, Brasil, E-mail: *vitorozaki@usp.br*