



# Status of DAYCLI Implementation

**Workshop on Enhancing Data-sharing in the Southern African Region**

**National Centers for  
Environmental Information (NCEI)**

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# Overview

- History: the CLIMAT message
- Why a DAYCLI message ?
- Countries transmitting DAYCLI
- Sources of Information and Assistance for Encoding and Transmitting DAYCLI messages

## History : the CLIMAT message

In 1935 it was agreed within the International Meteorological Organization (IMO), former WMO, that mean monthly values of the main climatological elements at certain stations around the world should be exchanged between Meteorological Services

Known as the CLIMAT message (FM-71), such exchange really started in 1949 with monthly extremes, means and Normals data

In 1951 and 1957, WMO confirmed the relevant resolutions of IMO

1935

1949

1951 & 1957



WMO OMM



# CLIMAT message

- CLIMAT – Provides a variety of monthly mean climate parameters provided for the previous month
  - For example, monthly mean of station pressure and temperature, precipitation total and sunshine duration.
  - Optional parameters such as Number of Days with values beyond certain thresholds such as >25C or >30C as well as the maxima of different parameters such as highest daily temperature in the month.
- CLIMAT – Does Not provide climate observations for each day of the month
  - No observations which are necessary for monitoring climate extremes or computing climate indices such as growing season length, maximum 1-, 2-, 3-day precipitation, length of heat waves, cold outbreaks, etc.



WMO OMM



## Why a DAYCLI message ?

- Over the last 30 years, there has been a growing demand for indices and high-quality measurements of the climate on extremes.
- For many extreme measures, monthly data are insufficient.
- There is a need for operationally exchanged Daily climate data.
  - This need is not just for timeliness
- It is principally for data that is compatible with long historical daily series developed, controlled and made available by NMHSs.
- There is also a demand for validation of modeling data by surface station observations.



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# Why a DAYCLI message ?

- Attempts have been made to use SYNOP data for this purpose but there are serious issues of incompatibility of SYNOP data with traditional methods of climate measurement within NMHSs.
- Daily summaries in SYNOP messages are based on measurements that occur between synoptic reporting times and often over a period of less than 24 hours.
- For instance, in Europe, minimum temperatures are recorded usually over the 18 to 06 UTC 12-hour period and maximum temperatures during the 06 to 18 UTC 12-hour period.
- Measured in this way, the true daily minimum and maximum temperatures may not be reported because they may have occurred outside those particular 12-hour periods.
- As a result, SYNOP reports have been shown to significantly underestimate extremes.



WMO OMM



## Why a DAYCLI message ?

- To solve this problem the DAYCLI message was developed
- Once-a-month transmissions of all the daily observations recorded during the previous month
- With DAYCLI, National Meteorological Services can provide daily observations consistent with national climate databases



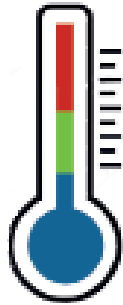
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# Content of the DAYCLI message

Exchanging **high-quality** and **quality-controlled** values of temperature, rain and snow parameters all around the world for better climate services:



*Daily Minimum Mean  
and Maximum  
temperatures*



*Daily total  
accumulated  
precipitation*

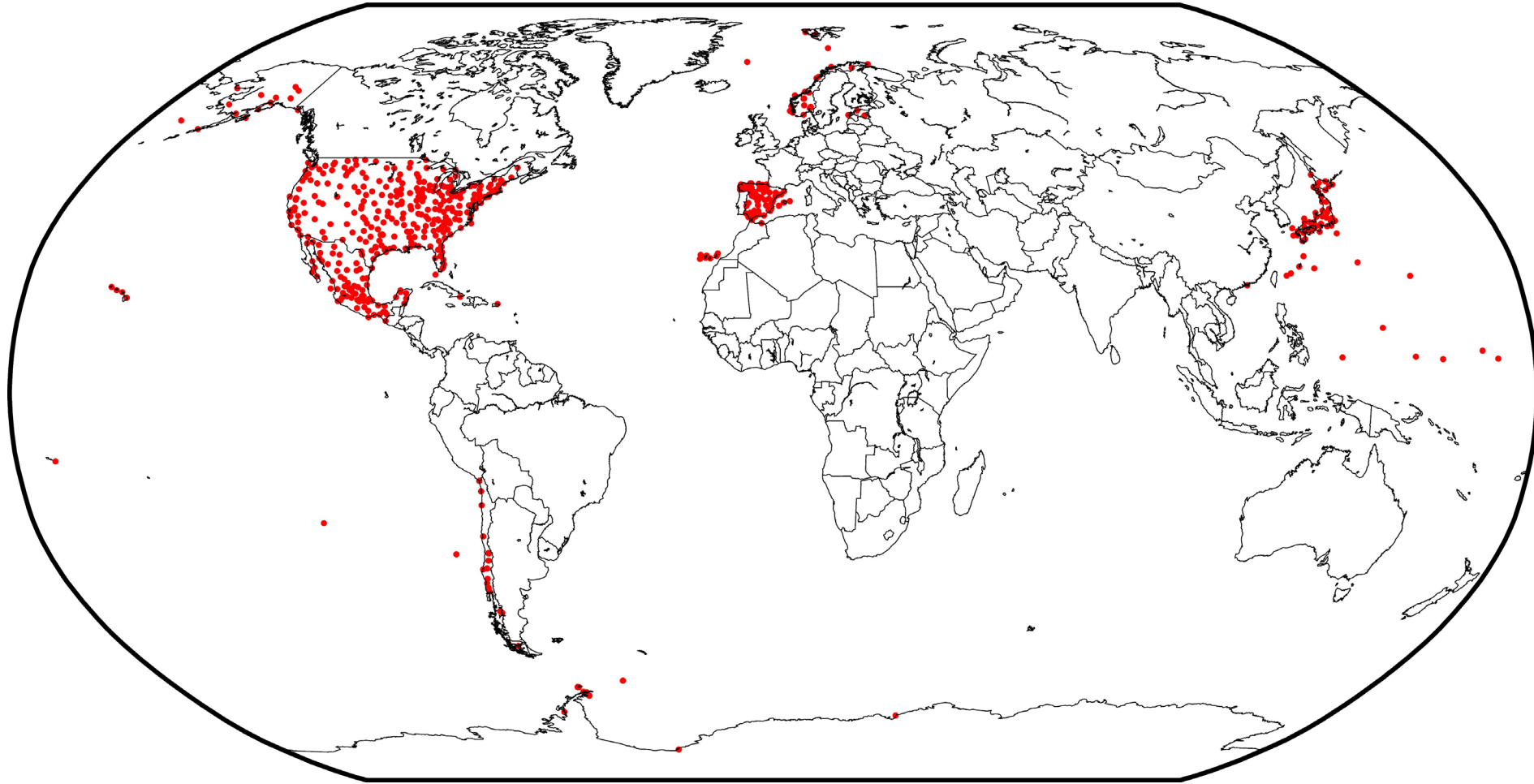


*Daily total snow  
depth & Daily depth  
of fresh snow*

- The entire month of daily observations are transmitted in a DAYCLI message once each month.
- Each of the observations should be recorded at the observing time consistent with the climate reporting practices of the NMHS and should reflect conditions over the previous 24-hour period.



# Countries Transmitting DAYCLI and Received at NCEI in 2024



# DAYCLI Coding and Transmission

- The DAYCLI report is exchanged in a specific WMO binary format, the Binary Universal Form for the Representation of meteorological data, commonly named BUFR.
- The BUFR code “FM 94 3 07 075”, is the BUFR template that designs the structure of the data values for exchanging the DAYCLI report.
- This template is described in the Manual on Codes, Part B Binary Codes, WMO-No. 306.
- <https://community.wmo.int/en/activity-areas/wis/volume-i2>

# Helpful Open Source Software for DAYCLI

Source	Software location
ECMWF software	<a href="https://confluence.ecmwf.int/display/UDOC/HPC2020%3A+ECMWF+software+and+libraries">https://confluence.ecmwf.int/display/UDOC/HPC2020%3A+ECMWF+software+and+libraries</a>
Norway Meteorologisk Inst. BUFR software	<a href="https://wiki.met.no/bufr.pm/bufrread.pl%C2%A0">https://wiki.met.no/bufr.pm/bufrread.pl%C2%A0</a> GNU GPL
Environment Canada BUFR library	<a href="https://github.com/ECCC-MSC/libecbufr">https://github.com/ECCC-MSC/libecbufr</a> (Free LGPL licence V3 - Language : Fortran and C)

# For Assistance with DAYCLI Coding and Transmission

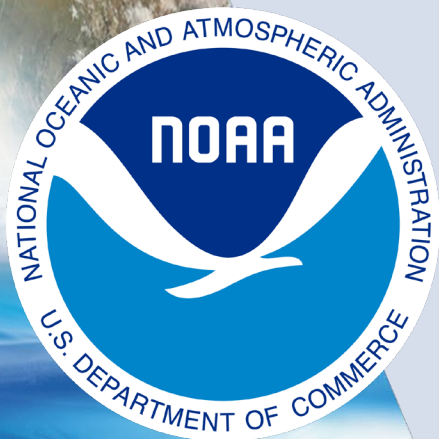
Information	Sources of Information
Content of the DAYCLI	wcdmp@wmo.int
DAYCLI encoding in the WIS2box software	<a href="https://docs.wis2box.wis.wmo.int/en/1.0b7/index.html">https://docs.wis2box.wis.wmo.int/en/1.0b7/index.html</a>
How to create BUFR from a CSV (ECMWF)	<a href="https://confluence.ecmwf.int/display/UDOC/How+do+I+create+BUFR+from+a+CSV+-+ecCodes+BUFR+FAQ">https://confluence.ecmwf.int/display/UDOC/How+do+I+create+BUFR+from+a+CSV+-+ecCodes+BUFR+FAQ</a>



Thank You!

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<https://www.ncei.noaa.gov>



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