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Study of the relevant timescales from wavelet transform in the Nocturnal Atmospheric Boundary Layer: interaction between wave-like structures and turbulence

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Data from the *Stable Atmospheric Boundary Layer Experiment in Spain 2006* (SABLES2006), obtained on a fairly homogeneous terrain in the centre of an extensive plateau (41º49' N, 4º56' W), have been used in order to study the relevant timescales which are present along the nocturnal atmospheric boundary layer for different degrees of stability. The instrumentation deployed in the field campaign included: six quartz-based microbarometers (2 Hz sampling rate and 0.002 hPa resolution, three installed at surface level and three at heights z= 20, 50 and 100m) and three sonic anemometers (20 Hz sampling rate, at z= 3, 20 and 100m). During the different nights wave-like structures are often found, and these coexist and interact with turbulent motions. Two main techniques have been used in this work: Wavelet transform (WT) and MultiResolution Flux Decomposition (MRF). WT has been applied to different meteorological variables (pressure, wind, temperature) to locate the structures along different nights and analyze the presence of these ones at different heights. On the other hand MRF allows to know what timescales contribute more to the covariance of the temporal series and it has been used to explore the shift of the spectral gap towards lower timescales as stability increases, and the 'contamination' of higher scale mo-

tions on the evaluation of turbulent fluxes evaluated from eddy correlation technique with a fixed window.