



## **Kalman Filtering of 2m-temperature forecast in Portugal**

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Accurate nowcasts of 2m-temperature have a wide range of applications, from Tourism, Monitoring of Fire Risk and Forest Fire Control, Agriculture, Sports Events and Airport Control. However, numerical weather prediction models may exhibit systematic errors in the forecast of near surface weather parameters due to the poor resolution of model topography and deficient physical parameterizations. In this work the deviations between 2m-temperature observations and forecasts provided by the European Centre for Medium-Range Weather Forecasts (ECMWF) are analyzed for twelve synoptic stations located in Portugal. It is shown that the systematic errors vary considerably with geographical location, time of day and throughout the year. The Kalman Filter theory provides a suitable tool to correct such systematic errors and consequently improve model forecasts. Accordingly, a Kalman Filter is applied to correct 3-hourly forecast of ECMWF 2m-temperature producing nowcasts valid six hours ahead with an improved accuracy. The correction procedure reduces the bias of the forecasts at each station to values close to zero, being an efficient tool for operational implementation.