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## A probability model of three potential precursors during tornado occurrences: the Italian case.

Roberto Inghrosso<sup>1</sup>, **Piero Lionello**<sup>2,3</sup>, Mario Marcello Miglietta<sup>4</sup>, and Gianfausto Salvadori<sup>5</sup>

<sup>1</sup>University of Quebec in Montreal (UQAM), Department of Earth and Atmospheric Sciences, Montreal, Canada (ingrosso.roberto@courrier.uqam.ca)

<sup>2</sup>Università del Salento, Dipartimento di Scienze Ambientali e Biologiche, Lecce, Italy (piero.lionello@unisalento.it)

<sup>3</sup>CMCC Euro Mediterranean Center on Climate Change, Lecce, Italy (piero.lionello@unisalento.it)

<sup>4</sup>ISAC-CNR, Istituto di Scienze dell'Atmosfera e del Clima-Consiglio Nazionale delle Ricerche, Lecce/Padua (Italy) (m.miglietta@isac.cnr.it)

<sup>5</sup>Università del Salento, Dipartimento di Matematica e Fisica, Lecce, Italy (gianfausto.salvadori@unisalento.it)

57 tornadoes with intensity Enhanced Fujita Scale 2 or larger that occurred in Italy in the period 2000–2018 are analysed in order to investigate the way two meteorological parameters, namely Wind Shear, calculated in 0-1 km and 0-6 km layers, and CAPE, affect their development. For this purpose, a statistical analysis, by means of homogeneity tests, conditional probabilities and a multivariate analysis via copulas is performed, using two different re-analysis datasets (ERA-Interim and ERA-5). The study indicates that: (a) tornadoes occur mostly in correspondence with positive anomalies of both variables; (b) probability of occurrence is correlated with WS, and (c) is maximum when either WS or CAPE are large. Also, the probability does not increase significantly with CAPE, although sufficiently large values are needed for tornado occurrence. These results are similar for both re-analyses we used and suggest that the selected parameters are reliable precursors for Italian tornadoes.