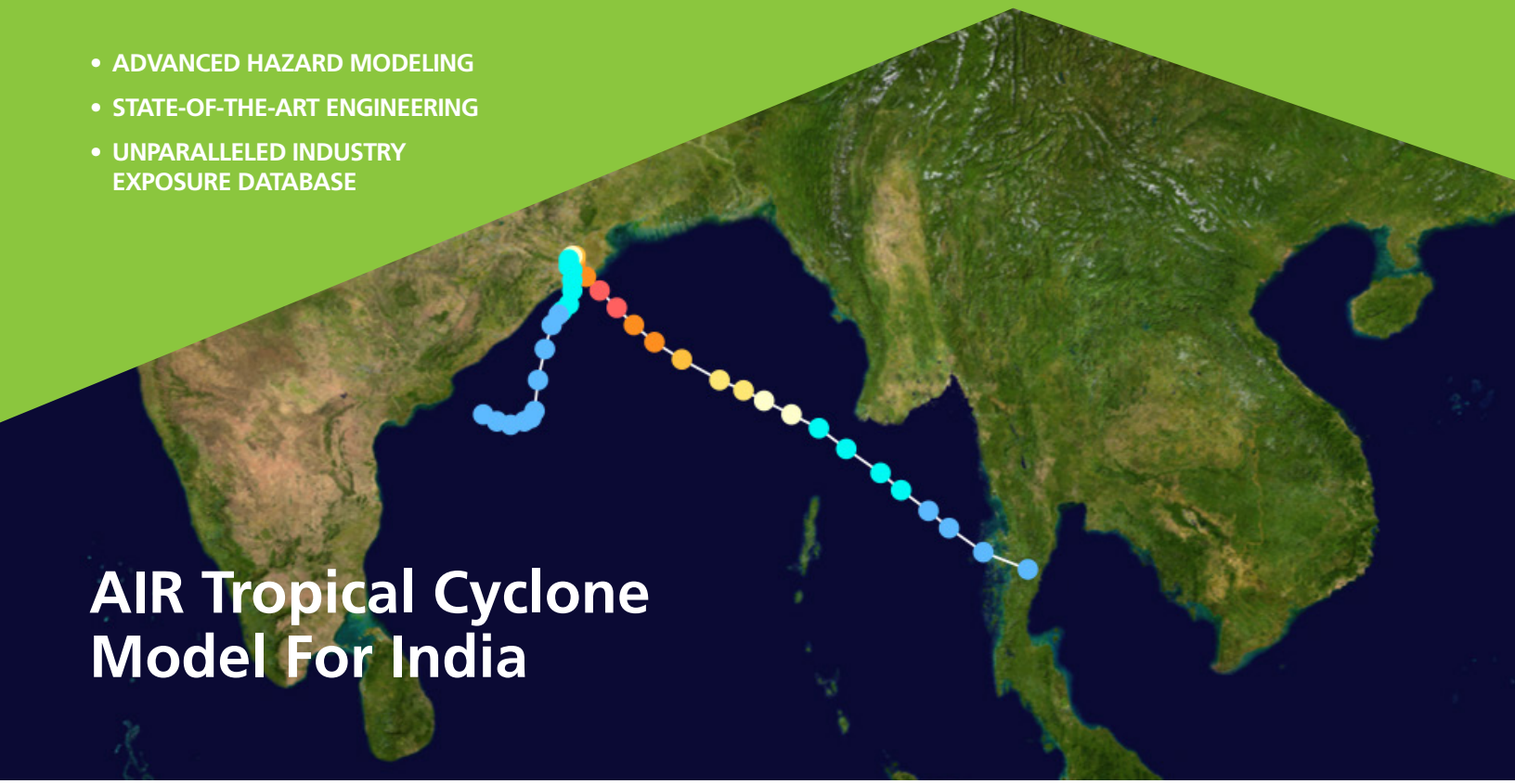
- ADVANCED HAZARD MODELING
- STATE-OF-THE-ART ENGINEERING
- UNPARALLELED INDUSTRY EXPOSURE DATABASE



AIR Tropical Cyclone Model For India

ADVANCED HAZARD MODELING	THE ISSUE.	THE SOLUTION.
Takes a Basinwide View of Cyclone Risk	Cyclones that impact India are four times more likely to form in the warmer Bay of Bengal, to the country's east, than in the Arabian Sea, to its west. To accurately capture the risk in India, models must account for variation in cyclone activity across the North Indian Ocean basin.	The AIR model's event catalog features separate annual frequencies for cyclones originating in the Bay of Bengal and the Arabian Sea. This allows local direct insurers to analyze district- or state-specific risk and global insurers and reinsurers to assess the risk to policies and portfolios that span the country.
Explicitly Models Precipitation-Induced Flood Loss	Precipitation-induced flooding can produce significant losses in both coastal and inland India, even in cases where cyclone winds are relatively weak. Models that only consider cyclone winds fail to capture the full extent of losses.	The AIR model explicitly captures precipitation-induced flooding. A sophisticated flood module estimates flood depth using high-resolution topography, elevation, and soil data.
Accounts for Directional Effects of Local Terrain on Surface Winds	Surface terrain can greatly affect wind speeds. Winds arriving at a site directly from the ocean will be faster than winds that had previously traveled over forested or urban terrain.	Using the latest high-resolution satellite-derived land use/land cover data, the AIR model captures the effects of surface friction on wind speed for eight wind directions.
STATE-OF-THE-ART ENGINEERING		
Captures Building Responses to Both Wind and Flood	Damage patterns from cyclone winds are dramatically different to those from precipitation-induced flooding.	The AIR model features separate damage functions for wind and flood that vary by construction type, building height, and year built. Explicitly modeling the damage by peril returns more accurate loss estimates.
Incorporates Component-Based Approach to Modeling Industrial Facilities	Traditional approaches to estimating the vulnerability of industrial facilities treat these facilities as single entities. Yet they can comprise hundreds of distinct structural components, each with its own vulnerability.	The AIR model employs a component-based approach to estimate potential loss to complex industrial exposures. The model implicitly accounts for more than 500 distinct components that have been identified through detailed, site-specific risk assessments conducted by AIR.

continued

AIR WORLDWIDE®

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MODEL AT A GLANCE

YEAR OF RELEASE 2012

MODELED PERILS Tropical cyclone winds and precipitation-induced flood.

CATALOG 10,000-year standard catalog with more than 35,000 loss-causing events. AIR's basinwide catalog allows companies to capture losses across the Indian subcontinent.

HAZARD MODULE

- Features separate annual frequencies for cyclones originating in the Bay of Bengal and the Arabian Sea
- Explicitly models precipitation-induced flood losses by assessing the flood depth from a storm's precipitation totals
- Incorporates the latest land use/land cover data to capture the directional effects of surface friction on wind speeds

VULNERABILITY MODULE Provides separate damage functions for wind and flood perils; damage functions also vary by occupancy, construction, and height. Damage functions for large industrial facilities are based on a component-based approach.

MODEL VALIDATION Hazard intensity was validated against local storm data, and loss estimates were validated against industry sources. In addition to AIR's comprehensive internal model validation, the model was peer reviewed by two independent external consultants.

STATE-OF-THE-ART ENGINEERING *(contd.)*	THE ISSUE.	THE SOLUTION.
Models the Effects of Storm Duration for More Reliable Loss Estimates	Most models estimate damage using peak wind speed alone. However, observation data repeatedly show that damage is also a result of how long a structure is subjected to damaging winds.	The AIR model develops a complete time profile of wind speeds for each affected location, thus capturing the effects on structures of both wind duration and peak wind speed.

UNPARALLELED INDUSTRY EXPOSURE DATABASE — **NO ISSUE HERE.**

India's high-resolution industry exposure database (IED) offers the industry's most up-to-date view of India's built environment. Based on the latest available information on risk counts, building characteristics, and construction costs, the IED has many benefits and uses—from supporting industry loss warranties that pay out based on industry losses, to providing the means by which companies with aggregate exposure can disaggregate their data for more accurate loss estimates.

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.

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