catalytics

FACT SHEET

Flexible & Adjustable
Creates a unique model to estimate the frequency and range of potential losses to your specific business exposures:
Trending of your unique exposure profile over future years;
Allocating standard or user defined vulnerability curves to your various combinations of classes, sources of business and types of risk;
Includes an assessment of demand inflation risk;
Includes current or alternative reinsurance structures;
Imports detailed risk by risk exposure data per class, source of business, type of risk, postal code, sum insured and EML.

Includes comprehensive research
Data for hundreds of historical seismic events in your region;
Detailed seismic hazard map referenced to the existing GSHAP research;
International attenuation curves extrapolated from the most comparable seismic zones worldwide;
17 standard vulnerability curves (damage ratio versus Modified Mercalli Scale Intensity) for specific types of risks and classes of business.

Extensive geographical mapping features:
Use your own maps or ours;
Visually plot earthquake epicenters, mines or any other data sets on your maps;
Define your own risk areas or use built-in maps based on expert research;
Let Catalytics tell you which points fall in any polygon for analysis;
Plot any unique combination of your exposure set on a 3 dimensional map.

State of the art mathematics
Use cutting edge mathematics to accommodate catalogue incompleteness and magnitude uncertainty in estimating earthquake occurrence parameters;
Estimate frequency and magnitude distributions for each geographical point in the country;
Optimally estimate multiple parameters using the maximum likelihood procedure;
Estimate maximum possible earthquake magnitude from historical data;
Use specially designed interfaces to change parameters at geographical points if required;
View fitted earthquake occurrence parameters on a 3D map of the country.

Realistic simulations
Simulate earthquake epicenters over the whole country using best fit frequency and magnitude parameters at each geographical point;
View the location and magnitude of simulated losses in a detailed report;
Fit attenuation equations for each user-defined geological structure area to realistically simulate the impact of each event on every postal code;
Allocate the appropriate spatial location to each risk in the exposure data set based on postal codes;
Simulate up to 50,000 annual periods.

CATALYTICS PTE LTD
UOB Plaza 1, 80 Raffles Place #36-00, Singapore 048624 | T +65 6248 4738 | F +65 6248 4531 | www.catalytics.asia

Easy-to-read accurate reports & charts
Damage to each risk is calculated by using its allocated vulnerability curve, distance between risk location and simulated earthquake epicenter, simulated Richter scale Magnitude and attenuation equation of the geological structure area of the risk location.
Dynamic process flow charts are included. They allow practitioners to define multiple proportional and non-proportional reinsurance covers for different business segments (i.e. combination of classes and sources of business and types of risk).
The software produces the following reports as cumulative probability distributions, probability of exceeding or return periods:

- Number of earthquake loss events per annum;
- Number of ceded earthquake loss events per annum;
- Number of ceded earthquake loss events per annum to each defined reinsurance contract;
- Earthquake loss amount per event to each defined business segment and all business segments combined gross of all reinsurance / net of all proportional reinsurance / net of all proportional and non-proportional reinsurance;

Maximum earthquake loss amount per annum to each defined business segment and all business segments combined net of all proportional reinsurance;
Maximum ceded earthquake loss amount per annum to each defined reinsurance contract and all reinsurance contracts combined;
Ceded earthquake loss amount per event to each defined reinsurance contract and all reinsurance contracts combined;
Correlation matrix of earthquake loss amounts between various business segments gross of all reinsurance;
Correlation matrix of ceded earthquake loss amounts between various reinsurance contracts.

Compatible with commonly used software
Export all reports to MS Excel allowing practitioners to do further analysis if required;
The reports can be used as input to capital models, reinsurance and retrocession structure decision making.

Allows risk analysis and scenario testing
Assume the location of an earthquake epicenter and its Richter scale magnitude.
View a cumulative probability distribution and the probability of exceedence for the earthquake loss scenario:
Gross of reinsurance for all business segments combined;
Net of all proportional reinsurance for all business segments combined;
Net of all proportional and non-proportional reinsurance for all business segments combined;
Ceded loss to all reinsurance contracts combined.

Quality Control

Catalytics submits its models to:

- Prominent academics for peer review and
- Qualified software auditors for integrity checks.