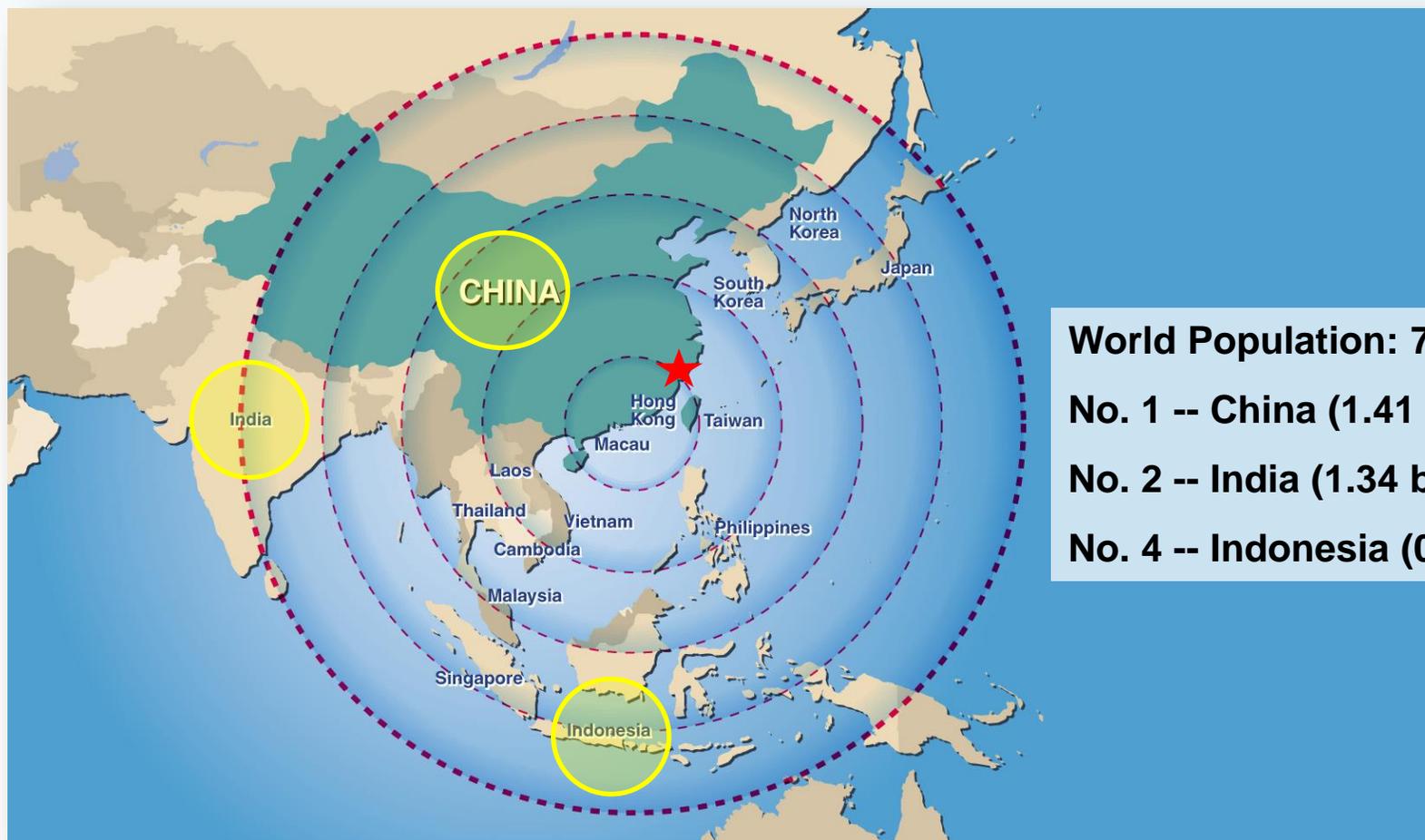


Where are we?



World Population: 7.55 billion*
No. 1 -- China (1.41 billion*)
No. 2 -- India (1.34 billion*)
No. 4 -- Indonesia (0.26 billion*)



Lucky that we don't have SNOW....It is no FUN



Our coolest day in 2018 was just 6.8 °C (44 °F)



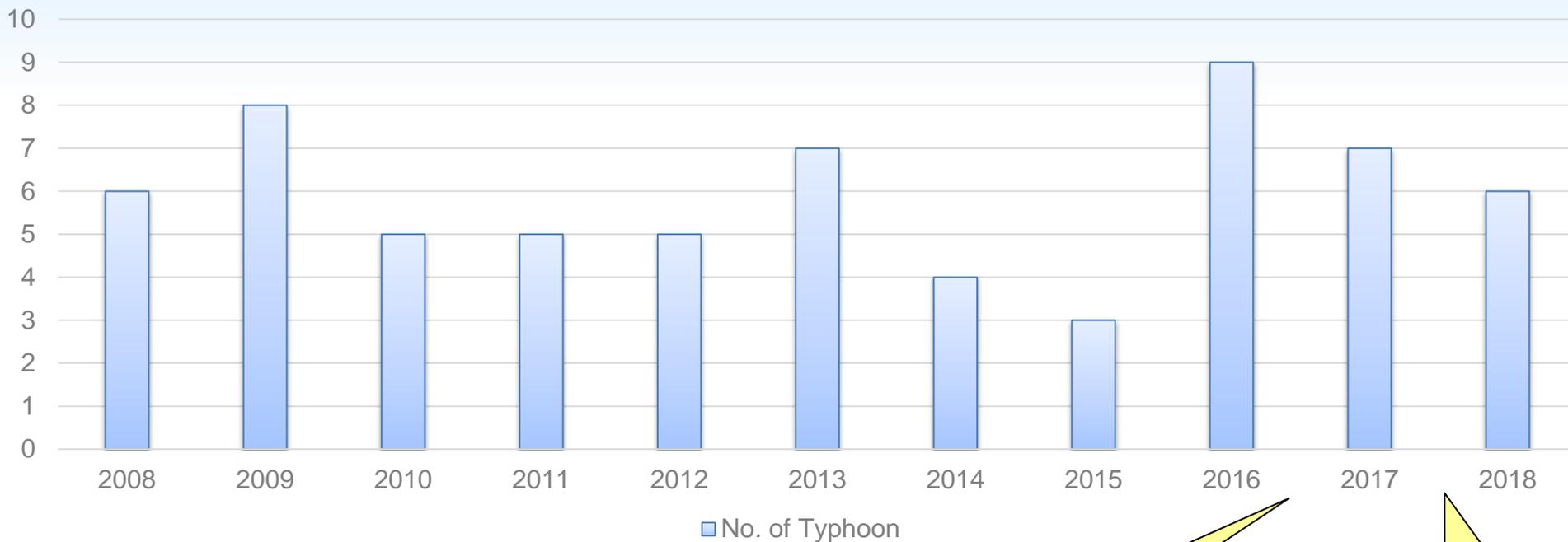
BUT.... Typhoon season affects our operations



Uncertainty

- **Rapid changing weather condition**
- Reporting timeliness
- Assessment tools e.g. measuring gauge
-

Hong Kong Weather Phenomenon



Super Typhoon Hato (2017)

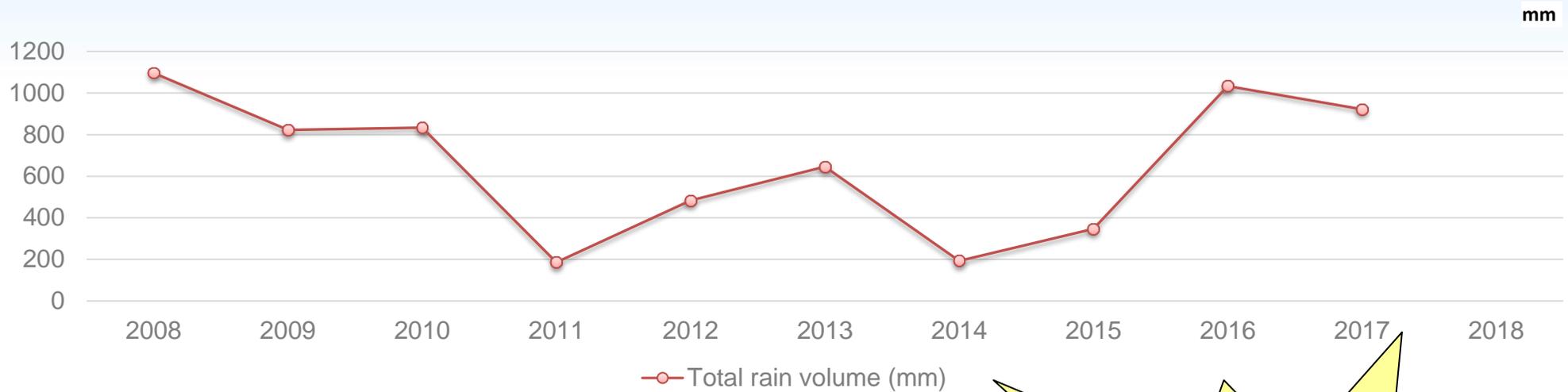
- Max Gust 144 km/hr
- Max Mean Wind 90 km/hr

Super Typhoon Mangkhut (2018)

- Max Gust 157 km/hr
- Max Mean Wind 99 km/hr



Typhoon associated rainstorm and lightning

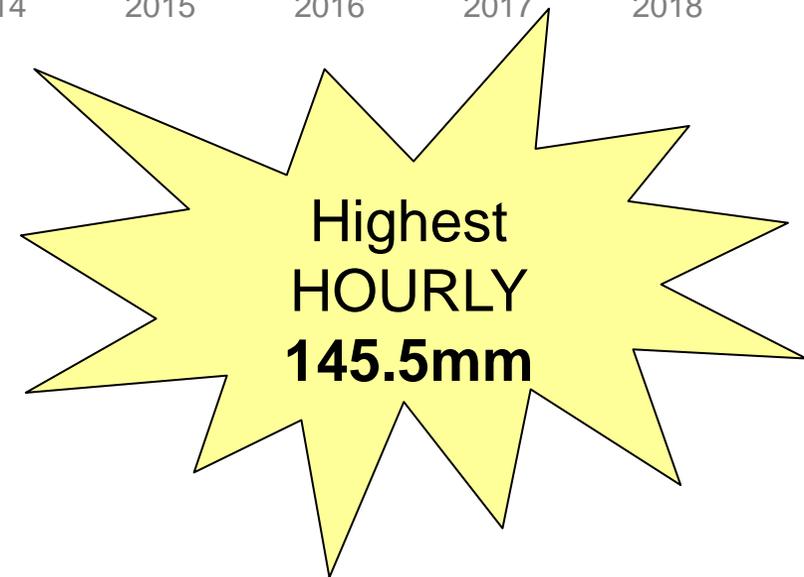


2017 statistics

- 2572.1mm total rainfall / annum
- 48 days with thunderstorm warning

2018 statistics

- 2162.9mm total rainfall / annum
- 38 days with thunderstorm warning

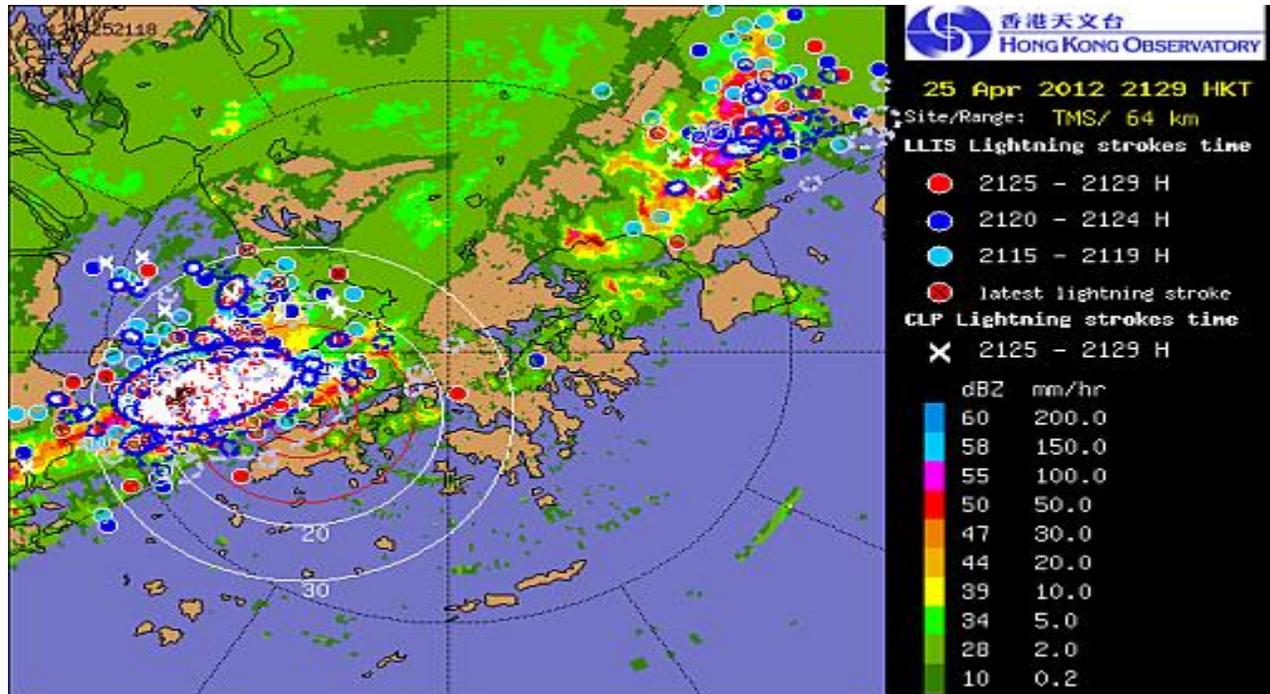


Difficulty to determine water depth under rapid changing weather



HKIA Airport Lightning Warning

To reduce the risk of injury to airport staff working in exposed area



- Zone A (Passenger Apron & Cargo Apron) = 118 occurrences (longest duration 283mins)
- Zone B (Area outside Zone A) = 153 occurrences (longest duration 204 mins)

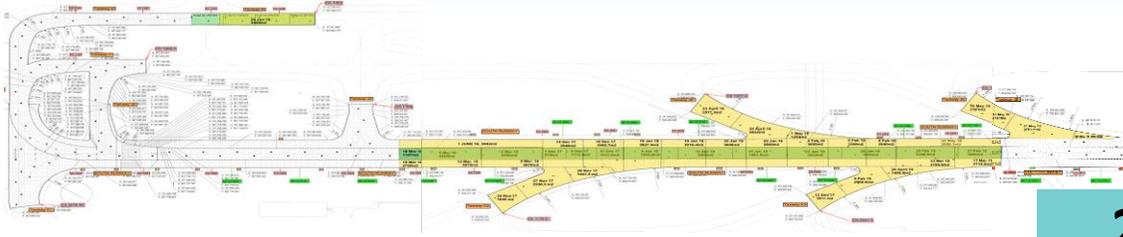


What about Infrastructure?



Planned Maintenance

1. Runway Resurfacing ~ wearing course re-laid every 7-10 years as standard practice



2. Runway Friction Run ~ weekly



**3. Runway Rubber Removal
~ daily on different sections**



Building Blocks of the Regime

(A) Assessment Criteria

- Percentage coverage ✓
e.g. 26-50%, etc.
- Depth assessment
e.g. Standing Water 3mm-15mm, etc.
- Rwy condition description ✓
e.g. Dry, Wet (less than 3mm), Slippery Wet, Standing Water, etc.
- Pilot braking action ✓



Runway Condition Matrix

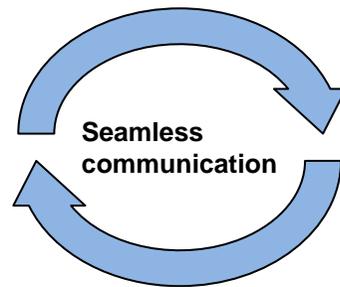
Uncertainty

- Rapid changing weather condition
- Reporting timeliness
- Assessment tools e.g. measuring gauge
-



Handling Procedure and Handshaking Protocol

Collaboration and Support.....



HKIA Flight Operations

- Is it timely?
- NOTAM or ATIS



HKIA Airport Operations

- How frequent to report?
- Duration of 3mm “standing water”
- What if surface runoff created by sporadic downpour?

HKIA ATC Operations

- Is it timely?
- Runway Condition Report in NOTAM
- What if surface runoff created by sporadic downpour?



Building Blocks of the Regime

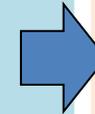
(B) Reporting

- Runway Condition Report (RCR) ✓
- Standardized AIS (Aeronautical Information Services) syntax ✓
- Enabled multi-platform dissemination ✓

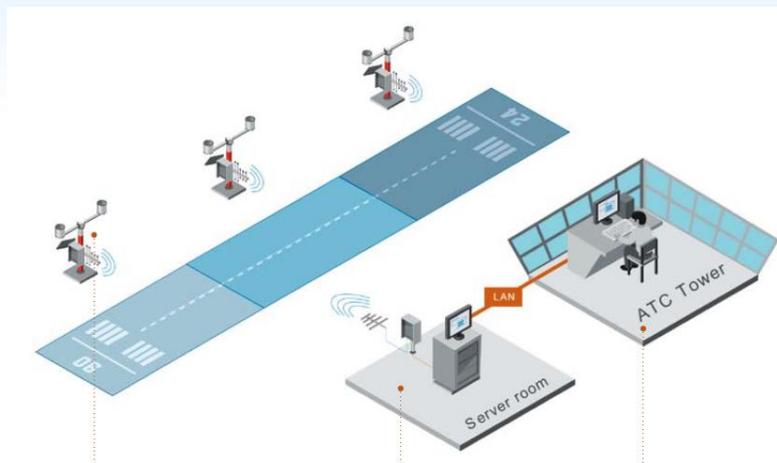
How to tackle timeliness?

Uncertainty

- Rapid changing weather condition
- **Reporting timeliness**
- Assessment tools e.g. measuring gauge
-



How's technology fitted in?



Roadway and Runway Weather Station

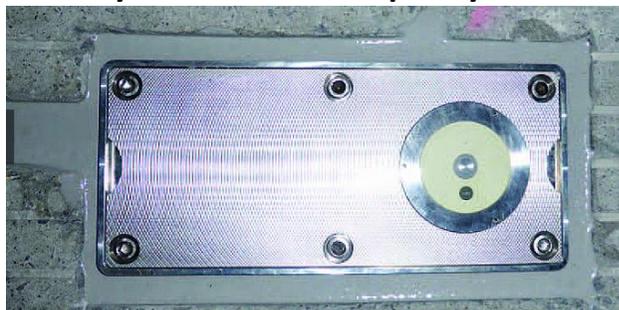
To name a few and still evolving.....



Non-invasive sensors



Runway Contaminant Depth System



Uncertainty

- Rapid changing weather condition
- Reporting timeliness
- **Assessment tools e.g. measuring gauge**

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Questions



