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# Wind velocity autocorrelation functions in low-wind conditions.

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An analysis of the Eulerian horizontal velocity autocorrelation functions and of the Eulerian and Lagrangian time scale is presented. The study is based on 15 months of continuous wind and turbulence measurements carried out during low-wind conditions in an urban area. In most cases the velocity autocorrelation functions present an oscillating behavior attributed to the large scale wind meandering instead of the classical exponential decay.
The computed meandering time scale is used to normalize the autocorrelation functions and to characterize the low-wind conditions. The Lagrangian time scales evaluated from the new autocorrelation functions are larger than the one obtained with the exponential decay. A comparison with two widely used parameterizations shows that the calm regime and the urban fabric influence the turbulent scales suggesting that the considered parameterizations are not suitable for these peculiar conditions. The presence of the large scale meandering poses some questions on the proper time on which the autocorrelation are evaluated (i.e. $recordlength$).$The$ $variabilityofthemeanderingtimescalewiththerecordlengthis$ $discussed.$