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[Poster]

Spatial Distribution of Floods and Earthquakes in Southern Europe: An Analysis at the NUTS 3 Regional Level (1990–2025)

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Abstract: Natural hazards represent a significant risk factor for societies in Southern Europe, a region exposed to both seismic activity and frequent hydrological extremes. This paper analyzes the spatial distribution of two dominant types of natural hazards—floods and earthquakes—across the territories of Southern European countries: Italy, Spain, Portugal, Greece, Serbia, Croatia, Slovenia, Bosnia and Herzegovina, Montenegro, North Macedonia, and Albania, over the period from 1990 to 2025. Data on hazard events, obtained from the EM-DAT database, were georeferenced and represented as points in QGIS software, and subsequently aggregated at the NUTS 3 statistical regional level (or NUTS 3-equivalent regions for the territory of Bosnia and Herzegovina). Based on the number of events recorded in each region, hazard density is calculated in relation to regional area, thereby identifying spatial patterns of concentration (hotspots) for each hazard type separately. Particular attention is given to comparing the spatial distribution of floods and earthquakes, with the aim of determining whether regions exposed to one type of hazard overlap with those exposed to the other, or whether the two risks are spatially complementary. The results are expected to demonstrate pronounced spatial heterogeneity across the study area, with earthquakes concentrated

in zones of elevated seismic activity, while floods are expected to be more closely associated with river basins and lowland areas. The findings may provide a basis for further risk assessment and the planning of preventive measures at the regional level.

Keywords: natural hazards, floods, earthquakes, spatial distribution, Southern Europe