

# **The Experiments of Weather Instruments & Observations lab.**

**(First Semester)**

**ASD / 2<sup>nd</sup> Stage**

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# *Analysis and drawing of observation codes for the upper atmosphere*

## *Devices used for upper atmosphere observations:*

1. *Radiosonde*
2. *Pilot ballon*
3. *Radiowind*
4. *Satellites*

## *Upper observations codes:*

*It observations the upper atmospheres for synoptic analyzes and weather forecasts in terms of atmospheric pressure, temperature, relative humidity, and wind speed and direction.*

*MiMiMjMj*



*The type of station and replace it with one of the following formulas:*

*If the report is from a fixed earth station (TTAA)*

*If the report was taken from a marine station (UUAA)*

*If the report was taken from a small balloon or balloon (XXAA)*

*If the report is from a portable station (IIAA)*

*YYGGI<sub>d</sub>*



*Date and time code*

*The date takes values between (01-31) or (51-81)*

*YY*

*Time and takes values between (00-23)*

*GG*

*Evidence of the last standard pressure level reached by the device*

*I<sub>d</sub>*

<i>code</i>	1	2	3	4	5	6	7	8	9	0	/
<i>Standard pressure level (hpa)</i>	100	200	300	400	500	-	700	800	900	1000	<i>There is no wind information in the report</i>

IIiii



II Zone number / iii Station number

99 P<sub>o</sub>P<sub>o</sub>P<sub>o</sub> T<sub>o</sub>T<sub>o</sub>T<sub>ao</sub>D<sub>o</sub>D<sub>o</sub> d<sub>o</sub>d<sub>o</sub>d<sub>o</sub>f<sub>o</sub>f<sub>o</sub>



The code at the station's surface where:

Atmospheric pressure

P<sub>o</sub>P<sub>o</sub>P<sub>o</sub>

Temperature and tenths

T<sub>o</sub>T<sub>o</sub>T<sub>ao</sub>

The difference between temperature and dew point

D<sub>o</sub>D<sub>o</sub>

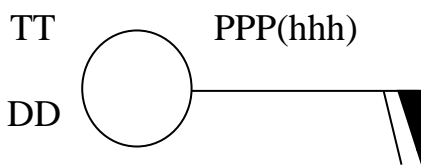
Wind direction

d<sub>o</sub>d<sub>o</sub>d<sub>o</sub>

Wind speed

f<sub>o</sub>f<sub>o</sub>

- The location of the weather elements on the station shall be as follows:



- The real value of the pressure level rise (hhh): is calculated in a different way for each level, as will be mentioned in detail later, and it is measured in units (gpm).
- The value of the dew point (T<sub>d</sub>T<sub>d</sub>): is found according to the following equation for all standard levels

$$T_d T_d = T T T_a - |DD|$$

The temperature is **positive** if its tenths (T<sub>a</sub>) are **even numbers**,

The temperature is **negative** if its tenths (T<sub>a</sub>) are **odd numbers**.

DD is absolute and unsigned:

a - If its value is within (00-50), it is written in tenths.

22547 means its real value is 4.7

b - If its value is within (56-99), then we subtract 50 from it.

For example, 29458 means its real value is 8 as well as 15773 means 23.

c- The value of DD is plotted on the station as it is and applied in the above equation to get the value of  $T_d T_d$ .

### 3. Wind direction and speed:

a- Write the tens digit for the direction of the wind at the end of the arrow for accuracy.

b- The wind speed remains the same when the date is added to 50, and the speed doubles when the date is normal, for example:

28022 for the date 23121: the speed is 22 m/s and draws 44 knots

20050 for the date 80121: the speed remains the same, i.e. 50 knots

C - If the wind speed is more than 100 kt. The hundreds digit is added to the ones in the direction, for example:

28655: 285 direction / 155 speed

29700: 295 direction / 200 speed