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Use of statistical techniques to account for parameter uncertainty in landslide tsunami generation

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Landslide tsunamis constitute complex phenomena, the nature of which is governed by varying rheological and geomorphological parameters. In an attempt to understand better these mechanisms, statistical methods can be used to quantify uncertainty and carry out sensitivity analyses. Such a method is the statistical emulation of the numerical code used to model a phenomenon. In comparison to numerical simulators, statistical emulators have the advantage of being faster and less expensive to run. In this study we implement a Bayesian calibration which allows us to build a statistical surrogate of the numerical simulators used to model submarine sliding and tsunami generation in the Rockall Bank Slide Complex, NE Atlantic Ocean. For the parameter selection and numerical simulations of the event we make use of a sophisticated sampling technique (Latin Hypercube Sampling). The posterior distributions of the parameters and the predictions made with the emulator are provided.