Oasis Success Stories

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25 years Success Story of Cat Risk Modelling

- Historical data
- Scientific information
- R&D for integration of statistical/scientific data
- Actuarial and underwriting expertise to design financial solutions
- Analytical IT platform for damage and loss calculation
- Sales and support
Oasis Success

- Universities
- Research Institutes
- Individual Experts
- In-house R&D
- Modelling Firms

Network of organizations including GEM, ImageCat, JBA Consulting, COMBUS, CatRisk Solutions, and ARA.
Commissioning Cat Risk Models

- Earthquake model for new territories
- Model ordered, sponsored and licensed by end users
- Fully integrated in Oasis Loss Modelling Framework
- For new emerging markets in Africa and Middle East
- Model components to handle available exposure data
- Towards model-based risk management and data enhancement
Cat Risk Earthquake Coverage

- Modelled and Available
- Ready Soon
- Under Development
Uncertainty Handling

- **Earthquake Modelling (Location, Size and Rate)**
  - Historical data / Unknown faults or faults with unknown activity
  - Intraplate regions and low seismic areas
  - Rupture and energy release pattern

- **Hazard Modelling**
  - Ground Motion uncertainty and choice of Attenuation Functions
  - Source-to-site distance definition
  - Local soil conditions

- **Vulnerability**
  - Limited or uncertain historical or claim data
  - Physical damage vs. monetary loss
  - Fragility vs. vulnerability functions
  - Non-structural damage
  - Damage correlation
Why Oasis?

- Fully Plug-and-ply system
- Full probabilistic
- Layer structured
- Interoperability
- Multi peril and multi model handling
- Framework for full uncertainties implementation
- Prepossessed hazard footprint and therefore Very fast
- Framework for handling location and coverage correlation
- Real occurrence and aggregate calculation with no proxy method
- Numerical integration of uncertainties with no proxy close form distribution
Full Numerical Integration

An earthquake from simulated eventset

A site for a location of insured risk

Ground motion Calculation using earthquake and site characteristics

Damage probability distribution for a risk with given vulnerability class

For a risk of a Vulnerability Class
Numerical Implementation of Policy Conditions

- **Economic Damage** (Ground Up Loss)
- **Per Risk and Per Event Damage Distribution**
- **Total Loss**
- **PDF**
- **Above Policy Limit % or $**
- **Insurable Loss $**
- **Deductible % or $**
- **Per Risk and Per Event Loss Distribution**
- **Insured Loss** (Gross Loss)
- **PDF**
Risk to Portfolio Loss Aggregation

Location and Policy Aggregation

Events
- Event 1
- Event 2
- Event 3
- Event i
- Event n

Coverage
- Building
- Contents
- BI
- Building
- Contents
- BI
- Building
- Contents
- BI
- Building
- Contents
- BI

Location
- Site 1
- Site 2
- Site 3
- Site j

Policy
- Policy 1
- Policy 2
- Policy k

Portfolio
- Portfolio 1
- Portfolio 2
- Portfolio l

Program
Reinsurance Structure Implementation

Per Portfolio and Per Event
Net Loss Distribution

Portfolio Loss

Per Portfolio and Per Event
Transferred Loss Distribution

Reinsurance Loss

Reinsurance Structure

PDF

Reinsurance Structure

Second Excess
90% of $1M xx $1M

First Excess
80% of $500K xx $500K

Quota Share
50% of $500K xx $0K

Third Excess
$1M xx $1M

Second Excess
$500K xx $500K

First Excess
$300K xx $200K

Reinsured Retention $200K

$0

$500,000

$1,000,000

$2,000,000

$100K

$250K

$360K

$270K

$270K

$400K

$250K

$250K
Administrative Boundaries

31 Provinces
336 Parishes
888 Counties

2400 Rural District
1032 Cities
91302 Villages
Exposure Locating / Disaggregation

720,000 census blocks for 1032 cities

Cell of 0.5x0.5 km
VRG Cells (Hazard cells, AreaPeril Cells)

High Resolution (137,000 Cells)

Medium Resolution (29,000 Cells)
Scenario Damage Modelling

Magnitude (Mw) 6.04
Mean PGA (gal) 189
Return period (year) 500
Damaged Bld (number) 91,740
Building Damaged (%) 10.3%
Fatalities (number) 546,909
Fatality (%) 8.1%
Modelled Losses from Last 1000 Years Historical Eqs.
The Benefit

- Timing and delivery phases to meet client needs
- Iterative process to ensure consistency of model components
- Exposure data compatibility
- Transparency / Traceability
- Training and transfer of knowledge on model Technical aspects
- Documentation and regulation process
- Model functionality, Resolution, Speed
- Access to model developer
- Technical presentation to the local market
- Evaluation process / Validation
- Model Customization for specific uses (location, vulnerability)
- Sensitivity analysis
- IP ownership, exclusivity and client competitive advantage
- Cost
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