

# Guidelines on the Implementation of Climate Watches

2022 edition

WEATHER · CLIMATE · WATER



WORLD  
METEOROLOGICAL  
ORGANIZATION

WMO-No. 1299



# Guidelines on the Implementation of Climate Watches

2022 edition



WORLD  
METEOROLOGICAL  
ORGANIZATION

WMO-No. 1299

WMO-No. 1299

© **World Meteorological Organization, 2022**

The right of publication in print, electronic and any other form and in any language is reserved by WMO. Short extracts from WMO publications may be reproduced without authorization, provided that the complete source is clearly indicated. Editorial correspondence and requests to publish, reproduce or translate this publication in part or in whole should be addressed to:

Chair, Publications Board  
World Meteorological Organization (WMO)  
7 bis, avenue de la Paix  
P.O. Box 2300  
CH-1211 Geneva 2, Switzerland

Tel.: +41 (0) 22 730 84 03  
Fax: +41 (0) 22 730 81 17  
Email: [publications@wmo.int](mailto:publications@wmo.int)

ISBN 978-92-63-11299-6

NOTE

The designations employed in WMO publications and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of WMO concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The mention of specific companies or products does not imply that they are endorsed or recommended by WMO in preference to others of a similar nature which are not mentioned or advertised.

## **CONTENTS**

	<i>Page</i>
ACKNOWLEDGEMENTS.....	<b>v</b>
PREFACE.....	<b>vi</b>
INTRODUCTION .....	<b>1</b>
CONCEPTS AND TERMINOLOGY .....	<b>1</b>
FUNDAMENTAL PRINCIPLES AND PRACTICAL CONSIDERATIONS .....	<b>4</b>
APPENDIX 1. CLIMATE WATCH TEMPLATE AND EXAMPLE .....	<b>8</b>
APPENDIX 2. GUIDELINES ON CLIMATE WATCHES – 2021 SURVEY RESULTS .....	<b>12</b>



## ACKNOWLEDGEMENTS

The present publication has benefitted from guidance and support from Prof. Manola Brunet, Chair of the WMO Commission for Weather, Climate, Water and Related Environmental Services and Applications (SERCOM) Standing Committee on Climate Services (SC-CLI).

The following people are thanked for their outstanding contributions to the publication:

- John Kennedy, Met Office Hadley Centre, United Kingdom of Great Britain and Northern Ireland
- Jessica Blunden, NOAA-NCEI, United States of America
- Serhat Sensoy, Turkish State Meteorological Service, Türkiye
- Markus Ziese, Deutscher Wetterdienst (DWD), Germany
- Blair Trewin, Bureau of Meteorology, Australia
- Ladislaus Benedict Chang'a, Tanzania Meteorological Agency, United Republic of Tanzania
- Stefan Rösner, DWD (WMO Regional Association VI (RA VI) Regional Climate Centres (RCC) Network), Germany

The following people have contributed to the development of the publication or have helped to review it:

- Members of the SERCOM SC-CLI Expert Team on Climate Monitoring and Assessment (ET-CMA), WMO
- WMO RA VI RCC Network, Climate Monitoring Node

Stefan Rösner, DWD, Germany  
Maya Körber, DWD, Germany  
Peter Bissolli, DWD, Germany

- WMO Secretariat

Atsushi Goto, WMO  
Omar Baddour, WMO  
Claire Ransom, WMO  
Peer Hechler, WMO

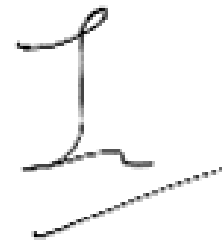
## **PREFACE**

Extreme weather and climate events bring serious impacts to various sectors. Because the frequency and intensity of these events is increasing as the climate changes, enhanced efforts are needed to mitigate associated risks to people and societies. Early warning systems play a crucial role in managing such risks and mitigating their impacts. Climate Watch systems produce advisories, generally called Climate Watches, on timescales extending from a week to a season. These advisories constitute a mechanism to heighten user awareness, as early as possible, on existing or foreseen climate anomalies that could potentially trigger extreme weather and climate events and their associated negative impacts.

As a specialized agency of the United Nations focusing on weather, climate and water, WMO plays a critical role in monitoring extreme weather and climate events and issuing related warnings.

It is therefore crucial and timely for the Commission for Weather, Climate, Water and Related Environmental Services and Applications (SERCOM) to help WMO Members by providing guidance on various aspects of extreme events, so that efficient monitoring, forecasting and early warning systems are adequately deployed and improved.

It should be noted that National Meteorological and Hydrological Services (NMHSs) serve as the official and authoritative providers of early warnings for hydrometeorological hazards, including Climate Watches. Accordingly, the guidance provided in the present publication focuses on the implementation of Climate Watch systems mainly at national scale.

A handwritten signature in black ink, appearing to read 'I Lisk', with a horizontal line underneath.

Ian Lisk  
President, Commission for Weather, Climate, Water and  
Related Environmental Services and Applications (SERCOM)



## INTRODUCTION

Extreme weather and climate events can bring serious impacts across a range of sectors. In response, adaptive measures are needed to help countries transition from crisis management to risk management (*Climate Watch System: Early Warning against Climate Anomalies and Extremes*). One valuable such measure is a Climate Watch system, an efficient extreme weather and climate warning system to heighten awareness that a significant climate anomaly exists or might develop, and that preparedness measures that should be initiated.

In 2008, WMO launched the implementation of Climate Watch systems through regional workshops. The implementation at regional and national levels has progressed well, often by embedding Climate Watches in other activities. For example, information on current status and long-range forecasts of rainfall amount is used for drought monitoring in various regions (*Drought Monitoring and Early Warning: Concepts, Progress and Future Challenges* (WMO-No. 1006)), and information on forthcoming heat waves can contribute to heat health warnings on daily to seasonal timescales (*Heatwaves and Health: Guidance on Warning-System Development* (WMO-No. 1142)).

To assess the degree of implementation of Climate Watch activities, the Expert Team on Climate Monitoring and Assessment (ET-CMA), part of the Standing Committee on Climate Services (SC-CLI) of the Commission for Weather, Climate, Water and Related Environmental Services and Applications (SERCOM), conducted a survey in 2021. The results of the survey demonstrated diverse challenges and gaps in implementation from region to region (see [Appendix 2](#)). While 85% of the respondents were familiar with the guidelines on Climate Watches and their use, 60% found that there was a need for better user engagement and 25% needed more guidance and technical regulations. In response to these results, ET-CMA developed the present publication to fulfill the needs that had been identified.

The present publication provides guidelines on the implementation of Climate Watches. It draws from the *Guidelines on Climate Watches* (WMO/TD No. 1269) and responds to the need for a more practical and easy approach for better understanding each element of the Climate Watch system, particularly the user aspects and user engagement. These guidelines are fundamental for, and aim to support the implementation, of Climate Watches at national scale. Thereby, they aim to enhance science-based decision-making and countermeasures against extreme weather/climate events and anomalous climate states in the context of a changing climate. The publication is structured in two parts: the [first part](#) focuses on concepts and terminological aspects, while the [second part](#) discusses fundamental practical aspects.

## CONCEPTS AND TERMINOLOGY

### What is a Climate Watch?

A Climate Watch is a warning mechanism aimed to heighten awareness of end users regarding an ongoing or high-probability foreseen climate anomaly and its potential negative impacts so that they can take appropriate action. The timescale covered by a Climate Watch can extend from a week to a season. It is disseminated to serve as a mechanism for initiating preparedness activities and/or a series of events that affect decision-making. A Climate Watch is developed based on both real-time monitoring and long-range forecasts of climate conditions. It is issued by individual National Meteorological and Hydrological Services (NMHSs), with support from Regional Climate Centres (RCCs) in the region, which issue regional Climate Watches covering all or part of the region. Each Climate Watch is developed through continuous and iterative collaboration with users.

## Stages of a Climate Watch

As a part of a Climate Watch system, the NMHS continuously monitors and assesses the state of the climate, evaluates available forecasts, and, when conditions warrant, issues formal Climate Watches to alert users to relevant information. Users are then able to take action to mitigate potential climate-related impacts. There are three stages of a Climate Watch:



Initial Climate Watch: outlines the potential conditions and associated impacts.



Climate Watch update(s): issued at regular or agreed upon intervals to keep users informed about the progress of the climate event or anomalous state. Updates may include information on the most recent long-range forecasts or updated information on climate anomalies. The frequency of update and the contents of such Climate Watch updates should preferably be agreed with the users.



Final Climate Watch: confirms that the Climate Watch has expired and that the likelihood of risks associated with the climate event or anomalous status no longer exists or has diminished significantly.

## Climate Watch system

A Climate Watch system is the system that underpins the development and issuance of Climate Watches. An important step in the establishment of an effective Climate Watch system is for the NMHS to engage with the user community, or the socio-economic groups whose decision-making could be affected by a climate event or anomalous climate state (such as those involved in agriculture, public health or water resource management), as partners in formulating and developing the system. The Climate Watch system may vary from one NMHS to another, although in general it involves the following activities:

- (i) Operational climate monitoring to detect climate events or anomalous climate states.
- (ii) Assessment of regional climate events or anomalous climate states, including analysis of drivers and/or relationship to large-scale climate variability.
- (iii) Long-range forecast (numerical prediction products are available from Global Producing Centres for Long-Range Forecasts, and interpretations and assessments provided by the RCCs are applicable).
- (iv) Consultation with users on developing indices, criteria and policies for issuing Climate Watches.
- (v) Evaluation of the Climate Watch system and its effectiveness in meeting the needs of users.

An important foundation for a Climate Watch system is a computer-based dataset consisting of monthly, seasonal and annual summaries of temperature, precipitation and other climate elements (both station-based and gridded data can be utilized for this purpose). This will allow for monitoring the state of the climate system and detecting conditions that might lead to extreme events. Also, a suitable climatological mean and statistics need to be established so that a given observation may be evaluated against a historical average.

In most cases, Climate Watches include information on extreme weather and climate events, such as heat waves, cold waves, extreme precipitation and drought. As a general principle, the definition and characterization of these events can be reported consistently based on their physical characteristics (magnitude, duration and extent). The Climate Watch can be issued and updated throughout the evolution of the event (Guidelines on the Definition and

Characterization of Extreme Weather and Climate Events (in press)). Since climate varies regionally, the definition of an extreme weather or climate event from a statistical point of view (percentile, frequency and thresholds) offers a useful and consistent approach to characterize events occurring across borders. The use of climate indices at station level or gridded data can be very helpful in providing the historical context to the Climate Watch at local level (*Guidelines on Analysis of Extremes in a Changing Climate in Support of Informed Decisions for Adaptation* (WMO/TD-No. 1500)). Furthermore, national climate monitoring products (NCMPs) (*WMO Guidelines on Generating a Defined Set of National Climate Monitoring Products* (WMO-No. 1204)), which specifically summarize climatic conditions at a national scale and show how current conditions compare with those in the past, are also very useful to develop thresholds for Climate Watches.

In addition, partnership with the user community is necessary for the development of some aspects of the Climate Watch system that are directly related to users: the indices used in Climate Watches and criteria of issuance, the promulgation system and evaluation of the Climate Watch system. Therefore, it is advisable to cooperate with the user community from the beginning of development and implementation of the Climate Watch system. Practical aspects of user engagement are described in the [second part](#) of the present publication.

### Issuing authorities

At national level: NMHSs (in some cases other authoritative bodies) are the primary authorities responsible for issuing Climate Watches. Given that Climate Watches aim to heighten awareness of an ongoing or high-probability foreseen climate anomaly and its potential negative impacts and to encourage people to take appropriate action, they can be a part of NMHSs' meteorological alert systems.

At regional level: RCCs issue regional Climate Watches primarily to support NMHSs in issuing national Climate Watches, or other users that act at a regional level, such as organizations supporting emergency efforts in response to humanitarian crises affecting several countries in the region. RCCs are not expected to issue Climate Watches at national scale in their regions of responsibility, except in cases where special arrangements exist between the RCC and NMHSs. If a regional Climate Watch issued by an RCC concerns a country, the NMHS can issue a national Climate Watch for its own country.

### Categories of users



**End users** can be individual decision makers (such as farmers), government agencies or organizations that are aware of their vulnerability to climate and have the knowledge and ability to act on climate information. Rather than receiving climate information directly from the technical experts who produce it, most end users access climate information via intermediaries who interpret and transform the technical information into a form that is more suitable for the end users.



**User intermediaries** are individuals or organizations (either governmental or otherwise) that provide guidance to a climate-sensitive community sector to enable that community to make better decisions. Targeted efforts to communicate tailored climate information tend to be more effective (and less prone to exaggeration and misinterpretation) than broad communication of general information.



The **media** are a particular group of user intermediaries that deserve special mention. Radio, television, print, internet and other media have the capacity to communicate Climate

Watches to a vast array of end users. The effectiveness of members of the media as intermediaries will depend upon their abilities to understand and interpret Climate Watches for their audiences. And these abilities, in turn, will depend upon the training they have received, and their relationships with the NMHS and intermediaries from affected sectors.



**User stakeholders** may contribute to the development and operation of Climate Watch systems. User stakeholders are organizations which have the interests of the users at heart and a stake in the effectiveness of the processes aimed at meeting those interests. They include aid agencies, international organizations concerned with development or governance, non-governmental organizations (NGOs) and community-based organizations. User stakeholders may be able to contribute to the Climate Watch system by raising awareness, empowering the end users, analyzing and disseminating information, and supporting meetings, training seminars and other capacity building activities. The role played by user stakeholders will differ from country to country, so some NMHSs may wish to partner directly with user stakeholders, while others will elect to work through user intermediaries.

## FUNDAMENTAL PRINCIPLES AND PRACTICAL CONSIDERATIONS

### Content of a Climate Watch

The content and format of a Climate Watch statement for a particular country or region should be developed in conjunction with the appropriate user intermediaries. Guidelines for issuing weather warnings, however, can provide a good starting point for what should be included in a Climate Watch statement. A Climate Watch template is given in [Appendix 1](#). The specific content and format adopted by an NMHS should be tailored to the local needs of each country or region, as determined in consultation with user intermediaries and/or end users. The information in a standard Climate Watch should include the following:

- (i) A standard heading;
- (ii) Issuing authority;
- (iii) Time and date of issue;
- (iv) Areas covered by the advice (the appropriate regions);
- (v) Period during which the Climate Watch is valid;
- (vi) Where appropriate, an indication of the reason for the Climate Watch, which may include graphical information;
- (vii) Outlook (forecast) of the progress of the anomalous event and relevant skill of long-range forecasts;
- (viii) Potential impacts of the climate anomaly;
- (ix) The date on which the next update will be issued.



### **User engagement**

Setting goals and selecting criteria should be the first issues addressed by the NMHS and user intermediaries. This may involve research by either or both parties into appropriate climate elements and criteria (threshold conditions) for issuing Climate Watches. Identifying and partnering with appropriate user intermediaries is normally a better strategy than attempting to work directly with end users because: (1) there are too many end users for NMHSs to reach directly, or in some cases, to even be aware of; (2) end users commonly require interpretation of technical climate information; (3) intermediaries can provide NMHSs with extensive insight into end-user needs and circumstances; and (4) NMHSs can benefit from the infrastructure and activities of intermediaries to disseminate Climate Watch information to end users. Therefore, it is important to begin partnering with user intermediaries early in the development of a Climate Watch system and to maintain contact throughout the entire process. The suggested progression of the relationship between the NMHS and user intermediary is as follows:

- (i) Initial contact with prospective known user intermediaries should be undertaken either by the intermediaries attending group information sessions held by the NMHS or by representatives from the NMHS attending meetings held by such user intermediaries.
- (ii) A contact point (a particular person or position) should be chosen within each intermediary organization, or a link should be set up via a dedicated channel for sending Climate Watch information, to establish an institutional relationship and ensure that the organization receives Climate Watches. It is insufficient to post Climate Watches to a web site and expect that the intermediaries and end users will read them; the NMHS must be proactive in making sure the intermediaries receive notification that a Climate Watch has been issued.
- (iii) Continuous interaction is needed between the NMHS and the user community. This allows NMHSs to define specific criteria and evaluate whether the Climate Watch system is addressing the end users' needs. Thus, periodic feedback from the user intermediaries should be requested and evaluated. The NMHSs and user intermediaries should agree upon a plan for collecting and evaluating user feedback as part of the design of the Climate Watch system.



### **Issuance of a Climate Watch**

Climate Watches should only be issued when there is an enhanced probability that a climate anomaly may happen and where there might be serious consequences to some end users. Given the prerequisite that the Climate Watch must be as skillful as practicably possible, the period over which an initial Climate Watch is valid should be stated. As with weather warnings, a Climate Watch should only be issued when there is an elevated probability of a significant climate anomaly based on reliable forecast information. Hence, there is a need to establish appropriate criteria for when a Climate Watch should be issued.

It may be necessary to issue one or more updates of a Climate Watch to inform users on the current situation and outlook.

A final statement should be issued to confirm that the Climate Watch has expired and that the likelihood of risks associated with the climate anomaly has diminished significantly. Once again, there is a need to consult with user intermediaries on what may constitute a return to normal conditions.

During periods when no Climate Watch has been issued, it may be appropriate to post a message with wording like “There is currently no Climate Watch in effect”. This assures users and intermediaries that the current climate assessment does not warrant the issuance of a Climate Watch.

Climate Watches are to be issued in a timely manner to allow end users sufficient time to incorporate them into their decision-making processes. For example, if a drought Climate Watch is to be issued, farmers need access to this information before they make decisions about planting, crop management and harvesting.



### **Dissemination of a Climate Watch**

The dissemination plan designed by the NMHS and its partner intermediaries (including members of the media) should balance the need for effective targeting of Climate Watches with the mandate to protect the lives and property of all citizens. Such a dissemination plan might combine public release of the Climate Watch with targeted dissemination via networks of user intermediaries, such that further dissemination of a Climate Watch beyond the user intermediary, for example to the farming community, is the responsibility of the agricultural intermediary. It is advised, when the local policy allows, that Climate Watches also be displayed on a publicly available web site and/or posted to social media, further facilitating the distribution process.

As with weather warnings, the NMHS needs to be proactive in the distribution of a Climate Watch. This includes ensuring that the user community receives the Climate Watch. At a minimum, dissemination of the initial Climate Watch should involve person-to-person contact between the NMHS and intermediaries, while subsequent updated Climate Watches issued on set dates could be sent by email. The initial contact could, for example, be made via a telephone call with a follow-up email and an update to a Climate Watch web page. For this to work smoothly, there must be both a user intermediary contact point and an NMHS contact point responsible for the Climate Watch. Every effort must be made to ensure that the Climate Watch is delivered to and received by the correct persons in the intermediary organizations.

Climate Watches are to be disseminated in a timely manner to allow end users sufficient time to incorporate them into their decision-making processes.

Responsibility for secondary distribution of Climate Watches (for example, from the Bureau of Rural Services to the farming community) may be effectively delegated to an appropriate intermediary. A periodically evaluated contact protocol for the dissemination of the Climate Watch must be established between the NMHS and the user intermediaries.



### **Evaluation of the Climate Watch system**

A Climate Watch system should include mechanisms to evaluate the effectiveness of the Climate Watches it produces. While the formal verification of forecast products is an essential part of the evaluation process, this process needs to move beyond statistical summaries to the evaluation of the Climate Watch system’s effectiveness in the user community.

A highly skilled climate analysis or forecast reflected in a Climate Watch will only be effective if users are acting on this information. Thus, the evaluation requires regular, organized interactions among all the types of participants in the Climate Watch system, including the providers of the climate information, the intermediary agencies and organizations, and the end users.

The evaluation of long-range forecasts should form only one part of the evaluation of the Climate Watch system. The evaluation should also encompass the effectiveness of the dissemination of Climate Watches and their ability to help users make informed decisions given a current climate anomaly and probabilistic forecast. Specific evaluation methodologies will need to be developed in partnership with the user community. They may include aspects such as whether the Climate Watch was received, further disseminated, considered subjectively useful, formally used as part of a decision mechanism, or ignored, and what impacts those decisions had on the welfare of the user community.

It is highly desirable that criteria for evaluating the Climate Watches be developed and agreed upon with the user communities in advance. Even an ideal Climate Watch will not be capable of eliminating all the negative effects of an event or anomalous climate state, but the Climate Watch should help to mitigate the effects and may help planners identify sectors and regions of vulnerability. Therefore, a certain level of “reliability” and “skill” expected from the Climate Watch should be set for its evaluation.

The formal evaluations of the Climate Watch must also deal directly with the inherent probabilistic nature of long-range forecasts. For instance, a seasonal probability forecast for 55% wet, 30% average and 15% dry conditions is not “wrong” if that particular season turns out dry, but would be “wrong” if in a large number of such forecasts the observed probabilities were substantially different from those forecasts, say 35% wet, 35% average and 30% dry. Such evaluations require forecasts to be saved and archived and should be discussed in advance with user intermediaries and end users who may not be familiar with probabilistic forecasts. A user interface platform like National Climate Outlook Forum (NCOF) might be good for both feedback and providing adequate explanation of probabilistic forecasts.

---

## APPENDIX 1. CLIMATE WATCH TEMPLATE AND EXAMPLE

<b>Climate Watch (serial number: yyyyymmdd-no)</b>		Initial/Update/Final
<b>Title:</b>		<b>severity:</b>
<b>Issuing organization:</b>	NHMS	0 No particular impact
<b>Issued/updated/ expired</b>	dd-mm-yyyy hh:mm	1 Potentially serious
<b>Contact point:</b>	Email:	2 Serious
	Tel:	3 Very serious
	Fax:	
<b>Valid from-to:</b>	dd-mm-yyyy	
<b>Region of concern:</b>	<ul style="list-style-type: none"> <li>• A map which illustrates the area of the watch should be included</li> </ul>	
<b>Monitoring section:</b>	<ul style="list-style-type: none"> <li>• Description of recent and previous evolution (timescale depends on characteristics of events and climate status)</li> <li>• Relevant climate indices</li> <li>• Absolute values, anomalies and extremeness</li> </ul>	
<b>Forecast section:</b>	<ul style="list-style-type: none"> <li>• Outlook (forecast) for the progress of the anomalous event</li> <li>• Relevant skill of long-range forecasts</li> </ul>	
<b>Impact/Conclusion section:</b>	<ul style="list-style-type: none"> <li>• Duration and severity – thresholds (expected to be) exceeded due to climate conditions (thresholds have to be defined by NMHS)</li> <li>• Expected impacts</li> </ul>	
<b>Supplementary information:</b>	<ul style="list-style-type: none"> <li>• Reference to more frequently updated warnings/advisories and other related information</li> </ul>	
<b>Graphics/Charts:</b>	<ul style="list-style-type: none"> <li>• Additional text and charts can be attached as annexes</li> </ul>	
<b>Next update:</b>	dd-mm-yyyy	



## Climate Watch Advisory



### Guidance on cold wave

ID: 202202-u2

**Area concerned:** central and eastern Turkey

Initial statement issued on 14 January 2022

First update issued on 28 January 2022

Second update issued on 4 February 2022

Valid:

Begin: 4 February 2022

End: 18 February 2022



### To: Climate Watch focal points of NMHS of Turkey

The RA VI RCC Network Offenbach Node on Climate Monitoring (RCC Node-CM) is responsible for providing Climate Watch guidance information for NMHSs' own consideration for issuing climate advisories for their territory.

After having consulted the consortium partners of the RCC Node-CM and RCC Node-LRF (RA VI RCC Network Toulouse and Moscow Node on Long-Range Forecasting), RCC Node-CM issues the following guidance information:

#### Due to the results from monthly forecasts, we expect:

"Below-normal temperature (cold wave) in central and eastern Turkey in the next two weeks with widespread frost, partly severe and occasional snow. Weekly anomalies will be between  $-1^{\circ}\text{C}$  and  $-3^{\circ}\text{C}$  in the first week and between  $-3^{\circ}\text{C}$  and  $-6^{\circ}\text{C}$  in the second week. Daily minima will range from slightly above zero in coastal regions to below  $-15^{\circ}\text{C}$  in highlands in the first week, below  $-20^{\circ}\text{C}$  in the second week. Probabilities are above 80-90%. There is an increased risk of frost damage. A further continuation of the cold wave until end of February or early March 2022 might be possible."

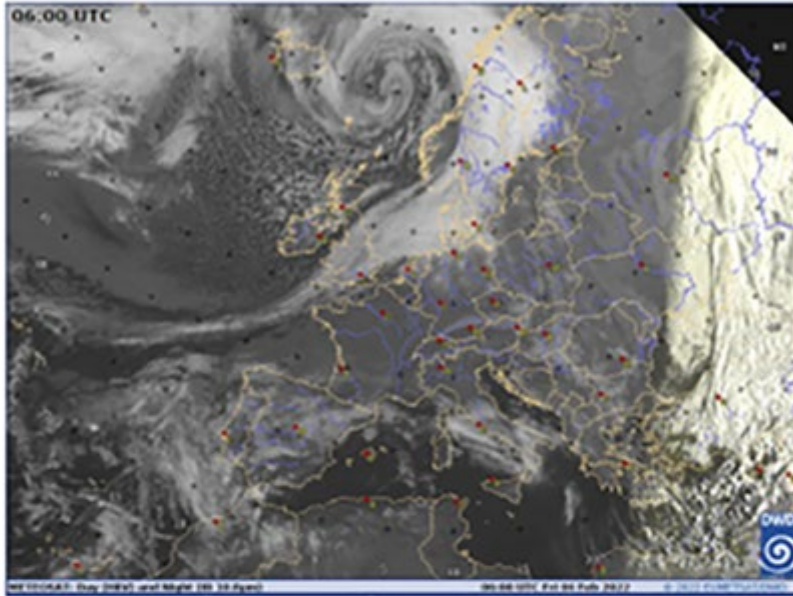
This information should be used as guidance for the National Meteorological and Hydrological Services (NMHS) in a pre-operational mode. It is up to the above-mentioned NMHSs to monitor the status and evolution of the current climate conditions closely and to consider issuing a national Climate Watch Advisory. RCC Node-CM would appreciate feedback from NMHS whether this information was helpful. Also, any suggestion on further pieces of information needed by NMHSs is highly welcomed! A template for a national climate watch advisory can be provided by DWD on request as agreed among the climate watch pilots and RCC Node-CM.

Please note that further information can be obtained from RCC Node-CM website (<https://rcccm.dwd.de>) concerning Climate Monitoring and from RCC Node-LRF websites (<http://seasonal.meteo.fr>, <http://naacc.meteoinfo.ru/forecast>) concerning Long-Range Forecast or by e-mail to [rcc\\_cm@dwd.de](mailto:rcc_cm@dwd.de) or [rcc-lrf-ru@meteo.fr](mailto:rcc-lrf-ru@meteo.fr). For ECMWF member's further information on monthly forecasts after logging in is provided at <http://www.ecmwf.int/> -> Forecasts

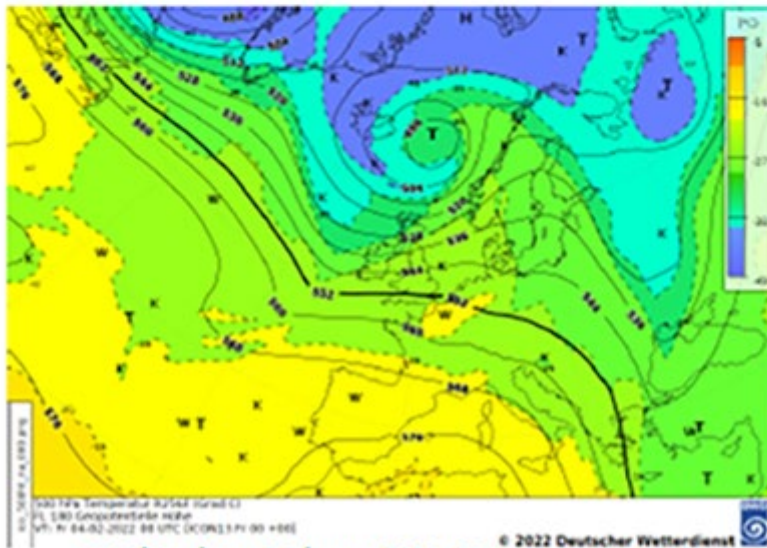
We will monitor the evolution of the anomaly, issue updates if significant change arise and close the advice when no clear signal can be detected in the forecasts.

On behalf of the RCC Node-CM Team

## Supplementary material

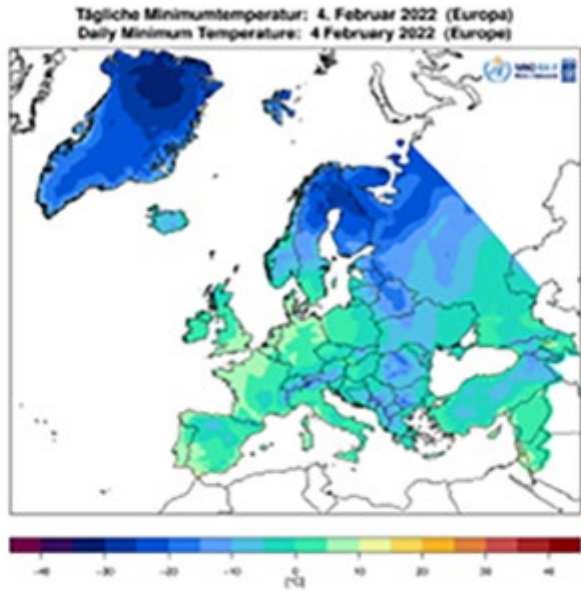


Meteosat satellite image 4 February 2022, 06 UTC. Source: DWD

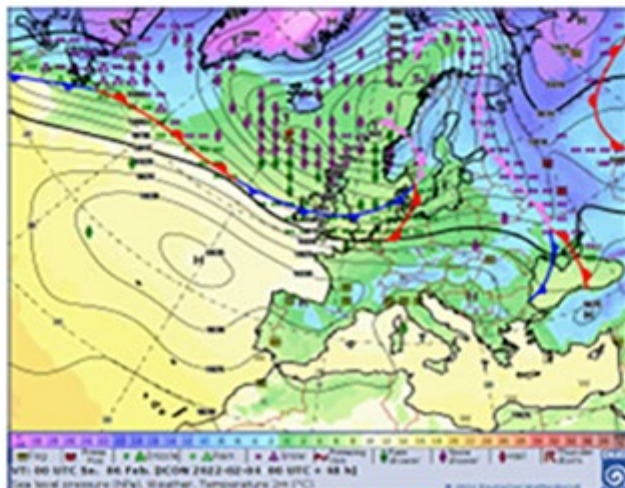


500-hPa chart, 4 February 2022, 00 UTC. Source: DWD

# Climate Watch Advisory



Map of daily minimum temperature on 4 February 2022, Source: DWD



Forecast chart for 6 February 2022, 00 UTC, Source: DWD,

[https://www.dwd.de/EN/ourservices/hobbymet\\_wcharts\\_europe/hobbyeuropecharts.html](https://www.dwd.de/EN/ourservices/hobbymet_wcharts_europe/hobbyeuropecharts.html)

## APPENDIX 2. GUIDELINES ON CLIMATE WATCHES – 2021 SURVEY RESULTS

Climate Watch systems are implemented at regional and national levels to deliver advisories on pending or foreseen climate anomalies and the associated extremes and negative impacts that extend from several days to weeks or even a season. These advisories are called Climate Watches.

Since the first version of the [WMO Guidelines on Climate Watches](#) (WMO/TD-No. 1269) was released in 2005, Climate Watch systems have not been fully implemented in all countries and regions. A survey was therefore undertaken to get an overview of the issues involved with applying the Guidelines. The survey asked about respondents' experiences while establishing a system to produce and disseminate Climate Watches at regional and national level. A summary of the survey results follows, and full results of the survey can be further explored [here](#).

- Number of responses: 48 (the breakdown by Regional Association (RA) is as follows: RA I: 10, RA II: 7, RA III: 1, RA IV: 5, RA V: 3, RA VI: 22).
  - Duration of survey: from December 2021 to February 2022.
  - Familiarity with and usage of the existing guidelines are high. Approximately 80% of respondents (39 of 48) are familiar with the guidelines and 38 of 48 respondents use the guidelines at least partially. Most of respondents (39 of 48) would recommend their adoption.
  - Over half of respondents feel that the relevance and adequacy of the [WMO Guidelines on Climate Watches](#) (WMO/TD-No. 1269) to their services and operation are high (21 of 48) or very high (5 of 48).
  - About 60% (30 of 48) of respondents received Climate Watches from a Regional Climate Centre (RCC) responsible for their region, but 16 respondents consider support of RCCs as one of challenges.
  - Lack of sufficient input for Climate Watches is a challenge for 18 respondents, and there is a high need for suitable automatic data collection infrastructure (41 of 48). In addition to traditional data sources and collection infrastructure, "big data", crowd-sourced data, third parties' observation networks or voluntary observing networks are thought to have potential to fill this gap. According to this survey, however, usage of these data sources is still limited, with the exception of third parties' observation networks (33 of 48).
  - Only 33% of respondents (16 of 48) have established procedures to process and deliver received Climate Watches to their users, and 22 respondents feel the need for a legal framework for Climate Watches.
  - In adopting the [WMO Guidelines on Climate Watches](#) (WMO/TD-No. 1269) in their institutions, respondents feel that more user engagement from application sectors (29 of 48), and more guidance and WMO regulations (14 of 48) are necessary.
-

For more information, please contact:

**World Meteorological Organization**

7 bis, avenue de la Paix – P.O. Box 2300 – CH 1211 Geneva 2 – Switzerland

**Strategic Communications Office**

Tel.: +41 (0) 22 730 83 14 – Fax: +41 (0) 22 730 80 27

Email: [cpa@wmo.int](mailto:cpa@wmo.int)

**[public.wmo.int](http://public.wmo.int)**