

**WMO OMM**

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

Secrétariat

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

Notre réf.: 09732/2020/S/CS/CMP/WWR-2020

29 mai 2020

Annexe: 1 (disponible en anglais seulement)

Objet: Collecte des données en vue de publier les World Weather Records pour les années 2018 et 2019

Suite à donner: Communiquer les données dès que possible et au plus tard le **31 juillet 2020**

Madame, Monsieur,

Je tiens à vous informer que des dispositions ont été prises concernant la collecte des World Weather Records. Comme vous vous en souviendrez peut-être, le Dix-septième Congrès météorologique mondial a noté que les nouvelles modalités de présentation annuelle des World Weather Records donnaient satisfaction et a prié instamment les Membres de communiquer leurs données sans retard, comme le prévoit la [résolution 14 \(EC-64\)](#) – Communication annuelle des World Weather Records (*Conseil exécutif: Rapport final abrégé de la soixante-quatrième session* (OMM-N° 1092)).

Par conséquent, je vous invite à préparer les données des stations de votre pays enregistrées dans OSCAR/Surface, l'outil de l'Organisation météorologique mondiale (OMM) destiné à l'analyse de la capacité des systèmes d'observation en surface (<https://oscar.wmo.int/surface>). Il s'agit de communiquer les données pour 2018 et 2019, ainsi que celles couvrant les périodes 1991–2000 et 2001–2010 et les années 2011, 2012, 2013, 2014, 2015, 2016 et 2017 **dans l'éventualité où elles n'auraient pas encore été transmises**. En ce qui concerne ces périodes et années, nos bases de données sont encore très lacunaires pour la plupart des régions du monde.

Les données doivent être numérisées et soumises au format Excel ou dans un fichier texte, en suivant le projet de mise à jour ci-joint (version 3.0 de mai 2020) des *Directives concernant la communication des World Weather Records à partir de 2011* (OMM-N° 1186). Cette mise à jour inclut une séquence (logique) révisée d'éléments climatiques (section II.1), des ajustements connexes des modèles, y compris la prise en compte des identifiants de stations du WIGOS (section II.2) et une révision du mécanisme de collecte des WWR (annexe 1). Des modèles de fichiers EXCEL et de fichiers texte mis à jour sont disponibles à l'adresse suivante: <https://community.wmo.int/world-weather-records-wwr>.

Afin que les données soient publiées rapidement dans les World Weather Records, je vous saurais gré d'envoyer vos données nationales dès que possible et de préférence avant le **31 juillet 2020**, au centre principal pour le Système mondial d'observation du climat dont votre pays dépend (conformément à l'annexe 1 des Directives).

Aux: Représentants permanents (ou directeurs des Services météorologiques ou hydrométéorologiques) des Membres de l'OMM

cc: Présidents des conseils régionaux
 Président et vice-présidents de la SERCOM
 Président et vice-présidents de l'INFCOM
 Directrice des Centres nationaux d'information sur l'environnement (NCEI), Asheville, États-Unis d'Amérique

Il est possible de consulter des actualisations annuelles des World Weather Records recueillis dans ce cadre et ayant ensuite fait l'objet d'un contrôle qualité via le Centre mondial de données météorologiques, à l'adresse <https://www.ncdc.noaa.gov/wdcmnet/data-access-search-viewer-tools/world-weather-records-wwr-clearinghouse>. La mise à jour la plus récente inclut les données 2011–2016 de l'actuelle 11^e série de World Weather Records (2011–2020).

Si vous souhaitez des précisions supplémentaires, n'hésitez pas à prendre contact, à l'OMM, avec la Division des services de surveillance du climat et des politiques climatiques (M. Omar Baddour, Chef de la Division des services de surveillance du climat et des politiques climatiques, et M. Peer Hechler, fonctionnaire scientifique, à l'adresse wcdmp@wmo.int).

Veuillez agréer, Madame, Monsieur, l'expression de ma considération distinguée.



(E. Manaenkova)
pour le Secrétaire général

Draft updated Guidelines for the Submission of the World Weather Records 2011+

Version 3.0, May 2020, NCEI / WMO / PH;

Updates of content highlighted:

- Section II.1: Revised (logical) sequence of the climatic elements
- Section II.2: Template adjustments including accommodation of WIGOS Station Identifier (template adjustments have been incorporated –but not highlighted anymore- in Annexes 2 and 3)
- Annex 1: Update of collection mechanism
- Text alignments and updates as appropriate

Table of Contents

I. BACKGROUND.....	3
I.1 History	3
I.2 Submission Channels of the WWRs	3
I.3 Quality Assurance and Accessibility of WWRs.....	3
II. METHODOLOGY FOR REPRESENTING THE WWRs.....	3
II.1 Data Elements.....	3
II.2 Data Format.....	4
Option 1: Excel	4
(a) Station Header Records.....	5
(b) Yearly Data Records	6
Option 2: Text	8
(a) Station Header Records.....	8
(b) Yearly Data Records	9
II.3 History Metadata (Station Notes)	10
Annex I: Proposed collection mechanism by region	11
Annex II: Example Excel File (single station per tab)	13
Annex III: Example Text File (single station per file)	14
Annex IV: Station Notes Example	17

I. BACKGROUND

I.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 ten editions of WWR, the first containing data up through 1920, with each successive release containing data for another decade (i.e., 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 U.S. Weather Bureau (1959, 1967); and the U.S. 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, posing an impediment to climate monitoring and assessment activities because of the decline in station coverage starting in 1991. World Meteorological Congress XVI, Geneva 2011, emphasized the importance of updating the World Weather Records 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. This approach has been formalised through Resolution 14 (EC-64) Submission of World Weather Records on an Annual Basis.

I.2 Submission Channels of the WWRs

Each WMO Member should submit two types of files to the responsible CBS Lead Center for GCOS or to WMO as appropriate (see suggested collection mechanisms in ANNEX I). The first file type should contain station data for the country (single Excel file containing all stations OR single text file per station) 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 center. In the list of countries in ANNEX I, the responsible institutions are given for each region including an email address. In case of any question the Members are encouraged to contact WMO: wcdmp@wmo.int.

I.3 Quality Assurance and Accessibility of WWRs

WWRs can be accessed through the World Data Centre for Meteorology, National Centers for Environmental Information (NCEI), Asheville, United States of America at <https://www.ncdc.noaa.gov/wdcmnet/data-access-search-viewer-tools/world-weather-records-wwr-clearinghouse>. It is planned to provide access to quality-controlled WWRs within six months of the WMO's 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.

II. METHODOLOGY FOR REPRESENTING THE WWRs

II.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 air temperature

(code 5) Total precipitation in tenths of a mm ~~Monthly mean maximum temperature~~

(code 6) Mean daily maximum air temperature in tenths of a °C ~~Monthly mean minimum temperature~~

(code 7) Mean daily minimum air temperature in tenths of a °C ~~Total monthly precipitation~~

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

(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 (e.g., 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/WIGOS Station Identifier.**

11.2 Data Format

Each WMO Member should submit the WWRs 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, 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, which should contain the most recent information for the station. **A second header record line has been added to accommodate the new WIGOS Station Identifier.**

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 15 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
1A	3-7	WMO number	5-digit with leading 0 if applicable, right-justified. Leave null if new station with only WIGOS Station Identifier.
2B	8-8	Element Designator Code	1 = Station header record
3C	9-10	Degrees of latitude (0-90)	Right-justified
4C	11-12	Minutes of latitude (0-59)	Right-justified
5C	13-14	Seconds of latitude (if available, 0-59)	Right-justified
6C	15-15	Hemisphere of latitude	N (Northern) or S (Southern)
7D	16-18	Degrees of longitude (0-180)	Right-justified
8D	19-20	Minutes of longitude (0-59)	Right-justified
9D	21-22	Seconds of longitude (if available, 0-59)	Right-justified
10D	23-23	Hemisphere of longitude	E (Eastern) or W (Western)
11E	24-47	Name of country in English	Left-justified
12F	48-71	Name of station in English	Left-justified
13G	72-76	Height of station above sea level (whole meters)	Right-justified
14H	77-83	Height of barometer above sea level (tenths of meters)	Right-justified
L	3-33	WIGOS Station Identifier (WSI)	Maximum 31 character identifier from WMO's OSCAR system, left-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 (if applicable), 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
1A	3-7	WMO number	5-digit with leading 0 if applicable, right-justified. Leave null if new station with only WIGOS Station Identifier.
2B	8-8	Element Designator Code	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 percent.
3I	9-12	Year	4-digits
4J	13-13	Average Value Designator Code	Blank = Yearly data record
5K	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 1 st 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".
6K	19-23	February	
7K	24-28	March	
8K	29-33	April	
9K	34-38	May	
10K	39-43	June	
11K	44-48	July	
12K	49-53	August	
13K	54-58	September	
14K	59-63	October	
15K	64-68	November	
16K	69-73	December	
17K	74-78	Annual	

If data are missing for an entire year, then only complete Fields 1-4A, B, I and J.

Yearly data can be provided only for 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 line for each station must be a station header record which should contain the most recent information for the station. A second header record line has been added to accommodate the new WIGOS Station Identifier.

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 9's or -9's or tabs to represent missing data.

(a) Station Header Records

Station header records contain 8 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-digit with leading 0 if applicable, left-justified. Leave null if new station with only WIGOS Station Identifier.
2	40-63	Name of station in English	Left-justified
3	40-63	Name of country 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 meters
7	40-49	Height of barometer above sea level	Left-justified, tenths of meters, explicit decimal
8	40-70	WIGOS Station Identifier (WSI)	Maximum 31 character identifier from WMO's OSCAR system, left-justified

(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 percent). 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 1 st 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 only for the data-year in question but also for other data-years where data were not previously submitted or need to be corrected.

II.3 History Metadata (Station Notes)

Each WMO Member should submit one file containing all of the metadata (station notes) for all of the stations in their country. 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 (changes in) basic parameters such as location and elevation. An example of station notes is given in Annex IV.

Annex I: Proposed collection mechanism by region

REGION	Countries (ENG)	Collection mechanism	Alternative
REGION I	Angola, Algeria, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Canary Islands, Comoros Islands, Cape Verde, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Djibouti, Egypt, Eritrea, Ethiopia, Gabon, Ghana, Gambia, Guinea, Guinea Bissau, Guinea Equatorial, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Niger, Nigeria, Mauritania, Mauritius, Morocco, Mozambique, Namibia, the Ocean Islands (St. Helena Island, Ascension Island, Martin de Vivies, Iles Crozet, Iles Kerguelen), Rwanda, Senegal, Seychelles, Sierra Leone, Sao Tome and Principe, Somalia, South Africa, South Sudan , Sudan, Swaziland, Togo, Tunisia, Uganda, United Republic of Tanzania, Zambia, Zimbabwe	CBS Lead Center for GCOS Africa, Morocco (DMN), cbs.lead.centre.4gcoss@gmail.com	WMO, Geneva; wcdmp@wmo.int
REGION II	Afghanistan, Armenia, Azerbaijan, Bahrain, Brunei, Cambodia, China, India, Iran, Japan, Jordan, Kazakhstan, Kyrgyzstan, Laos, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Oman, Pakistan, Philippines, Qatar, Republic of Korea, Russian Federation, Saudi Arabia, Singapore, Sri Lanka, Syria, Tajikistan, Thailand, Turkey, United Arab Emirates, Vietnam, Yemen	CBS Lead Center for GCOS Asia, Japan (JMA); climatemonitor@met.kishou.go.jp	WMO, Geneva; wcdmp@wmo.int
REGION III	All countries of RA III	CBS Lead Center for GCOS South America, Chile (DMC); gtorres@meteochile.cl	WMO, Geneva; wcdmp@wmo.int
REGION IV	All countries of RA IV	CBS Lead Center for GCOS North and Central America, Caribbean, USA (NCEI); gcoss.ncdc@noaa.gov	WMO, Geneva; wcdmp@wmo.int
REGION V	Countries of RA V, which are not noted under RA II	CBS Lead Center for GCOS South West Pacific, Australia (BOM); GCOS_Lead_Centre_RAV@bom.gov.au	WMO, Geneva; wcdmp@wmo.int
REGION VI	Countries of RA VI, which are not noted under RA II	CBS Lead Center for GCOS Europe, Germany (DWD); CBS-LC-GCOS.RAVI@dwd.de	WMO, Geneva; wcdmp@wmo.int

Note: The above CBS Lead Centres for GCOS constitute the principle regional nodes of the WWR collection mechanism. The WMO Secretariat does not act as a node in the WWR collection mechanism. Members are requested to contact the WMO Secretariat (wcdmp@wmo.int) for coordination should submission problems arise.

[illegible]

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.
L 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.
L WIGOS Station identifier, maximum 31-character identifier from WMO's OSCAR system.

[illegible]

(4) Mean Daily Air Temperature (precision to tenths of degrees Celsius)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ANNUAL
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	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
2017	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
2018													
2019													

(5) Total Precipitation (precision to tenths of mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ANNUAL
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	7.0	0	37.7	14.7	168.9	408.8	208.7	115.1	186.7	43.9	2.0	0	1193.5
2017	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
2018													
2019													

(6) Mean Daily Maximum Air Temperature (precision to tenths of degree Celsius)

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

[illegible]

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 22 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 meters at Piarco and 6.7 meters at Crown Point.

Temperature:

Thermometers, housed in a standard Stevenson Screen, were 1.2 meters 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 meters at Piarco, and 3 meters at Crown Point.

URUGUAY (13 stations)**General:**

CLINO values correspond to the period 1951-80 for precipitation and 1946-1980 for other elements. Rain gauges and thermometers were located 1.5 meters above the ground.

Pressure and Temperature:

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

$$1/10(00+03+06+09+12+15+18+21 \text{ hours GMT} + \text{Mean Max} + \text{Mean Min})$$

Precipitation:

The daily values were measured at 0900 hours GMT.