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WMO OMM
World Meteorological Organization
Organisation météorologique mondiale
Organización Meteorológica Mundial
Всемирная метеорологическая организация
المنظمة العالمية للأرصاد الجوية
世界气象组织

Secrétariat
7 bis, avenue de la Paix – Case postale 2300
CH 1211 Genève 2 – Suisse
Tél.: +41 (0) 22 730 81 11
Fax: +41 (0) 22 730 81 81
wmo@wmo.int – public.wmo.int

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Annexes: 5

Subject: WMO Centennial Observing Stations

Action required: (1) Submit information for WMO recognition of up to four centennial hydrological observing stations and up to four centennial marine observing stations at your earliest convenience **but not later than 8 March 2024**

(2) Consider recognizing national meteorological observing stations with a history of 75 years and more

Dear Sir/Madam,

I wish to draw your attention to Resolution 28 (Cg-19) – Update of the Mechanism for Recognition of Long-Term Observing Stations, which includes the recognition criteria for centennial marine and hydrological observing stations as well as for the national recognition of long-term observing stations of over 75 years and more.

To date, 406 centennial observing stations (374 meteorological, 22 hydrological and 10 marines observing stations) have been recognized by the World Meteorological Organization (WMO) covering all six WMO Regional Associations and Antarctica. Several well received national and local celebratory events and media activities have been organized by Members in recent years to help maintain in operation the centennial observing stations by raising their profile as science and service enablers and societal treasures.

Information on the WMO recognition mechanism for long-term observing stations including lists of recognized stations, recognition criteria etc. are available on the WMO website. Furthermore, WMO will regularly issue the brochure Centennial Observing Stations: State of Recognition Report (first version: *Centennial Observing Stations: State of Recognition Report - 2021* (WMO-No. 1296)).

I would like to seek your collaboration on this important initiative and invite you to submit information of up to four (additional) hydrological long-term observing stations as well as up to four (additional) marine long-term observing stations (candidate stations) of your country or territory, which meet the criteria as per Annexes 1 and 2, respectively. Please note that the next call for meteorological candidate stations (including upper air observing stations) will be issued in late 2024 for recognition in 2025.

The Advisory Board for the Recognition of WMO Long-term Observing Stations will assess responses and submit recommendations for consideration by the seventy-eighth session of the Executive Council in June 2024 (EC-78). WMO will provide by email, certificates and a standardized model for a metal/brass plate (to be manufactured by the Member, if desired) for each recognized station.

To: Permanent Representatives of Members with WMO

cc: Hydrological Advisers

I kindly ask you to submit your response at your earliest convenience, but preferably **not later than 8 March 2024**. Please use one updated template for each individual observing station (Annex 3 for hydrological stations and Annex 4 for marine stations; WORD versions can be downloaded from the website; clicking on "WMO recognition mechanism" and then clicking on "Self-assessment templates for nomination of candidate stations").

Annex 5 provides criteria and a suggested mechanism for national recognition of meteorological observing stations with a history of between 75 and 100 years to acknowledge their long history and importance, thereby facilitating the ongoing recognition by WMO of centennial observing stations in the future.

Should you require further clarification, please do not hesitate to contact Mr Peer Hechler, Scientific Officer in the WMO Secretariat at wcdmp@wmo.int.

Yours faithfully,

Prof. Petteri Taalas
Secretary-General

RECOGNITION CRITERIA FOR CENTENNIAL HYDROLOGICAL OBSERVING STATIONS

Note: Hydrological observations include observations and measurements of precipitation; evaporation; evapotranspiration; soil moisture; water levels of rivers, lakes, and reservoirs; ice on rivers, lakes, and reservoirs; velocity of stream flow; discharge; water quality and groundwater.

Mandatory criteria

(1) The observing station was founded 100 years (or over) ago, observing regularly (at least monthly) a minimum of one hydrological element since then (element(s) to be listed in the References/Remark column) and is in operation as an observing station at the date of nomination.

(2) Periods of inactivity of the observing station shall not exceed 10%.

(3) The minimum historic station metadata for the full duration of station operation shall contain actual or derived geographical coordinates including elevation, basin area, known changes of station name and/or station identifier, identified hydrological element(s) and its unit(s) as well as the measurement methods and observing schedule.

(4) Any known observing station relocation or change in the measurement techniques have not significantly affected the hydrological time-series data.

Note: Documented data homogenization for the observing station is considered compliant with criterion 4. Major river modifications upstream to the hydrological observing station, which changed the drainage area of the river basin (by bringing in or diverting water courses across water divides) or major changes to water use or land use upstream to the hydrological observing station, which significantly altered the hydrological regime at the point of observation, shall be flagged to the Advisory Board and may rule out recognition as a centennial observing station.

(5) All historic observational data and metadata have been digitally archived or will be rescued. Members shall share their plans for data rescue, if applicable.

(6) The observing station shall be operated according to WMO observing standards according to the *Manual on the WMO Integrated Global Observing System* (WMO-No. 1160), the *Technical Regulations, Volume III: Hydrology* (WMO-No. 49), the *Guide to Hydrological Practices* (WMO-No. 168), Volume II and the Manual on Stream Gauging *Vol. I: Fieldwork* (WMO-No. 1044).

Note: Explanatory information shall be provided for those stations that do not meet current WMO observing standards.

(7) The observed and measured data shall be subject to routine quality control procedures according to current WMO guidelines and practices. The quality control processes as well as their results shall be well documented.

Note: A brief description of the routine quality procedures at the observing station shall be provided.

(8) Members shall do their utmost to maintain nominated stations according to the above recognition criteria.

(9) Historic observation data and metadata have been or will be made available for scientific research, according to Resolution 1 (Cg-Ext(2021)) – WMO Unified Policy for the International Exchange of Earth System Data. Members shall share their plans for data availability, if applicable.

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RECOGNITION CRITERIA FOR CENTENNIAL MARINE OBSERVING STATIONS

Notes

(1) Surface marine observations comprise a variety of observations taken at land/coastal stations, and by moored and drifting buoys and ships. Surface marine variables comprise both meteorological variables and other variables including sea level, sea-surface temperature etc. (for a full list of marine meteorological variables, refer to the *Manual on the WMO Integrated Global Observing System*, (WMO-No. 1160), Attachment 5.1.).

(2) The proposed WMO recognition mechanism is limited to centennial observations from land-based (coastal) stations including tide gauges. Other marine observations from buoys, drifters and ships are very likely not to meet the 'centennial' criterion and will be addressed at a later stage based on modified recognition criteria including a shorter observing history.

Mandatory criteria

(1) The observing station was founded over 100 years ago, observing regularly (at least monthly) a minimum of one surface marine element since then (element(s) to be listed in the references/remark column) and is in operation as an observing station at the date of nomination.

(2) Periods of inactivity of the observing station shall not exceed 10%.

(3) The minimum station metadata for the full duration of station operations shall contain actual or derived geographical coordinates including elevation, known changes of station name and/or station identifier, identified surface marine element(s) and its unit(s) as well as the observing schedule(s).

(4) Any known observing station relocation or change in the measurement technique have not significantly affected the climatological time-series data.

Note: Documented data homogenization for the observing station is considered compliant with criterion 4.

(5) All historic observational data and metadata have been digitally archived or will be rescued. Members shall share plans for data rescue, if applicable.

(6) The observing station shall be operated according to WMO observing standards or where these do not exist, then the Intergovernmental Oceanographic Commission (IOC)* observing standards shall apply.

Note: Explanatory information shall be provided for those stations that do not meet current WMO/IOC observing standards.

(7) The current environment of the observing station has been classified, or will be classified, according to the siting classification defined by WMO or where these do not exist then as defined by IOC*. Members shall share: (i) the metadata attached to the siting classification in the appropriate WMO or IOC Metadata repository; or (ii) their plans to classify the observing station, if applicable.

(8) The observed and measured data shall be subject to routine quality control procedures according to current WMO or IOC* guidelines and practices. The quality control processes as well as their results shall be well documented.

Note: A brief description of the routine quality procedures at the observing station shall be provided.

(9) Members shall do their utmost to maintain nominated stations according to the above recognition criteria.

(10) Historic observation data and metadata have been, or will be made available for scientific research according to Resolution 1 (Cg-Ext(2021)) – WMO Unified Policy for the International Exchange of Earth System Data. Members shall share their plans for data availability, if applicable.

* Relevant IOC standards and good practices are described in IOC Manuals and Guides No. 14 and No. 83. Reference to additional technical documents may be added upon extension of the recognition mechanism to capture more marine observational variables.

WMO CANDIDATE CENTENNIAL OBSERVING STATION SELF-ASSESSMENT TEMPLATE FOR HYDROLOGICAL OBSERVING STATIONS

Important notes

- Please send the filled-in template (one template for one observing station) to wcdmp@wmo.int
- Station operators are encouraged to provide sufficient information in the 'References/Remarks' column to facilitate the assessment by the Advisory Board. Station operators are encouraged to attach additional documentation and photos to be made available publicly, however, this additional information is not core to the assessment.
- Information in the self-assessment template MUST BE TYPED (handwritten information cannot be processed). A WORD version of the template can be downloaded from the WMO website (-> WMO Recognition mechanism -> Self-assessment templates for nomination of candidate stations ->Hydrological stations).
- Station operators are invited to consider filling in the template in English to accelerate the recognition assessment.
- The correctness of the information provided in the template is under the sole responsibility of the station/network operator. The Advisory Board performs its assessment based on the completed template considering additional global information. The information provided by the station operator in the template will be made available publicly for user review.
- Station operators should assign a WMO Integrated Global Observing System (WIGOS) Station Identifier to all nominated stations and populate Observing Systems Capability Analysis and Review (OSCAR) (http://oscar.wmo.int) with the minimum station metadata according to criterion 3 below.

1. Current hydrological station information

Station name	
Start of observations (year)	
WIGOS Station Identifier and other current station identifiers, where available	
Station latitude and longitude*	
Station elevation* (meter above MSL)	
Country/Place	
WMO Region	

Institution	
Name of contact person	Email address

***** Cf. *Guide to Instruments and Methods of Observation* (WMO-No. 8) – Coordinates *of the station*

2. Mandatory criteria – Hydrological stations

Criteria	Compliance (Yes/No)	References/Remark
(1) The observing station was founded over 100 years ago, observing regularly (at least monthly) a minimum of one hydrological element since then (element(s) to be listed in the References/Remark column) and is in operation as an observing station at the date of nomination.		
(2) Periods of inactivity of the observing station shall not exceed 10%.		
(3) The minimum historic station metadata for the full duration of station operation shall contain actual or derived geographical coordinates including elevation, basin area, known changes of station name and/or station identifier, identified hydrological element(s) and its unit(s) as well as the measurement methods and observing schedule.		
(4) Any known observing station relocation or change in the measurement technique have not significantly affected the hydrological time-series data. Note: Documented data homogenization for the observing station is considered compliant with criterion 4. Major river modifications upstream to the hydrological observing station, which changed the drainage area of the river basin (by bringing in or diverting water courses across water divides) or major changes to water use or land use upstream to the hydrological observing station, which significantly altered the hydrological regime at the point of observation, shall be flagged to the Advisory Board and may rule out recognition as centennial observing station.		

Criteria	Compliance (Yes/No)	References/Remark
(5) All historic observational data and metadata have been digitally archived or will be rescued. Members shall share their plans for data rescue, if applicable.		
(6) The observing station shall be operated according to the WMO observing standards according to the *Manual on the WMO Integrated Global Observing System* (WMO-No. 1160), the *Technical Regulations* (WMO-No. 49), Volume III Hydrology, the *Guide to Hydrological Practices* (WMO-No. 168) and the *Manual on Stream Gauging* (WMO-No. 1044). Note: Explanatory information shall be provided for those stations that do not meet current WMO observing standards.		
(7) The observed and measured data shall be subject to routine quality control procedures according to the current WMO guidelines and practices. The quality control processes as well as their results shall be well documented. Note: A brief description of the routine quality procedures at the observing station shall be provided.		
(8) Members shall do their utmost to maintain nominated stations according to the above recognition criteria.		
(9) Historic observation data and metadata have been, or will be made available for scientific research, according to Resolution 1 (Cg-Ext(2021)) – WMO Unified Policy for the International Exchange of Earth System Data. Members shall share their plans for data availability, if applicable.		

WMO CANDIDATE CENTENNIAL OBSERVING STATION SELF-ASSESSMENT TEMPLATE FOR MARINE OBSERVING STATIONS

Important notes

- Please send the filled-in template (one template for one observing station) to wcdmp@wmo.int
- Station operators are encouraged to provide sufficient information in the 'References/Remarks' column to facilitate the assessment by the Advisory Board. Station operators are encouraged to attach additional documentation and photos to be made available publicly, however, this additional information is not core to the assessment.
- Information in the self-assessment template MUST BE TYPED (handwritten information cannot be processed). A WORD version of the template can be downloaded from the WMO website (-> WMO Recognition mechanism -> Self-assessment templates for nomination of candidate stations -> Marine stations).
- Station operators are invited to consider filling in the template in English in order to accelerate the recognition assessment.
- The correctness of the information provided in the template is under the sole responsibility of the station/network operator. The Advisory Board performs its assessment based on the completed template considering additional global information. The information provided by the station operator in the template will be made available publicly for user review.
- Station operators should assign a WIGOS Station Identifier to all nominated stations and populate OSCAR (http://oscar.wmo.int) with the minimum station metadata according to criterion 3 below.

1. Current marine station information

Station name	
Start of observations (year)	
WIGOS Station Identifier and other current station identifiers, where available	
Station latitude and longitude*	
Station elevation* (meter above MSL)	
Country/Place	
WMO Region	

Institution	
Name of contact person	Email address

***** Cf. *Guide to Instruments and Methods of Observation* (WMO-No. 8) – *Coordinates of the station*

2. Mandatory criteria – Marine stations

Criteria	Compliance (Yes/No)	References/Remark
(1) The observing station was founded over 100 years ago, observing regularly (at least monthly) a minimum of one surface marine element since then (element(s) to be listed in the references/remark column) and is in operation as an observing station at the date of nomination.		
(2) Periods of inactivity of the observing station shall not exceed 10%.		
(3) The minimum station metadata for the full duration of station operation shall contain actual or derived geographical coordinates including elevation, known changes of station name and/or station identifier, identified surface marine element(s) and its unit(s) as well as the observing schedule(s).		
(4) Any known observing station relocation or change in the measurement technique have not significantly affected the climatological time-series data. Note*: Documented data homogenization for the observing station is considered compliant with criterion 4.*		
(5) All historic observational data and metadata have been digitally archived or will be rescued. Members shall share their plans for data rescue, if applicable.		

Criteria	Compliance (Yes/No)	References/Remark
(6) The observing station shall be operated according to WMO observing standards or where these do not exist, then Intergovernmental Oceanographic Commission (IOC) observing standards shall apply. Note: Explanatory information shall be provided for those stations that do not meet current WMO/IOC observing standards.		
(7) The current environment of the observing station has been classified, or will be classified, according to the siting classification defined by WMO or where these do not exist then as defined by IOC. Members shall share (i) the metadata attached to the siting classification in the appropriate WMO or IOC Metadata repository or (ii) their plans to classify the observing station, if applicable.		
(8) The observed and measured data shall be subject to routine quality control procedures according to current WMO or IOC* guidelines and practices. The quality control processes as well as their results shall be well documented. Note: A brief description of the routine quality procedures at the observing station shall be provided.		
(9) Members shall do their utmost to maintain nominated stations according to the above recognition criteria.		
(10) Historic observation data and metadata have been or will be made available for scientific research according to Resolution 1 (Cg-Ext(2021)) – WMO Unified Policy for the International Exchange of Earth System Data. Members shall share their plans for data availability, if applicable.		

MECHANISM AND CRITERIA FOR NATIONAL RECOGNITION OF LONG-TERM OBSERVING STATIONS OF 75+ YEARS

Note: The mechanism and criteria for the national recognition of long-term observing stations of over 75 years and more, will be implemented for meteorological observing stations. This mechanism and criteria will be extended soon to include hydrological and marine observing stations pending one to two years operational experience with global WMO recognition of centennial hydrological and marine observing stations.

Scope of the mechanism and criteria for national recognition of long-term observing stations of over 75 years and more

National recognition, on a voluntary basis, of long-term observing stations -operated by the National Meteorological and Hydrological Services (NMHS) or any other environmental network or station operator attached to or outside NMHSs – with a history of at least 75 years and less than 100 years.

Note: It is encouraged that observing stations, which have accomplished 100 years of operation be submitted for WMO recognition of centennial observing stations. Stations that have been established for 75 years or more, may therefore be reported by Members for inclusion in the list of candidate stations at Centennial Observing Stations | WMO (wmo.int).

Criteria for national recognition of long-term observing stations of over 75 years and more

(1) The observing station was founded over 75 years ago, observing a minimum of one meteorological element since then, and is in operation as an observing station at the date of nomination.

(2) Periods of inactivity of the observing station shall not exceed 10%.

(3) The minimum historic station metadata for the full duration of station operation shall contain actual or derived geographical coordinates including elevation, known changes of station name and/or station identifier, identified meteorological element(s) and its unit(s) as well as the observing schedule(s).

(4) Any known observing station relocation or change in the measurement techniques have not significantly affected the climatological time-series data.

Note: Documented data homogenization for the observing station is considered compliant with criterion 4.

(5) All historic observational data and metadata have been digitally archived or will be rescued. Station operators should share their plans for data rescue, if applicable.

(6) The observing station shall be operated in line with the WMO observing standards according to the *Manual on the WMO Integrated Global Observing System* (WMO-No. 1160) and the *Guide to Instruments and Methods of Observation* (WMO-No. 8).

(7) The current environment of the observing station has been classified or will be classified according to the siting classification defined in the *Guide to Instruments and Methods of Observation* (WMO-No. 8). Station operators should share the metadata attached to the siting classification in the appropriate WMO metadata repository (currently Observing Systems Capability Analysis and Review (OSCAR)), if applicable.

(8) The observed and measured data shall be subject to routine quality control procedures according to current WMO guidelines and practices. The quality control processes as well as its results (current data as well as historic time-series data) shall be well documented.

(9) Station operators shall do their utmost to maintain nominated stations according to the above recognition criteria.

(10) Historic observation data and metadata should be made available for scientific research.

Recommended mechanism to underpin national recognition of long-term observing stations of over 75 years and more

(a) The office of the Permanent Representatives (PRs) triggers a process to collect, on a regular basis (e.g. every second year), nominations for national recognition of long-term observing stations (75+ years; operated by their NMHS as well as by other network/station operators within their country or territory) as per above endorsed criteria. The call for nominations should include the list of recognition criteria to be ticked off and commented on by network/station operators for each nominated observing station.

(b) Review of nominations received from network/station operators for the recognition of long-term observing stations by an ad hoc expert group nominated by the PR (suggested composition: experts from climate, research, observing network, and measurement, instruments and traceability domains including representative(s) of network or station operators outside the NMHS, as appropriate).

(c) Recommendations for formal recognition of national long-term observing stations (75+ years) to be submitted to PR for approval.

(d) Recognized stations may be awarded with a certificate and a brass plate template, to be provided by the NMHS, for display at the station and/or other appropriate locations and shall be listed in the WMO OSCAR. The PR may submit the list of recognized observing stations of over 75 years or more with supporting documentation to the Secretary-General of WMO for a certificate of acknowledgement.

Note: The certificate of acknowledgement will be provided upon review and confirmation of the WMO processes followed for recognizing observing stations of over 75 years or more.

(e) The NMHS to publish, and to keep up to date, a dedicated website with the list of nationally recognized stations and a brochure on long-term observing stations indicating their importance.

(f) Recognized stations to be re-assessed every 10 years.

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