Signal 8 Transparency: Data vs. Decision

An Empirical Audit of HKO Typhoon Warning Reliability (2022-2025)

GCAP 3226: Empowering Citizens through Data
Group 3 Submission
Legislative Council Panel

The Policy Problem

"Is Hong Kong shutting down too early?"

Typhoon Signal No. 8 (T8) triggers a city-wide shutdown. Recent events like *Ragasa (2025)* saw signals issued 12+ hours in advance. We analyzed 11 typhoons using real-time wind data to cross-validate HKO decisions against their own "8-Station Network" criteria.

SDG 11 ALIGNMENT

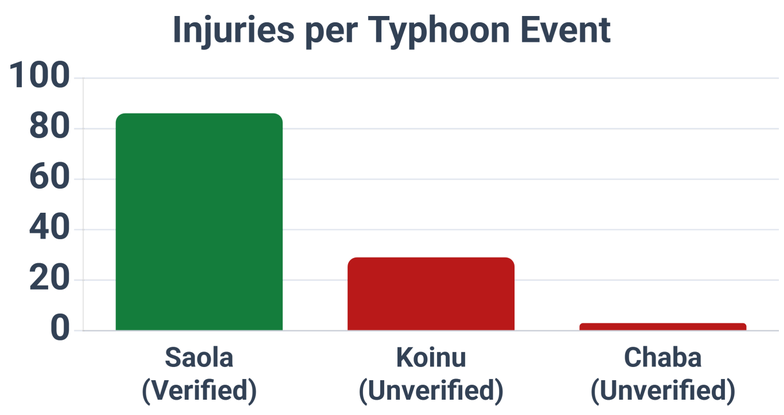
Target 11.5: Disaster Resilience.
"Balancing public safety with economic continuity through accurate early warnings."

METHODOLOGY: THE 3-TIER SYSTEM

We reverse-engineered HKO's decision logic using a strict observational algorithm on 10-minute mean wind data:

- **Tier 1** **Verified:** ≥4 stations sustained ≥63 km/h winds for ≥30 mins.
- **Tier 2** **Reappear:** Verified gales + typical eye passage lull pattern.
- **Tier 3** **Unverified:** Failed strict network spatial criteria.

IMPACT CORRELATION



Verified ≠ Safe: While verified storms like *Saola* caused massive damage, "Unverified" storms like *Koinu* still resulted in 29 injuries. This justifies HKO's "Precautionary Principle" for borderline cases.

POLICY RECOMMENDATIONS

1. TRANSPARENCY
Publish a "Decision Log" for every T8 signal. If strict criteria aren't met, explain the specific safety factors.

2. OPEN DATA
Release historical 10-minute wind data in machine-readable CSV formats to enable public audit.

3. STANDARDIZATION
Calibrate the "Precautionary Principle" to a standard 3-4 hour lead time target.

KEY FINDINGS

82%

OF T8 SIGNALS WERE "UNVERIFIED"

Out of 11 analyzed events, **9 were classified as Tier 3**. Only *Saola* and *Ragasa* met the strict "4 out of 8 stations" rule.

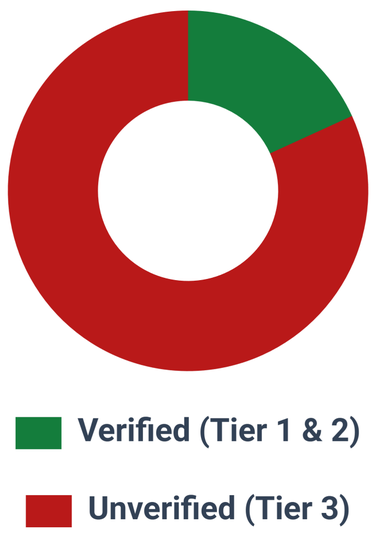


Figure 1: Observational Verification of 11 Typhoons (2022-2025)

ALL ANALYZED STORMS BY TIER

TIER 1: VERIFIED

- Ragasa

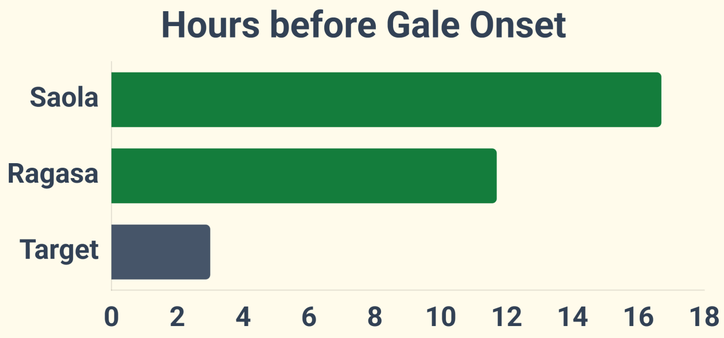
TIER 2: REAPPEAR

- Saola

TIER 3: UNVERIFIED

- Chaba
- Ma-on
- Nalgae
- Talim
- Koinu
- Yagi
- Toraji
- Wipha
- Tapah

⚠ Precautionary Lead Times (Hours)



Verified storms (green) had ~14h avg lead time vs. 3h target (grey).

SCAN FOR MORE

Data Sources: Hong Kong Observatory API, Annual Tropical Cyclone Reports.
Generated for HKBU GCAP3226, December 2025.

Hui Man Hei *Introduction*
Hong Kam Yin *Lit Review & Theory*
Chen Man Ching *Methodology & Findings & Implications*
Zheng Zian *Data & Poster*
Kung Tsz Lok *Conclusion*