

# Rare risk modeling - are low probabilities too risky to model?

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**Mots-clés :**

**Résumé :** Probabilistic risk assessment is developing as a means of decision-support for the design and regulation of industrial and natural risk control, requiring a description of uncertainty coupled with growingly-complex physical-numerical models. A number of issues are raised as to the need for robust and accountable modeling of the low probabilities associated. The issue of computing low probabilities on the outputs of a complex numerical function will firstly be discussed, including the robust control of the error estimates and associated probabilistic and computational issues. The question is then to confidently estimate the model input distributions questioning the extreme value theory and its further developments with multi-dimensional physical-numerical models. An associated need is the computation of double-level probability distributions. The discussion will end with the larger issue of modeling in the context of decision-making facing high-loss low-probability events.