Review of "Evaluating the potential of short-term instrument deployment to improve distributed wind resource assessment" by Lindsay M. Sheridan, Dmitry Duplyakin, Caleb Phillips, Heidi Tinnesand, Raj K. Rai, Julia E. Flaherty, and Larry K. Berg

General comments

The authors investigated the impact of the MCP correction on the long-term wind resource assessment. They focused on the accuracy of the MCP corrections using the months-long observations to investigate the possibility of reducing the measurement period used for the training data for the MCP. They found that one month of onsite wind speed measurements improves the long-term wind estimate on average, although four months of onsite measurements is a better option to mitigate the errors. It was also reported that the summer months should be avoided, as these months tend to be the least representative of long-term wind speed means and standard deviations. The study is well conducted, and the methods used are appropriate. The data are clearly presented. This study has shown quantitatively that the MCP, using a data period of less than one year, is effective in improving the performance of long-term wind resource assessment based on a large data set.

These findings will be of interest to wind energy developers working on the distributed wind resource assessment, as well as to researchers in the field. However, I have following concerns for the manuscript:

- Page 7, Line 131–136: Correlation coefficient, bias, and MAE were used as error metrics. In the case of bias and MAE, they would be associated with the magnitude of the values. Accordingly, the use of relative values would be more appropriate when comparing these results for different wind climates.

- Also, the accuracy of ERA 5 would depend on the measurement height as well as the region. I'm not so sure that the combined results can show the true performance of the ERA 5 dataset near the surface. If the accuracy is strongly dependent on the measurement height, it would be better to narrow the range of observations used for the analysis.

- Page 7, Lines 158–160: In addition to the three MCP algorithms used in this study, the other algorithms were also available. In fact, a commercial tool, such as WindPro provides methods using matrix and neutral network approaches. The reasons why these algorithms were chosen were briefly explained, but it is still unclear. Are there any reasons why they were chosen, e.g. because they gave better results than the other algorithms?

- Page 11, Figure 4: The box plots for each month in the figures are based on the different numbers of samples. Is it possible to add the number of samples used for each box plot on the right axis? The authors would analyze a large dataset to derive the results. The information of the sample size would make it easier for readers to understand how much data was used in the analysis.

- Page 22, Figure 12: Figure 12 (b) shows that the capacity factor errors appear to decrease when the training months reach four months. In the discussion, the authors concluded that four months is the preferred length of training months. If the aim of the investigation is to assess the capacity factor, is the MCP based the months-long observation an appropriate approach?

- The authors investigated the impact of observations using the error metrics with bias, MAE, and correlations. As shown in most of the figures in this study, the MCP methods would mainly affect the bias correction. Also, the improvement on the MAE scores would be due to the bias reduction, as discussed in Mattihas and Focken (2006). Is it necessary to use MAE and correlation coefficient for the KPIs as well as bias through the manuscript?

  ➢ Lange, Matthias, and Ulrich Focken. *Physical approach to short-term wind power prediction*. Vol. 208. Berlin: Springer, 2006.

Minor comments

- Page 7, Figure 3: The error metrics were compared across seven regions. However, the number of sites used to drive the statistics would be different. One option would be to show the number of sites for each region in Figure 1.

- Page 7, Figure 3: The results of this study would be consistent with previous studies on the accuracy of the ERA5 dataset. The authors would be able to link the result to the previous study.

- Page 8, Line 216–221: It's difficult to follow the numbers described in the main text. Please consider using more tables to show the numbers.

- Page 15, Figure 6: Studying the worst-case scenario is certainly an interesting approach to investigating the risk of the MCP with the months-long observation. On the other hand, the large errors for the data with fewer training months would be due to the outliers. I assume that there is a possibility to improve such errors by applying robust regression algorithms that are insensitive to the outliers.