

StormZ – Investor Brief

*Early Warning Intelligence
for Extreme Weather Risk*



1. Executive Summary

StormZ is a cloud-based climate intelligence platform that detects **early warning signals of major storm formation** using satellite-derived atmospheric data.

By analysing **divergence between water vapour and outgoing radiation**, combined with **volatility and fractal signal analysis**, StormZ identifies **precursor conditions for storm genesis up to 7 days in advance**.

Unlike traditional weather models, StormZ treats the atmosphere as a **dynamic signal field**, enabling:

- Earlier detection of instability
- Lower computational cost
- Scalable global deployment

Historical analysis (2015–2025) demonstrates that StormZ identifies **structured, non-random precursor patterns** associated with major storms.

2. The Problem

Climate volatility is increasing, while existing forecasting approaches face limitations:

- **Late detection:** Traditional models rely on pressure, wind, and temperature signals that emerge *after instability is established*
- **High cost:** Numerical weather models require significant compute resources
- **Limited early warning:** Difficulty identifying pre-genesis conditions at basin scale

This creates a gap in **early-stage risk detection**, particularly for:

- Insurance and reinsurance
 - Shipping and ports
 - Government disaster planning
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3. The StormZ Approach

StormZ introduces a different paradigm:

Detect instability before storms form by analysing atmospheric signal behaviour

Core Signal

StormZ measures divergence between:

- **Total precipitable water vapour (rising)**
- **Outgoing longwave radiation (falling)**

This indicates energy being absorbed into atmospheric convection—a precursor to storm formation.

Signal Processing Layer

The platform applies:

- **Seasonal z-score normalisation**
- **Volatility analysis**
- **Fractal (DFA) metrics**
- Rolling time-window analysis (4, 20, 31 days)

This converts raw satellite data into **structured instability signals**.

Output

StormZ delivers:

- Candidate storm regions (lat/lon)
- Predicted genesis windows (days ahead)
- Imminence scoring
- Volatility diagnostics

Delivered via UI and API for subscribers.

4. Evidence of Predictive Signal

StormZ is built on **10 years of historical validation (NOAA IBTrACS + satellite data)**.

Key findings:

4.1 Magnitude Matters

- Higher signal intensity (SPI) significantly increases probability of storm genesis
 - Low signal → near-zero probability
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4.2 Basin-Wide Coupling

Storms are not isolated events—they emerge from **basin-scale instability patterns**.

StormZ detects these patterns before formation.

4.3 Sequential “Bridge” Signal (Key Insight)

A recurring precursor pattern has been identified:

1. Elevated instability over **West Africa**
2. Followed by elevated instability over **US eastern seaboard**
3. Storm formation occurs **1–7 days later**

Performance:

- Detection rate: ~70%
- False positive rate: ~24%

This demonstrates a **structured, time-ordered signal with predictive value**.

5. Product & Platform

StormZ is a **fully operational cloud platform**.

Architecture

- Satellite ingestion (NASA MERRA-2, Copernicus ERA-5)
- Daily automated processing pipeline

- Signal detection and tracking
 - Secure cloud delivery (AWS, Zero Trust architecture)
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User Access

Subscribers can:

- View daily risk maps
 - Track evolving risk clusters
 - Access timing forecasts
 - Generate custom reports
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Commercial Model

- Subscription-based access
 - Tiered analytics (basic → advanced)
 - API integration for enterprise users
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6. Competitive Advantage

StormZ differs from traditional forecasting systems:

Capability	Traditional Models	StormZ
Approach	Physical simulation	Signal detection
Timing	Late-stage	Pre-genesis
Compute cost	High	Low
Scalability	Limited	Global
Insight type	Deterministic	Probabilistic early warning

7. Strategic Positioning

StormZ is not a replacement for meteorology.

It is:

An early-warning intelligence layer that complements existing systems

Primary markets:

- Reinsurance (Swiss Re, Munich Re, AXA)

- Government risk agencies
 - Ports and shipping operators
 - Energy infrastructure
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8. Current Status

- Live operational platform (North Atlantic)
 - Daily pipeline automated
 - Historical validation completed
 - Initial signal discovery confirmed
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9. Funding Requirement

Funding is sought to:

1. Expand Basin Coverage

- South Pacific
- South Indian Ocean
- Additional regional baselines

2. Enhance Signal Modelling

- Refine timing models
- Improve geolocation precision
- Extend fractal and coupling analysis

3. Commercial Deployment

- Enterprise API development
 - Customer onboarding
 - Strategic partnerships
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10. Vision

StormZ represents a shift in climate intelligence:

From simulating weather
→ to **detecting the signals that precede it**

Early findings suggest that:

- Atmospheric instability forms structured fields
- Storms are amplifications of these fields
- These fields can be observed, measured, and interpreted

This opens the possibility of:

- Earlier warnings
 - Better preparedness
 - Reduced economic loss
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Closing Note

In many fields—from telecommunications to finance—major advances have come from recognising that complex systems exhibit **structured variability rather than random noise**.

StormZ applies this principle to the atmosphere.

It does not attempt to replace existing models.

It provides something they do not:

A measurable, early signal that a storm is about to form
