



Uncertainty assessment of the near-surface wind speed trends in the reanalyses

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Wind energy users have recently incorporated reanalyses products for the evaluation of the long-term wind speed variability, particularly in those regions where there are not long observational records available. For some of these users it is still difficult to identify which is the most suitable dataset for their specific needs, because a comparison of the quality of the wind speed data from reanalysis products at global scale is not readily available.

This study investigates the wind speed long-term trends at global scale in the last decades (1980-2015) using three reanalyses: ERA-Interim, Japanese 55-year Reanalysis (JRA-55) and Modern Era Retrospective-Analysis for Research and Applications (MERRA-2). The intercomparison focuses on the seasonal variability of the mean wind speed but also the 10th and 90th percentiles. Strong seasonal and spatial variability have been identified with an increase of the wind speed over the ocean and a decline over land, although disagreement between the reanalyses has been identified, particularly for the JRA-55 reanalysis which overestimates the trends over land. The causes of these wind speed trends are discussed in terms of the wind speed at 850 hPa, because although changes in land use, aerosols and the recent modifications of the large-scale circulation have been identified to play a role over wind speed trends, it is still not fully understood how these factors could affect wind speed trends at global scale.