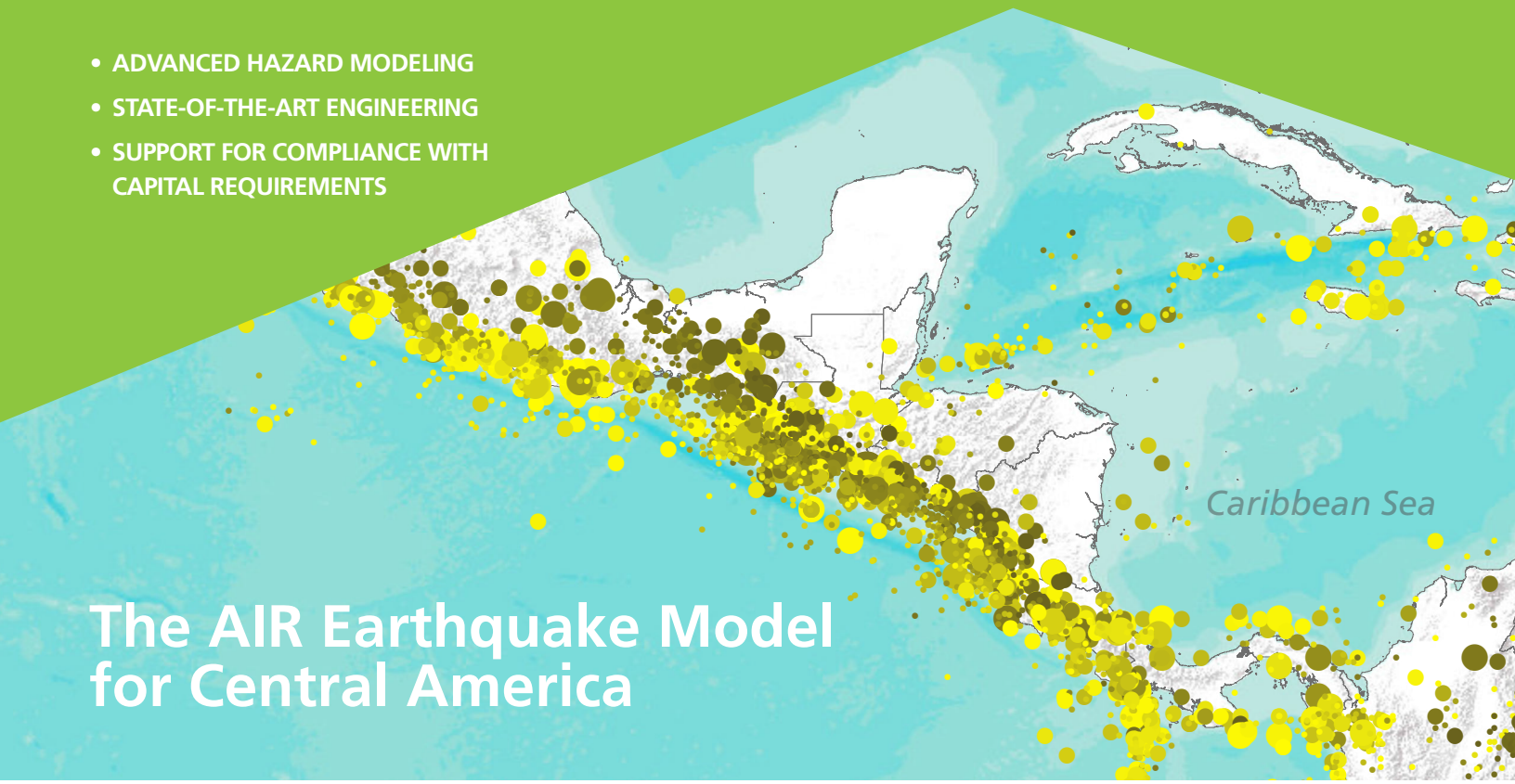
- ADVANCED HAZARD MODELING
- STATE-OF-THE-ART ENGINEERING
- SUPPORT FOR COMPLIANCE WITH CAPITAL REQUIREMENTS



The AIR Earthquake Model for Central America

ADVANCED HAZARD MODELING	THE ISSUE.	THE SOLUTION.
Comprehensive Data Set, Including Physical Modeling, to Improve Assessment of Seismic Potential	While the isthmus that comprises Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama—the region called Central America today—has experienced earthquakes for many millions of years, the recorded history is relatively short. Therefore, additional information is needed to improve the assessment of seismic hazard.	To create a fully probabilisitic event catalog, AIR supplements historical data with paleoseismological research and crustal deformation rates that determine the seismic energy accumulation rate in various parts of Central America using extensive GPS data and a kinematic model developed by AIR seismologists.
High Resolution Geological Maps Capture Potential for Soil Amplification	Soil properties play a critical role in amplifying or de-amplifying seismic waves.	The AIR model incorporates soil data at the highest available resolution, including a map of El Salvador at 100 m, maps of Belize, Costa Rica, Honduras, and Panama at 500 m, and a map of Nicaragua at 1.1 km.
Appropriately Accounts for Loss Volatility	Infrequent, large loss-causing events—also known as "tail" events—drive earthquake risk in Central America. Thus, information from historical earthquakes alone is not sufficient to gauge future losses.	The AIR model appropriately captures the frequency and magnitude of "tail" events, and outputs a reliable estimate of average annual loss—one that accounts for the volatility to be expected from periods of calm interrupted by the occurrence of extreme (tail) events.
STATE-OF-THE-ART ENGINEERING		
Damage Estimation Based on Rigorous Engineering Analysis	How buildings respond to earthquakes depends on both the ground motion and the building type. Traditional approaches to damage estimation, which rely heavily on expert opinion, don't capture these complex interactions.	Complementing local expertise, damage estimation in the AIR model uses state-of-the-art engineering analysis, including results from detailed computer models of buildings subjected to actual ground motion records from historical earthquakes.

continued

AIR WORLDWIDE®

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MODEL AT A GLANCE

MODEL RELEASED 2011

MODELED PERIL Ground shaking

CATALOG The model incorporates a 10,000-year catalog of 392,450 simulated events, of which 55,593 cause loss in the modeled region.

HAZARD MODULE Developed based on the following data sources:

- Instituto Panamericano de Geografia e Historia (IPGH)
- (USGS) PDE Worldwide Catalog of Earthquake
- Global Centroid Moment Tensor Catalog
- White and Harlow (1993)
- Ambraseys and Adams (1996)
- White et al. (2004)

VULNERABILITY MODULE Supports 110 occupancy classes and 40 construction classes; accounts for the impact of the evolution of each country's building codes and other local factors affecting seismic performance of buildings in Central America.

STATE-OF-THE-ART ENGINEERING *(contd.)*	THE ISSUE.	THE SOLUTION.
Considers Impact of Regional Construction on Building Vulnerability	Building materials and their respective vulnerabilities vary both among and within countries in Central America. The seismic performance of buildings in Central American countries is greatly influenced by local construction practices, with damageability often affected by variations in workmanship, materials, and building codes and their enforcement.	The AIR model takes into account both intra-country factors and the evolution of each country's building code in assessing the vulnerability of various building types in Central America.
Comprehensive Set of Damage Functions	Central America's building stock is diverse, and vulnerability varies by construction and occupancy.	The AIR model offers a robust set of damage functions for 40 construction types and 110 occupancy classes. Supported lines of business include residential, commercial/industrial, and automobile.

SUPPORT FOR COMPLIANCE WITH CAPITAL REQUIREMENTS — NO ISSUE HERE.

Insurance markets in Central American countries have been experiencing strong growth. To comply with the various capital requirements set by regulators, insurers can use AIR models to manage their risk and make the case to regulators for setting capital reserve requirements that better reflect their unique portfolio's risk.

EXPOSURE DATA FORMATS ARE TRANSPARENT AND PUBLICLY AVAILABLE

AIR has long been a proponent of open exposure data standards, as reflected by the UNICEDE® standard, which AIR makes available to the industry via a public website, unicede.com. AIR was also the first catastrophe modeling firm to support ACORD's new building authority exposure data standard, and both AIR's CATRADER® and Touchstone® platforms are ACORD-certified.

About AIR Worldwide

AIR Worldwide (AIR) is the scientific leader and most respected provider of risk modeling software and consulting services. AIR founded the catastrophe modeling industry in 1987 and today models the risk from natural catastrophes and terrorism in more than 90 countries. More than 400 insurance, reinsurance, financial, corporate, and government clients rely on AIR software and services for catastrophe risk management, insurance-linked securities, detailed site-specific wind and seismic engineering analyses, and agricultural risk management. AIR is a member of the Verisk Insurance Solutions group at Verisk Analytics (Nasdaq:VRSK) and is headquartered in Boston with additional offices in North America, Europe, and Asia. For more information, please visit www.air-worldwide.com.