

DROPSONDE OBSERVATION

Dropsondes released by reconnaissance aircraft are encoded in a manner similar to the mandatory and significant level raob data commonly used. These reports contain important pressure, temperature and moisture information. The XXAA message gives mandatory pressure level information, while the XXBB message gives significant pressure level data.

The following is a decode of the mandatory portion of the dropsonde report:

GENERIC CODE...

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XXAA YGGI 99LaLaLa QLoLoLoLo MMMU 99PPP TTTDD dffff
P1P1hhh TTTDD dffff P2P2hhh TTTDD dffff...PnPnhhh TTTDD
dffff 88PPP TTTDD dffff 77PPP dffff 4vvvv
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The first line of the report gives the mission identifier...this consists of: 1-Agency; 2-aircraft number; 3-number of missions in this storm system; 4-depression number; 5-storm name. AF554 WX OB 03 KMIA means this mission is flown by the Air Force, with aircraft number 554; observation number 3, reported to Miami.

XXAA...mandatory level data follows

YGGI...YY is the day of the month, GG is the time in Z, I is a wind indicator, with a / meaning wind information is missing.

99LaLaLa...99 is a group indicator with LaLaLa being the latitude in tenths of a degree.

QLoLoLoLo...Q is the quadrant of the globe of this report, with
 1 being North latitude and East longitude,
 3 being South latitude and East longitude,
 5 being South latitude and West longitude,
 7 being North latitude and West longitude,
 LoLoLoLo is the longitude in tenths of a degree.

MMMU...MM is the Marsden square number of the reporting location, UU is the units digit of the latitude and longitude respectively.

99PPP... 99 means that surface data follows, PPP is the pressure at the surface in tenths of a millibar (9 or 10 is assumed in front of the number).

TTTDD... TTT is the sfc temperature in tenths of a degree Celcius. If the third digit (tenths) is odd, the number is negative; if its even, the number is positive. DD is the dewpoint depression. If 50 or less, its the depression in degrees and tenths; if 56 or more, subtract 50 and its the depression in whole degrees.

ddfff... dfff is the wind direction/speed at the surface using the standard meteorological format.

P1P1hhh... the first mandatory pressure level data follows, with 00 being 1000 mb, 85 being 850 mb, 70 being 700 mb, etc. hhh is the height of this level in meters above sea level.

TTTDD... the temperature and dewpoint depression at this level using the format mentioned above.

ddfff... the wind direction/speed as outlined above.

OTHER MANDATORY LEVEL DATA FOLLOWS HERE FOLLOWING THE FORMAT
<PPhhh TTTDD dfff> FOR EACH LEVEL.

88PPP... 88 is the indicator meaning tropopause data follows;
PPP is the pressure at the tropopause.
88999 means that tropopause information is unavailable.

TTTDD... temperature and dewpoint depression at the tropopause.

ddfff... wind direction and speed at the tropopause.

77PPP... 77 is the indicator meaning maximum wind level data follows;
PPP is the pressure at the level of maximum wind.
77999 means that maximum wind information is not available.

ddfff...the wind direction and speed of the maximum wind

4vvvv...4 is the indicator meaning wind shear information follows.

The first vv group is the wind shear from the level of max wind to 3000 ft below the level of max wind; the second vv group is the wind shear from 3000 feet above the level of max wind down to the level of max wind. This group is optional.

AF977 WX OB 05 KMIA

XXAA 1717/ 99260 70892 08169 99018 27836 00158 26833 85574 17220
70206 08040 88999 77999

The following is a decode of the above sample report:

Report from Air Force aircraft number 977, weather observation #5 sent to Miami on the 17th at 17Z, wind data msg. Report is from latitude 26.0N and 89.2W which is in quadrant 7 of the globe in Marsden square number 81. The units digit of the latitude is 6, the units digit of the longitude is 9. Surface pressure is 1001.8 mb with a temperature of 27.8 degrees C and a dewpoint depression of 3.6 degrees C. The height of the 1000 mb level is 158 meters above sea level with a temperature of 26.8C and dewpoint depression of 3.3 degrees C. 850 mb level is at 1574 meters above sea level, temperature 17.2 C and dewpoint depression of 2.0 C. 700 mb height is 3206 meters with a temperature 8.0 C and dewpoint depression of 4.0 C. Tropopause and max wind information missing (likely because the dropsonde was released from 700 mb, a standard level for recon reports).

The following is a decode of the significant portion of the dropsonde report:

GENERIC CODE...

XXBB YYGG/ 99LaLaLa QLoLoLoLo MMMU OOPPP TTTDD dffff 11PPP
TTTDD dffff...NNPPP TTTDD dffff

The first line of the report gives the mission identifier...this consists of: 1-Agency; 2-aircraft number; 3-number of missions in this storm system; 4-depression number; 5-storm name.

AF554 WX OB 03 KMIA means this mission is flown by the Air Force, with aircraft number 554; observation number 3, reported to Miami.

XXBB... signifies that significant level data follows.

YYGG/ 99LaLaLa qLoLoLo MMMU follows the exact same format as in the mandatory data above, essentially day, time, lat-long information.

00PPP...00 signifies that surface data follows, with the PPP being the pressure at the surface.

TTTDD...the temperature and dewpoint at the surface, using the convention as outlined under the mandatory levels above.

ddfff...wind direction and speed at the surface.

11PPP...11 means that the data to follow is for the next highest significant level...with the pressure at that level indicated by PPP in whole millibars.

TTTDD...the temperature and dewpoint depression in Celcius at the first significant pressure level.

ddfff...the wind direction and speed at the first significant level.

22PPP...22 means that the data to follow is for the next highest significant level...with the pressure at that level indicated by PPP in whole millibars.

TTTDD...the temperature and dewpoint depression in Celcius at the second significant pressure level.

ddfff...the wind direction and speed at the second significant level.

SIGNIFICANT LEVEL DATA CONTINUES WITH THE FORMAT <NNPPP TTTDD ddfff> THROUGH THE REMAINDER OF THE REPORT.

A sample report is shown below:

AF977 WX OB 05 KMIA
XXBB 1717/ 99260 70892 08169 00018 27836 11799 13405 22733 09411
33716 08650 44699 08040=

