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. RAOBS
2. RAWIN	6. PRAWT
3. RABAL	7. PRAT
4. Russian PIBAL	8. CORAC
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 ..... 9999n Hddvv

   c. IIIGG Hddvv Hddvv ..... Hddvv $C_L C_M HH$

   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.

$H_x H_x H_x$ 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

v$_5$ 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

9999n 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, 9999n, 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 $P_oP_oP_oT_oT_o$ $U_oU_ox_1x_2x_3$ 00hhh TTUm_rm_r (0ddvv) 85hhh TTUm_rm_r 70hhh TTUm_rm_r 50hhh TTUm_rm_r nnPPP TTUm_rm_r .....
   IIIG$_{50}$G$_{50}$ 30hhh TTUm_rm_r (0ddvv) 20hhh TTUm_rm_r 10hhh TTUm_rm_r nnPPP TTUm_rm_r .....
   $101A_{df}A_{df}$

   b. IIIGG $H_dH_dP_1P_1P_1$ TTTUU ..... 00000 $H_dH_dH_dH_dH_d$ TTTUU .....

   c. PRAWT

   IIIGG $P_oP_oP_oT_oT_o$ U_oU_oDDv $n_0n_9n_8n_7n_5$ $n_5n_4n_3n_2n_1$ HHTTU Uddvv 95TTU HHTTU Uddvv 85TTU Uddvv ..... 77788 $P_1P_2P_3P_4P_5$ PPTTU Uddvv .....

d. PPAT

IIIGG $P_oP_oP_oT_oT_o$ U_oU_oKK- $n_0n_9n_8n_7n_5$ $n_5n_4n_3n_2n_1$ HHTTU

95TTU HHTTU 85TTU HHTTU ..... 77788 $P_1P_2P_3P_4P_5$ ...PX

PPPTU .....

e. CORAC

IIIGG $P_oP_oP_oT_oT_o$ $U_oU_ox_1x_2x_3$ (Oddvv) $P_1P_1h_1h_1h_1$

$T_1T_1U_1u_1u_1$ $P_2P_2h_2h_2h_2$ $T_2T_2U_2u_2u_2$ .....

a. 11199 $\frac{nn}{hh}PPP$ TTUuu

or

77788 $P_1P_1T_1T_1U_1$ 10171

$1u_1u_1u_2u_2$ $3u_3u_3u_4u_4$ etc.

f. Russian RAOB

IIIGG $H_1H_1H_1T_1T_1$ $H_2H_2H_2T_2T_2$ ..... 98755 H_aH_aPPP

$T_aT_aT_aUU$)))RR H_bH_bPPP $T_bT_bT_bUU$)))RR .....

$A_{df}A_{df}$ Form of additional data follows (1945 Radiosonde code.)

dd Wind direction in tens of degrees.

RR Equivalent potential temperature in °C.

GG Greenwich hour - Local mean solar time in Russian.

HH (PPAT and PPAWT) Height in tens of feet or whole meters dependent on KK.

H_aH_a, H_bH_b Height in hectometers.

H_dH_d Height in hundreds of geodynamic meters.

$H_1H_1H_1$, $H_2H_2H_2$ (Russian code) Height at pressure levels as follows:

1 - 1000 mb.	6 - 400
2 - 900	7 - 300
3 - 700	8 - 200 etc.
4 - 500	

$h_1h_1h_1$, $h_2h_2h_2$ Height in tens of feet or whole meters.

III Station index number.

KK Indicator of form of report in PPAT code.

m_rm_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 according to regional agreement.

$n_0n_9n_8n_7n_5$ $n_5n_4n_3n_2n_1$ 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.

$P_oP_oP_o$ Station level pressure.

P_1P_1, P_2P_2 Pressure in tens of millibars of 1st, 2nd, etc. levels.

$P_1P_2P_3P_4P_5$ Units figure of pressures for following levels which report in tens of millibars.

))) (Russian code) Mixing ratio in grams and tenths. Temperature of air in whole degrees.

TT Temperature of air in whole degrees.

T_oT_o Temperature of air at surface.

T_1T_1, T_2T_2 Temperature at certain levels.

TTT Temperature in degrees and tenths.

U Relative humidity (International code).

UU Relative humidity in percent.

U_oU_o Relative humidity in percent at surface.

U_1U_1, U_2U_2 Moisture values indicated by x_3.

vv Wind speed.

X Used to make a five digit group.

$x_1x_2x_3$ Indicator figures to show units used, x_1 for heights, x_2 for wind, x_3 for moisture values. (International code).

0 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.