One-step ahead forecasting of annual precipitation and temperature using univariate time series methods

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We investigate the one-step ahead predictability of annual geophysical processes using 16 univariate time series forecasting methods. We examine two real-world datasets, a precipitation dataset and a temperature dataset, together containing 297 annual time series of 91 values. We use the first 50, 60, 70, 80 and 90 data points for model-fitting and model-validation and make predictions corresponding to the 51st, 61st, 71st, 81st and 91st respectively. The assessment of the methods' performance is based on four error metrics and three accuracy statistics. The former are the error, absolute error, percentage error and absolute percentage error, while the latter are the median of the absolute errors, median of the absolute percentage errors and linear regression coefficient computed per category of tests.