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Damage monetization of gravity-driven torrent events in Austria.

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Natural hazards may cause enormous and often catastrophic consequences by affecting the human system. The impact measurement of the geophysical variable is commonly expressed by means of natural hazard loss estimation.

A methodology for the monetization of damage due to torrent events for various object classes has been developed. The specific damage extent (Euro) has been calculated for the five most damaging years in Austria within the period 1972 to 2004, and its spatial and temporal distribution has been analysed. Furthermore, the damage-causing processes have been analysed, as has the correlation between amount of damage and intensity of the events. Direct losses of various object classes have been evaluated without considering potential flow-on effects on the society i.e. indirect losses. The natural hazard loss estimation has mainly been obtained through a replacement costs approach for the built environment. The resistance of building structures to impacting forces of natural events is crucial to determine the extent of direct monetary damage. This resistance or its complementary component, vulnerability, is expressed in terms of vulnerability factors. Vulnerability factors describe the functional relationship between impacting forces of a natural event and the resistance of affected objects, and are expressed on a scale ranging from 0 to 1. The physical vulnerability of damaged objects has been considered through the design of specific vulnerability factors depending on both intensity of the torrent event and the process type.

This re-active post-event analysis, in terms of monetization of already accrued losses, identifies distributional patterns of the monetary consequences of gravity-driven natural hazards. The results might give conclusions for potential pro-active and pre-event

risk prevention and reduction measures.