

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

**(Second Semester)**

**ASD / 1<sup>st</sup> Stage**

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## General formula of surface code

**MiMiMjMJ**

$$\left\{ \begin{array}{c} (D \dots D1 \\ \text{or} \\ A1bw \ nbnbnb2) \end{array} \right\} \mathbf{YYGGIw} \left\{ \begin{array}{c} \mathbf{Iiii3} \\ \text{or} \\ 99LaLaLa \ QcLoLoLo1) \end{array} \right\}$$

**MMULaULo4 h0h0h0h0im4 IrIxVV Nddff (00fff) 1SnTTT**

$$\left\{ \begin{array}{c} \mathbf{2SnTdTdTd} \\ \text{or} \\ 29UUU \end{array} \right\} \mathbf{3P0P0P0P0} \left\{ \begin{array}{c} \mathbf{4PPPP} \\ \text{or} \\ 4a3hhh) \end{array} \right\} \mathbf{5aPPP \ 6RRRtr}$$

$$\left\{ \begin{array}{c} \mathbf{7wwW1W2} \\ \text{or} \\ 7wawaWa1Wa2) \end{array} \right\} \mathbf{8NhCLCMCH \ 9GGgg}$$

# *Drawing and analysis of surface observation codes and instruments used for measurement*

*The surface observation code is written in the following form:*

**MiMiMjMj YYGGI<sub>w</sub>**

**Iiii IRIxhVV Nddff 1S<sub>n</sub>TTT 2S<sub>n</sub>T<sub>d</sub>T<sub>d</sub>T<sub>d</sub> 3P<sub>o</sub>P<sub>o</sub>P<sub>o</sub>P<sub>o</sub>  
4PPPP 5aPPP 6RRRt<sub>R</sub> 7W<sub>W</sub>W<sub>1</sub>W<sub>2</sub> 8N<sub>h</sub>CLC<sub>M</sub>CH**

- **Note:** *There are latitude and longitude codes (LaLaLa) and (LoLoLo) but they are not mentioned in the main code above.*

**MiMiMjMj**



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

- If the report is from a stable ground station*      **(AAXX)**
- If the report was taken from a marine station*      **(BBXX)**
- If the report is from a mobile earth station*      **(OOXX)**

|                      |  |
|----------------------|--|
| <b>YY</b>            | <i>Date (01-31)</i>  |
| <b>GG</b>            | <i>Time (00-23)</i>  |
| <b>I<sub>w</sub></b> | <i>The source and units of wind speed, takes the following values:</i> |
| <b>0</b>             | <i>If the speed is estimated (m/s)</i>                                 |
| <b>1</b>             | <i>If the speed is measured (m/s)</i>                                  |
| <b>2</b>             | <i>If the speed is estimated (knot)</i>                                |
| <b>3</b>             | <i>If the speed is measured (knot)</i>                                 |
| <b>/</b>             | <i>If the wind speed is not available</i>                              |

**YYGGI<sub>w</sub>**



IIiii



II Zone number / iii Station number

IRIxhVV



Visibility group:

|           |  |
|-----------|--|
| <b>IR</b> | <i>Gide of Sediment group</i>  |
| 0,1,2     | <i>In the present of sediment<br/>This means that there is a sixth group</i>   |
| 3,4       | <i>In the absence of sediment, omitted or unattended sediment<br/>This means that the sixth group does not exist</i> |
| <b>IX</b> | <i>Gide of weather case</i>  |
| 1         | <i>Presence of weather case<br/>This means that there is a seventh group</i>   |
| 2         | <i>In the absence of weather case<br/>This means that the seventh group does not exist</i>                           |
| <b>h</b>  | <i>Base height of lower cloud</i>  |

| <b>h</b> | <b>feet</b>                                  | <b>Meters</b>                     |
|----------|--|-----------------------------------|
| <b>0</b> | <b>0-100</b>                                 | <b>0-50</b>                       |
| <b>1</b> | <b>100-300</b>                               | <b>50-100</b>                     |
| <b>2</b> | <b>300-600</b>                               | <b>100-200</b>                    |
| <b>3</b> | <b>600-900</b>                               | <b>200-300</b>                    |
| <b>4</b> | <b>900-1900</b>                              | <b>300- 600</b>                   |
| <b>5</b> | <b>1900-3200</b>                             | <b>600-1000</b>                   |
| <b>6</b> | <b>3200-4900</b>                             | <b>1000-1500</b>                  |
| <b>7</b> | <b>4900-6500</b>                             | <b>1500-2000</b>                  |
| <b>8</b> | <b>6500-8000</b>                             | <b>2000-2500</b>                  |
| <b>9</b> | <b>8,000 or higher or no cloud</b>           | <b>2500 or higher or no cloud</b> |
| <b>/</b> | <b>Height of base of cloud is not known.</b> |                                   |

## *Cloud Base Height Measuring Devices:*

- 1. Balloon*
- 2. Scout*
- 3. The siliometer*
- 4. By the mathematical equation:*

$$H=(T-T_a)/6.5*1000$$

*where:*

*H is the height of the cloud*

*T dry temperature*

*T<sub>a</sub> The degree of dew point*

*6.5 is a constant number which is the rate of temperature decrease per 1000 metres.*

| <b>VV</b>      | <i>Visibility (00-99)</i>  |
|----------------|--|
| <i>0 - 50</i>  | <i>We add two zeros to the right and the visibility is measured in units (m)</i>   |
| <i>51 - 55</i> | <i>Doesn't used</i>  |
| <i>56 - 80</i> | <i>We subtract 50, and the visibility is measured in units (km).</i>   |
| <i>81 - 89</i> | <i>Visibility is calculated from the equation below and is measured in units (km)</i><br>$VV=(\text{ones digit}) * 5 + 30$ |
| <i>90 - 99</i> | <i>This group gives visibility at sea</i>  |

*The location of the visibility is as shown on the station*



H.W

**Q\\ Below is the surface code of the two stations at two different times. Draw the code with writing all the information for each station, and what is the value of the real visibility range for each station.**

**1- AAXX 20093**

**40811 32560**

**2- AAXX 09182**

**40394 11438**

**3- AAXX 20123**

**40642 11530**

**4- AAXX 23122**

**40629 31903**