Catastrophe Risk Modelling Course: Nat Cat Models, PML, Accumulation and Reinsurance Buying

11 – 15 July 2027
Riyadh



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Introduction:

Catastrophe risk modelling, covering nat cat models, PML, accumulation and reinsurance buying, is a 1-week course for underwriting, reinsurance, exposure management and risk teams at insurers and reinsurers, ending with a Catastrophe Exposure and Reinsurance Buying Plan for a case insurer. Many carriers buy catastrophe protection on broker defaults, accept model output without testing the exposure data behind it and discover hidden accumulations only after a flood, windstorm or earthquake. Nominees already handle property portfolios or reinsurance renewals, and teaching is a modelling build on event loss tables and exposure schedules. CoreConcept Training Center delivers this catastrophe risk modelling course.

Course Objectives:

- Cleanse and enrich property exposure schedules with geocoding resolution, construction, occupancy and secondary modifier coding before model runs
- Interpret hazard, vulnerability and financial modules of flood, windstorm and earthquake models and explain how each drives modelled loss
- Derive OEP and AEP exceedance probability curves, PML at chosen return periods and AAL from event loss tables
- Monitor accumulation zones against risk appetite limits using realistic disaster scenarios and aggregate exposure reports
- Adjust the view of risk for model uncertainty, model blending and climate-conditioned hazard assumptions
- Size catastrophe excess of loss retentions and limits from modelled losses and link the result to solvency capital and ORSA reporting

Target Audience:

- Property underwriting managers responsible for line sizes and acceptance in catastrophe-exposed territories
- Reinsurance managers responsible for buying, renewing and justifying catastrophe protection
- Exposure management and catastrophe analytics managers responsible for model runs and accumulation reporting
- Risk and capital managers responsible for risk appetite limits, stress scenarios and ORSA input
- Actuarial and pricing managers responsible for catastrophe loads in property and engineering rates

Course Outline:

Day 1: Catastrophe Exposure Landscape and Portfolio Data Baseline

- Natural Peril Landscape of Flood, Windstorm and Earthquake Losses
- Deterministic Versus Probabilistic Catastrophe Model Runs Compared
- Exposure Schedule Fields for Location, Values and Policy Terms
- Geocoding Resolution Grades and Address Match Quality Scoring
- Data Quality Scorecard for Construction, Occupancy and Height Coding

Day 2: Catastrophe Model Architecture and Peril Components

- Hazard Module Stochastic Event Catalogues and Intensity Footprints
- Vulnerability Module Damage Functions and Secondary Modifier Effects
- Financial Module Treatment of Deductibles, Limits and Sublimits
- Flood Model Components for Riverine, Surface Water and Coastal Surge
- Earthquake Model Ground Motion Attenuation and Soil Amplification Inputs

Day 3: Exceedance Curves, PML, AAL and Accumulation Control

- Event Loss Table Structure and Annual Rate Interpretation
- OEP and AEP Exceedance Probability Curve Construction Worksheet
- PML Reading at Return Periods and Tail Value Measures
- AAL Calculation for Catastrophe Loads in Property Pricing
- Accumulation Zone Mapping and Aggregate Exposure Limit Reports

Day 4: Model Uncertainty, Climate Views and Risk Appetite Problems

- Model Uncertainty Sources and Secondary Uncertainty Distribution Effects
- Multi-Model Blending Weights and Own View of Risk Validation
- Climate-Conditioned Hazard Adjustments to Frequency and Severity Assumptions
- Realistic Disaster Scenario Design for Non-Modelled Perils
- Risk Appetite Statement Tolerances for Catastrophe Net Retained Loss

Day 5: Modelling Build for the Catastrophe Exposure and Reinsurance Buying Plan

- Case Insurer Exposure Cleansing and Model Input Preparation
- Case EP Curve Analysis With Gross and Net PML Comparison
- Cat XL Retention and Limit Sizing From Modelled Return Periods
- Solvency Capital Charge and ORSA Narrative From Model Output
- Catastrophe Exposure and Reinsurance Buying Plan Completion and Defence

Skills You Will Gain:

- Exposure Data Cleansing
- Catastrophe Model Interpretation
- Exceedance Probability Analysis
- Accumulation Zone Monitoring
- Model Uncertainty Assessment
- Climate Risk Adjustment
- Catastrophe Retention Sizing
- Capital Impact Analysis

Why Attend This Course:

- Deliver a Catastrophe Exposure and Reinsurance Buying Plan to the chief risk officer and the reinsurance purchasing committee before the next renewal
- Decide which return period and retention the catastrophe programme should protect and whether additional limit is worth its cost
- Avoid unmodelled accumulations, underbought catastrophe limit and capital surprises caused by weak exposure data
- Coach underwriting and finance colleagues with the data quality scorecard, EP curve worksheet and accumulation report templates

Conclusion:

Back at work, the participant presents the Catastrophe Exposure and Reinsurance Buying Plan to the chief risk officer and the reinsurance purchasing committee, who use it to approve the catastrophe retention, the limit purchased and the accumulation tolerances written into the risk appetite statement. Underwriting and finance teams reuse its exposure scorecard and EP curve worksheet for quarterly reporting. After the first renewal or significant catastrophe event, the unit should compare modelled and actual losses, review data quality scores and recalibrate its own view of risk.

Frequently Asked Questions FAQ:

What should participants know before a catastrophe risk modelling course on PML and accumulation?

Participants should already work with property portfolios, catastrophe reinsurance or risk reporting and read basic loss statistics. Bringing an anonymised exposure schedule or event loss table makes the modelling build more useful.

How does a catastrophe risk modelling course differ from a reinsurance treaty course?

A treaty course concentrates on structures, wordings, rating and recoveries. This course works upstream on the evidence behind buying: exposure data, model components, exceedance curves, accumulation limits and the modelled losses used to size catastrophe protection and capital.

Why does catastrophe risk modelling report both OEP and AEP for PML?

OEP shows the chance that the largest single event exceeds a loss, which suits per-event protection. AEP shows the chance that all events in a year combined exceed it, which suits aggregate covers and capital tests.

What do participants take back from the catastrophe risk modelling course?

Participants take back a Catastrophe Exposure and Reinsurance Buying Plan for a case insurer, plus a data quality scorecard, an EP curve worksheet, an accumulation report template and a retention sizing model ready for their own portfolio.