Proposal of two new criteria to assess solar forecasting performances

Context
- Solar energy depends on weather conditions ⇒ high temporal variability
- The high variability of solar production has consequences on the electrical grid: ⇒ need to introduce increasingly accurate forecasts of photovoltaic production
- Need to establish a standardized procedure to assess solar forecast accuracy

Illustrations of RMSE limitations
The root mean square error (RMSE) – in absolute or in relative terms – is the most commonly used metric in solar forecast evaluation. Although this metric provides comprehensive global information on forecast errors, it can be misleading and insufficient to characterize the behavior of forecast results. To highlight some of the weaknesses of this metric, a concrete real example is presented below:

Definition of two new criteria: a ramp and a time alignment metric

Conclusion
- Introduction of two new metrics: a ramp score quantifying the ability to follow ramp events, and the TDM derived from the estimation of the global temporal distortion between the forecast and the measurements, quantifying the alignment of the two time series.
- The resulting scores of the new metrics presented correspond to the established behavior of three illustrative 15-min forecasts and allow a better understanding of each method’s characteristics.

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