



Abstract

Clues of Frequent Post-Fire Erosion Responses in the Campania Region (Southern Italy) [†]

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[†] Presented at the Third International Conference on Fire Behavior and Risk, Sardinia, Italy, 3–6 May 2022.

Keywords: wildfire; rainstorm; post-fire erosion; debris flow; Italy



Citation: Esposito, G.; Masi, R.; Alfano, S.; Giannatiempo, G.; D'Eliseo, R.; Russo, F. Clues of Frequent Post-Fire Erosion Responses in the Campania Region (Southern Italy). *Environ. Sci. Proc.* **2022**, *17*, 57. <https://doi.org/10.3390/environsciproc2022017057>

Academic Editors: Pierpaolo Duce, Donatella Spano, Michele Salis, Bachisio Arca, Valentina Bacciu, Grazia Pellizzaro and Costantino Sirca

Published: 10 August 2022

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Impacts of wildfires on mountainous landscapes include modifications to hydraulic and geotechnical properties of soils [1,2]. These changes may influence both hydrologic and sedimentologic response of burned watersheds to intense rainfall, increasing the likelihood of overland flow and soil erosion than in areas that are unburned [3]. Enhanced rainfall-induced runoff and sediment transport can lead to relevant landscape degradation, as well as to the triggering of rapid debris and sediment-laden flows [4,5] which may represent a substantial hazard for people and infrastructures located downstream [6].

Post-fire erosion responses have been documented in different areas worldwide, including the Mediterranean basin [7]. Here, most of fires occur during hot and dry summers, whereas post-fire processes are triggered by intense precipitations concentrated in the late summer-autumn period, when severe convective storms are also frequent. Favourable conditions for the ignition and propagation of wildfires are expected to increase as consequence of the ongoing climate change, along with the frequency and intensity of rainstorm events [8]. This scenario suggests a consequent increasing of post-fire erosion processes and related impacts on natural and anthropogenic environments over the course of the century.

Such situation requires more efforts to the scientific community to improve the existing knowledge about initiation and evolution mechanisms of post-fire erosion and flow processes, as well as to provide effective tools aimed at assessing risk conditions in threatened urban settlements. In the light of this, the current contribution presents preliminary results of a historical research aimed at documenting the temporal frequency of post-fire erosion responses in a central area of the Campania region (Southern Italy), where the fire regime along with geologic, geomorphic and climatic conditions make mountainous areas prone to such processes [9,10]. The collected data will be useful for further hazard analyses and risk management in the study area.

Author Contributions: Conceptualization, G.E.; methodology, G.E. and R.M.; data curation, G.E., R.M., S.A., G.G., R.D. and F.R.; writing—original draft preparation, G.E. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

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