

Technical Brief

# CONSIDERATIONS REGARDING THE NAMING OF HEATWAVES

At [SERCOM-2](#) (Oct 2022), WMO Members considered the practice of naming heatwaves, and expressed caution in adopting or promoting this practice. Members requested WMO to focus attention on strengthening heat-health warning systems, enhancing technical heat forecasting capabilities, and building capacity and partnerships to protect vulnerable communities from extreme heat.

## BACKGROUND

Heat has emerged as a major public health risk and will continue to pose a significant threat with additional climate change. Yet persistent low awareness of the health risks of heat, during heatwaves and also moderate heat days, means thousands of preventable deaths occur annually.

A number of National Hydrological and Meteorological Services (NHMS) actively participate in coordinated multi-agency Heat Action Plans and produce Extreme Heat Warnings that save lives, but these are not implemented as widely as needed. More multi-agency action on heat as a significant meteorological hazard is required to protect public health and well-being.

A recent civil society effort originating in the United States to increase public awareness of heat risks, proposes to name and rank heatwaves, and they have begun piloting this approach in selected cities in the USA and several other countries. Given the role of World Meteorological Organization (WMO) in the coordination of the naming of extreme weather events, international experts in public health, public policy, and meteorology were consulted to assess the advantages and disadvantages of this practice. Key findings are summarized in the following pages.

**NMHS are encouraged to consider these findings in taking a position on the practice in their own jurisdictions.**



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## BOX 1

### EXAMPLE HEAT ADVISORY DECISION SCENARIOS

The following scenarios highlight the issues that may arise from naming heatwaves without careful consideration of this practice:

#### Interference with established HHWS Protocols

In countries with established heat response protocols, warning decisions are based on authoritative information and close collaboration between national weather services, public health and emergency services agencies, ministries, and other organizations.

If a 3rd party publicly named an extreme weather event based on different criteria, in the midst of issuing the official warning, this “intervention” may undermine the authority of the relevant bodies, cause public confusion, generate media interest in “who is right,” and possibly erode public trust in designated authorities.

#### Conflicting messages in risk communication

If a third party issued a public statement about a named event for the purposes of raising awareness of the hazards of heat, then it would be important to refer to official response information and resources.

However, if practices of naming and official response were decoupled, then the public may find contradictory risk assessment information or that an official threshold to provide response or disperse financial resources was not merited. This may cause confusion for the public and the suite of decision makers (hospital administrators, sports coaches, etc.) who received their information through public media channels. Evidence shows that mixed messages are to be avoided in risk communication.

#### Decision-making using unofficial vs. authoritative warnings

Technical staff and decision-makers at subnational levels may be unaware of constitutional or other legal mandates that indicate designated authorities should be the single source for government coordinated responses to extreme weather. Population health and wellbeing may not be adequately protected in the event that unofficial sources are used for decision-making, and issues of legal liability may arise in some situations.

### CONTEXT OF NAMING EXTREME WEATHER EVENTS

- **What was established for tropical cyclone events may not necessarily be appropriate for heatwaves.** International and regional naming protocols are used to inform risk management of different types of storms, including tropical cyclones. Caution should be used when comparing or applying lessons or protocols from one hazard type to another hazard due to the important differences in their physical nature and impacts, and in the public response to those impacts.
- **There is currently no agreed national, regional, or international system or protocol for naming or coordinating the naming of heatwave events.** Decades of research and experience with extreme weather events demonstrate that storm naming protocols and agreed coordination mechanisms are required to ensure effectiveness, prevent misnaming, and to coordinate the naming of transboundary or regional scale events.
- NMHS usually have the designated national responsibility to provide forecasting and public warning services for extreme weather and hazard impact events. **Where NMHS are the nationally designated body, a NMHS should be involved in any plans or initiatives to develop a heatwave naming process,** whether initiated by the media or third-party actors, to ensure necessary alignment with official national heat warning services.
- **There are potential advantages and disadvantages of naming heatwaves for the diverse range of stakeholders and users** (See Table 1).

**TABLE 1: ADVANTAGES AND DISADVANTAGES OF HEATWAVE NAMING FOR DIVERSE AUDIENCES**

	<i>Advantages</i>	<i>Disadvantages</i>
Public	<p>May improve recall of past events (undocumented)</p> <p>May raise awareness of broad impacts of heat on society and environment, including impacts on health, infrastructure, power, wildlife, biodiversity, and agriculture.</p>	<p>Conflicting motivations of risk communication and public risk awareness that may result in:</p> <ul style="list-style-type: none"> <li>• False sense of complacency around heat events that are very harmful but not assigned a name.</li> <li>• Confusion of independently named events with authoritative early warning systems. Warning fatigue and distraction from understanding vulnerability and personal behavior.</li> <li>• Confusion across localities: “does this apply to me?” when a named event is in another city or has a different name.</li> </ul>
Insurance	<p>Categorizations related to impacts that are used to name an event, can help create a market for insurance by providing transparent triggers for parametric products. Greater transparency will also satisfy regulators.</p> <p>Categorizations could provide a minimum requirement for a claims process to take place, making indemnity heat insurance more costly and timely.</p>	<p>One naming system (and associated categories) will not be suitable for different types of heat insurance (health, business interruption, energy, transport...) and different locations and multiple categories would be confusing.</p> <p>Naming (categories) will create a framework that drives the market towards standardized (cheaper) products, rather than products that are more impactful for the insured (but cost more).</p> <p>Naming/categories cannot be consistent across borders and with national-level warnings. Alignment with national systems is important for transparency and because insurers want to support risk reduction systems. Inconsistency across borders would be a barrier to global deployment of parametric solutions (e.g. regional risk pools like ARC).</p>
NMHS	<p>May increase general hazard awareness</p>	<p>Non-official naming practices are likely to undermine national level warnings systems and authoritative advice and create tensions between NHMS and private weather information providers</p> <p>Non-official practices will detract time and attention from official advisory systems</p> <p>Non-official practices will be disconnected from multi-hazard warning systems which are under development to manage compounding, cascading hazards.</p>
Media	<p>May be easier for the media to report and create stories around</p>	<p>The same heat wave can have a very different intensity and impact manifestations across a city or region, and complicate risk communication.</p> <p>As the heatwave moderates or intensifies the media may over emphasize or under emphasize the potential impact of the heatwave through persistent reporting against the named heatwave.</p>
Public Health & Emergency management Authorities	<p>May increase general hazard awareness</p>	<p>Focuses media attention on heat wave events versus equally harmful chronic heat and unnamed extreme heat events</p> <p>Risk of disorganization of the heat warning system, decision-making processes and timing of authoritative alerts.</p> <p>Does not raise awareness of personal vulnerability, which is more important in triggering protective lifesaving behavior</p>

## PERSPECTIVES OF PUBLIC HEALTH AUTHORITIES AND RESPONDERS

- **Authoritative and evidence-based heat alert and response systems have been established and are functioning in many countries.** Caution should be taken to protect public trust in public warning systems. Interventions which are not-evidence based may detract from these established protocols and are not desirable for public health authorities. **Critical time by limited staff should be spent on lifesaving interventions.**
- **Naming heatwave events would put focus on the wrong thing.** Evidence indicates awareness of personal vulnerability and safe behavior measures are more important for saving lives than hazard awareness, in the case of extreme heat. Naming singular heatwave events misdirects public and media attention away from the messages that matter most.
- **The dangers of heat are not restricted to heatwave days, which account for only a proportion of heat-related deaths.** For example, in France, heatwave days represent around 1/3rd of heat related mortality during the course of a heat season (Pascal et al, 2018). High impacts concentrated on a small number of heatwave days require specific emergency and public health responses and pose risks to disrupting health systems. However, exposure to more frequent less extreme temperature days account for the greatest public health burden and require different behavioral and longer-term responses. Focus on heatwaves alone is prioritizing only one part of the problem and associated solutions.

## HEAT RISK COMMUNICATION AND PREVENTION

- A named heat wave is not a public hazard advisory. Only designated national agencies, (e.g., weather services or public health agencies) have the national responsibility to issue official heat warnings. **Unofficial naming practices, which are decoupled from formal advisory protocols, risk disrupting civil protection coordination efforts** (See box 1).
- The possible additional benefits of introducing heatwave naming systems above the benefits derived from effective existing Heat Action Plans have not been rigorously evaluated. **It is currently not possible to reliably determine the added value or impacts of heatwave naming.**
- In instances where heatwave naming is being piloted, it was done so to serve predominantly as an instrument for risk awareness raising for the public and media. The associated heatwave messaging may or may not align with the official national weather communication strategies, **good practices guidance is available** (see box 2).
- **Focusing on heatwave events alone may misinform the public and undermine awareness of the actual risks of heat to health.** Evidence suggests public advisories about heat-related risks should provide sufficient awareness of the dangers of prolonged exposure to excessive heat above locally determined thresholds, such as hot nights, exertional heat-risk conditions, or prolonged elevated heat; these are responsible for the most heat related-illnesses and excess mortality.
- **Extreme heat results in multiple socio-economic impacts.** Naming a heatwave once an event is ongoing or has already occurred **will have little impact on decisions to prevent negative losses and damages to the natural environment, agriculture, or infrastructure for housing, energy, water, transportation** - such decisions are usually made years or seasons in advance of singular events.
- **The complexity of high temperatures occurring across space and time significantly complicates the proposed practice of heatwave naming.** Heatwaves occur at local to continental scales and may cross multiple

political jurisdictions. Microclimates, such as those in urban areas may experience heatwave conditions in a different manner from surrounding areas. Given these complexities and the increasing frequency of heatwaves, **public confusion and warning fatigue are real concerns.**

- **The effectiveness of heatwave naming as an intervention has not been evaluated.** Systematic research is needed to determine if the practice of naming heatwaves results in enhanced community and sectoral preparedness, and reduced heat related illness, or mortality. The monitoring and evaluation of pilot naming scheme projects should be encouraged.
- Notwithstanding the contrasts between storms and heatwaves, **the storm naming literature as yet does not provide convincing evidence of the potential efficacy of heatwave naming.** The literature on the efficacy of naming storms, whether they are tropical cyclones or winter storms, is undeveloped. In relation to winter storms, the few studies on the effectiveness of naming reveal contrasting conclusions. Some studies suggest naming has precipitated behaviour change and an upturn in hazard awareness (e.g. [Charlton-Perez et al. 2019](#); [Kotroni et al. 2021](#)) while others (e.g. [Lin et al. 2018](#); [Raine et al. 2017](#)) do not draw this conclusion and highlight the inherent methodological issues associated with assessing naming effectiveness. Furthermore, different cultural views influence how people perceive and interact with hazard risk and associated information ([Morss et al. 2020](#)).

## GOVERNANCE

- An objective, threshold-based and mandated system of heatwave naming, similar to Tropical Cyclone naming, would require significant resources at WMO level to govern the process at global and regional level. Such a system would likely need to be operationally managed by a network of Regional Specialized Meteorological Centers as per Tropical Cyclones. Such a system would represent a significant resource burden, largely for the NMHSs with designated responsibilities for managing such a system. A NMHS may not have the resources or capacity to support regional coordination or establish a national coordination body. **National meteorological authorities should evaluate these costs, in relation to the claimed but, unevaluated, benefits.**
- WMO advocates the sovereignty of individual Members to warn their citizens in ways appropriate to their context. This principle should be maintained in relation to naming-schemes. If not appropriately designed and implemented, naming has the potential to undermine (rather than reinforce) national-level warnings and communications around severe weather. **National meteorological authorities should evaluate these risks and benefits for public safety.**
- As the UN specialized agency responsible for weather, climate and water, WMO should look to reinforce its leadership role in coordinating globally recognized extreme weather naming conventions.

### BOX 2

## GOOD PRACTICE GUIDANCE ON RISK COMMUNICATION

[Heatwaves and Health: Guidance on Warning-System Development. \(WMO. 2015\)](#)

[Communicating the Health Risks of Extreme Heat Events: Toolkit for Public Health and Emergency Management Officials \(Health Canada, 2011\) EN / FR](#)

[Risk Communication Basics Training Course \(World Health Organization\)](#)

[Communicating risk in public health emergencies \(World Health Organization, 2018\)](#)

[Communicating Heat Risk: Experiences from C40's Cool Cities Network \(C40, 2020\)](#)

## TECHNICAL AND OPERATIONAL ISSUES

- There is no standard classification or ranking system for extreme temperature events, including heatwaves. The **practice of decoupled naming and early warning, as well as inappropriate naming, could bring unintended negative consequences and reduce the effectiveness of established heat advisory and response measures.** (See box 1)
- The additional act of “naming heatwaves” does not assist with the identification or characterization of extreme temperature events.
- **Heatwaves can be forecast up to 10 days in advance in many areas (mainly extra-tropics and high latitudes) but lack skill at 3-day lead-times in many regions (mainly tropics). Forecast-based naming creates additional challenges** that named events might not transpire, turn out to be less severe, or occur in different localities, potentially undermining any benefits of raised awareness through naming, and creating false alarms.
- **NMHS should consider the impact on duties and services of communication and emergency operations staff.** The time burden for NMHS, health authorities and other civil protection authorities to engage with a naming scheme, including its coordination and providing technical clarifications to other civil authorities, and the media will detract staff focus from providing official EWS/advisory services and life saving interventions.
- **To prevent confusion and interference with authoritative operational procedures and protocols,** coordination of pilot heatwave naming with the official heat advisory systems in a country is recommended.



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## CONCLUSIONS

WMO, working with relevant partners, will continue to update extreme heat related guidance and lead efforts to further develop associated communication strategies. In terms of achieving better coordinated and consistent approaches to heatwave warnings and advisory around the world, WMO should initially look to conduct an evaluation of the effectiveness, benefits, challenges and sustainability of existing initiatives to name heatwaves, using the findings to inform any future proposals.

NMHS are encouraged to partner with their national health and disaster management partners to improve established and evaluated measures, such as Extreme Heat Warnings, coordinated Heat Action Plans, and evidence-based interventions to reduce preventable morbidity and mortality during heatwaves at local to national levels.

Members are encouraged to promote alignment between extreme heat messaging and overarching authoritative national severe weather warnings and communication strategies. Stakeholder engagement should be undertaken, including with local authorities considering or who are piloting heatwave naming.

Members are encouraged to undertake and widely share the results of monitoring and evaluation of extreme heat warning systems, communication strategies, and any pilots of heatwave naming.

WMO is committed to supporting Member States through its bodies and activities to enhance Early Warning Systems and Heat Action Plans, and to raise awareness of the risks of extreme heat and effective action that can be taken to protect the most vulnerable.



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