

CLIMAT Messages.

Part 1 - Mission Connection

a. Product/Service Description. The program for the international exchange of monthly mean data is called the "CLIMAT" program. The World Data Center for Meteorology, operated by the National Climatic Data Center (NCDC), collects CLIMAT messages for publication under World Meteorological organization (WMO) sponsorship.

b. Purpose/Intended Use. The CLIMAT program serves the following objectives:

To provide regular assessments and authoritative statements on the interpretation and applicability of instrumental and proxy data for the study of climate variability, the detection of climate change, and the validation of climate models and forecasts;

To develop awareness of the inter-annual variability of the global climate system and to facilitate the generation, interpretation, and dissemination of this information in global and regional scale climate fluctuations;

To support the Global Climate Observing System in the maintenance and integrated development of existing observation systems, including traditional in situ surface and upper-air observations, satellite systems, and new observing technologies;

To facilitate the development and implementation of methods to enable the rescue, preservation, and management of climate data by WMO Members, especially developing countries; promote the international exchange of climate data and related products; and coordinate the preparation and distribution of global and regional data sets, including metadata, as required for both research and development of climate information and prediction services.

c. Audience. The product is used by climate data managers and users of climate data.

d. Presentation Format. The reports are in coded text.

e. Feedback. <http://www.cpc.ncep.noaa.gov/comment-form.html>

Part 2 - Technical

a. Format and Science Basis. CPC provides coded monthly CLIMAT reports for stations within the 50 states, Puerto Rico and Pacific Islands. [See NWS Instruction 10-1002 \(Climate Monitoring\)](#) for the list of stations.

Each of the nine collectives has about 20 of the 187 station reports. Each collective begins with the following: CLIMAT MMJJJ, where MM is the 2-digit number for the month and JJJ is the year with the thousands digit dropped. (e.g. March 2002 is 03002).

Within the collectives, each station has a report as indicated generically:

Section 1 (111): Monthly data

Section 2 (222): not used

Section 3 (333): Number of the days in the month with parameters beyond certain thresholds

Section 4 (444): Extreme values during the month and occurrence of thunder and hail.

111 Iiiii 1P₀P₀P₀P₀ 2PPPP 3s_nTTT s_ts_ts_t 4s_nT_xT_xT_xs_nT_nT_nT_n 5eee 6R₁R₁R₁R₁R_dn_rn_r 7S₁S₁S₁p_sp_sp_s
 8m_pm_pm_pm_tm_tm_tm_{tx}m_{tx} 9m_em_em_rm_rm_sm_s 333 0T₂₅ T₂₅ T₃₀ T₃₀ 1T₃₅T₃₅T₄₀T₄₀ 2T_{n0}T_{n0}T_{x0}T_{x0}
 3R₀₁R₀₁R₀₅R₀₅ 4R₁₀R₁₀R₅₀R₅₀ 5R₁₀₀R₁₀₀R₁₅₀R₁₅₀ 6S₀₀S₀₀S₀₁S₀₁ 7S₁₀S₁₀S₅₀S₅₀ 8f₁₀f₁₀f₂₀f₂₀f₃₀f₃₀
 9V₁V₁V₂V₂V₃V₃
 444 0s_nT_{xd}T_{xd}T_{xd}Y_xY_x 1s_nT_{nd}T_{nd}T_{nd}Y_nY_n 2s_nT_{ax}T_{ax}T_{ax}Y_{ax}Y_{ax} 3s_nT_{an}T_{an}Y_{an}Y_{an} 4R_xR_xR_xR_xY_rY_r
 5R_iw_if_xf_xf_xY_{fx}Y_{fx} 6D_{ts}D_{ts}D_{gr}D_{gr}

Specifications of Symbolic Letters.

s_n - Sign of temperature: 0 for positive or zero, and 1 for negative values.

0,1,2, etc - group identifiers within a section.

Section 1. (111).

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| Iiiii | International index number of the station (II=country/area #, iii=station #). |
| (1) P ₀ P ₀ P ₀ P ₀ | Monthly average station pressure in tenths of millibars, thousands digit being omitted. |
| (2) PPPP | Monthly average sea level pressure in tenths of millibars, thousands digit being omitted. |
| (2) s _n TTT | Average air temperature in tenths of a degree Celsius. |
| s _t s _t s _t | Standard deviation of daily average temperatures during the month in tenths of a degree Celsius. |
| (4) s _n T _x T _x T _x | Average maximum temperature in tenths of a degree Celsius. |
| s _n T _n T _n T _n | Average minimum temperature in tenths of a degree Celsius. |
| (5) eee | Mean vapor pressure for the month in tenths of a millibar. |
| (6) R ₁ R ₁ R ₁ R ₁ | Total precipitation for the month in millimeters. |
| R _d | Quintile (frequency group) within which RRRR falls. The solidus (slant) is used if records were incomplete for the period 1971-2000, unless NESDIS has estimated these values; i.e., via the gamma function. |
| n _r n _r | Number of days of the month with precipitation equal to or greater than 1 mm. |
| (7) S ₁ S ₁ S ₁ | Total sunshine for the month to the nearest hour (solidus for unknown). |

- $P_s P_s P_s$ Percent of normal sunshine.
- (8) $m_p m_p$ days with missing pressure.
 $m_t m_t$ days of missing temperature.
 $m_{tx} m_{tx}$ days of missing extreme temperature.
- (9) $m_e m_e$ days of missing vapor pressure data.
 $m_r m_r$ days of missing precipitation data.
 $m_s m_s$ days of missing sunshine data.

Section 3 (333); sections with all zero occurrences are omitted in the transmission

- (0) $T_{25} T_{25}$ number of days temperature reaches 25°C or higher.
 $T_{30} T_{30}$ number of days temperature reaches 30°C or higher.
- (1) $T_{35} T_{35}$ number of days temperature reaches 35°C or higher.
 $T_{40} T_{40}$ number of days temperature reaches 40°C or higher.
- (2) $T_{n0} T_{n0}$ days with minimum temperature below 0°C.
 $T_{x0} T_{x0}$ days with maximum temperature below 0°C.
- (3) $R_{01} R_{01}$ days with precipitation 1 mm or more.
 $R_{05} R_{05}$ days with precipitation 5 mm or more.
- (4) $R_{10} R_{10}$ days with precipitation 10 mm or more.
 $R_{50} R_{50}$ days with precipitation 50 mm or more.
- (5) $R_{100} R_{100}$ days with precipitation 100 mm or more.
 $R_{150} R_{150}$ days with precipitation 150 mm or more.
- (6) through (9) Inadequate data for inclusion [snow (6 & 7), wind (8), and visibility (9)]

Section 4 (444)

- (0) $S_n T_{xd} T_{xd} T_{xd}$ maximum daily mean temperature (tenths of °C).
 $Y_x Y_x$ date of occurrence.
- (1) $S_n T_{nd} T_{nd} T_{nd}$ minimum daily mean temperature (tenths of °C).
 $Y_n Y_n$ date of occurrence.
- (2) $S_n T_{ax} T_{ax} T_{ax}$ monthly maximum temperature (tenths of °C).
 $Y_{ax} Y_{ax}$ date of occurrence.
- (3) $S_n T_{an} T_{an} T_{an}$ monthly minimum temperature (tenths of °C).
 $Y_{an} Y_{an}$ date of occurrence.
- (4) $R_x R_x R_x R_x$ Daily maximum precipitation (mm).

$Y_r Y_r$ date of occurrence.

- (5) R_i source code for units of wind speed (4=knots).
 $f_x f_x f_x$ maximum wind speed .
 $Y_{fx} Y_{fx}$ date of maximum wind speed.

Note: METAR observations do not provide this data. Thus CLIMAT reports for this group are coded as 54/////.

- (6) $D_{ts} D_{ts}$ number of days with a thunderstorm.
 $D_{gr} D_{gr}$ number of days with hail.

b. Availability. CPC issues the CLIMAT messages once a month on a weekday between the fourth and sixth around 1800 Universal Coordinated time. They are issued on NWS dissemination systems under the following IDs:

WMO Headings (nine messages): CSXX(01-09) KWNO

- c. Other information

Valid Time. This product is valid until the next issuance

Product Expiration Time. This product expires with the next issuance.

Creation Software. CPC generates coded CLIMAT text messages using a special CLIMAT program that extracts the observed data from a Climate Data Base containing about two years worth of daily global data. CPC generates CLIMAT messages from METAR observations at specified Automated Surface Observation System observing sites.