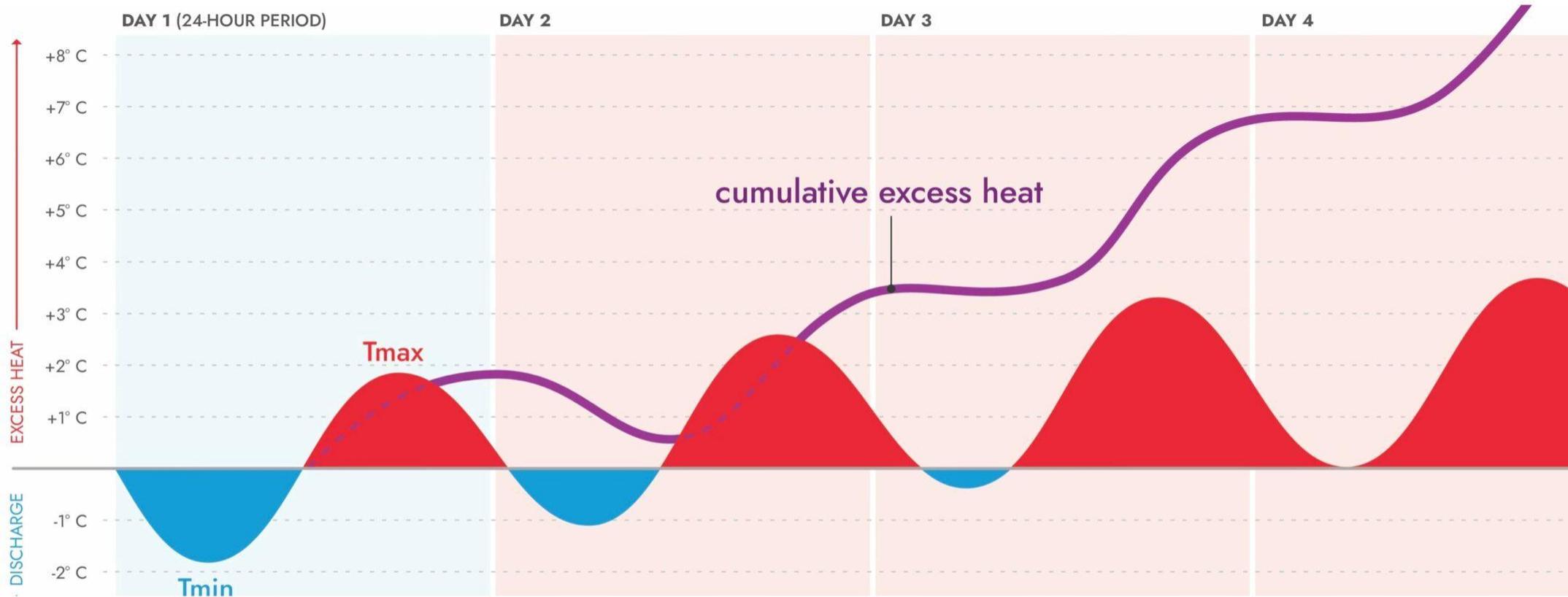# Bringing Extreme Heat Factor analysis to HEWS/HHEWS Design

HEATWAVE

Daytime heat is greater than overnight cooling. Heat accumulates over consecutive days. Everyone is at risk, including healthy individuals who are active or unprepared.

HEATWAVE THRESHOLD
(Local **mean** temperature 95th percentile on 30 year reference period)

EXCESS HEAT

DISCHARGE

DAY 1 (24-HOUR PERIOD) DAY 2 DAY 3 DAY 4

+8° C
+7° C
+6° C
+5° C
+4° C
+3° C
+2° C
+1° C
-1° C
-2° C

Tmax

Tmin

cumulative excess heat

Extreme Heat Factor (EHF) heatwave intensity/severity index: (Dr. John Nairn, ex-BOM, Australia)
A method to track heatwaves (past and forecast).
Environmental and Health-focused metric.
How the heat "accumulates" compared to what your body is actually used to, in your specific location

2-factors considered:

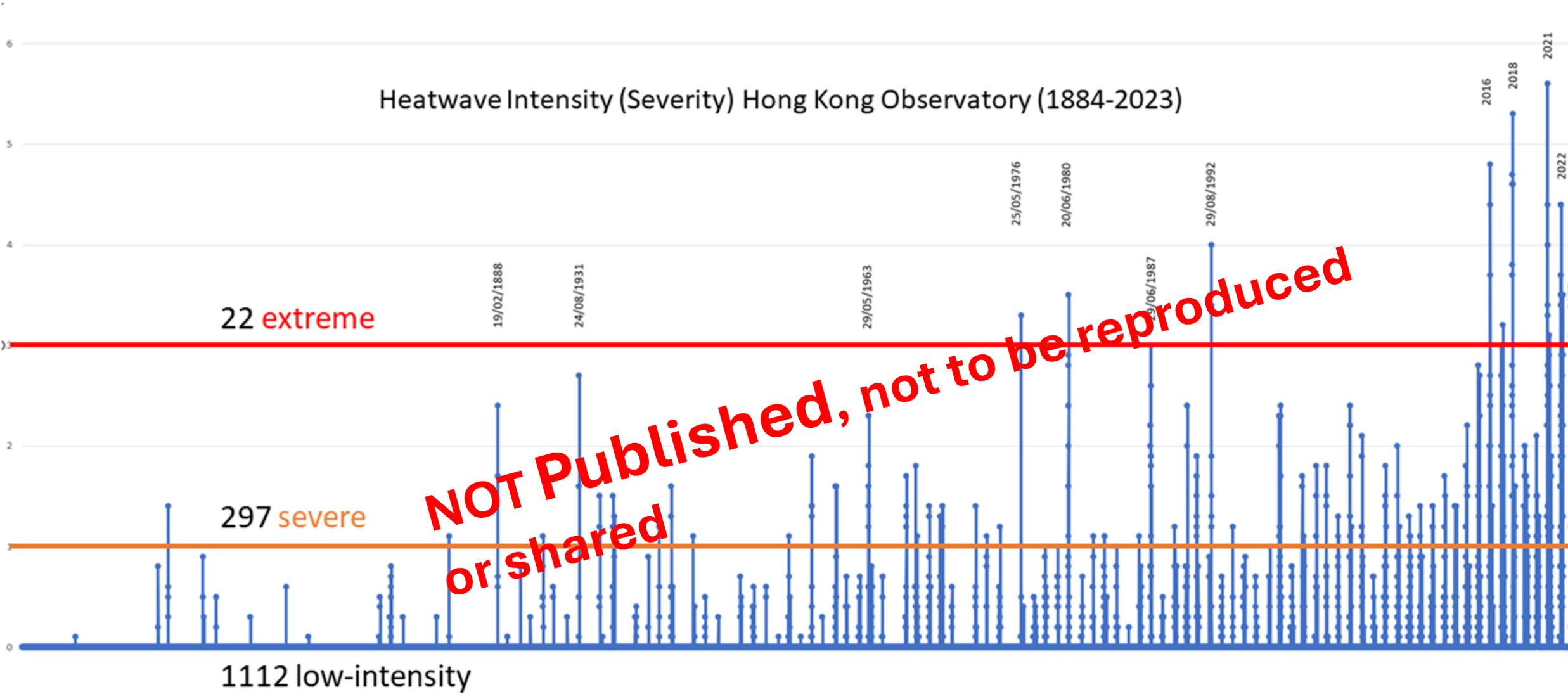**Significant Heat (Acclimatisation).**
Comparison of the past 30-days average to "Normal".
Extreme Heat (Threshold)
compares the three-day average to the long-term climate "normal" for the specific spot (station). If it's above 95 percentile, EHF will spike.

Heatwave Intensity (Severity) Hong Kong Observatory (1884-2023)

Regardless of what type of Heat Early Warning System (HEWS) or Heat-Health EWS.

Single Variable (Max Temp)

Dual-Variable (Max Temp & Min Temp)

Biometeorological or Termo-physiological (Heat Index, Humidex)

Heat Budget; rational indices (UTCI, PET, WBGT…)

Having access to the EHF, will help you identify which events have been the most intense and worth calibrating your threshold system.

If you/your NMHS is keen to use this support from WMO:

The Offer: EHF Analysis for representative stations

Ideal requirement: **30-years of Tmax and Tmin**
Bonus: <u>hourly</u> values for particularly interesting/disastrous heat events

*If interesting info is uncovered, we are happy to co-author any of the results.

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