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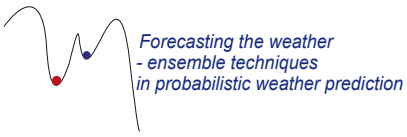

Improving and optimizing the results inferred from multiscale methods in experimental atmospheric boundary layer studies: common mistakes and overlooked issues.

S. Viana Jiménez (1), C. Yagüe (2), and G. Maqueda (3)

(1) AEMET, Barcelona, Spain (svianaj@aemet.es), (2) Departamento de Geofísica y Meteorología, Universidad Complutense de Madrid, Madrid, Spain, (3) Departamento de Astronomía y Ciencias de la Atmósfera, Universidad Complutense de Madrid, Madrid, Spain

Over the last few years, different multivariable and multiscale spectral tools developed for the study of time series have been applied to geophysical data. Micrometeorological studies from field data have strongly benefited from these new developments, which have increased our understanding of turbulent exchanges, gravity wave activity and the interaction between both processes. Two of these advanced tools are known as Wavelet Transform (WT) and MultiResolution Flux Decomposition (MRFD). Although the latter can be expressed in terms of the WT using a specific wavelet basis set (the Haar wavelet), there exist some important differences in the features related to these techniques, as well as in the data processing required by each of them. It is important to bear in mind these differences in order to choose the most convenient methodology for every dataset and desired application, to extract the most correct information from the outputs of these techniques, and to avoid misinterpretations of the results due to the limitations attached to each one of them. We will review all these issues by revising different results from our most recent works centred in stable nocturnal conditions.