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Hazard validation of vendor catastrophe models with application to reinsurance

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The loss exceedance probability curves from three vendor catastrophe models for an insurance company in Chile are wildly different. The 250 year ground up loss varies by up to 60%. That's a difference of 2.5billion USD. What's driving the differences in the models? Which model should be used for pricing of reinsurance or should a blend be used? This is a typical scenario in a reinsurance company and these are typical questions from an underwriter. First the hazard is analysed. What do the magnitude-frequency curves look like in Chile for the three models? The company has greatest exposure in Santiago. What do the curves look like around Santiago? Does an historic seismic record exist for Chile and if so, how long is it, what is its completeness and is a reinsurance company allowed to use it? A stochastic eventset is a broad spectrum of possible scenarios. An historic record is one realisation of what is possible. If a Generalised Pareto Distribution is applied to the historic record, do the three stochastic models fall within the 90% confidence intervals? The next step is a comparison of the shakemaps at different return periods. Model A outputs Peak Ground Acceleration (PGA) already modified for soil, but model B outputs PGA for rock. Can soil be removed from PGA in model A or added to PGA in model B in order to make a like-for-like comparison? It's not known what model C outputs. The Ground Motion Prediction Equations (GMPEs) that each model uses are numerous and vary between models, including how they are weighted. Could the differences seen in the losses be driven by the different GMPEs? The project is then passed to the vulnerability specialist. The project has been allocated 3 months.