Fast Short-Term Electrical Load Forecasting under High Meteorological Variability with a Multiple Equation Time Series Approach

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Abstract : In 2016, Clements, Hurn, and Li proposed a multiple equation time series approach for the short-term load forecasting, reporting an average mean absolute percentage error (MAPE) of 1.36% on an 11-years dataset for the Queensland region in Australia. We present an adaptation of their model to the electrical power load consumption for the whole Quebec province in Canada. More precisely, we take into account two additional meteorological variables — cloudiness and wind speed — on top of temperature, as well as the use of multiple meteorological measurements taken at different locations on the territory. We also consider other minor improvements. Our final model shows an average MAPE score of 1:79% over an 8-years dataset.

Keywords : short-term load forecasting, special days, time series, multiple equations, parallelization, clustering

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