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The Status of Meteorological Observation in the Asian Countries

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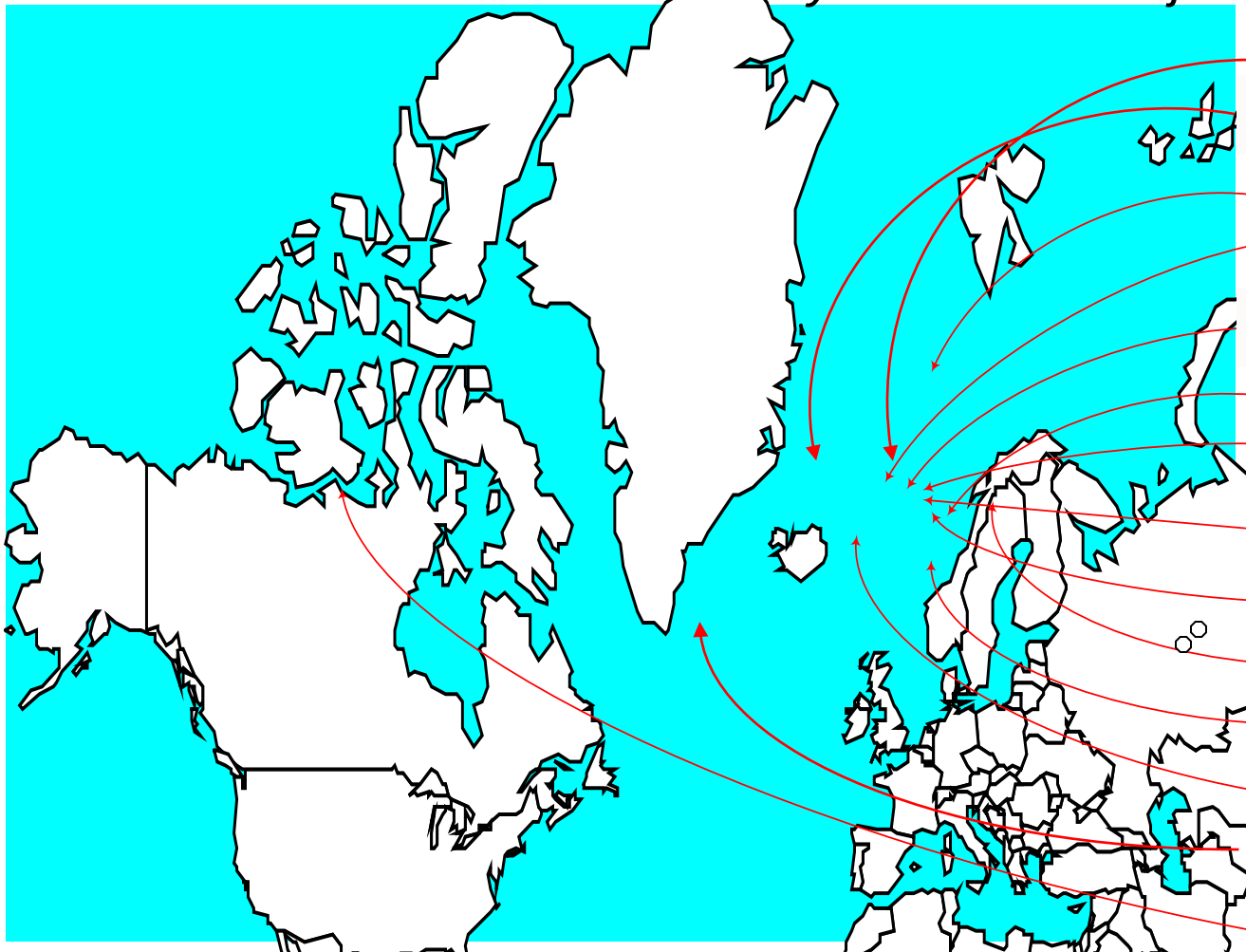
Self-Introduction

Countries visited or stayed as ODA Projects, mainly



Bhutan
Pakistan
Mongolia (4 times)
Bangladesh (3 times)
Myanmar (over 2 years)
Viet Nam (3 times)
Laos (twice)
Thailand (3 times)
Cambodia (over 2 years)
Philippines (5 times)
Indonesia (once)
Sri Lanka(once)
Mozambique
Dominican Republic (2 years)

Red Colored Country : Stayed over 2 years

Content of the Lecture

(1) Current status of Meteorological Instrument and its Maintenance

(2) Unreasonable Results of Analysis by using Observation Data from the Instrument which is not well Maintained or Calibrated

(3) Simple Calibration System at the Local Observatory

(4) Summary of the Current Status of Meteorological Instrument

(5) Points to be Taken Care in case of AWS.

Situation of surroundings of Observation Field (1/4)

Situation of surroundings of Observation Field (2/4)


Situation of surroundings of Observation Field (3/4)

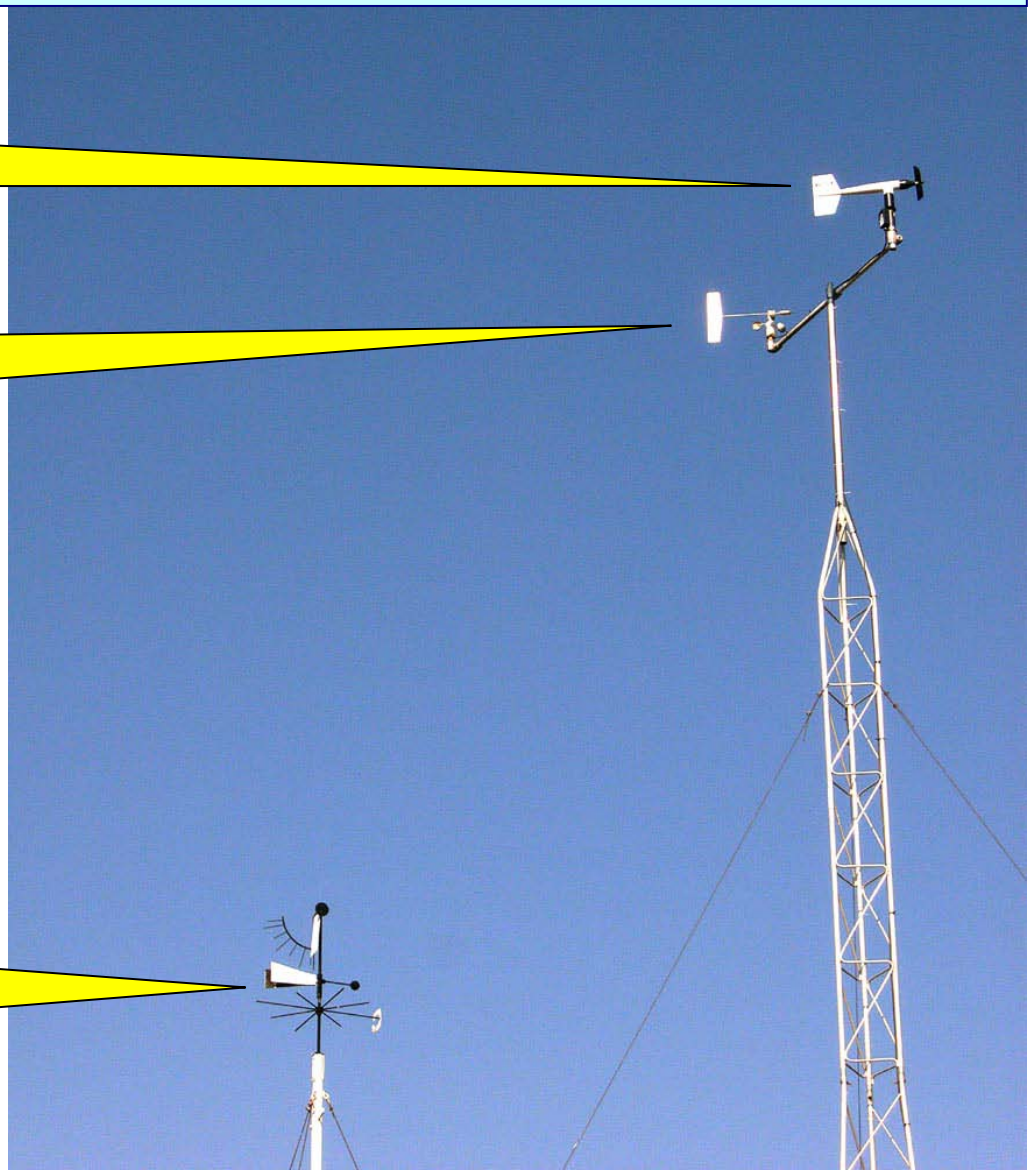

Situation of surroundings of Observation Field (4/4)

(1) Current Status of Meteorological Instrument (wind vane / anemometer) (1/2)

Wind mill type wind vane and anemometer

Wind vane and Anemometer

Wind pressure type
Some NMHSCs still use it



(1) Current Status of Meteorological Instrument (wind vane / anemometer) (2/2)

Robinson's Anemometer

Observers watch the counter of run-of-wind meter. This is still poplar in many NMHSCs

Conventional Wind vane

Observers have to observe Wind direction by his/her visual

(1) Current Status of Meteorological Instrument (rain gauge) (1/2)

Tipping bucket type

It become to be popular

Reserve pot type

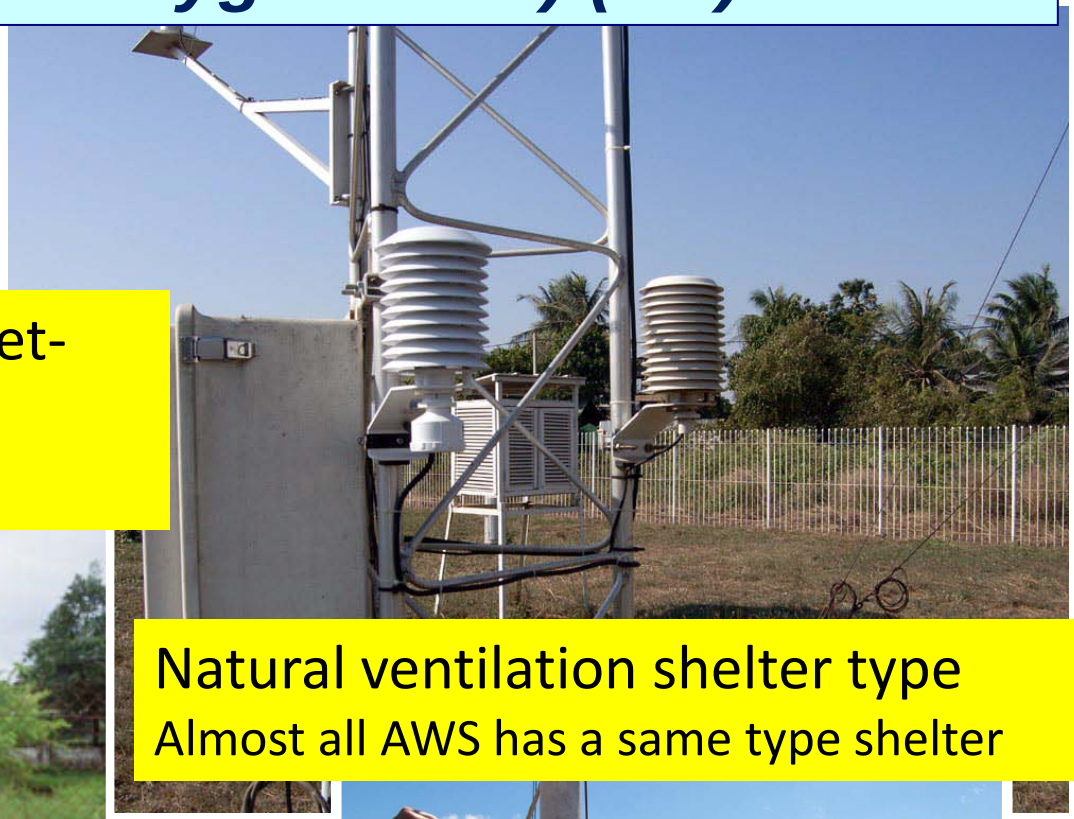
It is very popular at almost all NMHSCs

(1) Current Status of Meteorological Instrument (rain gauge) (2/2)

Pluviograph type

Few countries use it for actual usage and at many NMHSCs, Recording Chart is not set up

(1) Current Status of Meteorological Instrument (Thermometer / Hygrometer) (1/2)



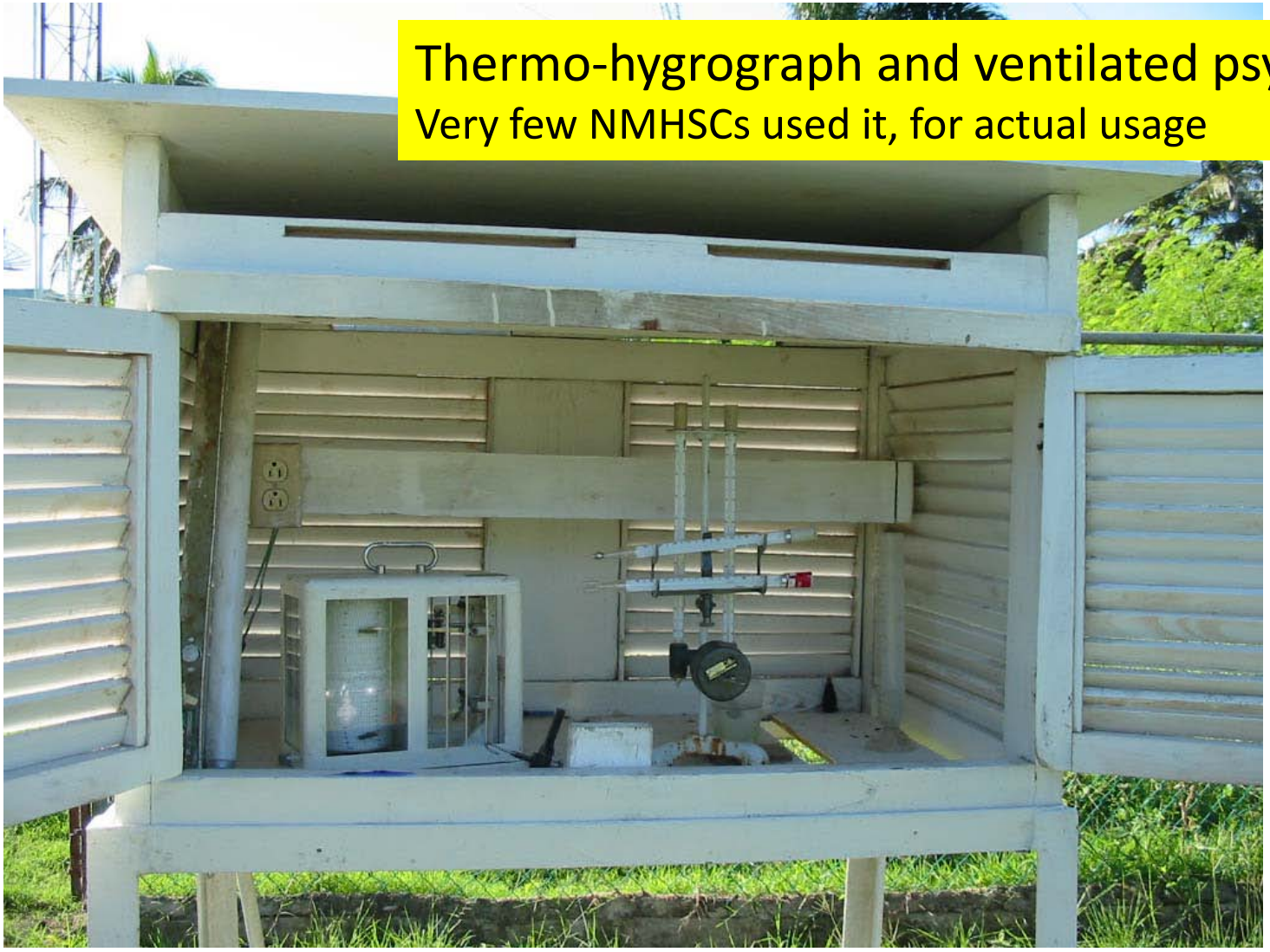
Mercury thermometer and wet-bulb in a Screen

It is used at every NMHSCs

Natural ventilation shelter type

Almost all AWS has a same type shelter

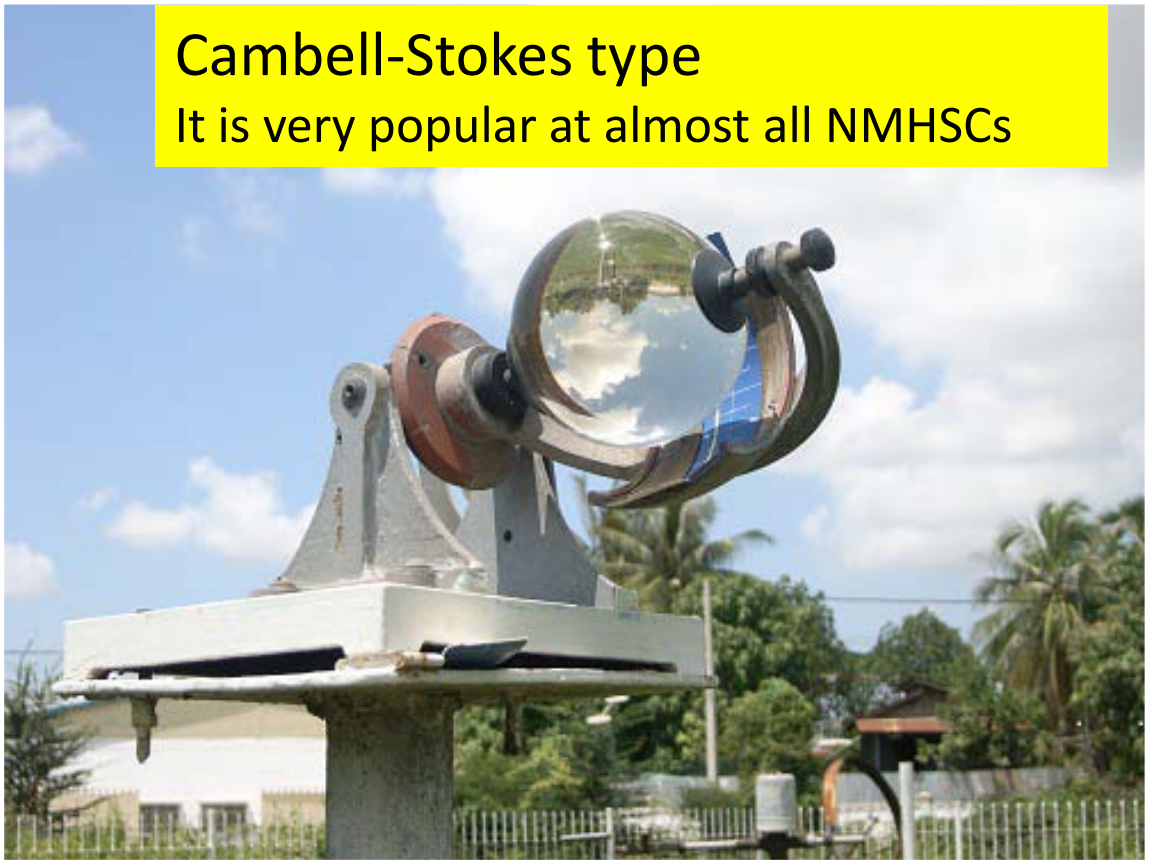
(1) Current Status of Meteorological Instrument (Thermometer / Hygrometer) (2/2)



Thermo-hygrograph and ventilated psychrometer

Very few NMHSCs used it, for actual usage

(1) Current Status of Meteorological Instrument (Actinometer / Sunshine recorder) (1/2)



Cambell-Stokes type

It is very popular at almost all NMHSCs

Thermopile type

(1) Current Status of Meteorological Instrument (Actinometer / Sunshine recorder) (2/2)

Recording Actinometer

Instrument has installed, however, almost all Recorder doesn't work

(1) Current Status of Meteorological Instrument (Barometer) (1/1)

Fortin type Barometer

It is installed almost all NMHSC including Local Observatories

Aneroid Barograph

Only few NMHSCs used it actually

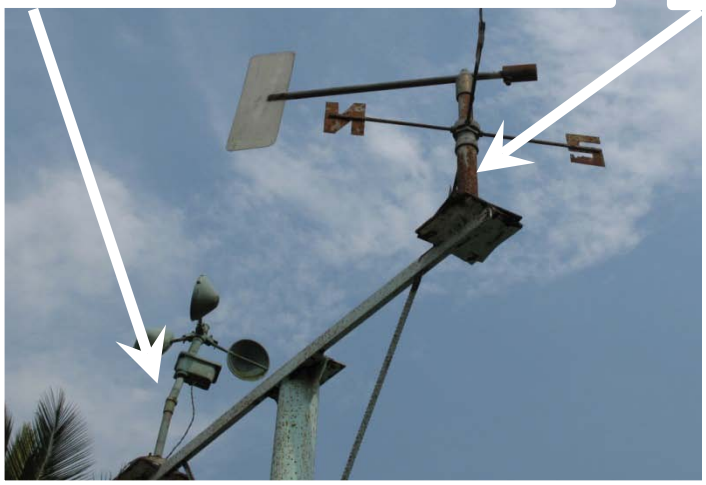
Digital Barometer

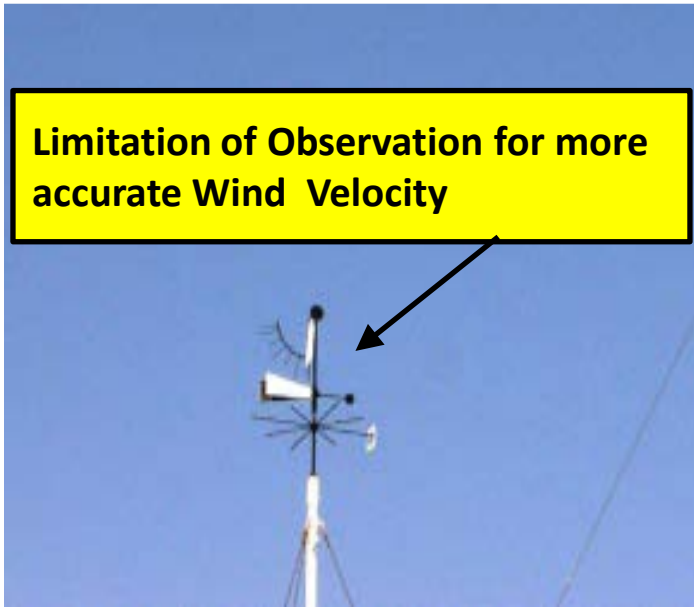
Few NMHSCs used it as the standard Instrument

(2) Maintenance of Meteorological Instrument (wind vane / anemometer) (1/2)

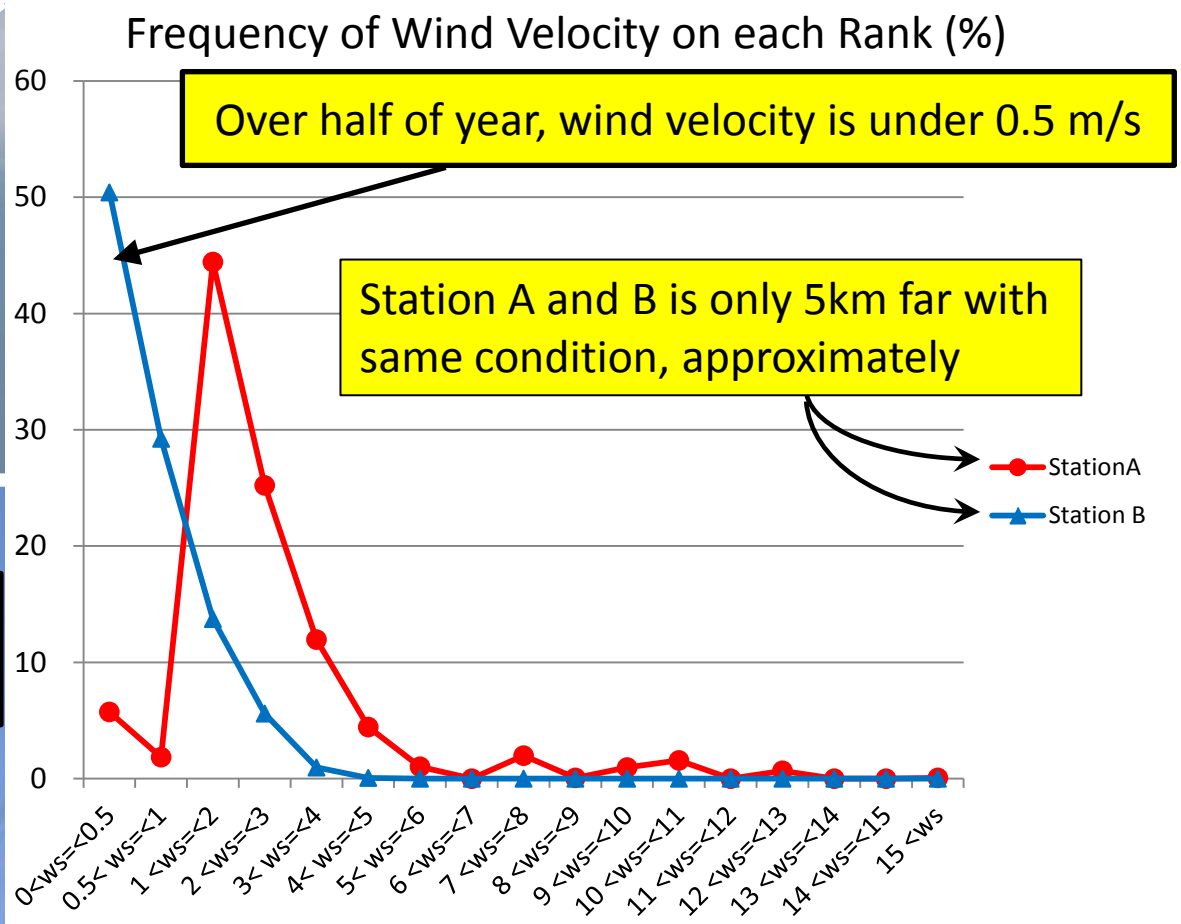
A shaft of Anemometer bends at this point

It become rusty

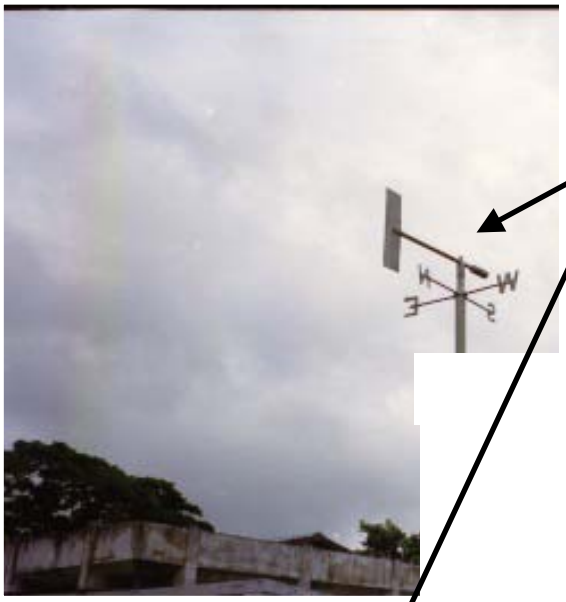


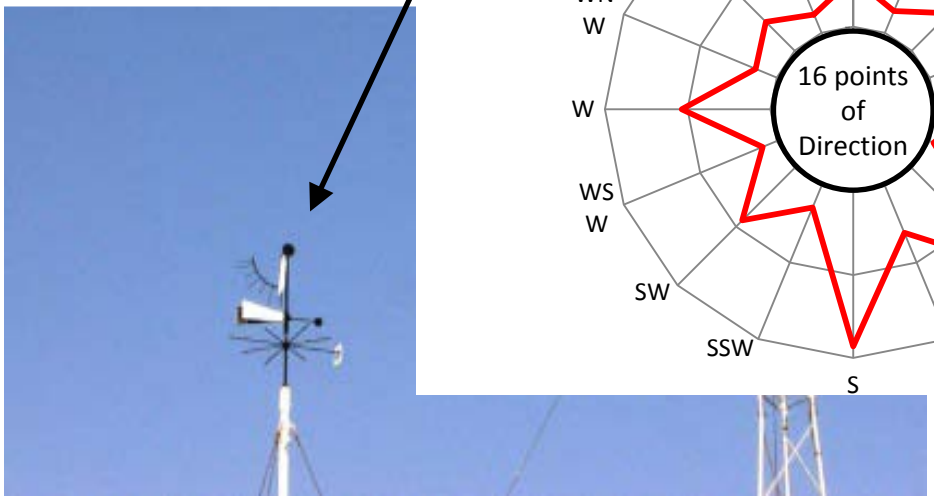


Limitation of Observation for more accurate Wind Velocity



(2) Maintenance of Meteorological Instrument (wind vane / anemometer) (2/2)



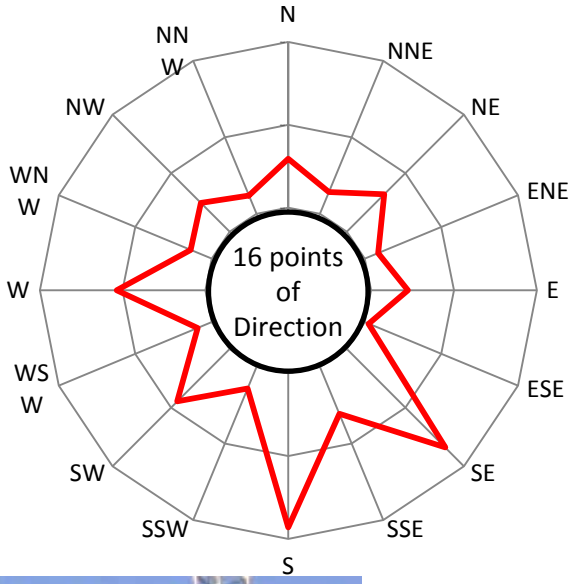


Limitation of Observation of wind direction

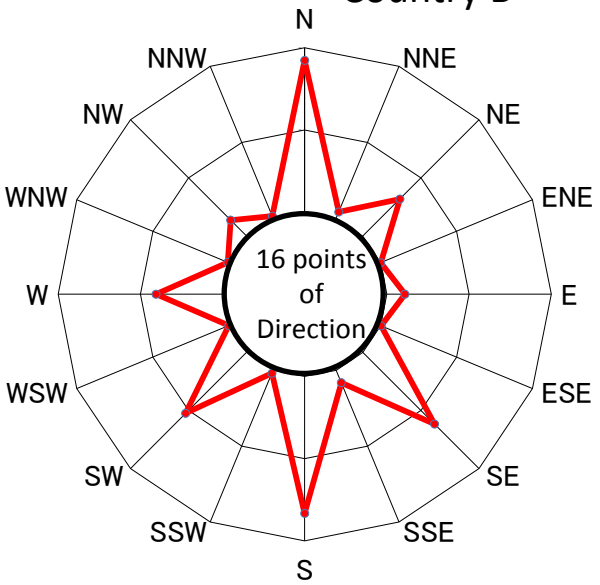
Windrose (Annual)

(by 6 hourly Synoptic Observation Data)

Country A

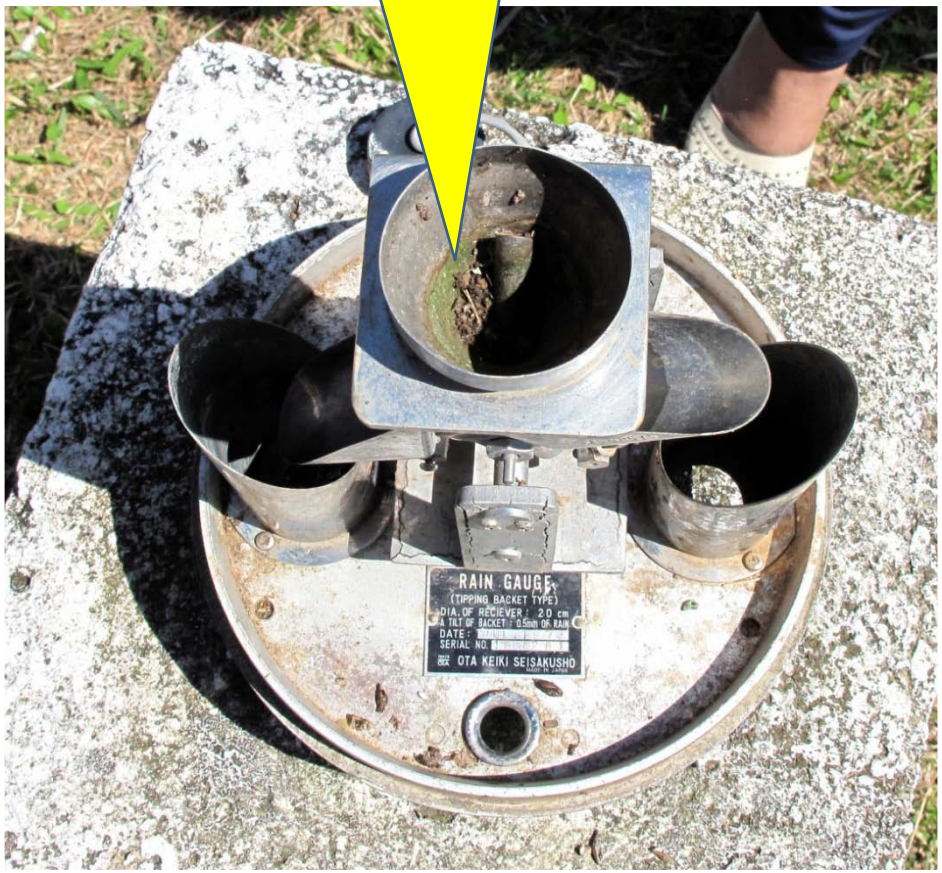


Country B



(2) Maintenance of Meteorological Instrument (Rain gauge)

It needs a more detailed maintenance



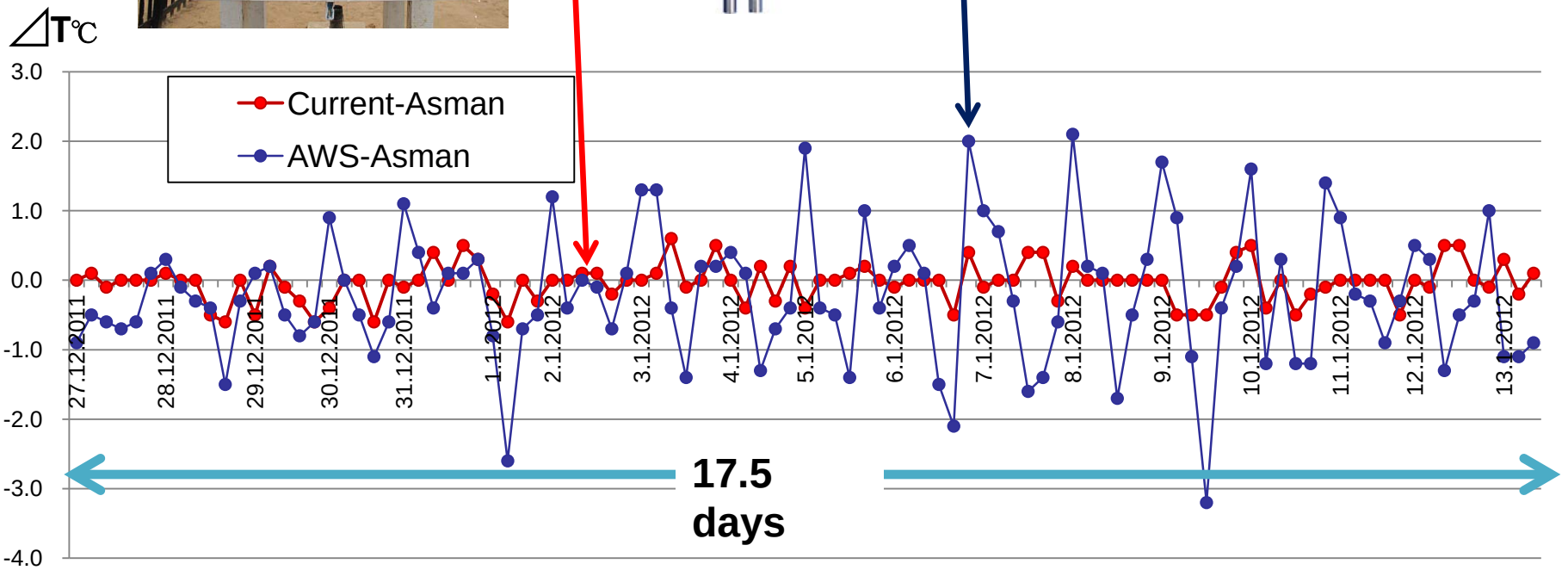
This type is made with low cost, however it may includes some observation error

(2) Maintenance of Meteorological Instrument (Thermometer)

Assmann aspiration psychrometer (as Standard Instrument)

Comparison

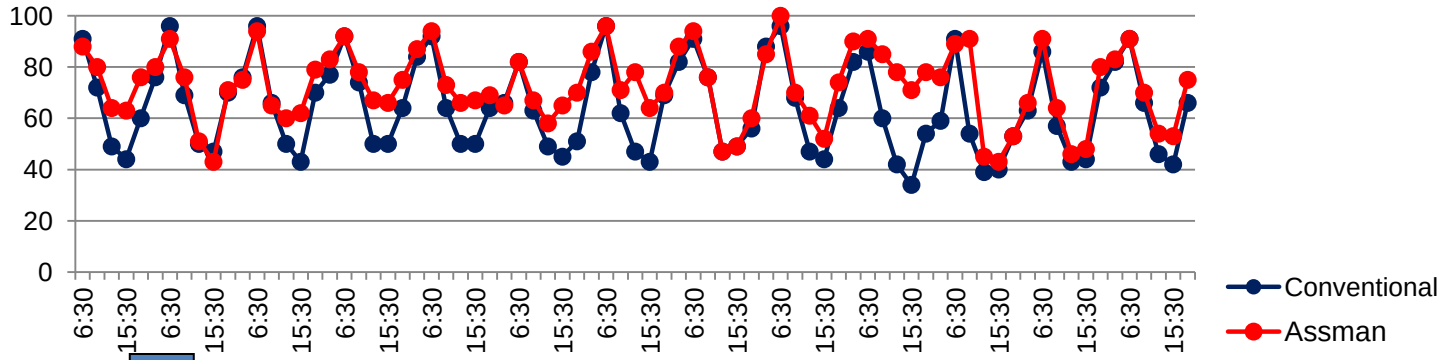
Comparison



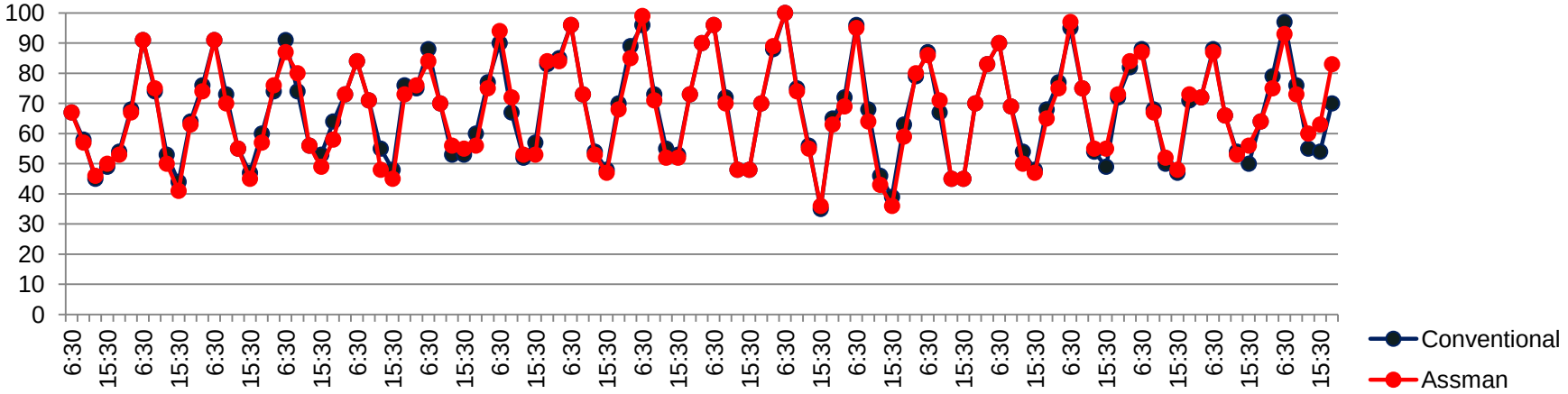
(2) Maintenance of Meteorological Instrument (Hygrometer) (1/2)

(2) Maintenance of Meteorological Instrument (Hygrometer) (2/2)

Before exchange of Cotton textile



After exchanging of Cotton textile and cleaning up the wet bulb



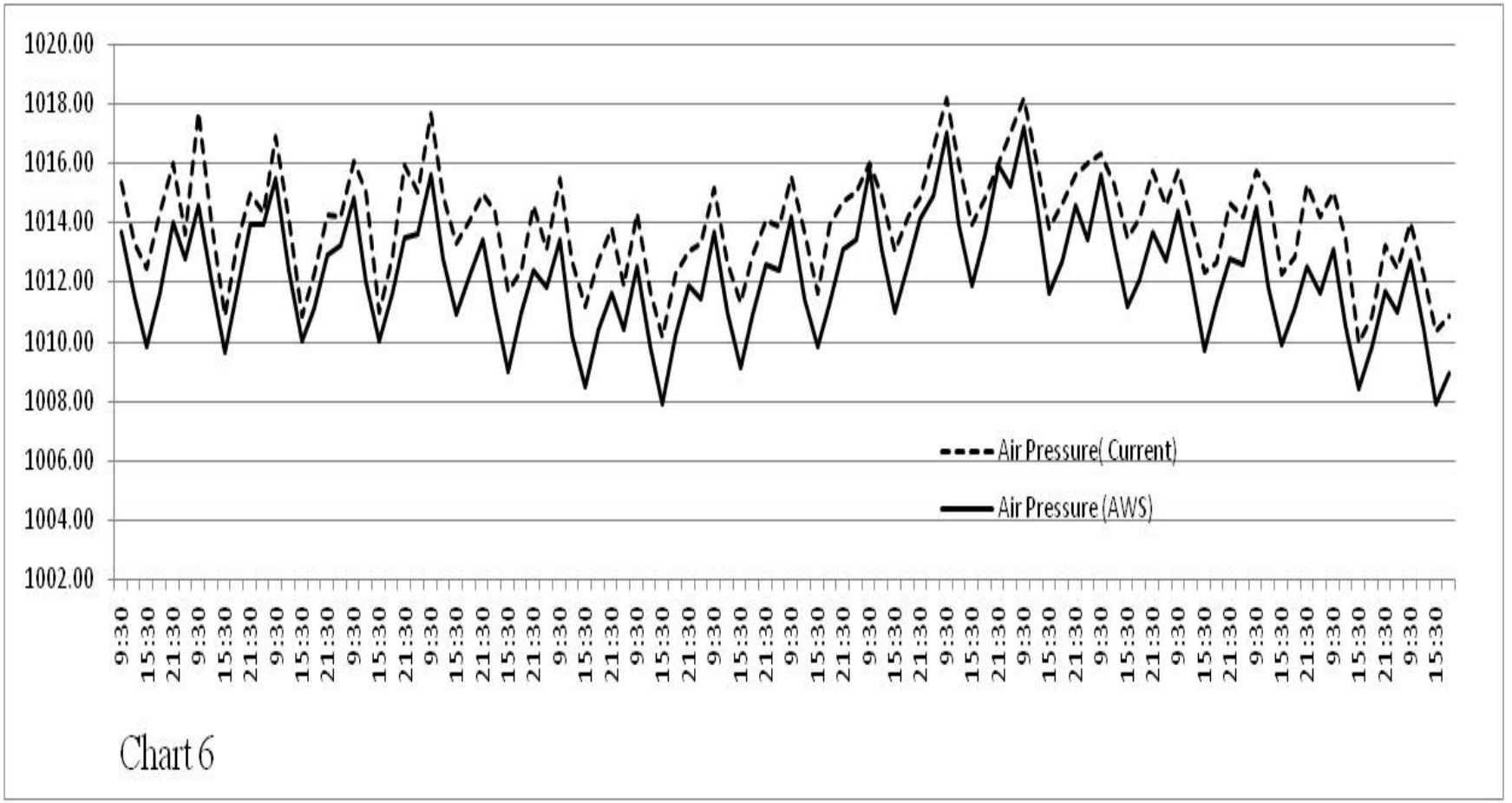
(2) Maintenance of Meteorological Instrument (Barometer) (1/2)

Over 30 years has passed since its installation

Its accuracy is concerned

(2) Maintenance of Meteorological Instrument (Barometer) (2/2)

Distance Between 2 sensors : 40 m
Height difference : Digital type is 3 m lower than Current barometer)



(3) Simple Mobile Type AWS for Site Calibration

Calibrated by JMA, Battery driven, can be stored in car Trunk (Designed by AKATSU Kunio)

- Data Logger
- Anemometer & wind vane
- Thermometer
- Hygrometer
- Actinometer
- Digital Barometer
- Container

- Assmann

(4) Summary of the Current Status of Meteorological Instrument

(1) On the Management of Quality Control of Meteorological Instruments

- *Only few NMHSCs carry out the Regular Maintenance and Repair*
- *Only few NMHSCs have a system of traceability*
- *However, almost all NMHSCs have some concern on the quality of observation data*

(2) (In future) Necessity of preparation of National Standard Instruments at each NMHSC

(5) Points to be Taken Care in case of AWS.

1. General condition of AWS in many NMHSCs

There are a lot of AWSs which doesn't work or out of order in many NMHSCs

2. Points to be taken care in case of AWS

(1) AWS requires a high technology for maintenance

- *Maintenance staff have to master AWS by reading its technical manual*

(2) Concerning Data Processing Units

- *Keep away from small insects and dust*
- *Keep away from very hot and high humid condition as possible as*
- *Protect from long time power cut off*
- *Utilize a OVP and AVR device and UPS*

3. Carry out the comparative analysis between Conventional and AWS data


Thank you
for
Your attention
Kunio AKATSU