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Adaptive behaviours and risk awareness during catastrophic events: the case of the Vaia storm in North-Eastern Italy

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On October 29th 2018, the Vaia storm hit the mountainous areas in North-Eastern Italy with high wind speeds, heavy gusts and extreme rainfall, leading to major socio-economic damages (two casualties, entire communities isolated for weeks, damages to buildings and infrastructures, etc.). It caused major damages to forests, losses to ecosystem services, and severe short as well as long term socio-economic consequences. As such, this event provides a concrete example of the scale of the hazard to communities and ecosystems and of the involved risks and impacts, including those on the economy, institutions and local communities.

Given this background, our study aims at understanding how individuals affected by the storm: i) detected the potentially dangerous circumstances, ii) reacted to the storm, iii) adapted their routine to cope with the consequence of the event, iv) changed their risk awareness and perception after the event.

To achieve these objectives, we developed a web-based survey addressing 1,500 ca. inhabitants of the Veneto and Trentino Alto Adige regions, two areas that suffered major consequences from the event. The survey quantitatively documented behavioural responses associated with the Vaia event and included questions related to: i) whether respondents changed their normal routine during the storm and if so for what reason; ii) information received before and during the event and how respondents reacted to it; iii) damage suffered during the event; iv) risk awareness and how it changed after the event; v) personal protection measures adopted before and after the event; vi) respondents' attitudinal and psychological traits, with specific reference to Protection Motivation Theory (Rogers, 1975, 1997; McMath and Prentice-Dunn,2005), a well-established theory on risk behaviour.

Data analysis is expected to reveal what are the key characteristics (maybe better factors?) affecting individual behaviours in a dangerous situation, with particular attention to the reasons that drive citizens to change their activities and daily routines during catastrophic events. Specifically, data will be used at first to develop a multivariate statistical analysis to define the determinants of adaptive behaviours and risk awareness. Secondly, they will be used to estimate probabilistic models (Latent Class models) that allow to segregate respondents (and hence the population of reference) in different groups sharing a similar profile in terms of behaviour and attitudes towards the catastrophic event under study. Probability to belong to different

behavioural groups will be explained by individuals' characteristics, such as socio-demographics and psychological traits related to the Protection Motivation Theory. The results will help to better understand societal responses to natural hazards and to explain why certain groups within broader communities are more risk aware and prepared than others. In turns, this will allow to design effective risk management strategies and inform policies and communication strategies aimed at increasing the citizen adaptive capacity.