C3S 311a Lot 2 Global Land and Marine Observations Database Service Land Data Policy

Version History

Version	Author(s)	Date	CDS release version that pertains
V2.0	Simon Noone, Peter Thorne, Paul Poli	09/09/25	V2.0
V1.0	Kate Willett, Simon Noone, Robert Dunn, Peter Thorne	14/7/20	V1.0

1. Introduction

The C3S 311a Lot 2 Global Land and Marine Observations Database service (hereafter, the Service) is undertaken in collaboration with the US National Oceanic and Atmospheric Administration's National Centre for Environmental Information (NCEI). The aim of the Service is to improve access to, and management of, historical land and marine surface meteorological data holdings. Long-term historical observations allow us to understand past changes and variability in climate, and hence to contextualise projected future changes and their impacts.

Sharing and onward usage policy relating to land surface meteorological data is complex and highly variable depending on the owning country or entity, and in most cases is not clearly associated with the data itself, requiring case by case detailed investigation. Historical changes to network designations, political boundaries, data archives and policy practices further complicate the issue. This means that in the majority of cases there is no immediately clear data policy associated with a station or collection of stations, and significant investigation is required.

Out of an abundance of caution, the default approach of the Service is to determine data to be restricted to non-commercial usage unless and until a more open policy can be ascertained.

Modern use of meteorological data is governed by the World Meteorological Organization (WMO) policy, practice and guidelines for the exchange of meteorological and related data and products. This is laid out in the following resolutions:

-WMO Unified Data Policy (Resolution 1) of the Extraordinary World Meteorological Congress 2021 – https://wmo.int/wmo-unified-data-policy-resolution-res1 , https://wmo.int/news/media-centre/wmo-unified-data-policy-adopted; -WMO Resolution 60 of the Seventeenth WMO Congress 2015 – https://library.wmo.int/doc_num.php?explnum_id=4192.

The WMO Unified Data Policy (Resolution 1, 2021) has superseded WMO Resolution 40 (1995). Whereas Resolution 40 focused primarily on meteorological data, the Unified Data Policy expands the scope to cover the full range of Earth system data, including weather, climate, hydrology, oceans, the cryosphere, and atmospheric composition. The Unified Data Policy calls for free and unrestricted international exchange of these data. It mandates this for those datasets designated as Core, which are deemed essential for "services in support of the protection of life and property and the well-being of all nations." Other datasets are categorized as **_Recommended**, *where Members are strongly encouraged to share data, though with some flexibility in terms of conditions of use. Thus, the earlier "essential" and "additional" data categories of Resolution 40 are now reflected as "Core" and* ***_Recommended*** under the Unified Data Policy. Unlike Resolution 40, which fixed these lists within its annex, the Unified Data Policy ensures that definitions and data requirements are maintained in WMO's technical regulations, allowing for more adaptive and up-to-date management. This provides greater clarity about the scope of exchange and avoids ambiguities regarding retrospective application or reclassification when stations or networks change their designation.

Some countries have declared an open data policy relating to all their meteorological holdings. However, it is not always clear how this relates to stations located within that country that may have previously been established or operated by another country (e.g. changes in international borders, or data being held by a former colonial state), nor for stations located within other countries that were previously governed by the open data policy country. The hope is that over time more countries will declare their meteorological, climatological, hydrological, and related holdings open. There is currently no definitive single point of reference listing the data policy within each country.

Historical data that pre-dates the electronic exchange era was originally recorded on paper and in many cases remains solely in paper form. Efforts to digitise such data are often undertaken as part of grassroots or international research projects, and the resulting digital data are sometimes made publicly available. It is rare that a clear data policy is attached to these data, but the assumption is that they can be used at a minimum for non-commercial applications as they are already in the public domain. Where digitisation has taken place, the data are not necessarily available under an open data policy.

Daily and monthly meteorological data may be provided directly from the owning country. Therefore, unless it is a CLIMAT designated observation, whereby it comes under the WMO Unified Data Policy's ***Core*** category, there may be restrictions on its onward use. In those cases where the C3S Service has derived daily and monthly values from hourly observations, it is not possible to easily retrieve the original hourly observations. However, the hourly observations themselves can be identified and traced. Hence, where those hourly data are not Core and have restrictions placed on their onward use, these restrictions are also determined to pertain to derived daily and monthly values.

The Service is a collation of meteorological observations collected electronically from previously archived international data exchanges (GTS, etc.), individual agreements (with Institutions, NMHSs, etc.) or ad hoc submissions of data collections and data rescue missions. Hence, data policy relating to these holdings includes all of the above scenarios.

2. Data Policy Categories Applied in the Present Release

As noted in the prior section, out of an abundance of caution, in early data releases of the Service, more data than may be necessary are being flagged as being restricted to ***non-commercial*** use only. This is to avoid raising issues with ultimate data rights holders and any resulting negative impacts on real-time data exchange which, for example, may imperil the provision of operational forecasts. Over successive releases an increasing volume of data will be made available for ***commercial*** applications once we have a sufficiently documented basis for doing so.

2.1 Nationally Open Data Policies

A number of countries have declared their meteorological collections as ***open*** datasets available to all for unrestricted onwards use cases, including ***commercial*** activities. Where we are satisfied of this policy at a national level, data will be flagged as ***open***, and therefore available for ***commercial*** use applications without restriction. An updated list of ***open*** data policy countries can be found in Annex A. There will likely be more complicated cases. For example, the ownership of a particular time series or set of data may not be clear because the country instigating the original measurements was not the country where the measurements took place. This will be addressed on a case by case basis as queries arise. Some countries have partial ***open*** data policies. At present, it is not possible to decipher which stations with the Service the ***open*** parts cover and so data from these countries remains restricted to ***non-commercial*** use only. Over time we hope that it becomes easier to decipher which records within a country can be made ***open***. The data policy for those records will then be amended accordingly. A Global data source contains stations located in many countries and the actual source data policy may not have been verified and will be assumed to be for ***non-commercial*** use only. However, in this case the stations located in a country that has been verified as having a fully ***open*** data policy will be listed as ***open*** access, this has led to some Global data sources containing both ***open*** access and ***non-commercial*** data policies. In addition, because of the station merge process some stations may contain segments of data which have derived from a source with open data policy and other segments which come from a source with a ***non-commercial*** data policy.

2.2 Pre-Unified Data Policy Adoption (pre-2021)

Data pre-dating electronic global exchange has mostly come from existing global and national public archives and various significant digitisation efforts (e.g., Atmospheric Circulation Reconstructions over the Earth (ACRE) – met-acre.net, oldweather.org). Such efforts are now supported by the C3S Data Rescue Service and periodically more newly digitised historical data should become available through the C3S Service. Generally, there is no link to source IPR policy documents for such data. Unless otherwise documented, an assumption is made that such data can be used on a ***non-commercial*** basis only. Sources with a clear open data policy are listed in Annex A.

The data policy applying to data exchanged electronically before the adoption of a formal WMO data policy framework is also unclear. Given that these are not explicitly listed in the Unified Data Policy's ***Core*** category, we have interpreted the guidance to mean that these are Recommended and therefore made available on a ***non-commercial*** basis only. Sources with a clear ***open*** data policy are listed in Annex A.

2.3 WMO Unified Data Policy – Core Data

The Unified Data Policy (Resolution 1, 2021) states that all ***Core*** data are to be provided on a free and unrestricted basis:

"Members shall provide on a free and unrestricted basis the Core data and products necessary for the provision of services in support of the protection of life and property and the well-being of all nations, particularly those required to describe and forecast accurately weather, climate, water, and other environmental conditions, and to support WMO Programmes."

Following the technical regulations underpinning the Unified Data Policy (e.g., the WIGOS Manual, GDPFS Manual), any 00, 06, 12, 18Z hours observations from stations identified as part of the Regional Basic Surface Network (RBSN), or CLIMAT reports, are considered to be ***Core***. These data are therefore available on a free and unrestricted basis, which includes for **_commercial_** use, and efforts are underway to identify all such reports as open within the Service.

2.4 WMO Unified Data Policy – Recommended Data

The Unified Data Policy also encourages Members to provide **_Recommended_** data and products, which broaden the available global dataset but for which Members retain more flexibility in conditions of use:

"Members should also provide the **_Recommended_** data and products required to sustain WMO Programmes at the global, regional, and national levels, and, further, as agreed, to assist other Members in the provision of services in their countries. While increasing the volume of data and products available to all Members by providing these **_Recommended_** data and products, it is understood that Members may place conditions on their re-export or ***commercial*** use, for reasons such as national laws or costs of production."

"Members should provide to the research and education communities, for their ***non-commercial*** activities, free and unrestricted access to all data and products exchanged under the auspices of WMO with the understanding that their commercial activities may be subject to conditions as identified above."

Hence, any land meteorological data not already identified as Core are considered to be **_Recommended_** data. These data are therefore available on a free but restricted basis, where only **_non-commercial_** activities are permitted. They will be identified as **_non-commercial_** within the Service.

2.5 Derived Data Values

In many cases, the Service's daily and monthly values are derived from hourly and daily data respectively. Although the original values are not retrievable from the averages, they are traceable through the station ID. In line with the WMO Unified Data Policy, derived data should carry the same conditions on their re-export and use as the **_Core_** or **_Recommended_** source data from which they originate.

At present, all derived data are made available with restriction to **_non-commercial_** use only. In the future we will progress this effort such that those daily and monthly averages derived from ***open*** (i.e., Core, free and unrestricted) sources will be made available as ***open***.

3. Policy Queries and Change Process

There will undoubtedly be cases that arise where data may be accidentally listed under the incorrect data policy category. We have a process to follow in this event, whether it is a user-led change or a Service-detected change.

In the event of a user-discovered query, please contact Copernicus-support@ecmwf.int or log in to the C3S Enquiry Portal (https://jira.ecmwf.int/servicedesk/customer/portal/1/user/login?destination=portal%2F1%2Fgroup%2F6%3FgroupId%3D6). Please state "C3S 311a Lot 2 Data Policy" and describe the issue found with as much detail and documentation as possible.

Where ***open*** (i.e., **_Core_**) data are queried, they will be withheld while investigation takes place. Any formal change of policy must be supported by sufficient evidence such as the data owner's written consent or a link to a formal policy document. A copy of these documents will be held by the Service along with the initial query and investigation trail. We aim to resolve all queries within 6 months.

4. Acknowledgement and Citation Requirements

All data accessed from the Service will have the relevant acknowledgements and citations attached. We ask that users reproduce these data provider statements whenever their use of the data results in a publication. These are often key for data providers to justify continued provision of observations to their funders. For example, Met Éireann (Irish Met Service) state that all users acknowledge them when using their data:

"Under the CC-BY-SA Licence, users must acknowledge Met Éireann as the source of the data by inserting this attribution statement in their product or application: Contains Met Éireann Data licensed"

Data acknowledgements and citations requirements are the responsibility of the user. Users agree to use acknowledgments and citations in any application that uses the data provided. The list of citations is found in the documentation tab.

There is no additional formal requirement to cite or acknowledge the Service although relevant papers and documentation are available through the CDS documentation tab and are citeable should the user wish to do so.

Annex A – Countries and Sources with Verified Open Data Policies

Table A1. Countries with an open data policy that covers all of their meteorological data

Country	Institute	Policy Link	Notes / Licence type
Finland	Finnish Met Institute	https://en.ilmatieteenlaitos.fi/open-data	Creative Commons Attribution 4.0 https://en.ilmatieteenlaitos.fi/open-data-licence, https://creativecommons.org/licenses/by/4.0/
Germany	DWD	https://opendata.dwd.de/climate_environment/CDC/Terms_of_use.pdf	Full open access policy
Ireland	Met Éireann	https://www.met.ie/climate/available-data/historical-data	Creative Commons Attribution 4.0 https://creativecommons.org/licenses/by/4.0/
Luxembourg	Meteolux	https://www.meteolux.lu/fr/aide/aspects-legaux/?lang=fr, no additional data - https://community.wmo.int/notifications	Creative Commons 0 1.0 Transfer to the Public Domain https://creativecommons.org/publicdomain/zero/1.0/deed.fr
Netherlands	KNMI	https://www.knmi.nl/copyright, https://www.digitaleoverheid.nl/overzicht-van-alle-onderwerpen/nieuwe-technologieen-data-en-ethiek/open-data/, no additional data - https://community.wmo.int/notifications	https://creativecommons.org/publicdomain/zero/1.0/legalcode.nl
Norway	MET Norway	https://www.met.no/en/free-meteorological-data/licensing-and-crediting, https://www.met.no/en/free-meteorological-data, no additional data - https://community.wmo.int/notifications	Creative Commons 4.0 BY http://creativecommons.org/licenses/by/4.0
Sweden	SMHI	https://www.smhi.se/omsmhi/policys/datapolicy/mer-och-mer-oppna-data-1.8138, https://www.smhi.se/data/oppna-data/villkor-for-anvandning-1.30622, no additional data - https://community.wmo.int/notifications	Creative Commons Recognition 4.0 SE https://www.smhi.se/data/oppna-data/villkor-for-anvandning-1.30622
United States	NOAA NCEI	https://www.ncdc.noaa.gov/wdcmethttps://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf	All US located stations are open access policy. Verified via personal communication with M. Menne at NOAA/NCEI. Also see link to US Government data policy document
Canada	Environmental Canada	https://open.canada.ca/data/en/dataset/635a6788-4cd2-44dc-801b-43e2c873f41e/resource/bac15370-6137-4fd9-a23b-c35d08d61120	Full open access policy
Iceland	Icelandic Met Office	https://en.vedur.is/about-imo/the-web/conditions	Full open access policy
Hungary	Hungarian Met Office	https://odp.met.hu/climate/	Full open access policy
France	Meteo France	https://meteo.data.gouv.fr/datasets/6569b4473bedf2e7abad3b72	Full open access policy
Spain	AEMET	https://www.aemet.es/en/datos_abiertos/AEMET_OpenData	Full open access policy
UK	Met Office	https://www.metoffice.gov.uk/policies/open-data-policy	Full open access policy
Argentina	SMN	Https://Www.Smn.Gob.Ar/	open access
Costa Rica	National Meteorological Institute (IMN)	Https://Www.Imn.Ac.Cr/Web/Imn/Terminos	open access
Hong Kong	Hong Kong Observatory	Https://Data.Weather.Gov.Hk/Weatherapi/Doc/Hko_Open_Data_Api_Documentation.Pdf	open access
Philippines	"Philippine Atmospheric Geophysical and Astronomical Services Administration"	Http://Bagong.Pagasa.Dost.Gov.Ph/	open access
Saudi Arabia	Meteorology and Environment Protection Administration	Https://Www.My.Gov.Sa/Wps/Portal/Snp/Aboutksa/Opendata	open access

Table A2. Sources with an open data policy that covers all of their meteorological data

Source ID	Source and data set name	Policy Link	Nc
120	U.S. Cooperative Summary of the Day Transmitted via WxCoder3 (NCDC DSI-3207)	https://www.ncdc.noaa.gov/wdcmet https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf Verified via personal communication with M. Menne at NOAA/NCEI	Op
159	U.S. ASOS data for October 2000 December 2005 (NCDC DSI-3211)	https://www.ncdc.noaa.gov/wdcmet https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf Verified via personal communication with M. Menne at NOAA/NCEI	Op
160	High Plains Regional Climate Center real time data	https://www.ncdc.noaa.gov/wdcmet https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf Verified via personal communication with M. Menne at NOAA/NCEI	Op
161	U.S. Cooperative Summary of the Day (NCDC DSI-3200)	https://www.ncdc.noaa.gov/wdcmet https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf Verified via personal communication with M. Menne at NOAA/NCEI	Op
162	CDMP Cooperative Summary of the Day (NCDC DSI-3206)	https://www.ncdc.noaa.gov/wdcmet https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf Verified via personal communication with M. Menne at NOAA/NCEI	Op
164	U.S. First-Order Summary of the Day (NCDC DSI-3210)	https://www.ncdc.noaa.gov/wdcmet https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf Verified via personal communication with M. Menne at NOAA/NCEI	Op
224	U.S. Automated Surface Observing System (ASOS)real-time data (since January 1 2006)	https://www.ncdc.noaa.gov/wdcmet https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf Verified via personal communication with M. Menne at NOAA/NCEI	Op
228	Short time delay US National Weather Service CF6 daily summaries provided by the High Plains Regional Climate Center	https://www.ncdc.noaa.gov/wdcmet https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf Verified via personal communication with M. Menne at NOAA/NCEI	Op
230	U.S. Fort data	https://www.ncdc.noaa.gov/wdcmet https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf Verified via personal communication with M. Menne at NOAA/NCEI	Op
233	U.S. Cooperative Summary of the Day data digitized from paper observer forms (from 2011 to present)	https://www.ncdc.noaa.gov/wdcmet https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf Verified via personal communication with M. Menne at NOAA/NCEI	Op
235	Community Collaborative Rain Hail and Snow (CoCoRaHS)	https://www.cocorahs.org/Content.aspx?page=datausagepolicy	Op
247	ISPD_International Surface Pressure databank_CDMP SAO/1001 Forms USA_sub_daily	https://www.ucar.edu/terms-of-use/data	Op
	ISPD_International Surface Pressure		

Source ID	Source and data set name	Policy Link	No
250	databank_Hadley Center UK_sub_daily	personal communication via email with data source	Op
252	ISPD_International Surface Pressure databank_READER Antarctic&Southern Hemisphere_sub_daily	https://data.bas.ac.uk/full-record.php?id=GB/NERC/BAS/PDC/00794	Op
253	ISPD_International Surface Pressure databank_KNMI Holland_sub_daily	https://www.knmi.nl/copyright, https://www.digitaleoverheid.nl/overzicht-van-alle-onderwerpen/nieuwe-technologieen-data-en-ethiek/open-data/, no additional data - https://community.wmo.int/notifications	htt
254	ISPD_International Surface Pressure databank_US Army Signal Service and other 19th Century Voluntary Obs_sub_daily	https://www.ncdc.noaa.gov/wdcmet https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf Verified via personal communication with M. Menne at NOAA/NCEI	Op
255	ISPD_International Surface Pressure databank_international stations recovered by Atmospheric Circulation Reconstructions over the Earth (ACRE) initiative_sub_daily	personal communication via email with data source	Op
256	ISPD_International Surface Pressure databank_Early Arctic observations_sub_daily	personal communication via email with data source	Op
257	ISPD_International Surface Pressure databank_EURO4M/MEDARE/C3 hourly SLP observations for North African stations_sub_daily	personal communication via email with data source	Op
258	ISPD_International Surface Pressure databank_International stations, University of South Carolina Historical Climate Lab_sub_daily	personal communication via email with data source	Op
262	ISPD_International Surface Pressure databank_Environment Canada Pressure Obs_sub_daily	personal communication via email with data source	Op
263	ISPD_International Surface Pressure databank_West African Synoptic observations digitized by MeteoFrance_sub_daily	personal communication via email with data source	Op
267	ISPD_International Surface Pressure databank_Spanish Hourly Pressure Observations _sub_daily	personal communication via email with data source	Op
268	ISPD_International Surface Pressure databank_German climate observations_sub_daily	https://opendata.dwd.de/climate_environment/CDC/Terms_of_use.pdf	htt
269	ISPD_International Surface Pressure databank_ZAMG Austrian station observations _sub_daily	personal communication via email with data source	Op
270	ISPD_International Surface Pressure databank_Meteoswiss station collection_sub_daily	personal communication via email with data source	Op
271	ISPD_International Surface Pressure databank_South African Weather Service Meteorological collection_sub_daily	personal communication via email with data source	Op
272	ISPD_International Surface Pressure databank_National Norwegian meteorological database_sub_daily	https://www.met.no/en/free-meteorological-data/licensing-and-crediting, https://www.met.no/en/free-meteorological-data, no additional data - https://community.wmo.int/notifications	Cr
274	ISPD_International Surface Pressure databank_Signatures of environmental change in the observations of the Geophysical Institutes_sub_daily	personal communication via email with data source	Op
277	ISPD_International Surface Pressure databank_ACRE-Pacific: NIWA and NZMet Service_sub_daily	personal communication via email with data source	Op
289	ISPD_International Surface Pressure databank_Canadian Volunteer Climate Data Rescue project_sub_daily	personal communication via email with data source	Op
290	ISPD_International Surface Pressure databank_University of Aberdeen historical pressure observations_sub_daily	http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/	Op
292	ISPD_International Surface Pressure databank_ERA-CLIM FFCUL_sub_daily_	personal communication via email with data source	Op
294	ISPD_International Surface Pressure databank_Project IMPROVE_sub_daily	personal communication via email with data source	Op
296	ISPD_International Surface Pressure databank_University of Bern_sub_daily	personal communication via email with data source	Op
297	ISPD_International Surface Pressure databank_Stockholm University_sub_daily	https://www.smhi.se/en/research/more-about/open-access-to-data-for-research-and-development-1.31497	Cr da
298	ISPD_International Surface Pressure databank_University of East Anglia _sub_daily	http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/	Op
300	ISPD_International Surface Pressure databank_ACRE-Pacific: Cook Island Met Services_sub_daily	personal communication via email with data source	Op
301	ISPD_International Surface Pressure databank_ACRE-Pacific: Pacific Island Met Services_sub_daily	personal communication via email with data source	Op
304	ISPD_International Surface Pressure databank_William Hutchinson pressure, Liverpool_sub_daily	http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/	Op
305	ISPD_International Surface Pressure databank_Jersey, Channel Island Pressure Obs_sub_daily	personal communication via email with data source	Op
306	ISPD_International Surface Pressure databank_CMDP-USNO sub_daily	https://www.ncdc.noaa.gov/wdcmet https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf Verified via personal communication with M. Menne at NOAA/NCEI	Op
	ISPD_International Surface Pressure databank_Russian Sitka Sea Level Pressure,		

Source ID	Source and data set name	Policy Link	No
307	University of South Carolina Climate Lab_sub_daily	http://www.meteorf.ru/opendata/	Op
308	ISPD_International Surface Pressure databank_University of Toronto British Everest Expedition meteorological observation collection_sub_daily	personal communication via email with data source	Op
310	ISPD_International Surface Pressure databank_University of Helsinki_sub_daily	https://en.ilmatieteenlaitos.fi/open-data	Cr da
311	ISPD_International Surface Pressure databank_Antarctic Expeditions_sub_daily	personal communication via email with data source	Op
312	ISPD_International Surface Pressure databank_Canadian Arctic Fort Rae SLP_sub_daily	personal communication via email with data source	Op
313	The Climate Database Modernization Program (CDMP)	https://www.ucar.edu/terms-of-use/data	Op
315	The Climate Database Modernization Program (CDMP)	https://www.ucar.edu/terms-of-use/data	Op
314	The Climate Database Modernization Program (CDMP)	https://www.ucar.edu/terms-of-use/data	Op
316	The UK Met Office Daily Weather Reports	personal communication via email with data source	Op
248	ISPD_International Surface Pressure databank_Russian Empire Stations sub_daily	personal communication via email with data source	Op
285	ISPD_International Surface Pressure databank_All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC)_sub_daily	personal communication via email with data source	Op
286	ISPD_International Surface Pressure databank_Data from Russian Hydrometcentre sub_daily	personal communication via email with data source	Op
287	ISPD_International Surface Pressure databank_Early Russian Empire Stations, , digitized in LDEO from Kupffers Annuaires_sub_daily	personal communication via email with data source	Op
240	SNOwpack TELemtry (SNOTEL) data obtained from the U.S. Department of Agriculture's Natural Resources Conservation Service	https://www.ncdc.noaa.gov/wdcmet https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf	Op
281	ISPD_International Surface Pressure databank_Japan Agency for Marine-earth Science and Technology (JAMSTEC)archive_sub_daily	personal communication via email with data source	Op
266	ISPD_International Surface Pressure databank_Hourly Surface Observations for Brazile_sub_daily	personal communication via email with data source	Op
83	Deutscher Wetterdienst	https://opendata.dwd.de/climate_environment/CDC/Terms_of_use.pdf	op
88	UERRA Algeria	https://datastore.copernicus-climate.eu/documents/uerra/D322 Lot1.4.1.2 User guides v3.3.pdf	op
171	UERRA godisnjak	https://datastore.copernicus-climate.eu/documents/uerra/D322 Lot1.4.1.2 User guides v3.3.pdf	op
172	UERRA kaspar	https://datastore.copernicus-climate.eu/documents/uerra/D322 Lot1.4.1.2 User guides v3.3.pdf	op
174	UERRA Egypt	https://datastore.copernicus-climate.eu/documents/uerra/D322 Lot1.4.1.2 User guides v3.3.pdf	op
176	UERRA germany	https://datastore.copernicus-climate.eu/documents/uerra/D322 Lot1.4.1.2 User guides v3.3.pdf	op
177	UERRA Spain	https://datastore.copernicus-climate.eu/documents/uerra/D322 Lot1.4.1.2 User guides v3.3.pdf	op
179	UERRA Slovenia	https://datastore.copernicus-climate.eu/documents/uerra/D322 Lot1.4.1.2 User guides v3.3.pdf	op
180	UERRA Norway	https://datastore.copernicus-climate.eu/documents/uerra/D322 Lot1.4.1.2 User guides v3.3.pdf	op
227	Environment Canada	https://climate.weather.gc.ca/prods servs/attachment1 e.html	op
320	Nanking Meteorological Bulletins	Verified via personal communication with Rob Allan at ACRE	op
321	DWD overseas data China Pacific Togo	https://opendata.dwd.de/climate_environment/CDC/Terms_of_use.pdf	op
323	Digitisation and QC funded by the University of Giessen India sbdy	Verified via personal communication with Rob Allan at ACRE	op
325	Zamg Austrian pressure data	Verified via personal communication withauer@zamg.ac.at	op
326	C3S south africa data rescue Uni Witwatesrand	Verified via personal communication withyuri.brugnara@giub.unibe.ch	op
327	UERRA Meteocat	https://datastore.copernicus-climate.eu/documents/uerra/D322 Lot1.4.1.2 User guides v3.3.pdf	op
328	UERRA lebanon	https://datastore.copernicus-climate.eu/documents/uerra/D322 Lot1.4.1.2 User guides v3.3.pdf	op
329	UERRA czech	https://datastore.copernicus-climate.eu/documents/uerra/D322 Lot1.4.1.2 User guides v3.3.pdf	op
330	UERRA morroco	https://datastore.copernicus-climate.eu/documents/uerra/D322 Lot1.4.1.2 User guides v3.3.pdf	op
331	UERRA MetNo	https://datastore.copernicus-climate.eu/documents/uerra/D322 Lot1.4.1.2 User guides v3.3.pdf	op
332	UERRA Sweden	https://datastore.copernicus-climate.eu/documents/uerra/D322 Lot1.4.1.2 User guides v3.3.pdf	op
334	UNI GIESSEN Australia sbdy	Verified via personal communication withjuerg.luterbacher@geogr.uni-giessen.de	op
336	National Climate Centre CMA ISPD3043	Verified via personal communication with Rob Allan at ACRE	op
337	CCSP China India sbdy	Verified via personal communication with Rob Allan at ACRE	op
338	ACRE African stations late19thC sbdy	Verified via personal communication with Rob Allan at ACRE	op
339	Meteo lux sbdy	https://data.public.lu/en/organizations/meteolux/,open acess policy	
340	ACRE Solomon Islands sbdy	Verified via personal communication with Rob Allan at ACRE	op

Source ID	Source and data set name	Policy Link	No
341	ECC Canada hourly	https://climate.weather.gc.ca/prods servs/attachment1 e.html	op
342	INMET brazilian met service	Verified via personal communication withjmauro.rezende@inmet.gov	op
343	NOAA's National Centers for Environmental Information (NCEI) NCEI/ASOS/AWOS	https://www.ncdc.noaa.gov/wdcmet[https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf],All US located stations are open access policy. Verified via personal communication with M. Menne at NOAA/NCEI. Also see link to US Government data policy document	
344	NOAA's National Centers for Environmental Information (NCEI) NCEI/MAPSO	https://www.ncdc.noaa.gov/wdcmet[https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf],All US located stations are open access policy. Verified via personal communication with M. Menne at NOAA/NCEI. Also see link to US Government data policy document	
345	NOAA's National Centers for Environmental Information (NCEI) NCEI/US CRN	https://www.ncdc.noaa.gov/wdcmet[https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf],All US located stations are open access policy. Verified via personal communication with M. Menne at NOAA/NCEI. Also see link to US Government data policy document	
346	NOAA's National Centers for Environmental Information (NCEI) NCEI/SURFRAD	https://www.ncdc.noaa.gov/wdcmet[https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf],All US located stations are open access policy. Verified via personal communication with M. Menne at NOAA/NCEI. Also see link to US Government data policy document	
353	Norway met service	Https://Www.Met.No/En/Free-Meteorological-Data/Licensing-And-Crediting	op
363	frost.met.no Norway weather rescue	Https://Www.Met.No/En/Free-Meteorological-Data/Licensing-And-Crediting	op
378	MET-NO-ARCHIVE	Https://Www.Met.No/En/Free-Meteorological-Data/Licensing-And-Crediting	op
382	U.S. Cooperative Observer Program - Hourly Precipitation Data (or COOP-HPD Version 2).	https://www.ncdc.noaa.gov/wdcmet[https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf],All US located stations are open access policy. Verified via personal communication with M. Menne at NOAA/NCEI. Also see link to US Government data policy document	
387	Israel Met Services	Https://Ims.Gov.Il/En/Home	op
368	UKMO Climatological Stations weather rescue	www.metoffice.gov.uk/policies/open-data-policy	op
352	GSDR_finland_precip_sbdy	Https://En.Ilmatieteenlaitos.Fi/Open-Data	op
388	PROMICE and GC-Net automated weather station data in Greenland	Verified via personal communication with Jason Eric Box ,jeb@geus.dk	op
390	Icelandic Met Office :CARRA-Iceland_project_data	Copernicus Arctic Regional Reanalysis (Carrar) via a bilateral agreement between DMI and the three Icelandic data owners the Icelandic Met Office (Veðurstofa Íslands) the Icelandic Road Administration (Vegagerðin) and the Icelandic National Power Company (Landsvirkjun),open acess policy	
391	Icelandic Road Administration : CARRA-Iceland_project_data	Copernicus Arctic Regional Reanalysis (Carrar) via a bilateral agreement between DMI and the three Icelandic data owners the Icelandic Met Office (Veðurstofa Íslands) the Icelandic Road Administration (Vegagerðin) and the Icelandic National Power Company (Landsvirkjun),open acess policy	
392	Icelandic National Power Company :CARRA-Iceland_project_data	Copernicus Arctic Regional Reanalysis (Carrar) via a bilateral agreement between DMI and the three Icelandic data owners the Icelandic Met Office (Veðurstofa Íslands) the Icelandic Road Administration (Vegagerðin) and the Icelandic National Power Company (Landsvirkjun),open acess policy	
362	Stephen Burt Durham Observatory weather rescue	Verified via personal communication with Ed Hawkins	op
365	Edward Hanna SCILLY WEATHER RESCUE	Verified via personal communication with Ed Hawkins	op
367	UKMO MIDAS weather rescue	Verified via personal communication with Ed Hawkins	op
380	UK-DATA-RESCUE-STATIONS	Verified via personal communication with Ed Hawkins	op
357	PALAEO-RA_PALANTINA	Verified via personal communication withyuri.brugnara@giub.unibe.ch	op
393	Meteo france hourly	https://www.data.gouv.fr/fr/organizations/meteo-france/,open acess policy	
394	UK HOURLY data rescue Ed Hawkins	Verified via personal communication with Ed Hawkins	op
395	Polish Met Service	Data are freely an openly downloadable from thehttps://danepubliczne.imgw.pl/data/dane_pomiarowo_obserwacyjne/dane_meteorologiczne/	op
396	Belgium met service	https://www.meteo.be/en/belgium	op
397	Royal Swedish Academy of Sciences digitized by B.-M. Sinnhuber	Verified via personal communication with B.-M. Sinnhuber	op
398	Met Norway service	Https://Www.Met.No/En/Free-Meteorological-Data/Licensing-And-Crediting	op
399	SMHI Swedish met service	[https://www.smhi.se/data/oppna-data/villkor-for-anvandning-1.30622],open acess policy	
400	AEMET spanish met service	https://www.aemet.es/en/datos_abiertos#:~:text=AEMET%20Open%20Data%20Website%20allowscommercial%20or%20non%2Dcommercial%20purposes.,open acess policy	
158	Met Eireann , (https://www.met.ie/climate/available-data/historical-data), Creative Commons Attribution 4.0 [https://creativecommons.org/licenses/by/4.0/		
324	CHIMES	Verified via personal communication withyuri.brugnara@giub.unibe.ch	op
366	SMHI Open Data weather rescue	[https://www.smhi.se/data/oppna-data/villkor-for-anvandning-1.30622], Creative Commons Attribution 4.0 [https://creativecommons.org/licenses/by/4.0/	