Geophysical Research Abstracts
Vol. 21, EGU2019-15454-1, 2019
EGU General Assembly 2019

A statistical, machine learning framework for parametric risk transfer

Mario L.V. Martina (1), Rui Figueiredo (1), David B. Stephenson (2), and Benjamin D. Youngman (2)
(1) Scuola Universitaria Superiore IUSS di Pavia, Italy (mario.martina@iusspavia.it), (2) University of Exeter, Exeter, UK

Parametric insurance is an increasingly used tool to manage disaster risk, whereby payouts are rapidly triggered whenever measurable indices exceed predefined thresholds. This promptness is critical in developing countries, which tend to be exposed to liquidity gaps that can overwhelm their post-disaster response capacity.
From a machine learning perspective, parametric triggers are essentially a classification rule for predicting loss or no loss based on the trigger variable. The rule is developed using past training sets of hazard and loss data (supervised learning). Despite the advantages of simplicity, transparency, and rapid payouts, there is still a certain lack of confidence and reluctance to use parametric insurance because of basis risk, which results from the misclassification of events due to false positives and false negatives. This problem is exacerbated by the prevalent use of ad-hoc parametric trigger rules that do not use rigorous statistical modelling to learn from past data and optimally exploit increasing amounts of available data.
In this presentation, we will discuss and illustrate how machine learning and statistical concepts can be employed to address these issues, leveraging big data to improve parametric trigger performance. We will also present more robust evaluation methods that can be used to quantify it, in terms of both prediction quality and utility.