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| WEATHER CLIMATE WATER | **World Meteorological Organization**  **COMMISSION FOR WEATHER, CLIMATE, WATER AND RELATED ENVIRONMENTAL SERVICES AND APPLICATIONS**  **Second Session** 17 to 21 October 2022, Geneva | **SERCOM-2/Doc. 5.5(6)** |
| Submitted by: Chair  18.X.2022  **APPROVED** |

**AGENDA ITEM 5: TECHNICAL REGULATIONS AND OTHER TECHNICAL MATTERS**

**AGENDA ITEM 5.5: Climate services**

# Update of the mechanism for recognition of long-term observing stations



# General Considerations

**Introduction**

[Resolution 4 (EC-73)](https://library.wmo.int/doc_num.php?explnum_id=11008#page=21) - WMO recognition mechanism for long-term observing stations, endorsed the roadmap to further develop the WMO recognition mechanism for long-term observing stations. The roadmap includes extensions of the mechanism to cover hydrological and marine observing stations as well as 75+ years stations, which do not yet meet the centennial station criterion.

The criteria and suggested mechanism for national recognition of 75+ years observing stations have been developed by the Secretariat in close collaboration with a consultant and evaluated by the Advisory Board for the Recognition of Long-Term Observing Stations (Advisory Board).

The criteria for the recognition of hydrological and marine observing stations have been developed by the Advisory Board in close collaboration with the hydrological and marine communities. A test phase has been conducted in early 2022 and its outcomes have been assessed by the Advisory Board. In its [assessment report](http://ane4bf-datap1.s3-eu-west-1.amazonaws.com/wmocms/s3fs-public/ckeditor/files/Test_phase_assessment-12July22.pdf?k8UqsBgiShDq6H4TZj5H7iwR4ymoQnZV), the Advisory Board concludes that the applicability of the draft recognition criteria for centennial hydrological and land-based marine observing stations has been demonstrated successfully. The Advisory Board provided a couple of suggestions that have been reflected in improved recognition criteria, where appropriate and will be addressed in future WMO calls for candidate stations’ nominations.

**Expected action**

Based on the above, the Commission is invited to adopt Draft Recommendation 5.5(6)/1 (SERCOM-2).

# Draft RECOMMENDATION

## Draft Recommendation 5.5(6)/1 (SERCOM-2)

### Update of the mechanism for recognition of long-term observing stations

THE COMMISSION FOR WEATHER, CLIMATE, WATER AND RELATED ENVIRONMENTAL SERVICES AND APPLICATIONS,

**Recalling** [Resolution 4 (EC-73)](https://library.wmo.int/doc_num.php?explnum_id=11008#page=21) – WMO recognition mechanism for long-term observing stations,

**Taking note** of the publication of the [*Centennial Observing Stations: State of Recognition Report-2021*](https://library.wmo.int/index.php?lvl=notice_display&id=22119) (WMO-No. 1296),

**Noting** Members’ requirements to further develop the WMO mechanism for recognition of long-term observing stations as reflected in the roadmap in Annex 2 of above [Resolution 4 (EC-73)](https://library.wmo.int/doc_num.php?explnum_id=11008#page=21),

**Having considered** the [assessment report](http://ane4bf-datap1.s3-eu-west-1.amazonaws.com/wmocms/s3fs-public/ckeditor/files/Test_phase_assessment-12July22.pdf?k8UqsBgiShDq6H4TZj5H7iwR4ymoQnZV) of the test phase for the WMO recognition of centennial hydrological and marine observing stations provided by the Advisory Board for long-term observing stations*,*

**Having examined** SERCOM-2/Doc. 5.5(6),

**Recommends** to Cg-19 the adoption of the update of the mechanism for recognition of long-term observing stationsthroughthe draft Resolution provided in the [annex](#Annex_to_draft_Recommendation) to the present Recommendation.

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[Annex: 1](#_Annex_to_draft_1)

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Note: This Resolution replaces [Decision 8 (EC-69)](https://library.wmo.int/doc_num.php?explnum_id=3645#page=183) – Recognition of WMO long-term observing stations, [Resolution 6 (EC-70)](https://library.wmo.int/doc_num.php?explnum_id=4981#page=24) – WMO recognition of long-term observing stations, [Decision 40 (EC-68)](https://library.wmo.int/doc_num.php?explnum_id=3166#page=155) – WMO mechanism for the recognition of long-term observing stations, [Resolution 35 (Cg-17)](https://library.wmo.int/doc_num.php?explnum_id=3138#page=476) – WMO recognition of long-term observing stations, [Resolution 23 (Cg-18)](https://library.wmo.int/doc_num.php?explnum_id=9827#page=97) – Recognition of long-term observing stations, [Resolution 7 (EC-72)](https://library.wmo.int/doc_num.php?explnum_id=10504#page=23) – Upgraded recognition mechanism for long-term observing stations, [Resolution 4 (EC-73)](https://library.wmo.int/doc_num.php?explnum_id=11008#page=21) - WMO recognition mechanism for long-term observing stations, [Resolution 5 (EC-73)](https://library.wmo.int/doc_num.php?explnum_id=11008#page=25) – List of Centennial Observing Stations, which are no longer in force.

## Annex to draft Recommendation 5.5(6)/1 (SERCOM-2)

**Draft** **Resolution ##/1 (Cg-##)**

THE WORLD METEOROLOGICAL CONGRESS,

**Recalling:**

[Resolution 35 (Cg-17)](https://library.wmo.int/doc_num.php?explnum_id=3138#page=476) – WMO recognition of long-term observing stations,

[Resolution 4 (EC-73)](https://library.wmo.int/doc_num.php?explnum_id=11008#page=21) – WMO recognition mechanism for long-term observing stations,

**Recalling also** the criteria and mechanism for the WMO recognition of Centennial Observing Stations provided in the [*Centennial Observing Stations: State of Recognition Report-2021*](https://library.wmo.int/doc_num.php?explnum_id=11291) (WMO-No. 1296),

**Taking note of** the list of recognized WMO Centennial Observing Stations provided in [Annex 3](#_Annex_3_to) to this Resolution,

**Reiterating** the importance of the mechanism for WMO recognition of long-term observing stations to promote WMO technical regulations and good practices, and the value of long-term observing stations for the national and international communities owing to their contribution to the availability of long-term time-series data with well documented station metadata, for the provision of authoritative information and services regarding the changing status of the entire Earth System by WMO and its Members,

**Welcoming** the collaboration among Technical Commissions, the Research Board, Regional Associations and Members to collect and publish the history of selected Centennial Observing Stations in order to promote long-term observing stations,

**Considering** the [outcome of the test phase](http://ane4bf-datap1.s3-eu-west-1.amazonaws.com/wmocms/s3fs-public/ckeditor/files/Test_phase_assessment-12July22.pdf?k8UqsBgiShDq6H4TZj5H7iwR4ymoQnZV) for the WMO recognition of long-term marine and hydrological observing stations*,*

**Having examined** Recommendation 5.5(6)/1 (SERCOM-2),

**Having agreed** Recommendation 5.5(6)/1 (SERCOM-2),

**Adopts**:

(1) The recognition mechanism including recognition criteria for centennial marine and hydrological observing stations as provided in [Annex 1](#Annex1) to the present Resolution;

(2) The mechanism and criteria for national recognition of 75+ years long-term observing stations, as provided in [Annex 2](#_Annex_2_to) to the present Resolution;

**Endorses** the publication of Centennial Observing Stations: State of Recognition reports at regular intervals (every third year, as appropriate);

**Requests**:

(1) Thetechnical commissions, Research Board, Regional Associations and Members to collaborate on the above complementary elements to the WMO recognition mechanism for long-term observing stations;

(2) The Commission for Observation, Infrastructure and Information Systems (INFCOM) to lead the over-all coordination of the Recognition Mechanism for long-term observing stations;

(3) The Secretariat to liaise with the presidents of the technical commissions and the Chair of the Research Board to nominate experts from the marine and hydrological communities in the ad hoc Advisory Board for the Recognition of Long-Term Observing Stations;

(4) The Secretary-General to further promote among Members the WMO recognition mechanism for long-term observing stations.

[Annexes: 3](#Annex1)

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Note: This Resolution replaces [Decision 8 (EC-69)](https://library.wmo.int/doc_num.php?explnum_id=3645#page=183) – Recognition of WMO long-term observing stations, [Resolution 6 (EC-70)](https://library.wmo.int/doc_num.php?explnum_id=4981#page=24) – WMO recognition of long-term observing stations, [Decision 40 (EC-68)](https://library.wmo.int/doc_num.php?explnum_id=3166#page=155) – WMO mechanism for the recognition of long-term observing stations, [Resolution 35 (Cg-17)](https://library.wmo.int/doc_num.php?explnum_id=3138#page=476) – WMO recognition of long-term observing stations, [Resolution 23 (Cg-18)](https://library.wmo.int/doc_num.php?explnum_id=9827#page=97) – Recognition of long-term observing stations, [Resolution 7 (EC-72)](https://library.wmo.int/doc_num.php?explnum_id=10504#page=23) – Upgraded recognition mechanism for long-term observing stations, [Resolution 4 (EC-73)](https://library.wmo.int/doc_num.php?explnum_id=11008#page=21) - WMO recognition mechanism for long-term observing stations, [Resolution 5 (EC-73)](https://library.wmo.int/doc_num.php?explnum_id=11008#page=25) – List of Centennial Observing Stations, which are no longer in force.

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## Annex 1 to Draft Resolution ##/1 (Cg-##)

### 1. 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 at least 100 years ago, observing regularly (at least monthly) at least 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.

Notes: 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 *[Canada, Czech Republic]*, shall be flagged to the Advisory Board and may rule out recognition as 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*](https://library.wmo.int/index.php?lvl=notice_display&id=19223) (WMO-No. 1160), the [*Technical Regulations Volume III Hydrology*](https://library.wmo.int/index.php?lvl=notice_display&id=10700) (WMO-No. 49), the [*Guide to Hydrological Practices*](https://library.wmo.int/index.php?lvl=notice_display&id=543) (WMO-No. 168) and the [*Manual on Stream Gauging*](https://library.wmo.int/index.php?lvl=notice_display&id=540) (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))](https://library.wmo.int/doc_num.php?explnum_id=11113#page=9) - WMO Unified Policy for the International Exchange of Earth System Data. Members shall share their plans for data availability, if applicable.

### 2. Recognition criteria for centennial marine observing stations

Notes:   
(i) 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 WIGOS*,](https://library.wmo.int/doc_num.php?explnum_id=11157#page=114) (WMO-No. 1160), Attachment 5.1.).

(ii) 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 very likely do not 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 at least 100 years ago, observing regularly (at least monthly) at least 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 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 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))](https://library.wmo.int/doc_num.php?explnum_id=11113#page=9) - 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 N°14 and N°83. Reference to additional technical documents may be added upon extension of the recognition mechanism to capture more marine observational variables.

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## Annex 2 to Draft Resolution ##/1 (Cg-##)

**Mechanism and criteria for national recognition of 75+ years  
long-term observing stations**

Note: The mechanism and criteria for national recognition of 75+ years long-term observing stations 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 75+ years long-term observing stations:

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. 75+ years stations may therefore be reported by Members for inclusion in the list of candidate stations at [Centennial Observing Stations | World Meteorological Organization (wmo.int)](https://public.wmo.int/en/our-mandate/what-we-do/observations/centennial-observing-stations).

Criteria for national recognition of 75+ years long-term observing stations:

(1) The observing station was founded at least 75 years ago, observing at least 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 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. Station operators should 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*](https://library.wmo.int/index.php?lvl=notice_display&id=19223#.YwiUyHZBw2w) (WMO-No. 1160) and the [*Guide to Instruments and Methods of Observation*](https://library.wmo.int/index.php?lvl=notice_display&id=12407#.YwiUi3ZBw2w) (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 75+ years long-term observing stations

(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 Observing Systems Capability Analysis and Review tool (OSCAR). The PR may submit the list of recognized 75+ years observing stations 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 75+ years observing stations. *[China]*

(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 ten 10 years.

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## Annex 3 to Draft Resolution ##/1 (Cg-##)

**List of WMO Centennial Observing Stations**

Note: There have been several EC and Cg Decisions and Resolutions regarding the recognition of WMO Centennial Observing Stations. It is aimed that the status of all recognized Centennial Observing Stations will be considered by EC, Annex 3 to this Resolution will be updated according to the decisions made by EC, and all existing EC and Cg Decisions and Resolutions will be replaced by this single Resolution for a better monitoring of the status of the WMO Centennial Observing Stations and to get a single consolidated Resolution for WMO Centennial Observing Stations.

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**WMO recognized Centennial Observing Stations**

| Regional Association | Member | Station Name | WMO Number/WSI | Start of Observations | Date and Event of Recognition |
| --- | --- | --- | --- | --- | --- |
| 1 | Burkina Faso | Bobo-Dioulasso | 65510 | 1907 | September 2020 (EC-72) |
| 1 | Burkina Faso | Ouagadougou Aeroport | 65503 | 1902 | September 2020 (EC-72) |
| 1 | Côte d’Ivoire | Bondoukou | 65545 | 1919 | June 2019 (Cg-18) |
| 1 | Côte d’Ivoire | Bouaké | 65555 | 1904 | June 2019 (Cg-18) |
| 1 | Côte d’Ivoire | Tabou | 65592 | 1919 | June 2019 (Cg-18) |
| 1 | Egypt | Helwan | 62377 | 1912 | September 2020 (EC-72) |
| 1 | Madagascar | Amborovy Mahajanga | 0–20000–0-67027 | 1897 | September 2020 (EC-72) |
| 1 | Madagascar | Antsiranana | 0–20000–0-67009 | 1901 | September 2020 (EC-72) |
| 1 | Madagascar | Taolagnaro | 0–20000–0-67197 | 1903 | September 2020 (EC-72) |
| 1 | Mali | Kayes | 61257 | 1895 | September 2020 (EC-72) |
| 1 | Mali | Nioro du Sahel | 61230 | 1899 | September 2020 (EC-72) |
| 1 | Mali | Ségou | 61272 | 1907 | September 2020 (EC-72) |
| 1 | Mali | Sikasso | 61297 | 1907 | September 2020 (EC-72) |
| 1 | Mauritius | Alma |  | 1873 | June 2021 (EC-73) |
| 1 | Mauritius | Beau Vallon Cour |  | 1865 | September 2020 (EC-72) |
| 1 | Mauritius | Bel Ombre |  | 1886 | June 2021 (EC-73) |
| 1 | Mauritius | Britannia |  | 1869 | September 2020 (EC-72) |
| 1 | Mauritius | Constance |  | 1865 | September 2020 (EC-72) |
| 1 | Mauritius | Fuel |  | 1881 | June 2021 (EC-73) |
| 1 | Mauritius | Labourdonnais |  | 1862 | September 2020 (EC-72) |
| 1 | Mauritius | Medine |  | 1904 | June 2021 (EC-73) |
| 1 | Mauritius | Pamplemousses |  | 1862 | September 2020 (EC-72) |
| 1 | Mauritius | St. Antoine |  | 1874 | June 2021 (EC-73) |
| 1 | Mauritius | Vacoas |  | 1901 | June 2021 (EC-73) |
| 1 | Morocco | Agadir Inezgane | 0–20000–0-60250 | 1921 | June 2021 (EC-73) |
| 1 | Morocco | Casablanca | 60155 | 1911 | June 2018 (EC-70) |
| 1 | Nigeria | Calabar | 65264 | 1899 | September 2020 (EC-72) |
| 1 | Nigeria | Lagos Roof | 65203 | 1892 | September 2020 (EC-72) |
| 1 | Nigeria | Minna | 65123 | 1916 | September 2020 (EC-72) |
| 1 | Nigeria | Sokoto | 65010 | 1916 | September 2020 (EC-72) |
| 1 | Nigeria | Yola | 65167 | 1914 | September 2020 (EC-72) |
| 1 | Senegal | Dakar | 61641 | 1904 | September 2020 (EC-72) |
| 1 | Senegal | Diourbel | 61666 | 1912 | September 2020 (EC-72) |
| 1 | Senegal | Kédougou | 61699 | 1918 | September 2020 (EC-72) |
| 1 | Senegal | Matam | 61630 | 1918 | September 2020 (EC-72) |
| 1 | Senegal | Saint Louis | 61600 | 1897 | September 2020 (EC-72) |
| 1 | South Africa | Cape Agulhas | 68920 | 1855 | May 2017 (EC-69) |
| 1 | South Africa | Cedara | 68580 | 1904 | May 2017 (EC-69) |
| 1 | South Africa | Roodebloem |  | 1882 | May 2017 (EC-69) |
| 1 | South Africa | Zuurbekom | 68351 | 1899 | June 2018 (EC-70) |
| 1 | Spain | Izana | 60010 | 1916 | May 2017 (EC-69) |
| 1 | Spain | Santa Cruz de Tenerife | 60020 | 1865 | June 2019 (Cg-18) |
| 1 | Sudan | El-Dueim |  | 1902 | September 2020 (EC-72) |
| 1 | Sudan | Kassala |  | 1900 | September 2020 (EC-72) |
| 1 | Tanzania | Bukoba |  | 1893 | June 2018 (EC-70) |
| 1 | Tanzania | Songea |  | 1908 | June 2018 (EC-70) |
| 1 | Tunisia | Bizerte | 60714 | 1920 | September 2020 (EC-72) |
| 1 | Tunisia | Gabes | 60765 | 1901 | June 2021 (EC-73) |
| 1 | Tunisia | Gafsa | 60745 | 1900 | June 2021 (EC-73) |
| 1 | Tunisia | Jendouba | 60725 | 1901 | September 2020 (EC-72) |
| 1 | Tunisia | Tozeur | 60760 | 1898 | September 2020 (EC-72) |
| 1 | Tunisia | Tunis Cartage | 60715 | 1886 | September 2020 (EC-72) |
| 1 | Zimbabwe | Bulawayo Goetz | 67964 | 1897 | June 2018 (EC-70) |
| 2 | China | Beijing | 54511 | 1724 | September 2020 (EC-72) |
| 2 | China | Changchun | 54161 | 1908 | May 2017 (EC-69) |
| 2 | China | Dalian | 54662 | 1904 | June 2019 (Cg-18) |
| 2 | China | Hohhot | 53463 | 1915 | May 2017 (EC-69) |
| 2 | China | Nanjing | 58238 | 1904 | September 2020 (EC-72) |
| 2 | China | Qingdao | 54857 | 1898 | September 2020 (EC-72) |
| 2 | China | Qiqihar | 50745 | 1901 | September 2020 (EC-72) |
| 2 | China | Shenyang | 54342 | 1905 | June 2019 (Cg-18) |
| 2 | China | Wuhan | 57494 | 1869 | June 2019 (Cg-18) |
| 2 | China | Wuhu | 58334 | 1880 | September 2020 (EC-72) |
| 2 | China | Yingkou | 54471 | 1904 | May 2017 (EC-69) |
| 2 | Hong Kong, China | Hong Kong Observatory | 45005 | 1884 | May 2017 (EC-69) |
| 2 | Hong Kong, China | Hong Kong Upper Air Observing Station | 0–20000–0-45004 | 1921 | June 2021 (EC-73) |
| 2 | India | Ahmedabad | 42647 | 1893 | September 2020 (EC-72) |
| 2 | India | Alipore | 42807 | 1877 | September 2020 (EC-72) |
| 2 | India | Bahraich | 42273 | 1892 | June 2021 (EC-73) |
| 2 | India | Cuddallore | 43329 | 1889 | June 2021 (EC-73) |
| 2 | India | Gopalpur | 43049 | 1881 | September 2020 (EC-72) |
| 2 | India | Kodaikanal | 43339 | 1899 | June 2021 (EC-73) |
| 2 | India | Srinagar | 42027 | 1891 | September 2020 (EC-72) |
| 2 | India | Minicoy | 43369 | 1891 | June 2021 (EC-73) |
| 2 | India | Mumbai (Colaba) | 43057 | 1841 | June 2019 (Cg-18) |
| 2 | India | Nungambakkam | 43278 | 1792 | June 2019 (Cg-18) |
| 2 | India | Panjim | 43192 | 1860 | June 2019 (Cg-18) |
| 2 | India | Patna | 42492 | 1867 | September 2020 (EC-72) |
| 2 | India | Port Blair | 43333 | 1866 | September 2020 (EC-72) |
| 2 | India | Pune | 43063 | 1856 | June 2019 (Cg-18) |
| 2 | India | Puri | 43053 | 1888 | September 2020 (EC-72) |
| 2 | India | Shillong | 42516 | 1902 | June 2021 (EC-73) |
| 2 | India | Thiruvananthapuram | 43371 | 1853 | June 2019 (Cg-18) |
| 2 | Japan | Ishigakijima | 47918 | 1896 | May 2017 (EC-69) |
| 2 | Kazakhstan | Akkol | 35085 | 1909 | June 2018 (EC-70) |
| 2 | Kazakhstan | Aktobe | 35229 | 1898 | June 2021 (EC-73) |
| 2 | Kazakhstan | Aral Tenizi | 35746 | 1884 | June 2018 (EC-70) |
| 2 | Kazakhstan | Atbasar | 35078 | 1886 | September 2020 (EC-72) |
| 2 | Kazakhstan | Fort-Shevchenko | 38001 | 1848 | June 2021 (EC-73) |
| 2 | Kazakhstan | Irgiz | 35542 | 1856 | September 2020 (EC-72) |
| 2 | Kazakhstan | Kazaly | 35849 | 1848 | September 2020 (EC-72) |
| 2 | Kazakhstan | Kokshetau | 28879 | 1895 | June 2021 (EC-73) |
| 2 | Kazakhstan | Merke | 38344 | 1910 | June 2021 (EC-73) |
| 2 | Kazakhstan | Mikhailovka | 29802 | 1907 | June 2018 (EC-70) |
| 2 | Kazakhstan | Semiyarka | 36152 | 1893 | June 2021 (EC-73) |
| 2 | Kazakhstan | Torgay | 35358 | 1874 | June 2021 (EC-73) |
| 2 | Kazakhstan | Turkestan | 38198 | 1882 | September 2020 (EC-72) |
| 2 | Kazakhstan | Zharkent | 36859 | 1890 | September 2020 (EC-72) |
| 2 | Korea, Republic of | Busan | 47159 | 1904 | May 2017 (EC-69) |
| 2 | Korea, Republic of | Seoul | 47108 | 1907 | May 2017 (EC-69) |
| 2 | Kyrgyzstan | Baitik |  | 1912 | May 2017 (EC-69) |
| 2 | Kyrgyzstan | Naryn | 36974 | 1885 | May 2017 (EC-69) |
| 2 | Macao, China | Taipa Grande | 45011 | 1901 | September 2020 (EC-72) |
| 2 | Russian Federation | Mezen | 22471 | 1883 | September 2020 (EC-72) |
| 2 | Russian Federation | Ola | 25912 | 1914 | September 2020 (EC-72) |
| 2 | Russian Federation | Polyarnoe | 22213 | 1899 | June 2021 (EC-73) |
| 2 | Russian Federation | Taseewo | 29379 | 1901 | September 2020 (EC-72) |
| 2 | Russian Federation | Werkhnejmbatsk | 23678 | 1911 | September 2020 (EC-72) |
| 2 | Tajikistan | Khudjant | 38599 | 1866 | June 2018 (EC-70) |
| 2 | Tajikistan | Murgab | 38878 | 1894 | June 2018 (EC-70) |
| 2 | Thailand | Chiang Mai | 48327 | 1911 | June 2018 (EC-70) |
| 2 | Thailand | Kanchana Buri | 48450 | 1911 | June 2018 (EC-70) |
| 2 | Thailand | Ubon Ratchathani | 48407 | 1911 | June 2018 (EC-70) |
| 2 | Uzbekistan | Fergana | 38618 | 1880 | June 2018 (EC-70) |
| 2 | Uzbekistan | Namangan | 38611 | 1878 | June 2019 (Cg-18) |
| 2 | Uzbekistan | Tashkent | 38457 | 1867 | June 2018 (EC-70) |
| 2 | Viet Nam | Phu Lien | 48826 | 1906 | June 2018 (EC-70) |
| 3 | Argentina | Base Orcadas (Antarctica) | 88968 | 1904 | June 2018 (EC-70) |
| 3 | Argentina | Ceres Aero | 87257 | 1896 | June 2018 (EC-70) |
| 3 | Argentina | La Quiaca Observatorio | 87007 | 1902 | June 2018 (EC-70) |
| 3 | Argentina | Malargüe Aero | 87506 | 1914 | June 2018 (EC-70) |
| 3 | Argentina | Monte Caseros Aero | 87393 | 1904 | June 2021 (EC-73) |
| 3 | Argentina | Pilar Observatorio | 87349 | 1907 | June 2018 (EC-70) |
| 3 | Argentina | San Luis Aero | 87436 | 1874 | June 2021 (EC-73) |
| 3 | Argentina | Santigo Del Estero Aero | 87129 | 1873 | June 2021 (EC-73) |
| 3 | Brazil | Aracaju | 83096 | 1910 | June 2021 (EC-73) |
| 3 | Brazil | Caetité | 83339 | 1907 | June 2019 (Cg-18) |
| 3 | Brazil | Campos Dos Goytacazes | 83698 | 1912 | June 2021 (EC-73) |
| 3 | Brazil | Cuiabá | 83361 | 1911 | June 2019 (Cg-18) |
| 3 | Brazil | Curitiba | 83842 | 1911 | June 2019 (Cg-18) |
| 3 | Brazil | Juiz De Fora | 83692 | 1910 | June 2019 (Cg-18) |
| 3 | Brazil | Maceió | 82994 | 1909 | June 2019 (Cg-18) |
| 3 | Brazil | Manaus | 82331 | 1910 | June 2019 (Cg-18) |
| 3 | Brazil | Passo Fundo | 83914 | 1912 | June 2021 (EC-73) |
| 3 | Brazil | Quixeramobim | 82856 | 1896 | June 2019 (Cg-18) |
| 3 | Brazil | Salvador – (Ondina) | 83229 | 1903 | June 2019 (Cg-18) |
| 3 | Chile | Juan Fernandez | 85585 | 1901 | June 2018 (EC-70) |
| 3 | Chile | Quinta Normal | 85577 | 1857 | May 2017 (EC-69) |
| 3 | Ecudor | Quito OAQ/EPN |  | 1891 | June 2021 (EC-73) |
| 3 | Uruguay | Mercedes | 0–20000–0-86490 | 1908 | June 2021 (EC-73) |
| 3 | Uruguay | Prado | 0–20000–0-86585 | 1901 | June 2021 (EC-73) |
| 4 | Canada | Creston Campbell Scientific | 0–20000–0-71770 | 1912 | September 2020 (EC-72) |
| 4 | Canada | Nappan Auto | 0–20000–0-71311 | 1890 | September 2020 (EC-72) |
| 4 | Canada | Ottawa CDA RCS | 0–20000–0-71063 | 1889 | September 2020 (EC-72) |
| 4 | Canada | Victoria Gonzales | 0–20000–0-71200 | 1919 | September 2020 (EC-72) |
| 4 | Canada | Welland-Pelham | 0–20000–0-71752 | 1872 | September 2020 (EC-72) |
| 4 | France | Fond-Saint-Denis-Cardet |  | 1905 | September 2020 (EC-72) |
| 4 | Mexico | Central Tacubaya | 76680 | 1877 | June 2018 (EC-70) |
| 4 | Mexico | Merida Aeropuerto Internacional | 76644 | 1898 | June 2018 (EC-70) |
| 4 | Mexico | Zakatecas (La Bufa) | 76525 | 1877 | June 2018 (EC-70) |
| 4 | United States of America | Blue Hill Observatory, Milton | 74492 | 1885 | May 2017 (EC-69) |
| 4 | United States of America | Buffalo Bill Dam |  | 1905 | June 2018 (EC-70) |
| 4 | United States of America | Downtown Charleston |  | 1738 | September 2020 (EC-72) |
| 4 | United States of America | Mandan Experiment Station |  | 1913 | May 2017 (EC-69) |
| 4 | United States of America | New York City Central Park | 0–20000–0-72506 | 1869 | June 2021 (EC-73) |
| 4 | United States of America | Olga |  | 1890 | May 2017 (EC-69) |
| 4 | United States of America | Prairie du Chien |  | 1893 | June 2021 (EC-73) |
| 4 | United States of America | Purdum |  | 1902 | June 2018 (EC-70) |
| 4 | United States of America | Saint Johnsbury |  | 1894 | June 2018 (EC-70) |
| 4 | United States of America | University Experiment Station |  | 1911 | June 2018 (EC-70) |
| 4 | United States of America | Vancouver 4 NNE |  | 1895 | June 2021 (EC-73) |
| 5 | Australia | Cape Leeuwin | 0–20000–0-94601 | 1897 | June 2021 (EC-73) |
| 5 | Australia | Hobart | 94970 | 1882 | May 2017 (EC-69) |
| 5 | Australia | Mt Boninyong |  | 1856 | May 2017 (EC-69) |
| 5 | Australia | Willis Island | 0–20000–0-94299 | 1921 | June 2021 (EC-73) |
| 5 | Australia | Wooltana |  | 1877 | June 2021 (EC-73) |
| 5 | Australia | Yamba Pilot Station | 94589 | 1877 | May 2017 (EC-69) |
| 5 | New Zealand | Hokitika | 93614 | 1865 | May 2017 (EC-69) |
| 5 | New Zealand | Lincoln Broadfield |  | 1881 | May 2017 (EC-69) |
| 6 | Armenia | Armavir | 37787 | 1904 | May 2017 (EC-69) |
| 6 | Armenia | Gavar | 37801 | 1890 | May 2017 (EC-69) |
| 6 | Armenia | Gyumri | 37686 | 1895 | May 2017 (EC-69) |
| 6 | Austria | Graz University |  | 1894 | June 2018 (EC-70) |
| 6 | Austria | Innsbruck University |  | 1877 | June 2018 (EC-70) |
| 6 | Austria | Kremsmünster | 11012 | 1762 | May 2017 (EC-69) |
| 6 | Austria | Sonnblick | 11146 | 1886 | May 2017 (EC-69) |
| 6 | Austria | Sonnblick | 11343 | 1886 | May 2017 (EC-69) |
| 6 | Austria | Stift Zwettl |  | 1833 | June 2018 (EC-70) |
| 6 | Austria | Wien-Hohe Warte | 11035 | 1872 | May 2017 (EC-69) |
| 6 | Belgium | Uccle | 0–20000–0-06447 | 1886 | June 2021 (EC-73) |
| 6 | Bulgaria | Knezha | 15520 | 1910 | June 2018 (EC-70) |
| 6 | Bulgaria | Obrazcov Chiflik |  | 1890 | June 2018 (EC-70) |
| 6 | Bulgaria | Sliven | 15640 | 1889 | June 2018 (EC-70) |
| 6 | Croatia | Gospic | 14330 | 1872 | May 2017 (EC-69) |
| 6 | Croatia | Hvar | 14447 | 1858 | May 2017 (EC-69) |
| 6 | Croatia | Zagreb-Gric | 14236 | 1861 | June 2018 (EC-70) |
| 6 | Cyprus | Kornos |  | 1916 | September 2020 (EC-72) |
| 6 | Cyprus | Lefkosia |  | 1899 | May 2017 (EC-69) |
| 6 | Cyprus | Panagia Bridge |  | 1916 | September 2020 (EC-72) |
| 6 | Cyprus | Pano Panagia |  | 1916 | September 2020 (EC-72) |
| 6 | Cyprus | Platania |  | 1916 | September 2020 (EC-72) |
| 6 | Cyprus | Polis Chrysochous |  | 1908 | May 2017 (EC-69) |
| 6 | Cyprus | Saittas |  | 1916 | September 2020 (EC-72) |
| 6 | Cyprus | Stavros Psokas |  | 1916 | May 2017 (EC-69) |
| 6 | Cyprus | Troodos Square |  | 1916 | September 2020 (EC-72) |
| 6 | Czech Republic | Klatovy | 0–203–0-11455 | 1876 | June 2021 (EC-73) |
| 6 | Czech Republic | Milesovka | 0–20000–0-11464 | 1905 | June 2021 (EC-73) |
| 6 | Czech Republic | Opava | 11763 | 1887 | May 2017 (EC-69) |
| 6 | Czech Republic | Prague-Klementinum | 11515 | 1775 | June 2018 (EC-70) |
| 6 | Czech Republic | Prerov | 0–203–0-11748 | 1874 | June 2021 (EC-73) |
| 6 | Czech Republic | Sumperk | 0–203–0-11705 | 1865 | June 2021 (EC-73) |
| 6 | Estonia | Tooma | 0–233–0-26147 | 1911 | June 2021 (EC-73) |
| 6 | Estonia | Vilsandi | 26214 | 1865 | May 2017 (EC-69) |
| 6 | Finland | Helsinki Kaisaniemi | 02978 | 1844 | June 2018 (EC-70) |
| 6 | Finland | Kuusamo Airport | 02869 | 1909 | June 2018 (EC-70) |
| 6 | Finland | Parainen Utö | 02981 | 1881 | May 2017 (EC-69) |
| 6 | Finland | Siikajoki Ruukki | 02803 | 1904 | May 2017 (EC-69) |
| 6 | Finland | Sodankylä Tähtelä | 02836 | 1908 | May 2017 (EC-69) |
| 6 | France | Besançon | 07288 | 1884 | May 2017 (EC-69) |
| 6 | France | Dunkerque | 07010 | 1917 | September 2020 (EC-72) |
| 6 | France | Istres | 07647 | 1920 | September 2020 (EC-72) |
| 6 | France | Mont-Aigoual | 07560 | 1895 | May 2017 (EC-69) |
| 6 | France | Paris-Montsouris | 07156 | 1872 | May 2017 (EC-69) |
| 6 | France | Saint-Genis-Laval |  | 1881 | September 2020 (EC-72) |
| 6 | France | Sauternes |  | 1888 | September 2020 (EC-72) |
| 6 | Germany | Brocken | 10453 | 1895 | May 2017 (EC-69) |
| 6 | Germany | Hohenpeissenberg | 10962 | 1781 | May 2017 (EC-69) |
| 6 | Germany | Potsdam | 10379 | 1893 | May 2017 (EC-69) |
| 6 | Greece | National Observatory of Athens | 16714 | (1891 on current location) | May 2017 (EC-69) |
| 6 | Hungary | Budapest | 0–348–1-44121 | 1780 | June 2021 (EC-73) |
| 6 | Hungary | Debrecen | 0–20000–0-12882 | 1853 | September 2020 (EC-72) |
| 6 | Hungary | Pecs/Pogany | 0–20000–0-12942 | 1871 | September 2020 (EC-72) |
| 6 | Hungary | Szeged | 0–20000–0-12982 | 1871 | September 2020 (EC-72) |
| 6 | Hungary | Szombathely | 0–20000–0-12812 | 1864 | September 2020 (EC-72) |
| 6 | Iceland | Stykkishólmur |  | 1846 | June 2018 (EC-70) |
| 6 | Iceland | Teigarhorn |  | 1881 | June 2018 (EC-70) |
| 6 | Ireland | Phoenix Park | 03982 | 1829 | September 2020 (EC-72) |
| 6 | Ireland | Valentia Observatory | 03953 | (1868) 1892 on current location | May 2017 (EC-69) |
| 6 | Israel | Beit Jimal | 0–376–0-557 | 1919 | June 2019 (Cg-18) |
| 6 | Israel | Miqwe Israel |  | 1897 | June 2019 (Cg-18) |
| 6 | Italy | Aggius |  | 1919 | September 2020 (EC-72) |
| 6 | Italy | Campotosto |  | 1919 | June 2021 (EC-73) |
| 6 | Italy | Carloforte Osservatorio | 16549 | 1901 | September 2020 (EC-72) |
| 6 | Italy | Chieti |  | 1918 | June 2021 (EC-73) |
| 6 | Italy | Domodossola-Collegio Rosmini | 0–380–7-2 | 1871 | June 2021 (EC-73) |
| 6 | Italy | Genoa University |  | 1833 | June 2021 (EC-73) |
| 6 | Italy | Moncalieri – Collegio Carlo Alberto |  | 1859 | June 2018 (EC-70) |
| 6 | Italy | Montevergine |  | 1884 | September 2020 (EC-72) |
| 6 | Italy | Osservatorio Astronomico di Brera-Milano |  | 1763 | June 2021 (EC-73) |
| 6 | Italy | Osservatorio Cavanis |  | 1835 | September 2020 (EC-72) |
| 6 | Italy | Osservatorio Modena |  | 1830 | September 2020 (EC-72) |
| 6 | Italy | Osservatorio Astronomico di Palermo |  | 1791 | September 2020 (EC-72) |
| 6 | Italy | Osservatorio Ximeniano |  | 1813 | June 2018 (EC-70) |
| 6 | Italy | Osservatorio Valerio, Pessaro |  | 1871 | June 2018 (EC-70) |
| 6 | Italy | Piacenza-Collegio Alberoni |  | 1802 | September 2020 (EC-72) |
| 6 | Italy | Roma Collegio Romano |  | 1787 | June 2018 (EC-70) |
| 6 | Italy | Rovereto |  | 1882 | June 2021 (EC-73) |
| 6 | Italy | Sulmona |  | 1919 | June 2021 (EC-73) |
| 6 | Italy | Urbino – Osservatorio Meteorologico Alessandro Serpieri |  | 1850 | June 2018 (EC-70) |
| 6 | Italy | Vigna di Valle | 16224 | 1910 | June 2018 (EC-70) |
| 6 | Latvia | Liepaja | 0–20000–0-26406 | 1870 | June 2021 (EC-73) |
| 6 | Latvia | Mersrags | 26324 | 1895 | June 2018 (EC-70) |
| 6 | Latvia | Priekuli | 26335 | 1912 | June 2018 (EC-70) |
| 6 | Latvia | Ventspils | 0–20000–0-26314 | 1901 | June 2021 (EC-73) |
| 6 | Lithuania | Panevezys | 26529 | 1894 | June 2018 (EC-70) |
| 6 | Moldova (Republic of) | Chisinau | 0–20000–0-33815 | 1886 | June 2021 (EC-73) |
| 6 | Moldova (Republic of) | Soroca | 0–20000–0-33678 | 1891 | June 2021 (EC-73) |
| 6 | Netherlands | De Bilt | 06260 | 1897 | May 2017 (EC-69) |
| 6 | Norway | Bjornoya (Arctic) | 0–20000–0-01028 | 1920 | September 2020 (EC-72) |
| 6 | Norway | Dombaas | 0–20000–0-01233 | 1864 | September 2020 (EC-72) |
| 6 | Norway | Ferder LH | 0–20000–0-01482 | 1885 | September 2020 (EC-72) |
| 6 | Norway | Jan Mayen (Arctic) | 0–20000–0-01001 | 1921 | June 2021 (EC-73) |
| 6 | Norway | Karasjok | 0–20000–0-01065 | 1877 | September 2020 (EC-72) |
| 6 | Norway | Utsira LH | 0–20000–0-01403 | 1867 | September 2020 (EC-72) |
| 6 | Norway | Vardo | 0–20000–0-01098 | 1829 | September 2020 (EC-72) |
| 6 | Romania | Calarasi | 15460 | 1898 | May 2017 (EC-69) |
| 6 | Romania | Drobeta Turnu Severin | 15410 | 1896 | May 2017 (EC-69) |
| 6 | Slovakia | Hurbanovo | 0–20000–0-11858 | 1872 | September 2020 (EC-72) |
| 6 | Spain | Barcelona (Observatorio Fabra) |  | 1913 | June 2018 (EC-70) |
| 6 | Spain | Daroca | 08157 | 1909 | May 2017 (EC-69) |
| 6 | Spain | Madrid Retiro | 08222 | 1893 | May 2017 (EC-69) |
| 6 | Spain | Tortosa | 08238 | (1880) 1905 on current location | May 2017 (EC-69) |
| 6 | Sweden | Abisko | 0–752–0-02022 | 1913 | June 2021 (EC-73) |
| 6 | Sweden | Bjuröklubb | 02297 | 1879 | May 2017 (EC-69) |
| 6 | Sweden | Hoburg | 02679 | 1879 | May 2017 (EC-69) |
| 6 | Sweden | Stockholm | 02485 | 1756 | May 2017 (EC-69) |
| 6 | Switzerland | Grand-Saint-Bernard | 06717 | 1817 | May 2017 (EC-69) |
| 6 | Switzerland | Säntis | 06680 | 1882 | May 2017 (EC-69) |
| 6 | Türkiye | Kandilli Observatory |  | 1911 | September 2020 (EC-72) |
| 6 | Ukraine | Dubno | 33296 | 1885 | September 2020 (EC-72) |
| 6 | Ukraine | Odesa | 33837 | 1866 | June 2018 (EC-70) |
| 6 | Ukraine | Poltava | 33506 | 1886 | June 2018 (EC-70) |
| 6 | Ukraine | Romny | 33268 | 1885 | September 2020 (EC-72) |
| 6 | Ukraine | Uman | 33587 | 1886 | June 2018 (EC-70) |
| 6 | United Kingdom | Armagh |  | 1836 | June 2018 (EC-70) |
| 6 | United Kingdom | Balmoral |  | 1882 | May 2017 (EC-69) |
| 6 | United Kingdom | Eskdalemuir | 03162 | 1908 | May 2017 (EC-69) |
| 6 | United Kingdom | Llysdinam |  | 1882 | June 2018 (EC-70) |
| 6 | United Kingdom | Maison St. Louis Observatory – Jersey | 03896 | 1894 | September 2020 (EC-72) |
| 6 | United Kingdom | Morpeth, Cockle Park |  | 1897 | June 2018 (EC-70) |
| 6 | United Kingdom | Oxford |  | 1772 | September 2020 (EC-72) |
| 6 | United Kingdom | Rothamsted | 03680 | 1872 | May 2017 (EC-69) |

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