

Extreme Heat Services – an Update

Armel Castellan, WMO Extreme Heat Services Technical Advisor

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WORLD
METEOROLOGICAL
ORGANIZATION

An aerial photograph of a densely populated informal settlement. The ground is covered with hundreds of colorful plastic water containers (blue, red, yellow, green) and long blue hoses snaking across the area. Numerous people, including children and adults, are visible, some standing and others sitting, engaged in daily activities. The scene is set against a backdrop of simple, weathered buildings with concrete and corrugated metal walls. The overall atmosphere is one of a bustling, resource-constrained community.

Outline

Publications & Partnerships

Survey Results

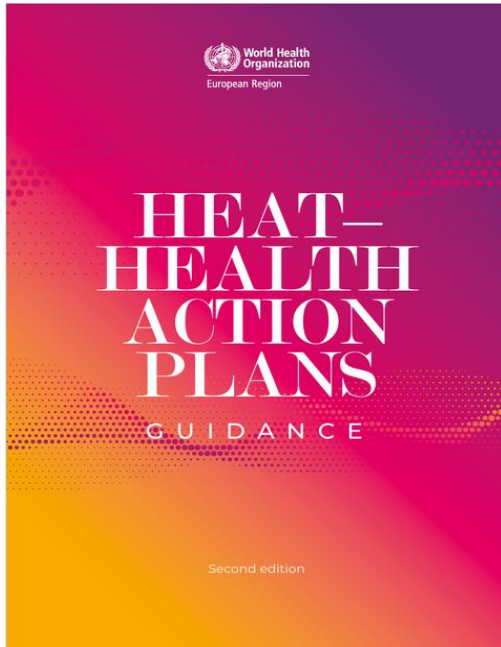
Excess Heat Factor

Heat Services Maturity Model

Climate and Health Desks (HWS Pilots)

Global Heat Forum

Guidance and Reports on the Horizon



WMO Global
Scientific
Synthesis
Report on
Extreme Heat
and Health

Guidance on
Extreme Heat
and Heat
Health
Early Warning
System
Development

Handbook of
Extreme Heat:
Temperatures,
Indices and
Statistics

Guidance and Reports on the Horizon

Partnership between:

Zurich Climate Resilience Alliance,

GHHIN SE Asia,

Red Cross Red Crescent Climate Centre

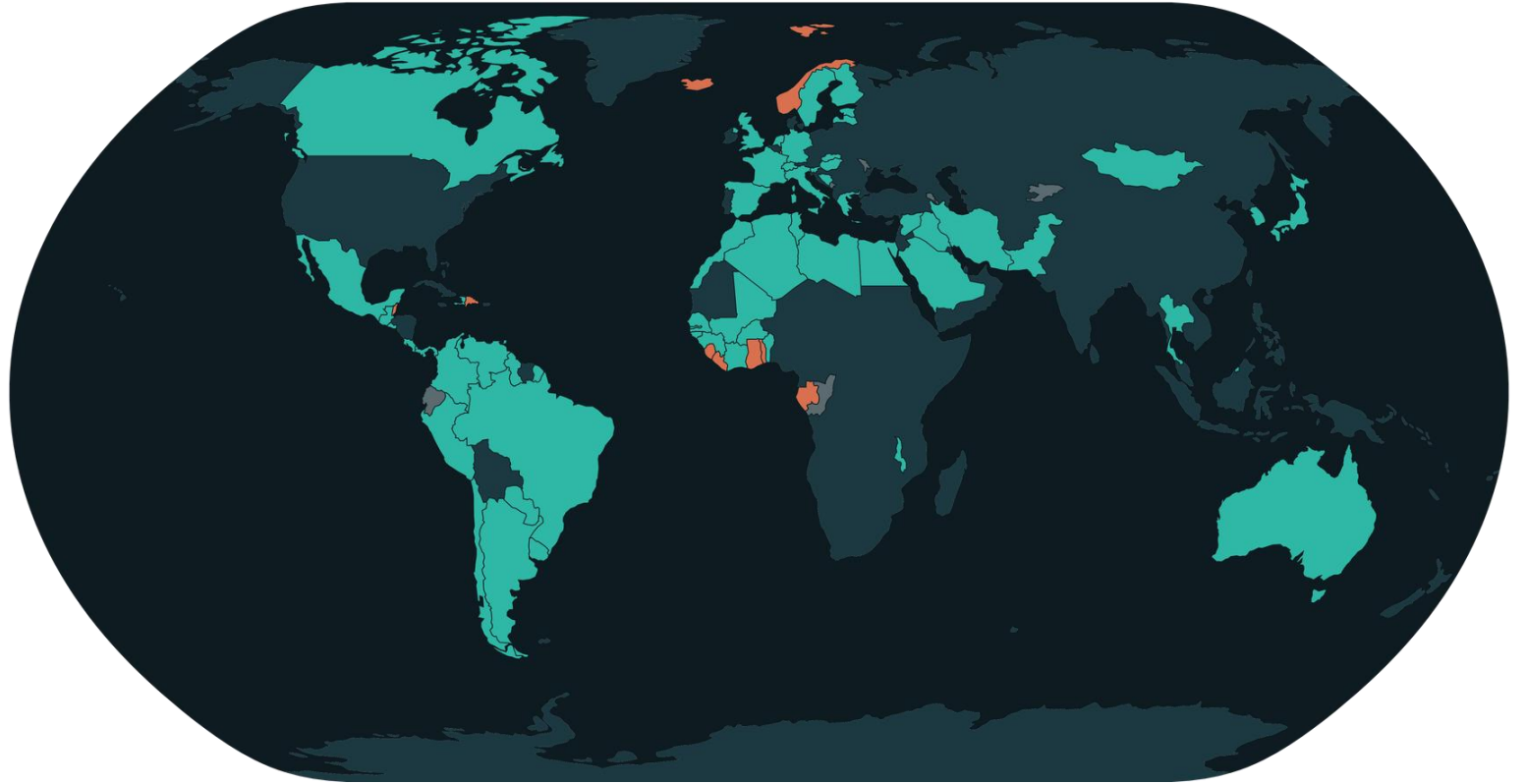
Heat Literacy Guide

Speaking of Extreme Heat...

2025 WMO Member survey results

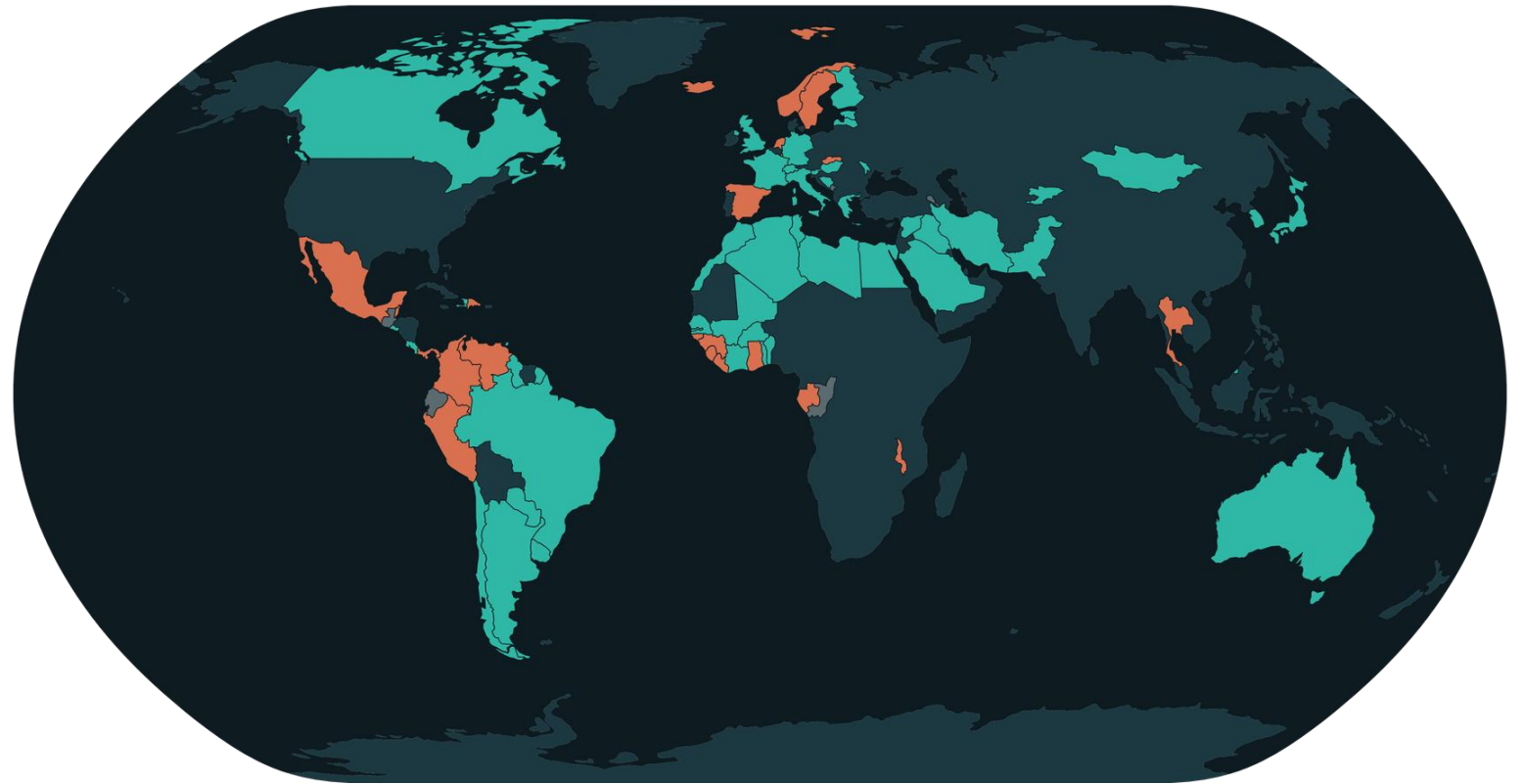
Most responding countries (n=75) provide warnings for **extreme temperatures**.

Extreme Temperatures can be defined according to a set threshold (e.g., 35°C) or a relative percentile of what is climatologically normal (e.g., 98%) for the season and typically focus on min, max, or mean temperature.



Fewer responding countries (n=75) provide warnings for **heatwave intensity**.

Heatwave Intensity warnings capture all four defining traits of a heatwave: localized, excess, cumulative, and sustained heat.

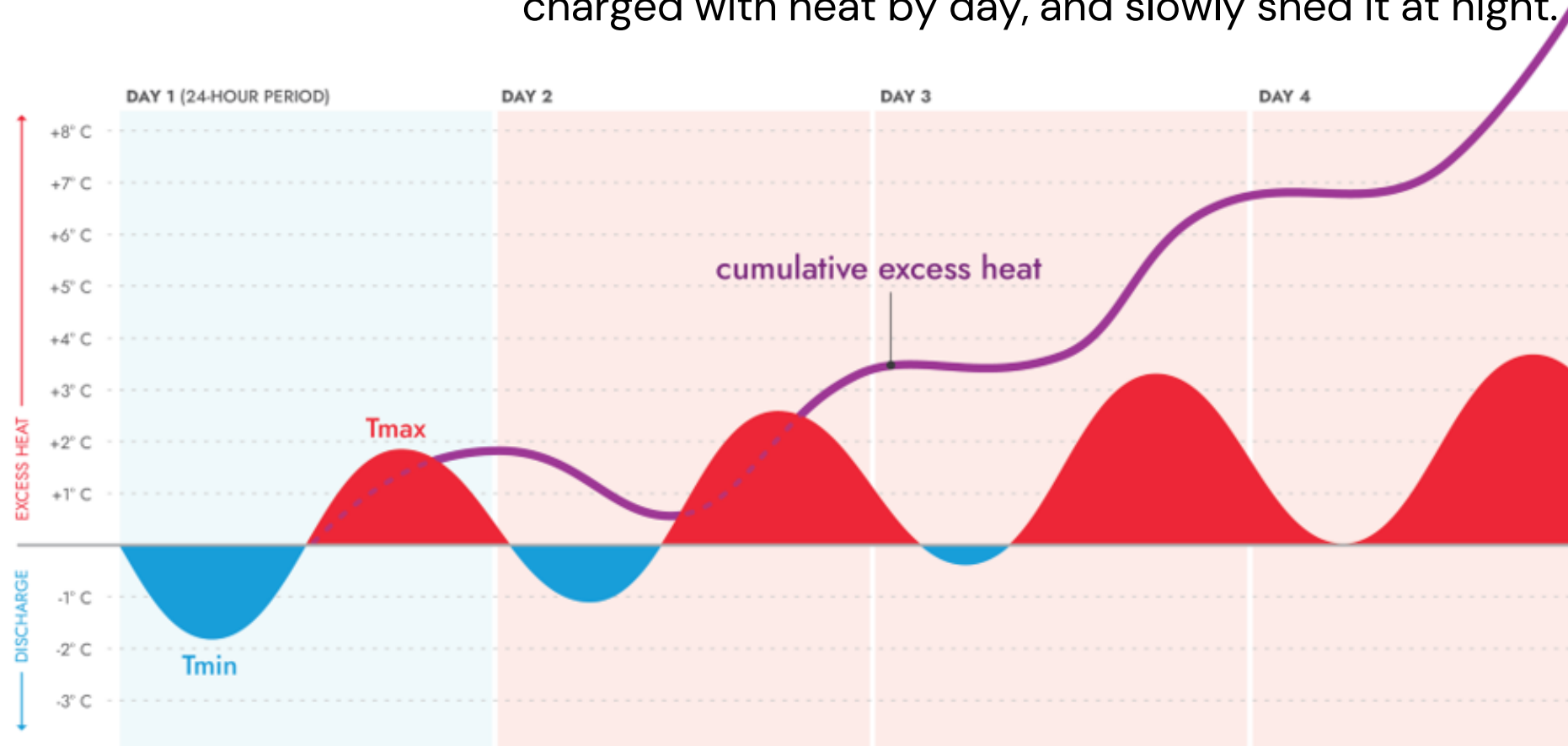


Heatwave intensity indices such as **Excess Heat Factor (EHF)** frame our environments as batteries that are charged with heat by day, and slowly shed it at night.

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)



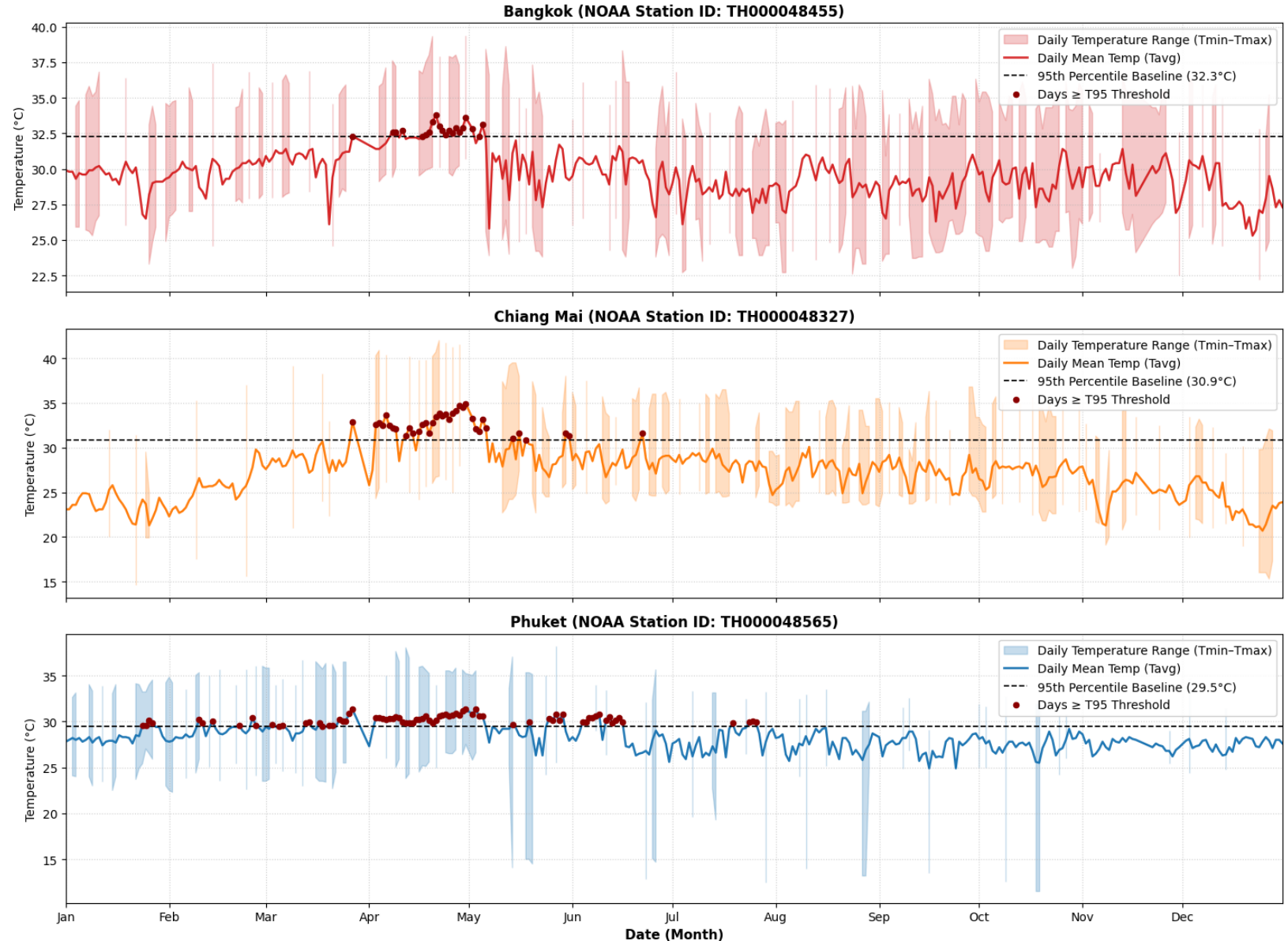
Graphics by Atalie Pestalozzi, ISET-International; Concept: John Nairn, GHIN

Excess Heat Factor

Preliminary Data

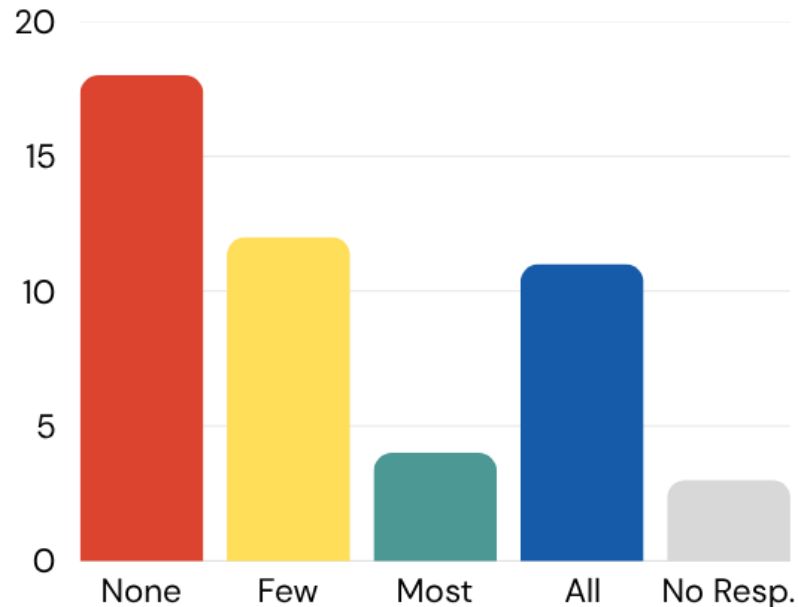
Thailand

NOAA GHCN-Daily Temperature Profile & Heatwave Baselines in Thailand — 2024

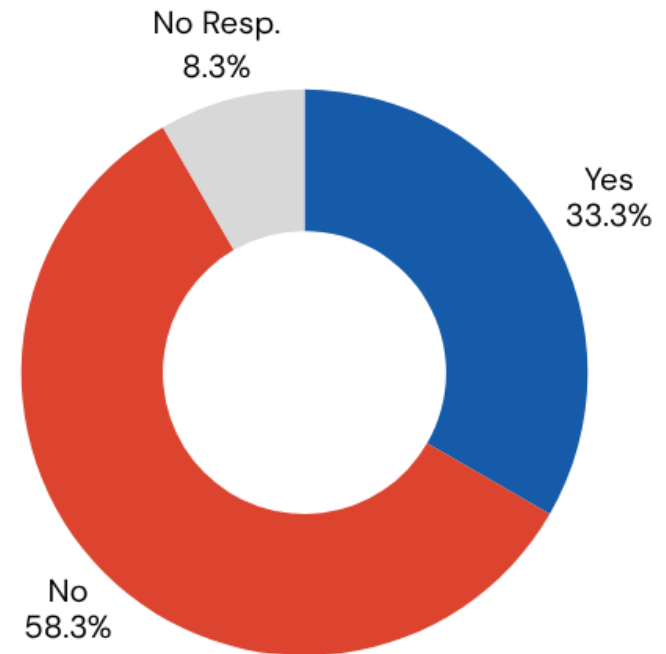


2025 WMO Member survey results

- 1 Only 1/3 have trained most or all forecasters on impact based forecasting for heat.



- 2 Only 1/3 actually provide impact based forecasts for heat.



HEAT SERVICES MATURITY MODEL

Example of Threshold Calibration



Heat Services Maturity Model

- **Meteorological Basis**
- **Impact-Based Warnings**
- **Verification and Validation**
- **Engagement Maturity**
- **Skills and Training**
- **Warning Granularity**

- A **Maturity Model** to assess current status, to establish a **Minimum Service Standard**, and to set clear criteria for moving up to higher maturity levels.
- **Guidance and technical documents** to support improvement of the heat services.
- **Training and capacity building** to ensure staff have the needed skills and knowledge.
- Clearer **mandates** and formal **relationships** with health and other partners (e.g., MOUs).



Climate and Health Desks

Indonesia

Philippines

Zimbabwe

Brazil

Heat Warning System Pilots

Morocco

Jamaica

Mongolia

South Asia ...



Climate Risk and Early Warning Systems CREWS

Heat Governance

Nepal

Senegal

Belize





World Health
Organization



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CLIMATE AND HEALTH JOINT PROGRAMME

Thank you

Connect with us

climahealth.info

heathealth.info

climatehealthoffice@wmo.int

info@ghhin.org