



Compound natural hazards analysis by applying statistical multivariate extreme value theory

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Design values needed for the protection of residential or industrial installations are commonly estimated using statistical extreme value theory for each single natural hazard. However, in some cases, the combination of different hazards may lead to more severe damages than forecasted by considering them as independent, and the analysis now needs to be refined by taking such correlation in extremes into account. The statistical multivariate extreme value theory provides results and tools to conduct such analyses. This paper aims at presenting two examples of application of this theory: the joint discharges of two rivers, which illustrates asymptotic dependence, and the joint occurrence of high speed wind and low temperature, which illustrates asymptotic independence.