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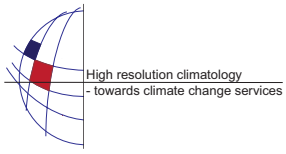

Breeze transients as triggers for the initiation of deep moist convection on mountains slopes

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Deep moist convection frequency is characterized by seasonal and diurnal cycles, related to the interplay between the different elements which force and sustain it: onset, instability, wind pattern.

Besides the instability diurnal cycles, the low level triggers initiating the convective motions are considered responsible for the modulations of the cycle. In some areas, like in the southern side of the Alpine ridge, the onset and the reversal of breezes produce microscale areas of flow convergence, at the lower levels, due breezes transients and breezes interaction with the orography.

This work presents a numerical analysis of the convection initiation generated by breezes transients. The Weather Research and Forecasting model (WRF) has been used to make simplified case studies and real cases simulations in which orography, solar radiation exposure and sea surface temperature variations are considered.

General results support the thesis that the daily modulation of thunderstorm development is significantly accounted by the trigger effect of breezes transients, when synoptic winds are negligible of course. The results produced by the large set of simulations are compared with the climatological data of convective cells development in the Northeastern Italian region.