

Modelling Extremes for Complex Events

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Abstract: Over the last decade or so, there has been increasing interest in the risks due to the extremes of complex events, such as widespread flooding, droughts, wildfires, heatwaves and, last but not least, financial crises. The probabilities of such multivariate events are difficult to estimate, because data are typically scarce and extrapolation is even more questionable than in the scalar case. In this talk I shall attempt to survey recent approaches to modelling extremes of complex events, using Bayesian and likelihood approaches for inference on max-stable and asymptotic independence models fitted either to maxima or to threshold exceedances. Some examples will be described. The work is partially funded by the Swiss National Science Foundation.

Key words and phrases: Asymptotic independence; Complex event; Max-stable process; Random set; Statistics of extremes