

Toward Implementation of WIGOS

- Activity of JMA in RA II -

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1. RIC-Tsukuba



ISO/IEC 17025 accredited
(temperature, pressure, humidity)



JMA/WMO Training Workshop on Calibration and Maintenance of Meteorological Instruments in RA II
(19-22 Feb 2013, Tokyo & Tsukuba, Japan)

Calibration Records in RIC-Tsukuba

- 2000: Thailand (barometer, thermometer)
- 2001: Republic of Korea (anemometer)
- 2006: Philippines (pyranometer)
- 2007: Thailand (barometer, thermometer)
Hong Kong, China (barometer)
- 2010: Thailand (barometer, thermometer, anemometer)
- 2012: Oman (barometer, thermometer, hygrometer)
Indonesia (barometer, thermometer, hygrometer)
- 2013: Bangladesh (barometer, thermometer)



Upon requests of Members, RIC-Tsukuba implements calibration of their instrument in order to achieve internationally reliable observations, preferably traceable to SI.

Calibration of thermometer
(Liquid-in-glass thermometer)

Capacity Development of RA II Members

Maybe low-profile, but most important activities for WIGOS implementation !!



Training at RIC Tsukuba (Japan)



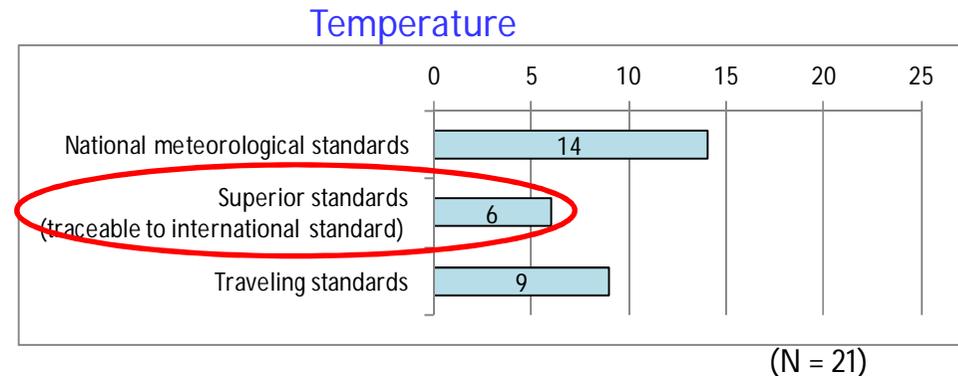
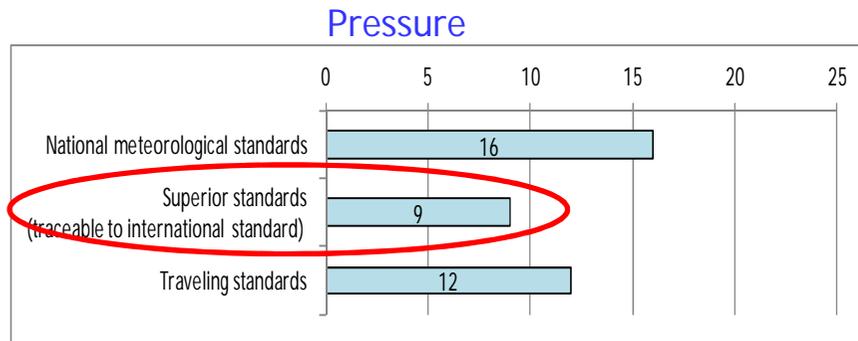
Training at BMD HQ (Bangladesh)

In 2014, BMD started instrument calibration services using newly provided meteorological standard and calibration equipment donated by JICA (Japan International Cooperation Agency).

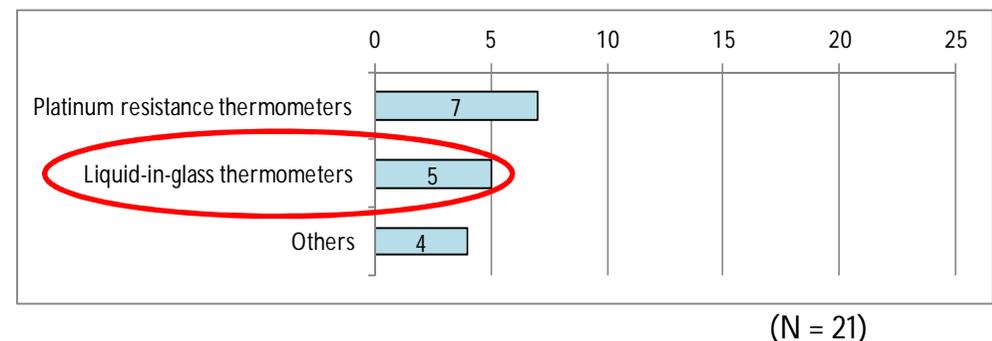
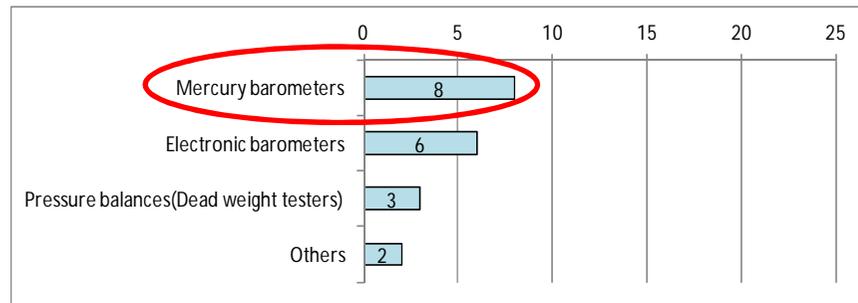
JMA RIC-Tsukuba was actively involved in this JICA project thru training activities both in Japan and Bangladesh.

WMO/JMA Survey on Meteorological Instruments, Calibration and Training in RA II

*** Traceability to international standards ***



*** Instrument type/method of National Meteorological Standards ***

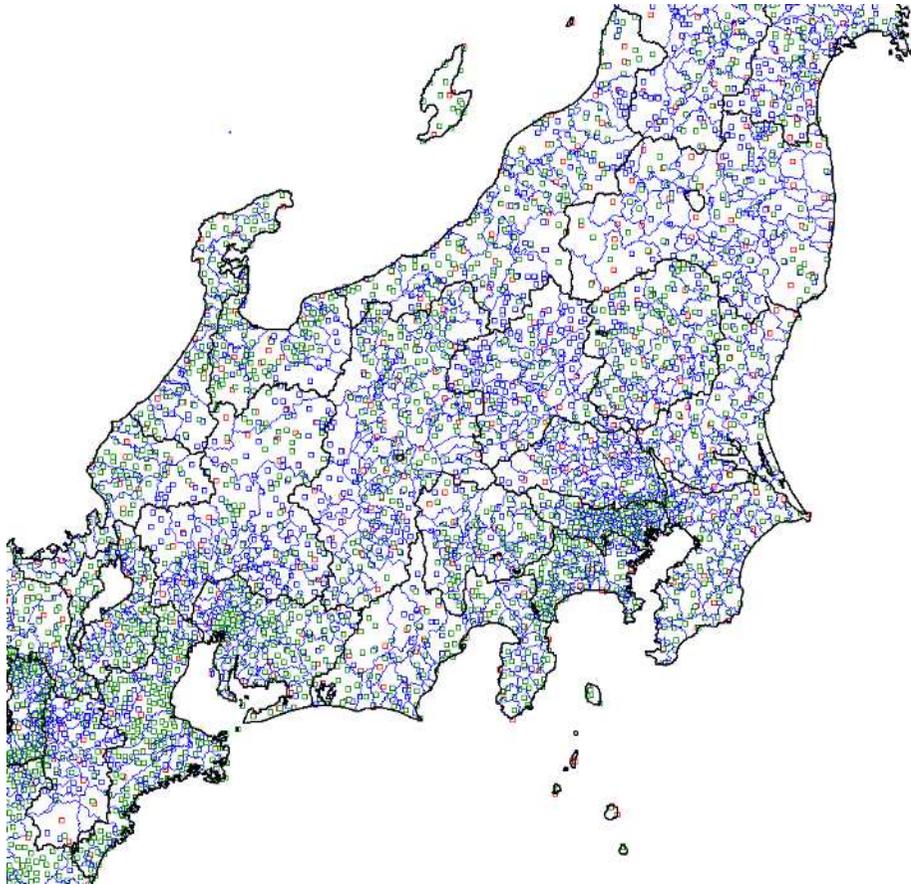


The survey (2011) revealed that

- Less than 50% of Members (who responded the questionnaire) had national meteorological standards traceable to international standards.
- Conventional instruments (mercury barometers etc.) were still widely used operationally rather than electrical instruments.

2. Japanese version of WIGOS

Rain-gauge

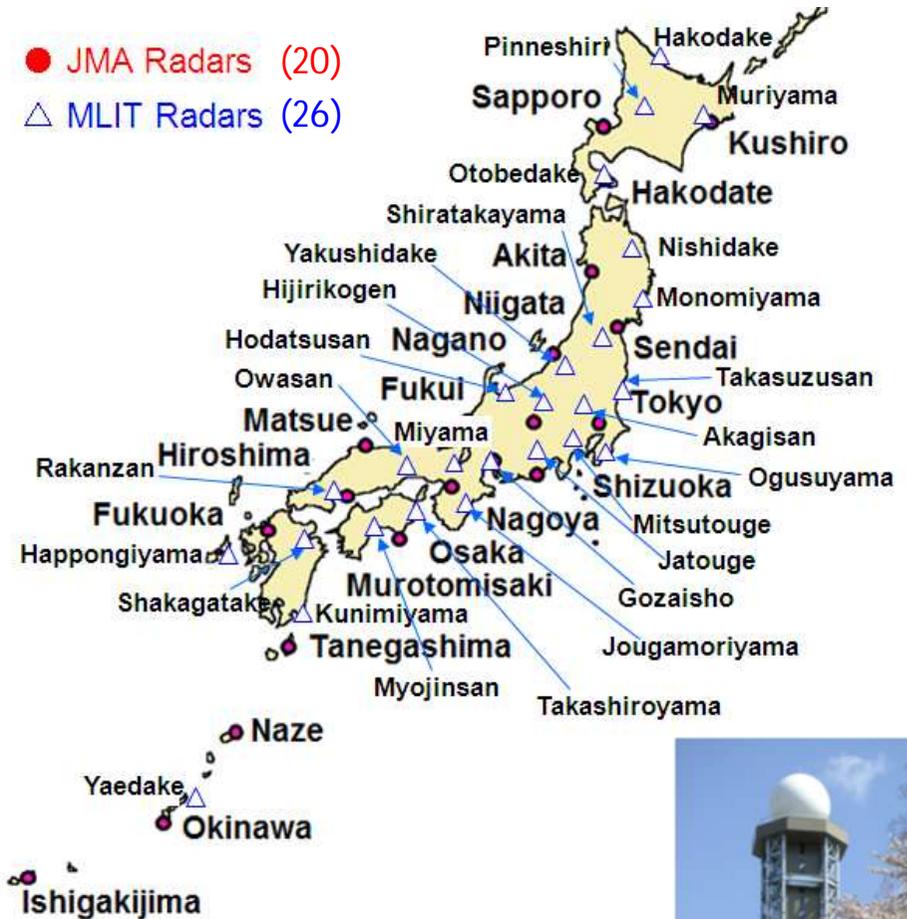


JMA (1,300)

Ministry of Land, Infrastructure, Transport and Tourism (MLIT) (3,400)

Local government (5,800)

Radar



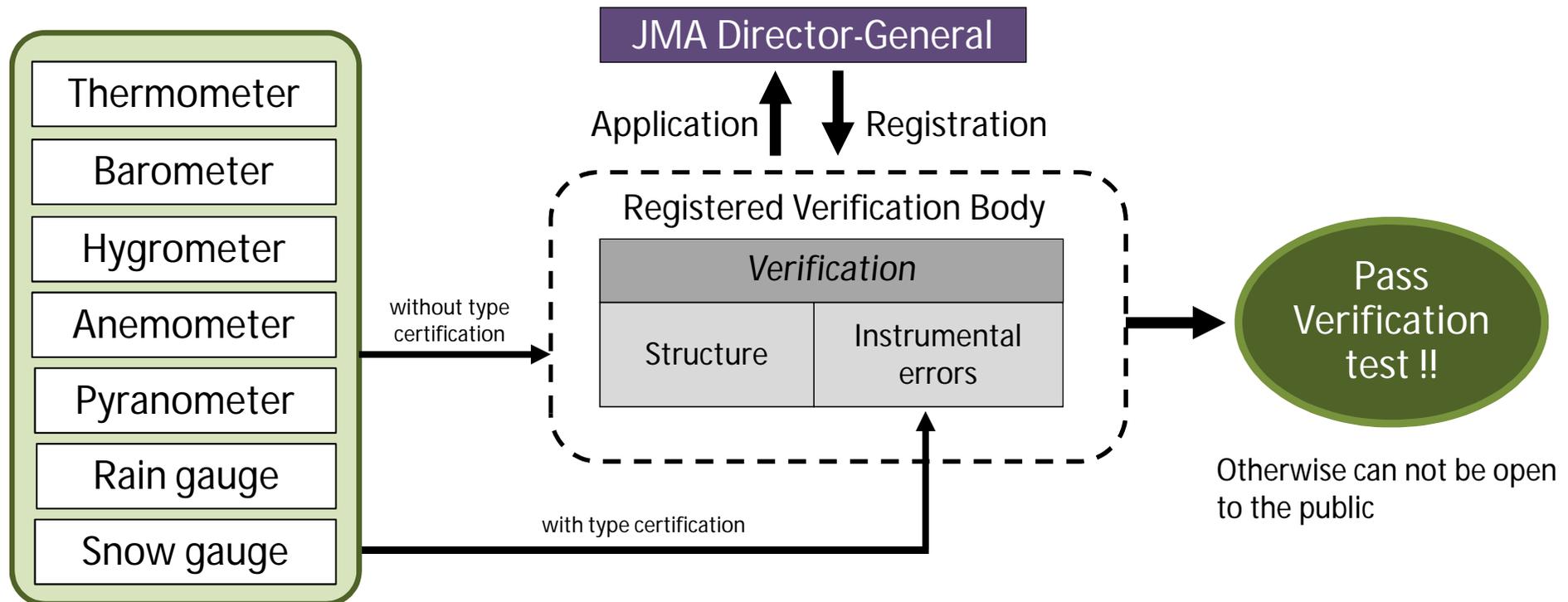
Non-JMA observations are used operationally.
To achieve this, QC is very important.

Met. Instrument Verification System

Meteorological Service Act in Japan legally stipulates as follows

Any meteorological instruments to be used for the following purposes shall pass the verification test:

- (1) for announcement of the result thereof
- (2) for use of the result thereof in disaster prevention



3. Radar Composite in ASEAN Region

- Capacity Building in Radar Techniques in the Southeast Asia is recognized as a WMO Regional WIGOS project.
- Even developed NMHSs in the region (such as Thailand, Indonesia, Malaysia etc.) can not achieve radar composite image with satisfying quality.
- In this connection, “ASEAN radar workshop” was led by Japanese experts from JMA, radar manufacture and University.



ASEAN Radar Workshop

(Bangkok, Thailand, Feb – Mar 2014)



This workshop, coordinated by JMA, provided **an excellent and first opportunity in the region** to exchange radar information, and shared common technical issues to be improved.

4. Wind Profiler



Outline of Wind Profiler Observation

WINDAS

Wind Profiler **N**etwork and **D**ata **A**cquisition **S**ystem

April 2001: Operation started (25 stations)

March 2003: 6 stations added

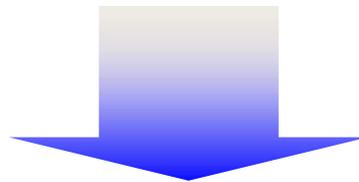
March 2012: 2 updated stations added

March 2014: 31 remained stations updated

Average horizontal distance: 120 - 150 km

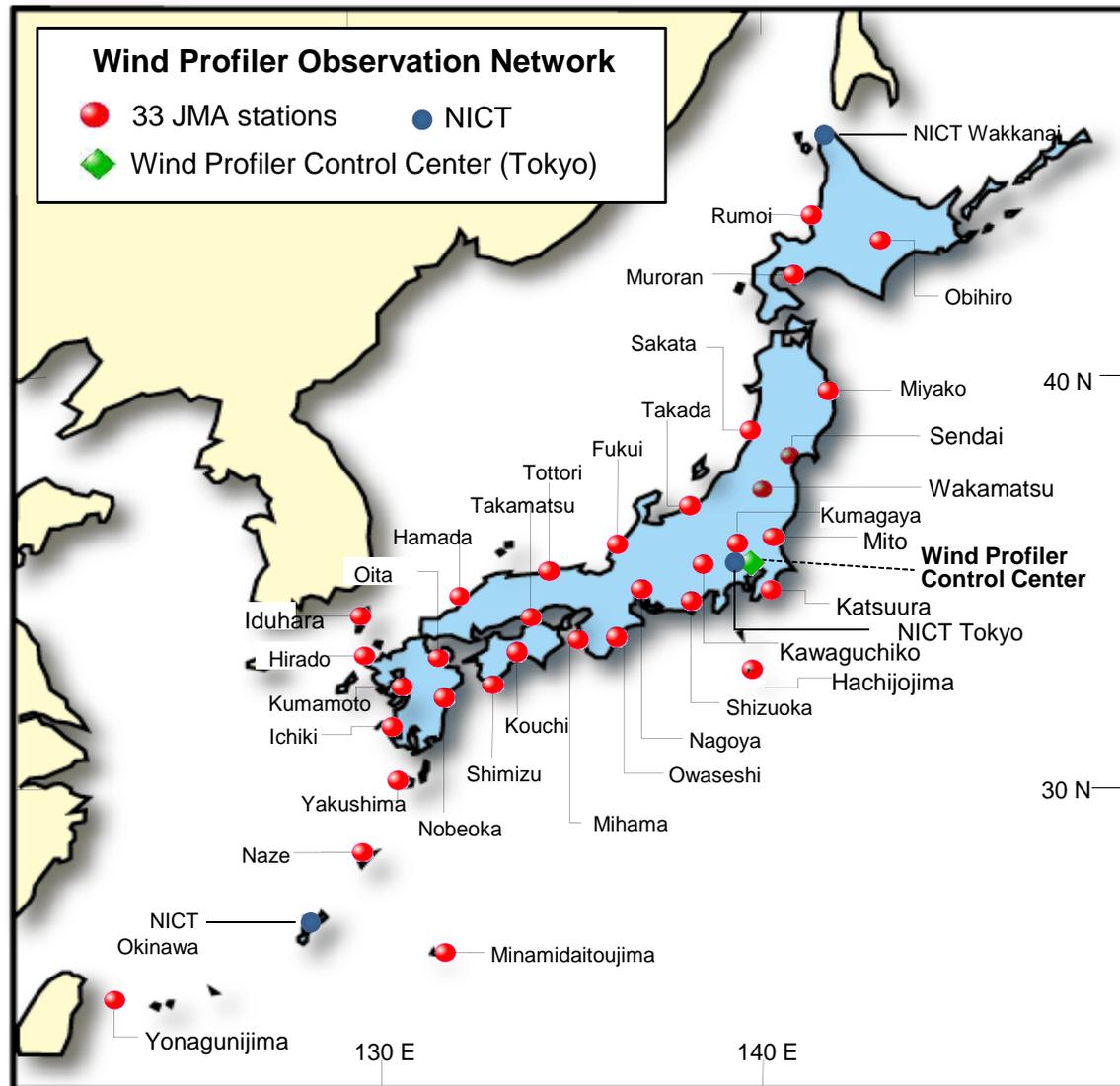
Observation frequency: every 10 minutes

Observed altitude: up to 10 km



WINDAS has improved monitoring of meso-scale phenomena which may cause disasters (heavy rain, snow etc.)

Wind Profiler Observation Network



How it looks



Normal appearance
(Owase station, Mie prefecture)



For snowy area
(Obihiro station, Hokkaido)

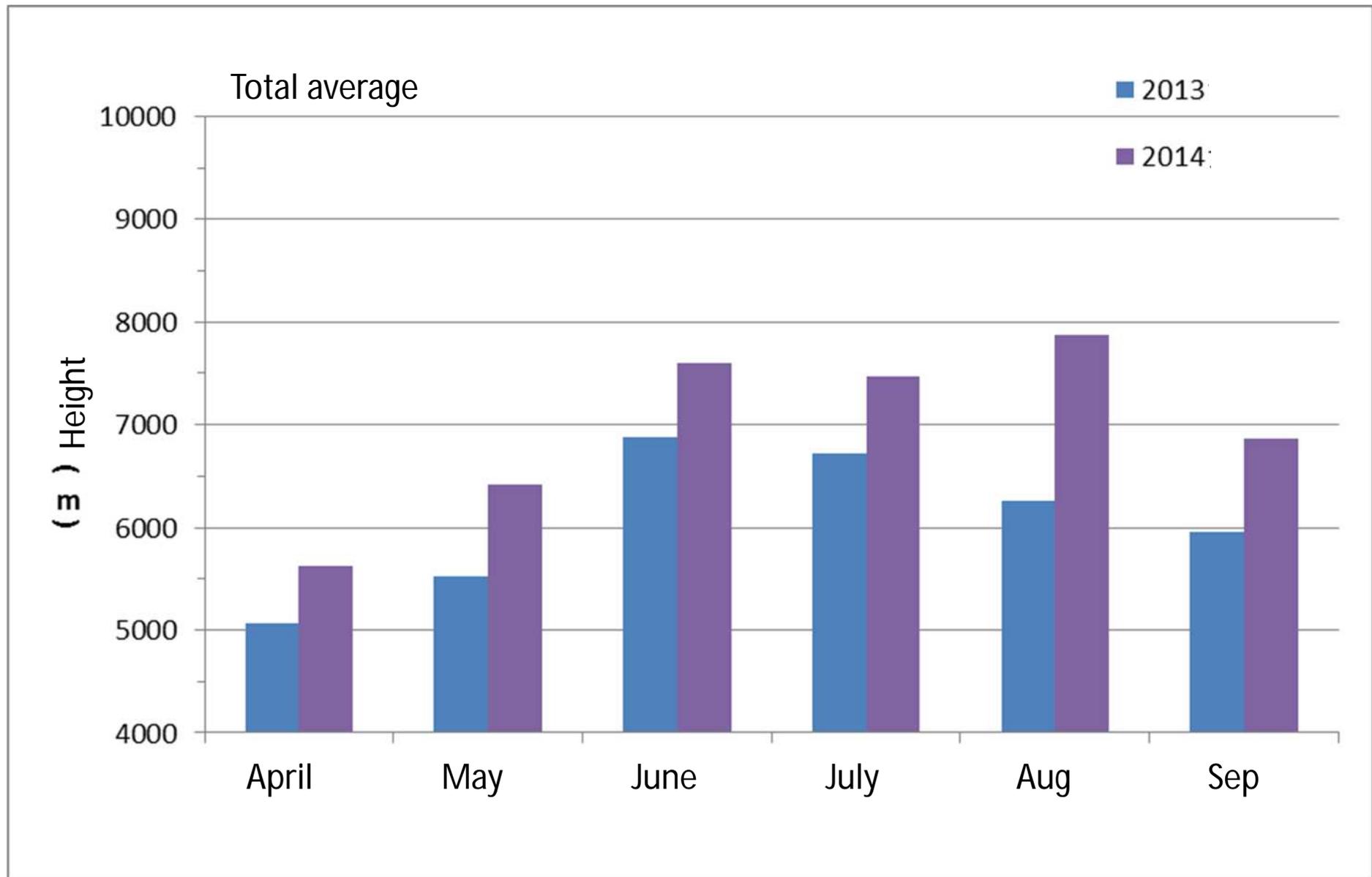
Specifications of Wind Profilers

	Old system	New system
Type of radio wave	10MOMON	4M70Q1N
Peak power	less than 2 KW	less than 4.8 KW
Frequency	1357.5 MHz	1357.4 MHz
Occupied bandwidth	less than 10 MHz	less than 4.7 MHz
Antenna gain	34.0 dBi	31.6 dBi
Beam width	3.1 °	3.9 °
Pulse width	0.67μs, 1.33μs, 2.00μs, 4.00μs	0.67μs, 1.33μs, 2.00μs, 4.00μs
Pulse repetition frequency	5kHz, 10kHz, 15kHz, 20kHz	5kHz, 8.33kHz, 0kHz, 20kHz
Power consumption	14 kVA	15 kVA

Major improvements

- increase transmission power to expand maximum detection altitude
- decrease occupied frequency bandwidth to effectively utilize radio waves

Monthly means of height coverage of wind measurement



Summary

- ◆ In RA II, regional WIGOS projects are ongoing.
Examples are “Improving Data Availability and Quality of Observations” and “Capacity Building in Radar Techniques in the Southeast Asia”
- ◆ According to WMO/JMA survey (2011), less than 50% of Members (who responded the questionnaire) had national meteorological standards traceable to international standards.
WMO/RIC activities should be duly recognized by WMO and further enhanced to ensure traceability of observations.

Summary

- ◆ Meteorological observations (open to the public and/or internationally exchangeable) should be well quality controlled.

Once achieved, NMHSs will get benefits of WIGOS concept (Japanese version WIGOS can be one of the best practice)

- ◆ Experience of advanced observations (such as Wind profilers, radars) can be shared among WMO Members.

Thru Expert Teams of CIMO, CBS etc., JMA experts would be happy to contribute to improve meteorological observations worldwide.

Thank you for your attention

