

DAILY SYNOPTIC UPPER-AIR REPORTS

The upper-air reports are derived in the same general manner as the surface data. For the most part, these observations have been for 0400Z, especially in Canada, Alaska, and the United States, with some additional observations at other hours when the station does not report at or near 0400Z. In Russia, where observations are taken at local mean solar time, reports from all available hours have been included. Stations using the 1945 Radiosonde Code use the convention of adding 50 to the Greenwich time to indicate that part of the observation above 400 millibars of pressure, commonly known as the "second transmission." Many stations outside North America indicate the time of observation other than on-the-hour by adding to the Greenwich hour 25, for 15 minutes past the hour; 50, for 30 minutes; and 75, for 45 minutes. Although this has not been "subtracted out" of the reports, the date has been listed chronologically by hour within station.

Assignment of Index Numbers:

The same method used in assigning station numbers in surface reports has been employed.

Station Lists:

The upper-air numerical station index which precedes the upper-air data is presented in the same form as the surface index. The alphabetic index following the charts includes all stations, both surface and upper-air. Stations for upper-air only are designated with a single asterisk; those for both upper-air and surface, with two asterisks; while those for surface only are merely listed.

Method of Presentation:

The upper-air data are presented in the same general way as the surface data. Stations are listed numerically within certain geographical areas according to their International Index Numbers. The teletype data have been edited for obvious errors, garbled data, etc.; but no attempt has been made to present the various winds aloft and radiosonde codes in a standard-level form. To the right of each line of the listed observations is a code number which indicates the type of code used for that report, as follows:

- | | |
|------------------|-----------------------------------|
| 1. PIBAL | 5. TEMPS |
| 2. RAWIN | 6. PRAWT |
| 3. RABAL | 7. PRAT |
| 4. Russian PIBAL | 8. CORAC and 1945 Radiosonde Code |
| 9. Russian RAOBS | |

While the upper-air observations usually have more than one line to an observation, the station number and hour appear only on the first line.

All land stations are listed first, and are followed by ship reports.

Description of Codes:

1. Winds Aloft

- | | | | | | |
|----------|--------------------|--------------------|-------|--------------------|---|
| a. IIIGG | Hddvv | Hddvv | | Hddvv | |
| b. IIIGG | Hddvv | Hddvv | | 9999 _n | Hddvv |
| c. IIIGG | Hddvv | Hddvv | | Hddvv | C _L C _M HMM |
| d. IIIGG | HHddv ₅ | HHddv ₅ | | HHddv ₅ | |
| e. IIIGG | 8ddvv | 9ddvv | 0ddvv | | M _x H _x H _x H _x C |
- (Russian)

C International cloud code.

C_L Form of low cloud (International code).

C_M Form of middle cloud (International code).

dd Wind direction in tens of degrees.

GG Greenwich hour - Local mean solar time (Russian code).

H Height in thousands feet meters.

HH Height of last observation.

HH Height in hectometers.

H_xH_xH_x Height at which observations were discontinued in tens of meters.

III Station index number.

M Reason for ceasing upper wind observation (International code).

M_x Reason for ceasing upper wind observation (Russian code).

- | | |
|---------------------------|-------------------------|
| 0 - Entering cloud | 5 - Lost behind cloud |
| 1 - Lost in fog | 6 - Lost in background |
| 2 - Lost in mist | 7 - Lost in distance |
| 3 - Lost accidentally | 8 - Lost, balloon burst |
| 4 - Lost in precipitation | 9 - Lost, other causes |

v₅ Wind speed (International code).

vv Wind speed in miles per hour/knots.

vv Wind speed in meters per second (Russian code).

8,9,0,1 etc. Height levels (Russian code).

- | | |
|------------------|--|
| 8 - Surface | |
| 9 - 200 meters | |
| 0 - 500 meters | |
| 1 - 1000 meters | |
| 2 - 2000 meters | |
| . | |
| . | |
| . | |
| . | |
| 0 - 10000 meters | |

9999_n Change in decade of thousands, the figure for n to give the tens of thousands digit for levels following.

Code "a" is generally used in North America and from stations controlled by United States. Code "b" is readily identified by group, 9999_n, and is used mainly in Europe. Code "c" may be identified by its last group and is also used in some European reports. Code "e" is identified by its height indicators and by the code number 4 at the extreme right-hand column of each line of the observation.

Only when a station designates its winds-aloft observation by the word RAWIN or RABAL have the codes 2 and 3 been listed in the right-hand column.

2. RAOBS

a. 1945 Radiosonde Code.

IIIGG P₀P₀P₀T₀T₀ U₀U₀x₁x₂x₃ 00hhh TTU_{m_r}m_r
 (Oddvv) 85hhh TTU_{m_r}m_r 70hhh TTU_{m_r}m_r
 50hhh TTU_{m_r}m_r nnPPP TTU_{m_r}m_r
 IIIG₅₀G₅₀ 30hhh TTU_{m_r}m_r (Oddvv) 20hhh

$TTU_{m_r m_r} 10hhh TTU_{m_r m_r} nnPPP TTU_{m_r m_r} \dots$
 $101A_{df} A_{df}$
 b. TEMPS
 $IIIGG H_d H_d P_1 P_1 P_1 TTTUU \dots 00000$
 $H_d H_d H_d H_d H_d TTTUU \dots$
 c. PRAWT
 $IIIGG P_o P_o P_o T_o T_o U_o U_o DDv n_0 n_9 n_8 n_7 n_6 n_5 n_4 n_3 n_2 n_1$
 $HHTTU Uddvv 95TTU Uddvv HHTTU Uddvv 85TTU$
 $Uddvv \dots 77788 P_1 P_2 P_3 P_4 P_5 PPTTU Uddvv$
 \dots
 d. PRAT
 $IIIGG P_o P_o P_o T_o T_o U_o U_o KK- n_0 n_9 n_8 n_7 n_6 n_5 n_4 n_3 n_2 n_1$
 $HHTTU 95TTU HHTTU 85TTU HHTTU \dots 77788$
 $P_1 P_2 P_3 P_4 P_5 \dots PX PPTTU$
 e. CORAC
 $IIIGG P_o P_o P_o T_o T_o U_o U_o x_1 x_2 x_3 (Oddvv) P_1 P_1 h_1 h_1 h_1$
 $T_1 T_1 U_1 u_1 u_1 P_2 P_2 h_2 h_2 h_2 T_2 T_2 U_2 u_2 u_2 \dots$
 a. $11199 \begin{matrix} nnPPP \\ hh \end{matrix} TTUUU$
 or
 $77788 P_1 P_1 T_1 T_1 U_1 \dots 10171$
 $1u_1 u_1 u_2 u_2 3u_3 u_3 u_4 u_4 \text{ etc.}$
 f. Russian RAOB
 $IIIGG H_1 H_1 H_1 T_1 T_1 H_2 H_2 H_2 T_2 T_2 \dots 98765$
 $H_a H_a PPP T_a T_a T_a UU QQQEE H_b H_b PPP T_b T_b T_b UU$
 $QQQEE \dots$

$A_{df} A_{df}$ Form of additional data follows
 (1945 Radiosonde code).
 dd Wind direction in tens of degrees.
 EE Equivalent potential temperature
 in °C.
 GG Greenwich hour - Local mean solar
 time in Russian.
 HH (PRAT AND PRAWT) Height in tens
 of feet or whole meters dependent
 on KK.
 $H_a H_a, H_b H_b$ Height in hectometers.
 $H_d H_d$ Height in hundreds of geodynamic
 meters.
 $H_d H_d H_d H_d H_d$ Height to which upper-air observa-
 tions of temperature and humidity
 are referred, expressed in
 geodynamic meters.

$H_1 H_1 H_1, H_2 H_2 H_2$ (Russian code) Height in geodynamic
 decameters at pressure levels as
 follows:
 1 - 1000 mb. 6 - 400
 2 - 900 7 - 300
 3 - 700 8 - 200 etc.
 4 - 500
 $h_1 h_1 h_1, h_2 h_2 h_2$ Height in tens of feet or whole
 meters.
 III Station index number.
 KK Indicator of form of report in
 PRAT code.
 $m_r m_r$ Mixing ratios in grams of water
 vapor per kilogram of dry air.
 nn Gives significant levels given
 consecutively.
 hh Gives height of level in 100's
 of feet or tens of meters accord-
 ing to regional agreement.
 $n_0 n_9 n_8 n_7 n_6 n_5 n_4 n_3 n_2 n_1$ Thousands figure in heights above
 M.S.L. of the 1000 mb, 900 mb, etc.
 PP Pressure in tens of millibars.
 PPP Pressure in whole millibars.
 $P_o P_o P_o$ Station level pressure.
 $P_1 P_1, P_2 P_2$ Pressure in tens of millibars of
 1st, 2nd, etc. levels.
 $P_1 P_2 P_3 P_4 P_5$ Units figure of pressures for
 following levels which report in
 tens of millibars.
 QQQ (Russian code) Mixing ratio in
 grams and tenths. Temperature of
 air in whole degrees.
 TT Temperature of air in whole degrees.
 $T_o T_o$ Temperature of air at surface.
 $T_1 T_1, T_2 T_2$ Temperature at certain levels.
 TTT Temperature in degrees and tenths.
 U Relative humidity (International
 code).
 UU Relative humidity in percent.
 $U_o U_o$ Relative humidity in percent at
 surface.
 $u_1 u_1, u_2 u_2$ Moisture values indicated by x_3 .
 vv Wind speed.
 X Used to make a five digit group.
 $x_1 x_2 x_3$ Indicator figures to show units used,
 x_1 for heights, x_2 for wind, x_3 for
 moisture values. (International code.)
 O Indicator figure for wind group.
 00000 Indicates that temperatures and
 humidities are for fixed pressures,
 1000, 900, 800 mbs., etc.
 00,85,70,50 etc. (1945 Radiosonde) Indicator figures
 for 1000, 850, 700 mb. levels.