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Geohazard assessment through the analysis of historical alluvial events in Southern Italy

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The risk associated with extreme water events such as flash floods, results from a combination of overflows and landslides hazards. A multi-hazard approach have been utilized to analyze the 1773 flood that occurred in conjunction with heavy rainfall, causing major damage in terms of lost lives and economic cost over an area of 200 km2, including both the coastal strip between Salerno and Maiori and the Apennine hinterland, Campania region - Southern Italy. This area has been affected by a total of 40 flood events over the last five centuries, 26 of them occurred between 1900 and 2000. Streamflow events have produced severe impacts on Cava de' Tirreni (SA) and its territory and in particular four catastrophic floods in 1581, 1773, 1899 and 1954, caused a pervasive pattern of destruction. In the study area, rainstorm events typically occur in small and medium-sized fluvial system, characterized by small catchment areas and high-elevation drainage basins, causing the detachment of large amount of volcaniclastic and siliciclastic covers from the carbonate bedrock. The mobilization of these deposits (slope debris) mixed with rising floodwaters along the water paths can produce fast-moving streamflows of large proportion with significant hazardous implications (Violante et al., 2009). In this context the study of 1773 historical flood allows the detection and the definition of those areas where catastrophic events repeatedly took place over the time. Moreover, it improves the understanding of the phenomena themselves, including some key elements in the management of risk mitigation, such as the restoration of the damage suffered by the buildings and/or the environmental effects caused by the floods.