Multivariate flood risk assessment: reinsurance perspective

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For insurance and re-insurance purposes the knowledge of the spatial characteristics of fluvial flooding is fundamental. The probability of simultaneous flooding at different locations during one event and the associated severity and losses have to be estimated in order to assess premiums and for accumulation control (Probable Maximum Losses calculation). Therefore, the identification of a statistical model able to describe the multivariate joint distribution of flood events in multiple location is necessary. In this context, copulas can be viewed as alternative tools for dealing with multivariate simulations as they allow to formalize dependence structures of random vectors. An application of copula function for flood scenario generation is presented for Australia (Queensland, New South Wales and Victoria) where 100.000 possible flood scenarios covering approximately 15.000 years were simulated.