Guidelines for the Submission of the World Weather Records 2011+

2017 edition

WEATHER CLIMATE WATER

WORLD METEOROLOGICAL ORGANIZATION

WMO-No. 1186

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EDITORIAL NOTE

METEOTERM, the WMO terminology database, may be consulted at http://public.wmo.int/en/resources/meteoterm.

Readers who copy hyperlinks by selecting them in the text should be aware that there will be additional spaces immediately following http://, https://, ftp://, mailto:, and after slashes (/), dashes (-) and unbroken sequences of characters (letters and numbers). These spaces should be removed from the pasted URL. The correct URL is displayed when hovering over the link or when clicking on the link and then copying it from the browser.

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1. BACKGROUND

1.1 History

The World Weather Records (WWR) database contains historical monthly climatic data from land surface stations worldwide. First released in 1927, the WWR database has been widely employed in operational climate monitoring, international climate assessments, and numerous other applications. To date, there have been nine editions of the WWR database, the first containing the available data up to and including 1920, with each successive release containing data for another decade (that is, 1921–1930, 1931–1940, 1941–1950, 1951–1960, 1961–1970, 1971–1980, 1981–1990, 1991–2000, 2001–2010). Since its inception, WWR has been produced by three different institutions: the Smithsonian Institution (1927, 1934, 1947); the United States of America Weather Bureau (1959, 1967); and the United States National Oceanic and Atmospheric Administration (NOAA; 1983, 1991, 2005). The current edition will also be produced by NOAA. It addresses the 2011+ period, consistent with WMO Secretariat guidance. However, the previous edition lacked data for many countries/territories because of the decline in station coverage that started in 1991, posing an impediment to climate monitoring and assessment activities. The Sixteenth World Meteorological Congress, Geneva 2011, emphasized the importance of updating the WWR database continuously. It requested Members to complete the data sets for WWR 1991–2000, submit WWR for 2001–2010, and – starting from 2011 – move towards annual updates of the WWR database. This approach has been formalized through Resolution 14 (EC-64) – Submission of World Weather Records on an annual basis.

1.2 Submission channels of the World Weather Records

Each WMO Member should submit two types of files to one of the responsible Commission for Basic Systems (CBS) lead centres for the Global Climate Observing System (GCOS) or to WMO as appropriate (see recommended collection mechanisms by region in Annex I). The first file type should contain station data for the country/territory (single Excel file containing all stations OR single text file per station, see Annexes II and III, respectively), and the second should contain a history metadata file (Annex IV). These files can be submitted via electronic mail following guidance provided by the WMO Secretariat or by a regional coordinating centre. Annex I specifies responsible institutions for each region including an e-mail address. In case of any questions, Members are encouraged to contact WMO: wcdmp@wmo.int.

1.3 Quality assurance and accessibility of World Weather Records

World Weather Records can be accessed through the World Data Centre for Meteorology, National Centers for Environmental Information (NCEI), Asheville, United States at http://www1.ncdc.noaa.gov/pub/data/wwr/. It is planned to provide access to quality-controlled WWR within six months of the WMO submission deadline annually. Routine quality assurance reviews of NCEI focus on gross data problems and include format consistency checks, determination of duplication and reasonableness of submitted values and metadata.

2. METHODOLOGY FOR REPRESENTING THE WORLD WEATHER RECORDS

2.1 Data elements

This document provides guidance on how to format data for submission to the current edition of WWR. As in the previous edition, the database will contain six climatic elements:

(Code 2) Monthly mean station pressure;
(Code 3) Monthly mean sea-level pressure;
(Code 4) Monthly mean temperature;

(Code 5) Monthly mean maximum temperature;
(Code 6) Monthly mean minimum temperature;
(Code 7) Total monthly precipitation.

As practiced in recent years, monthly means of daily relative humidity can also be submitted:

(Code 8) Monthly mean relative humidity.

The primary goal is to capture year-by-year, month-by-month data for each element at each station (for example, total monthly precipitation for Geneva in January 2011, February 2011,…, December 2015+). However, station metadata are also of particular importance. At a minimum these metadata should include station name, coordinates and elevation. Preferably, observation times, averaging formulas, instrumentation types, and station changes will also be documented. WMO Members should submit data for all of their surface stations that have an official WMO station index number.

2.2 Data format

Each WMO Member should submit the WWR data in either Excel or text file format. This section describes the format of these files, which are similar to previous editions of WWR. There are generally two record types in these formats:

(a) Station header records documenting basic station characteristics;

(b) Yearly data records with monthly and annual data for a particular year:

Note that decadal average (MEAN) and climate normal (CLINO) records are no longer necessary with this data submission.

Option 1: Excel

An example of a properly formatted Excel submission is given in Annex II, and an electronic template is provided to Members. A single Excel file should contain all stations for a given country/territory, with a single station on each tab, and each tab containing a single station's elements.

The first line for each station must be a station header record. There must be only one Station Header record for each station, and it should contain the most recent information for the station.

The next yearly data record section contains data for each climatic element for that station. Leave the element section blank if the station does not report that element.

(a) Station header records
Station header records contain 14 fields documenting basic station characteristics. These characteristics should represent the most recent location of the station. Stated in tabular form, the contents include the following:

Field	*Columns*	*Contents*	*Notes*
	1–2		Leave these columns blank
1	3–7	WMO number	5 digits with leading 0 if applicable, right-justified
2	8	Record type	1 = station header record
3	9–10	Degrees of latitude (0–90)	Right-justified
4	11–12	Minutes of latitude (0–59)	Right-justified
5	13–14	Seconds of latitude (if available, 0–59)	Right-justified
6	15	Hemisphere of latitude	N (northern) or S (southern)

Field	*Columns*	*Contents*	*Notes*
7	16–18	Degrees of longitude (0–180)	Right-justified
8	19–20	Minutes of longitude (0–59)	Right-justified
9	21–22	Seconds of longitude (if available, 0–59)	Right-justified
10	23	Hemisphere of longitude	E (eastern) or W (western)
11	24–47	Name of country/territory in English	Left-justified
12	48–71	Name of station in English	Left-justified
13	72–76	Height of station above sea level (whole metres)	Right-justified
14	77–83	Height of barometer above sea level (tenths of metres)	Right-justified

(b) Yearly data records

Each yearly data record contains monthly and annual data for a particular year. These records contain 17 fields documenting the WMO number, element type, year, monthly data values, and the annual value. Stated in tabular form, the contents include the following:

Field	*Columns*	*Contents*	*Notes*
	1–2		Leave these columns blank
1	3–7	WMO number	5 digits with leading 0 if applicable, right-justified
2	8	Element type	2 = mean station pressure in tenths of hPa 3 = mean sea-level pressure in tenths of hPa 4 = mean daily air temperature in tenths of a °C 5 = total precipitation in tenths of a mm 6 = mean daily maximum air temperature in tenths of a °C 7 = mean daily minimum air temperature in tenths of a °C 8 = mean of the daily relative humidity in whole per cent
3	9–12	Year	4 digits
4	13	Record type	Blank = yearly data record
5	14–18	January	**If a value is missing, then leave the field blank** **All values should be right-justified** Decimal points are implied (e.g., 1014.1 hPa should be entered as "10141") If there is no value after the decimal, the last character should be "0" (e.g., 1014.0 hPa should be "10140") If the temperature is negative, the 1st value of the field should be "–" (e.g., –13) If precipitation is zero, the field should be "0". If there was trace precipitation, the field should be "T"
6	19–23	February	
7	24–28	March	
8	29–33	April	
9	34–38	May	
10	39–43	June	
11	44–48	July	
12	49–53	August	
13	54–58	September	
14	59–63	October	
15	64–68	November	
16	69–73	December	
17	74–78	Annual	

If data are missing for an entire year, then only complete fields 1–4.

Yearly data can be provided for only the data-year in question but also for other data years where data were not previously submitted or need to be corrected.

Option 2: Text

An example of a properly formatted text file submission is given in Annex III, and a template is provided. A single text file should contain one station containing that single station's elements.

The first section for each station must be a station header record. There must be only one station header record for each station, and it should contain the most recent information for the station.

The next yearly data record section contains data for each climatic element for that station. Leave the element section blank by using spaces if the station does not report that element. Do not use figure "9" or "–9" or tabs to represent missing data.

(a) Station header records

Station header records contain seven rows documenting basic station characteristics. These characteristics should represent the most recent location of the station.

Line	*Position*	*Contents*	*Notes*
1	40–44	WMO number	5 digits with leading 0 if applicable, left-justified
2	40–63	Name of station in English	Left-justified
3	40–63	Name of country/territory in English	Left-justified
4	40–49	Latitude degrees (0–90) minutes (0–59) seconds (0–59) direction (N or S)	Left-justified, example 09 04 00N
5	40–50	Longitude degrees (0-180) minutes (0–59) seconds (0–59) direction (E or W)	Left-justified, example 000 45 59S
6	40–49	Height of station above sea level	Left-justified, whole metres
7	40–49	Height of barometer above sea level	Left-justified, tenths of metres, explicit decimal

(b) Yearly data records

Each yearly data record contains monthly and annual data for a particular year. These records contain 14 fields documenting the year, element type, monthly data values, and the annual value. Stated in tabular form, the contents include the following:

Field	*Columns*	*Contents*	*Notes*
1	1–4	Year	4-digits
2	6–11	January	**If a value is missing, then leave the field blank** **All values should be right justified** Decimal points should be explicitly noted except for relative humidity (which is rounded to whole per cent) If there is no value after the decimal, the last character should be "0" (e.g., 1014 hpa should be "1014.0") If the temperature is negative, the 1st value of the field should be "–" (e.g., –13) If precipitation is zero, the field should be "0". If there was trace precipitation, the field should be "T"
3	13–18	February	
4	20–25	March	
5	27–32	April	
6	34–39	May	
7	41–46	June	
8	48–53	July	
9	55–60	August	
10	62–67	September	
11	69–74	October	
12	76–81	November	
13	83–88	December	
14	90–95	Annual	

If data are missing for an entire year, then only complete field 1. *If data are missing for any months, use spaces to fill (not the tab key).*

Yearly data can be provided for only the data year in question but also for other data-years where data were not previously submitted or need to be corrected.

2.3 History metadata (station notes)

Each WMO Member should submit one file containing all the metadata (station notes) for all the stations in their country/territory. There is no required format for this information, but there is some preferred content to make the greatest possible use of the submitted climatic data. Critical content includes the times of observation, the formulas used in computing means, and the types of instrumentation. To the extent possible, this information should be specific to each climatic element. Furthermore, it is extremely helpful if historical changes are explicitly documented for all types of metadata, including observation times, averaging formulas, instrumentation types, and basic parameters such as location and elevation. An example of station notes is given in Annex IV.

ANNEX I. RECOMMENDED COLLECTION MECHANISM BY REGION

Note: Members may choose to submit their WWR through any of the below mentioned CBS lead centres for GCOS. Members are invited to notify WMO (wcdmp@wmo.int) should they decide to deviate from the normal channels.

Region	*Member States/ Territories*	*Collection mechanism*	*Alternative*
RA I	All Members of RA I	CBS Lead Centre for GCOS Africa, Morocco (DMN*), cbs.lead.centre.4gcos@gmail.com	WMO, Geneva; wcdmp@wmo.int
RA II	All Members of RA II	CBS Lead Centre for GCOS Asia, Japan (JMA*); climatemonitor@met.kishou.go.jp	WMO, Geneva; wcdmp@wmo.int
RA III	All Members of RA III	CBS Lead Centre for GCOS South America, Chile (DMC*); gtorres@meteochile.cl	WMO, Geneva; wcdmp@wmo.int
RA IV	All countries of RA IV	CBS Lead Centre for GCOS North and Central America and the Caribbean, United States (NCEI*); gcos.ncdc@noaa.gov	WMO, Geneva; wcdmp@wmo.int
RA V	All Members of RA V	CBS Lead Centre for GCOS South West Pacific, Australia, (BOM*); GCOS_Lead_Centre_RAV@bom.gov.au	WMO, Geneva; wcdmp@wmo.int
RA VI	All Members of RA VI	CBS Lead Centre for GCOS Europe, Germany (DWD*); christiana.lefebvre@dwd.de	WMO, Geneva; wcdmp@wmo.int

* BOM: Bureau of Meteorology; DMC: Dirección Metorológica de Chili; DMN: National Meteorological Office of Morocco; DWD: Deutscher Wetterdienst; JMA: Japan Meteorological Agency; NCEI: National Centers for Environmental Information.

ANNEX II. EXAMPLE EXCEL FILE (SINGLE STATION PER TAB)

World Weather Records
Data Sheet, Single Station (All Elements)

Scroll to Detailed Column Description Instructions

Station Header Record

Blank	A WMO Number	B *	C Latitude D D M M S S N/S	D Longitude D D D M M S S E/W	E Country Name (English)	F Station Name (English)	G Station Height Whole Meters	H Barometer Height Meters, to tenths
	99999	1	47 22 59	8 34 0	COUNTRY NAME	STATION NAME	31	31.3

Yearly Data Record

(2) Mean Station Pressure (tenths of hPa, decimal implied, example 10228 means 1022.8)

Blank	A WMO Number	B *	I Year	J #	K January	February	March	April	May	June	July	August	September	October	November	December	Annual
	99999	2	2011		10228	10218	10123	10111	10031	9998	10000	10056	10124	10166	10206	10284	10129
	99999	2	2012		10207	10205	10127	10094	10076	10020	9997	10044	10124	10161	10200	10266	10127
	99999	2	2013		10238	10209	10190	10101	10070	10008	10004	10040	10101	10158	10227	10247	10133
	99999	2	2014		10238	10168	10152	10086	10041	10039	10001	10045	10107	10185	10204	10248	10126
	99999	2	2015		10234	10249	10181	10077	10049	9979	10000	10036	10119	10174	10170	10263	10128
		2	2016														

(3) Mean Sea Level Pressure (tenths of hPa, decimal implied, example 10269 means 1026.9)

Blank	A WMO Number	B *	I Year	J #	K January	February	March	April	May	June	July	August	September	October	November	December	Annual
	99999	3	2011		10269	10258	10162	10149	10067	10034	10036	10092	10161	10204	10245	10325	10167
	99999	3	2012		10247	10245	10165	10132	10113	10056	10033	10080	10161	10199	10240	10307	10165
	99999	3	2013		10279	10249	10229	10139	10107	10044	10040	10076	10138	10196	10267	10287	10171
	99999	3	2014		10279	10207	10191	10123	10078	10075	10037	10081	10144	10223	10243	10288	10164
	99999	3	2015		10275	10290	10220	10114	10086	10015	10036	10072	10156	10212	10209	10304	10166
		3	2016														

(4) Mean Daily Air Temperature (tenths of degree Celsius, decimal implied, example -54 means -5.4 C)

Blank	A WMO Number	B *	I Year	J #	K January	February	March	April	May	June	July	August	September	October	November	December	Annual
	99999	4	2011		-54	-15	73	144	231	257	273	258	212	138	53	-24	129
	99999	4	2012		1	34	98	141	219	236	275	257	205	107	34	-29	132
	99999	4	2013		-31	9	63	153	210	247	261	262	206	132	35	3	129
	99999	4	2014		-23	29	78	163	205	250	260	249	213	140	65	-5	135
	99999	4	2015		-28	-29	63	164	198	256	279	260	221	149	75	-25	132
		4	2016														

(5) Total Precipitation (tenths of mm, decimal implied, example 122 means 12.2 mm)

Blank	A WMO Number	B *	I Year	J #	K January	February	March	April	May	June	July	August	September	October	November	December	Annual
	99999	5	2011		122	39	0	144	50	458	1286	497	92	457	214	30	3389
	99999	5	2012		0	5	60	377	123	1035	549	743	507	226	0	79	3704
	99999	5	2013		96	29	329	130	308	661	577	342	879	668	429	1	4449
	99999	5	2014		7	88	1	372	391	696	1820	507	742	99	80	32	4835
	99999	5	2015		15	100	2	170	684	664	961	1234	245	18	4	10	4107
		5	2016														

(6) Mean Daily Maximum Air Temperature (tenths of degree Celsius, decimal implied, example -13 means -1.3 C)

Blank	A WMO Number	B *	I Year	J #	K January	February	March	April	May	June	July	August	September	October	November	December	Annual
	99999	6	2011		-13	36	139	204	295	308	323	305	267	191	111	16	183
	99999	6	2012		59	101	163	200	279	285	327	306	271	161	83	5	187
	99999	6	2013		16	61	110	208	268	304	310	317	255	186	71	53	180
	99999	6	2014		26	82	134	223	264	304	307	293	267	200	119	31	188
	99999	6	2015		21	13	125	227	256	315	327	303	272	206	134	16	185
		6	2016														

(7) Mean Daily Minimum Air Temperature (tenths of degree Celsius, decimal implied, example -93 means -9.3 C)

Blank	A WMO Number	B *	I Year	J #	K January	February	March	April	May	June	July	August	September	October	November	December	Annual
	99999	7	2011		-93	-60	13	83	158	207	227	212	160	88	-3	-66	77
	99999	7	2012		-52	-28	32	89	154	194	228	215	143	57	-16	-62	80
	99999	7	2013		-75	-39	19	96	154	194	220	212	164	78	2	-42	82
	99999	7	2014		-66	-16	26	107	148	202	219	210	164	87	21	-36	89
	99999	7	2015		-65	-63	4	100	145	203	236	222	174	95	26	-59	85
		7	2016														

(8) Mean of the Daily Relative Humidity (whole percent, example 57 means 57%)

Blank	A WMO Number	B *	I Year	J #	K January	February	March	April	May	June	July	August	September	October	November	December	Annual
	99999	8	2011		57	62	31	46	44	63	68	71	63	73	56	42	56
	99999	8	2012		42	43	36	45	49	64	68	74	66	56	46	65	55
	99999	8	2013		50	52	56	50	62	56	71	67	73	59	64	42	59
	99999	8	2014		36	34	32	40	44	54	67	65	60	54	48	56	49
	99999	8	2015		41	47	31	34	48	60	66	73	59	50	45	36	49
		8	2016														

Column Descriptions

A	World Meteorological Organization (WMO) Number. 99999=Unassigned.
B	*Element Designator Code. 1=Header Record, 2=Mean Station Pressure (tenths of hPa), 3=Mean Sea Level Pressure (tenths of hPa), 4=Mean Air Temperature (tenths of deg C), 5=Total Amount of Precipitation (tenths of mm), 6=Mean of the Daily Maximum Air Temperature (tenths of deg C), 7=Mean of the Daily Minimum Air Temperature (tenths of deg C), 8=Mean of the Daily Relative Humidity in whole percent
C	Latitude. Format: DDMMSS (N or S), where DD=Degrees (00 to 90), MM=Minutes (00 to 59), SS=Seconds (00 to 59), N = North, S= South
D	Longitude. Format: DDDMMSS (E or W), where DDD=Degrees (000 to 180), MM=Minutes (00 to 59), SS=Seconds (00 to 59), E = East, W = West
E	Country Name (in English)
F	Station Name (in English)
G	Height of Station. Format: whole meters.
H	Height of Barometer. Format: tenths of a meter (decimal implied).
I	Year of Data.
J	#Average Value Designator Code. Format: Blank=Yearly Data
K	Monthly/Annual Data Values. Format: tenths of a deg C, mm, or hPa (decimal implied), blank=missing value, annual value mean of monthly values. Precipitation: All values to tenths of a mm, annual value sum of monthly values, zero precipitation indicated with a 0, trace precipitation total (>0 and <0.05 mm) indicated with a T.

ANNEX III. EXAMPLE TEXT FILE (SINGLE STATION PER FILE)

```
WMO number:                             85629
Station name:                           CURICO GENERAL FREIRE
Country/territory name:                 CHILE
Latitude (DD MM SS N/S):                34 58 00 S
Longitude (DDD MM SS E/W):              071 14 00 W
Station height (whole metres):          228
Barometer height (metres, to tenths):  228.0

(2) Mean station pressure (tenths of hPa)

Year Jan    Feb    Mar    Apr    May    Jun    Jul    Aug    Sep    Oct    Nov    Dec    MEAN

2011  989.0  986.9  989.1  989.8  990.0  993.8  993.2  992.9  993.5  991.6  989.9  988.3  990.7
2012  988.3  988.5  988.7  990.7  990.5  991.5  990.7  991.3  990.9  991.6  988.6  986.3  989.8
2013  985.2  986.3  987.3  988.3  989.5  991.4  991.2  991.9  992.9  990.1  989.1  987.8  989.3
2014  986.9  986.2  987.3  989.8  990.7  992.0  989.0  992.7  990.9  990.7  990.0  986.2  989.4
2015  987.5  986.1  986.3  990.3  990.1  990.0  991.4  992.7  990.4  989.6  988.7  988.1  989.3
2016

(3) Mean sea-level pressure (tenths of hPa)

Year Jan    Feb    Mar    Apr    May    Jun    Jul    Aug    Sep    Oct    Nov    Dec    MEAN

2011 1015.1 1012.9 1015.4 1016.5 1016.9 1021.2 1020.6 1020.2 1020.6 1018.4 1016.3 1014.4 1017.4
2012 1014.3 1014.6 1015.0 1017.5 1017.7 1018.8 1017.9 1018.5 1017.8 1018.5 1015.0 1012.3 1016.5
2013 1011.0 1012.3 1013.6 1015.1 1016.7 1019.0 1018.6 1019.2 1020.0 1016.7 1015.3 1013.7 1015.9
2014 1012.8 1012.3 1013.6 1016.7 1018.0 1019.5 1016.3 1020.0 1017.8 1017.4 1016.6 1012.3 1016.1
2015 1013.5 1012.1 1012.6 1017.3 1017.2 1017.1 1018.7 1020.1 1017.3 1016.3 1015.0 1014.2 1016.0
2016

(4) Mean daily air temperature (tenths of degrees Celsius)

Year Jan    Feb    Mar    Apr    May    Jun    Jul    Aug    Sep    Oct    Nov    Dec    MEAN

2011   19.4   19.3   16.7   13.6   12.0    7.2    7.7    8.2    9.8   12.8   15.9   18.8   13.5
2012   19.9   18.6   16.4   12.7    9.6    8.3    9.3    8.8   11.7   12.5   14.9   19.7   13.5
2013   20.5   19.1   16.1   12.2    7.9    5.4    6.5    8.6    9.7   14.0   17.3   19.9   13.1
2014   20.3   18.2   16.4   11.4    8.3    6.1    7.4    7.6   10.9   13.1   15.1   18.1   12.7
2015   19.3   18.6   15.8   10.6    9.6    9.6    7.6    7.6   11.0   13.0   16.2   18.6   13.1
2016

(5) Total precipitation (tenths of mm)

Year Jan    Feb    Mar    Apr    May    Jun    Jul    Aug    Sep    Oct    Nov    Dec    MEAN

2011   11.7      0      0    2.4  191.1   75.2   44.6  110.8   33.7   18.9    0.2      0  488.6
2012    7.0      0   37.7   14.7  168.9  408.8  208.7  115.1  186.7   43.9    2.0      0 1193.5
2013    8.3    1.0    0.3   17.5   55.9  147.9  139.7  116.0   24.9    0.4      0    0.2  512.1
2014      0    1.5    3.0   22.4  203.7  135.2  390.3  108.3   65.2   47.4    6.7      0  983.7
2015    0.3      0   29.9   25.0  127.1   26.1  126.5    6.6   46.7   71.9    0.2      0  460.3
2016

(6) Mean daily maximum air temperature (tenths of degree Celsius)

Year Jan    Feb    Mar    Apr    May    Jun    Jul    Aug    Sep    Oct    Nov    Dec    MEAN

2011    1.3    3.6   13.9   20.4   29.5   30.8   32.3   30.5   26.7   19.1   11.1    1.6   18.2
2012    5.9   10.1   16.3   20.0   27.9   28.5   32.7   30.6   27.1   16.1    8.3    0.5   18.7
2013    1.6    6.1   11.0   20.8   26.8   30.4   31.0   31.7   25.5   18.6    7.1    5.3   18.0
2014    2.6    8.2   13.4   22.3   26.4   30.4   30.7   29.3   26.7   20.0   11.9    3.1   18.8
2015    2.1    1.3   12.5   22.7   25.6   31.5   32.7   30.3   27.2   20.6   13.4    1.6   18.5
2016

(7) Mean daily minimum air temperature (tenths of degree Celsius)

Year Jan    Feb    Mar    Apr    May    Jun    Jul    Aug    Sep    Oct    Nov    Dec    MEAN

2011    9.3    6.0    1.3    8.3   15.8   20.7   22.7   21.2   16.0    8.8    0.3    6.6    7.7
2012    5.2    2.8    3.2    8.9   15.4   19.4   22.8   21.5   14.3    5.7    1.6    6.2    8.0
2013    1.6    6.1   11.0   20.8   26.8   30.4   31.0   31.7   25.5   18.6    7.1    5.3   18.0
2014    2.6    8.2   13.4   22.3   26.4   30.4   30.7   29.3   26.7   20.0   11.9    3.1   18.8
2015    2.1    1.3   12.5   22.7   25.6   31.5   32.7   30.3   27.2   20.6   13.4    1.6   18.5
2016

(8) Mean of the daily relative humidity (whole percent)

Year Jan    Feb    Mar    Apr    May    Jun    Jul    Aug    Sep    Oct    Nov    Dec    MEAN

2011     57     62     31     46     44     63     68     71     63     73     56     42     56
2012     19     22     29     35     41     45     46     46     42     37     28     22     34
2013     20     22     25     33     41     45     47     46     43     38     27     20     34
2014     20     22     29     31     39     45     47     46     43     38     27     18     34
2015     18     20     26     34     40     45     47     47     43     37     25     23     34
2016
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ANNEX IV. STATION NOTES EXAMPLE

TRINIDAD AND TOBAGO (2 stations)

General:

All observation hours were in local time. A total of 24 hourly observations per day were used in computing the means of temperature and pressure except at Crown Point. At this station, part-time operation existed during June to December 1980; January 1976; 1977, and 1978; February, March, April 1976; and for February, March, and April 1978. Observation hours during these periods were 0700 to 2300 hours or 0800 to 2200 hours.

At Piarco, the period of record of CLINO values for sea-level pressure and temperature was 1946–1975. For precipitation it was 1946–1980. No CLINO exists for Crown Point since past records begin only in 1970.

Pressure:

Pressure was measured by a Kew Pattern barometer until 1974 after which a precision Aneroid type was used. Heights of the barometers were 13.4 metres at Piarco and 6.7 metres at Crown Point.

Temperature:

Thermometers, housed in a standard Stevenson screen, were 1.2 metres above ground at both stations.

Precipitation:

Rainfall was measured by a pot gauge. A tilting–siphon rain recorder adjusted the pot gauge. Rainfall was measured four times daily at 0200, 0800, 1400, and 2000 hours local time at both stations except during part-time operations at Crown Point. Heights of the rain gauges were 3 metres at Piarco, and 3 metres at Crown Point.

URUGUAY (13 stations)

General:

CLINO values correspond to the period 1951–1980 for precipitation and 1946–1980 for other elements. Rain gauges and thermometers were located 1.5 metres above the ground.

Pressure and temperature:

The monthly pressure and temperature values were both computed from the equation:

1/10(00+03+06+09+12+15+18+21 hours GMT + Mean max + Mean min)

Precipitation:

The daily values were measured at 0900 hours GMT.

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