



Our ref.: DRA-AP/RA II/OBS (Survey)

GENEVA, 12 December 2011

Annex: 1 (available in English only)

Subject: Questionnaire on Meteorological Instruments, Calibration and Training in Regional Association II (Asia)

Action required: Completed questionnaire to be returned to the Regional Instrument Centre Tsukuba (Japan) not later than **31 January 2012**

Dear Sir/Madam,

I would like to inform you that the JMA/WMO Workshop on Quality Management in Surface, Climate and Upper-air Observations in Regional Association II (Asia) held in Tokyo, Japan, in July 2010, concluded that the primary factors adversely affecting data quality in RA II are calibration and maintenance of instruments mainly due to lack of traceability of measurements to international standards and calibration facilities. It indicated that there are strong needs for capacity building programmes on calibration and data quality management among Members. It recommended that services of Regional Instrument Centres (RICs) should be fully utilized by RA II Members to address these issues.

The Commission for Instruments and Methods of Observation (CIMO), at its fifteenth session held in Helsinki, Finland in September 2010, recommended that RICs maintain a database of the standards used by the Members of the Region and already calibrated by the RICs, develop necessary training materials, and organize training events to improve understanding of traceability of measurements to international standards in the Region in collaboration with CIMO.

With regard to measurement of radiation, Regional Radiation Centres (RRCs) are designated to serve as centres for intraregional comparisons of radiation instruments within the Region and to maintain the standard instrument necessary for this purpose and they shall provide the necessary outdoor facilities for simultaneous comparison of national standard radiometers from the Region.

To: Permanent Representatives of Members of Regional Association II (ASE-603)

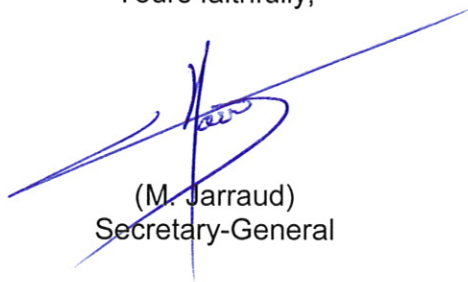
cc: President of RA II )  
Vice-president of RA II ) (for information)  
President of CIMO )

The attached questionnaire is based on the work of RIC Tsukuba and RIC Beijing together with RRC Tokyo and RRC Pune to assess the capability of calibrations of the RA II Members as well as their needs for services provided by RICs and RRCs including provision of training materials and training events to the Members. The results of the survey will be utilized for RICs and RRCs to enhance their capability and available services for improvement of quality of observational data in RA II in an efficient and effective manner.

In this connection, and to facilitate the work of RICs and RRCs, I would appreciate it if you could kindly send to the RIC Tsukuba (Japan) the duly completed questionnaire as soon as possible, but preferably **not later than 31 January 2012**.

Your cooperation in this matter will be highly appreciated.

Yours faithfully,

A handwritten signature in blue ink, consisting of a stylized 'M' followed by a horizontal line and a vertical line, with a small loop at the end.

(M. Jarraud)  
Secretary-General

# WORLD METEOROLOGICAL ORGANIZATION

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## QUESTIONNAIRE ON METEOROLOGICAL INSTRUMENTS, CALIBRATION AND TRAINING IN REGIONAL ASSOCIATION II (ASIA)

This questionnaire is based on the work of Regional Instrument Centre (RIC) Tsukuba and RIC Beijing together with Regional Radiation Centres (RRC) Tokyo and RRC Pune to assess the capability of calibrations of the RA II Members as well as their needs for services provided by RICs and RRCs including provision of training materials and training events to the Members.

Results of the survey will be utilized for RICs and RRCs to fully utilize their capability and available services for improvement of quality of observational data in RA II in an efficient and effective manner.

Name of Member: \_\_\_\_\_

### Person filling out this form:

Title: Mr ☐ Ms ☐ Dr ☐ Prof. ☐ (Please tick appropriate)

Name: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Telephone: \_\_\_\_\_

Facsimile: \_\_\_\_\_

Email: \_\_\_\_\_

Date: \_\_\_\_\_

(Signature of Permanent Representative)

## Part I. Instruments and calibration

### Q 1. Instruments in operational use

(Q 1-1) Which instruments do you use for operational observation? Please choose the types/methods of instruments by ticking the appropriate boxes and describe the manufactures and the models of the instruments. If you use two or more manufacturers or models in one type/method of instruments, please describe it/them in "others " box(es) additionally.

Then follow the questions on the status of calibration. Are the instruments calibrated with standard instruments? If "Yes", how often calibrations are performed?.

#### (a) Pressure

- ☐ Mercury barometer

Manufacturer: \_\_\_\_\_ Calibration:

Model: \_\_\_\_\_ ☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

- ☐ Aneroid barometer

Manufacturer: \_\_\_\_\_ Calibration:

Model: \_\_\_\_\_ ☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

- ☐ Barograph

Manufacturer: \_\_\_\_\_ Calibration:

Model: \_\_\_\_\_ ☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

- ☐ Electronic barometer

Manufacturer: \_\_\_\_\_ Calibration:

Model: \_\_\_\_\_ ☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

- ☐ Others (Type/method of the instrument: \_\_\_\_\_)

Manufacturer: \_\_\_\_\_ Calibration:

Model: \_\_\_\_\_ ☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

- ☐ Others (Type/method of the instrument: \_\_\_\_\_)

Manufacturer: \_\_\_\_\_ Calibration:

Model: \_\_\_\_\_ ☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

**(b) Temperature**

- ☐ Liquid-in-glass thermometer

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Thermograph

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Electrical thermometer

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Others(Type/method of the instrument: \_\_\_\_\_)

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Others(Type/method of the instrument: \_\_\_\_\_)

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

**(c) Humidity**

- ☐ Assmann aspirated psychrometer

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Other psychrometer (Name of the instrument: \_\_\_\_\_)

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Hair hygrometer

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Lithium-chloride heated condensation hygrometer

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Electrical hygrometer

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Others(Type/method of the instrument: \_\_\_\_\_)

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Others(Type/method of the instrument: \_\_\_\_\_)

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

#### **(d) Wind**

- ☐ Cup anemometer

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Wind vane

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Pressure tube anemometer

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Propeller anemometer and vane

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Sonic anemometer

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Others(Type/method of the instrument: \_\_\_\_\_)

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Calibration:

- ☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals

☐ No

- ☐ Others(Type/method of the instrument: \_\_\_\_\_)

Manufacturer: \_\_\_\_\_

Calibration:

Model: \_\_\_\_\_

☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

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**(e) Precipitation**

- ☐ Ordinary gauge

Manufacturer: \_\_\_\_\_

Calibration:

Model: \_\_\_\_\_

☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

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- ☐ Weighing gauge

Manufacturer: \_\_\_\_\_

Calibration:

Model: \_\_\_\_\_

☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

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- ☐ Tipping bucket gauge

Manufacturer: \_\_\_\_\_

Calibration:

Model: \_\_\_\_\_

☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

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- ☐ Float gauge

Manufacturer: \_\_\_\_\_

Calibration:

Model: \_\_\_\_\_

☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

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- ☐ Others(Type/method of the instrument: \_\_\_\_\_)

Manufacturer: \_\_\_\_\_

Calibration:

Model: \_\_\_\_\_

☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

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- ☐ Others(Type/method of the instrument: \_\_\_\_\_)

Manufacturer: \_\_\_\_\_

Calibration:

Model: \_\_\_\_\_

☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

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**(f) Radiation**

- ☐ Pyrheliometer

Manufacturer: \_\_\_\_\_

Calibration:

Model: \_\_\_\_\_

☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

-----

- ☐ Pyranometer(thermoelectric, photoelectric, pyroelectric, bimetallic etc.)

Manufacturer: \_\_\_\_\_

Calibration:

Model: \_\_\_\_\_

☐ Yes-> ☐ Regular intervals: every\_\_years

☐ Irregular intervals

☐ No

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- |  |                     |   |
|--|---------------------|---|
| <input type="checkbox"/> Pyrgeometer                                   | Manufacturer: _____ | Calibration:  |
|  | Model: _____        | <input type="checkbox"/> Yes-> <input type="checkbox"/> Regular intervals: every__years |
|  |                     | <input type="checkbox"/> Irregular intervals  |
|  |                     | <input type="checkbox"/> No   |
| <hr/>  |                     |   |
| <input type="checkbox"/> Net radiometer                                | Manufacturer: _____ | Calibration:  |
|  | Model: _____        | <input type="checkbox"/> Yes-> <input type="checkbox"/> Regular intervals: every__years |
|  |                     | <input type="checkbox"/> Irregular intervals  |
|  |                     | <input type="checkbox"/> No   |
| <hr/>  |                     |   |
| <input type="checkbox"/> Sunphotometer                                 | Manufacturer: _____ | Calibration:  |
|  | Model: _____        | <input type="checkbox"/> Yes-> <input type="checkbox"/> Regular intervals: every__years |
|  |                     | <input type="checkbox"/> Irregular intervals  |
|  |                     | <input type="checkbox"/> No   |
| <hr/>  |                     |   |
| <input type="checkbox"/> Others(Type/method of the instrument : _____) |                     |   |
|  | Manufacturer: _____ | Calibration:  |
|  | Model: _____        | <input type="checkbox"/> Yes-> <input type="checkbox"/> Regular intervals: every__years |
|  |                     | <input type="checkbox"/> Irregular intervals  |
|  |                     | <input type="checkbox"/> No   |
| <hr/>  |                     |   |
| <input type="checkbox"/> Others(Type/method of the instrument: _____)  |                     |   |
|  | Manufacturer: _____ | Calibration:  |
|  | Model: _____        | <input type="checkbox"/> Yes-> <input type="checkbox"/> Regular intervals: every__years |
|  |                     | <input type="checkbox"/> Irregular intervals  |
|  |                     | <input type="checkbox"/> No   |

(g) Sunshine duration

- ☐ Campbell-Stokes sunshine recorder  
Manufacturer: \_\_\_\_\_  
Model: \_\_\_\_\_  
Calibration:  
☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals  
☐ No
- 
- ☐ Jordan sunshine recorder  
Manufacturer: \_\_\_\_\_  
Model: \_\_\_\_\_  
Calibration:  
☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals  
☐ No
- 
- ☐ Pyrheliometer  
Manufacturer: \_\_\_\_\_  
Model: \_\_\_\_\_  
Calibration:  
☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals  
☐ No
- 
- ☐ Photo voltaic cell recorder  
Manufacturer: \_\_\_\_\_  
Model: \_\_\_\_\_  
Calibration:  
☐ Yes-> ☐ Regular intervals: every\_\_years  
☐ Irregular intervals  
☐ No





## Q 2. National meteorological standards and traceability to an international standard

(Q 2-1) Do you maintain national meteorological standards\*? Please tick the appropriate boxes. If your answer is "Yes", please describe them.

If your answer is "No", skip to (Q 2-3).

(\*National meteorological standard: A standard recognized by a NMHS decision to serve, in a member country, as the basis for assigning values to other standards.)

(Q 2-2) If your answer is "Yes" in some questions of (Q 2-1), do you calibrate your national meteorological standards with superior standards which are traceable to international standards\*? Please tick the appropriate boxes.

If your answer is "Yes", please describe the superior standard.

(\*International standard: A standard recognized by an international agreement to serve internationally as the basis for assigning values to other standards of the quantity concerned.)

(Q 2-3) Do you have your traveling standards\*? Please tick the appropriate boxes.

If your answer is "Yes", please describe them.

(\*Traveling standard: A standard, sometimes of special construction, intended for transport between different locations.)

### **(a) Pressure**

#### **(Q 2-1) National meteorological standard**

☐ Yes --> Instrument type/method used:

☐ Pressure balance(Dead weight tester)

☐ No ☐ Mercury barometer

☐ Electronic barometer

☐ Others(\_\_\_\_\_)

Instrument manufacturer: \_\_\_\_\_

Instrument model: \_\_\_\_\_

The year of manufacture: \_\_\_\_\_

Uncertainty: \_\_\_\_\_(unit)

Date of the last calibration with a superior standard: \_\_\_\_\_

Interval of calibration with a superior standard : every \_\_\_\_\_ years

#### **(Q 2-2) Superior standard**

☐ Yes --> Instrument type/method used: \_\_\_\_\_

Instrument manufacturer: \_\_\_\_\_

☐ No Instrument model: \_\_\_\_\_

Uncertainty: \_\_\_\_\_(unit)

Possessor of the instrument: \_\_\_\_\_

#### **(Q 2-3) Traveling standard**

☐ Yes --> Instrument type/method used: \_\_\_\_\_

Instrument manufacturer: \_\_\_\_\_

☐ No Instrument model: \_\_\_\_\_

Uncertainty: \_\_\_\_\_(unit)

**(b) Temperature****(Q 2-1) National meteorological standard**

- ☐ Yes --> Instrument type/method used:  
☐ Platinum resistance thermometer  
☐ Liquid-in-glass thermometer  
☐ Others(\_\_\_\_\_)
- Instrument manufacturer: \_\_\_\_\_  
Instrument model: \_\_\_\_\_  
The year of manufacture: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)  
Date of the last calibration with a superior standard: \_\_\_\_\_  
Interval of calibration with a superior standard : every\_\_\_\_\_years

**(Q 2-2) Superior standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)  
Possessor of the instrument: \_\_\_\_\_

**(Q 2-3) Traveling standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)
- 

**(c) Humidity****(Q 2-1) National meteorological standard**

- ☐ Yes --> Instrument type/method used:  
☐ Chilled mirror dewpoint hygrometer  
☐ Electrical hygrometer  
☐ Psychrometer  
☐ Others(\_\_\_\_\_)
- Instrument manufacturer: \_\_\_\_\_  
Instrument model: \_\_\_\_\_  
The year of manufacture: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)  
Date of the last calibration with a superior standard: \_\_\_\_\_  
Interval of calibration with a superior standard : every\_\_\_\_\_years

**(Q 2-2) Superior standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)  
Possessor of the instrument: \_\_\_\_\_

**(Q 2-3) Traveling standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_

☐No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)

---

**(d) Wind**

**(Q 2-1) National meteorological standard**

☐Yes --> Instrument type/method used:  
☐Pitot tube  
☐No ☐Differential pressure  
☐Hot wire  
☐Others(\_\_\_\_\_) )  
Instrument manufacturer: \_\_\_\_\_  
Instrument model: \_\_\_\_\_  
The year of manufacture: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)  
Date of the last calibration with a superior standard: \_\_\_\_\_  
Interval of calibration with a superior standard : every\_\_\_\_\_years

**(Q 2-2) Superior standard**

☐Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_  
☐No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)  
Possessor of the instrument: \_\_\_\_\_

**(Q 2-3) Traveling standard**

☐Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_  
☐No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)

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**(e) Precipitation**

**(Q 2-1) National meteorological standard**

☐Yes --> Instrument type/method used:  
☐Weight  
☐No ☐Volume  
☐Others(\_\_\_\_\_) )  
Instrument manufacturer: \_\_\_\_\_  
Instrument model: \_\_\_\_\_  
The year of manufacture: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)  
Date of the last calibration with a superior standard: \_\_\_\_\_  
Interval of calibration with a superior standard : every\_\_\_\_\_years

**(Q 2-2) Superior standard**

☐Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_  
☐No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)  
Possessor of the instrument: \_\_\_\_\_

**(Q 2-3) Traveling standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_ (unit)
- 

**(f) Radiation**

**(f-1) Pyrheliometer**

**(Q 2-1) National meteorological standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
The year of manufacture: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_ (unit)  
Date of the last calibration with a superior standard: \_\_\_\_\_  
Interval of calibration with a superior standard : every \_\_\_\_\_ years

**(Q 2-2) Superior standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_ (unit)  
Possessor of the instrument: \_\_\_\_\_

**(Q 2-3) Traveling standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_ (unit)
- 

**(f-2) Pyranometer**

**(Q 2-1) National meteorological standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
The year of manufacture: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_ (unit)  
Date of the last calibration with a superior standard: \_\_\_\_\_  
Interval of calibration with a superior standard : every \_\_\_\_\_ years

**(Q 2-2) Superior standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_ (unit)  
Possessor of the instrument: \_\_\_\_\_

**(Q 2-3) Traveling standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_ (unit)
- 

**(f-3) Pyrgeometer**

**(Q 2-1) National meteorological standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
The year of manufacture: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_ (unit)  
Date of the last calibration with a superior standard: \_\_\_\_\_  
Interval of calibration with a superior standard : every \_\_\_\_\_ years

**(Q 2-2) Superior standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_ (unit)  
Possessor of the instrument: \_\_\_\_\_

**(Q 2-3) Traveling standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_ (unit)
- 

**(f-4) Sunphotometer**

**(Q 2-1) National meteorological standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
The year of manufacture: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_ (unit)  
Date of the last calibration with a superior standard: \_\_\_\_\_  
Interval of calibration with a superior standard : every \_\_\_\_\_ years

**(Q 2-2) Superior standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_
- ☐ No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_ (unit)  
Possessor of the instrument: \_\_\_\_\_

**(Q 2-3) Traveling standard**

- ☐ Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_

☐No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)

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**(g) Sunshine duration**

**(Q 2-1) National meteorological standard**

☐Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_  
☐No Instrument model: \_\_\_\_\_  
The year of manufacture: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)  
Date of the last calibration with a superior standard: \_\_\_\_\_  
Interval of calibration with a superior standard : every \_\_\_\_\_years

**(Q 2-2) Superior standard**

☐Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_  
☐No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)  
Possessor of the instrument: \_\_\_\_\_

**(Q 2-3) Traveling standard**

☐Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_  
☐No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)

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**(h) Others(Name of the instrument: \_\_\_\_\_)**

**(Q 2-1)National meteorological standard**

☐Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_  
☐No Instrument model: \_\_\_\_\_  
The year of manufacture: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)  
Date of the last calibration with a superior standard: \_\_\_\_\_  
Interval of calibration with a superior standard : every \_\_\_\_\_years

**(Q 2-2) Superior standard**

☐Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_  
☐No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)  
Possessor of the instrument: \_\_\_\_\_

**(Q 2-3) Traveling standard**

☐Yes --> Instrument type/method used: \_\_\_\_\_  
Instrument manufacturer: \_\_\_\_\_  
☐No Instrument model: \_\_\_\_\_  
Uncertainty: \_\_\_\_\_(unit)

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(Q 2-4) Supplementary comments with regard to (Q2-1)-(Q2-3), if any.

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**Q 3. Needs for calibration of standard instruments with RIC or RRC standards**

**(Q 3-1) If your answer is “Yes” in (Q 2-1), do you wish to calibrate your standard instruments with the standard instruments that RICs or RRCs own? Please tick the appropriate box.**

***If your answer is “No”, skip to (Q 3-4).***

☐Yes      ☐No

(If your answer is “yes”, we will additionally contact you to ask your requirements in detail at a later date.)

**(Q 3-2) If your answer is “yes” in (Q 3-1), which standard instruments do you wish to calibrate? Please tick the appropriate boxes.**

**Then follow the questions on how you wish to perform the calibration? If you want to bring your own standard instruments to RICs/RRCs and have them calibrated there, choose “1”. If you want to calibrate your standard instruments on your own with traveling standards that RICs/RRCs send to your laboratory, choose “2”. Please tick the appropriate boxes.**

**☐Instruments measuring pressure**

- ☐1. You bring your standards to RIC. RIC calibrates them at RIC.
- ☐2. RIC sends its traveling standard to your laboratory. You calibrate your standards with RICs' standard by yourself.

**☐Instruments measuring temperature**

- ☐1.
- ☐2.

**☐Instruments measuring humidity**

- ☐1.
- ☐2.

**☐Instruments measuring wind\*3**

- ☐1.
- ☐2.

**☐Instruments measuring precipitation\*3**

- ☐1.
- ☐2.

**☐Pyrheliometer \*1\*3**

- ☐1.
- ☐2.

**☐Pyranometer\*3**

- ☐1.
- ☐2.

**☐Pyrgometer \*2\*3**

- ☐1.
- ☐2.

**☐Instruments measuring sunshine recorder \*3**

- ☐1.
- ☐2.

☐ Others(Name of the instrument: \_\_\_\_\_)

☐ 1.

☐ 2.

\*1: Calibration is limited only to comparison with Regional standard when Regional intercomparison is conducted at RRCs in every five years.

\*2: Calibration is not available now, but for the future consideration. This is the question for investigating potential requests of calibration in the future.

\*3: RIC Beijing and RIC Tsukuba don't have these traveling standards now. This is the question for investigating potential requests of calibration in the future.

**(Q 3-3) Supplementary comments with regard to (Q 3-1)-(Q 3-2), if any.**

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#### Q 4. Calibration laboratories

(Q 4-1) Do you have calibration laboratories? Please tick the appropriate boxes.

If your answer is “Yes”, is the laboratory accredited with ISO 17025(General requirements for the competence of testing and calibration laboratories)? Please tick the appropriate boxes.

##### **(a)Pressure**

☐Yes, I have a laboratory -->☐in the NMHS.  
-->☐out of the NMHS.

--> ISO17025 ☐Yes.

☐No.

☐Other ISO accreditation or certification(ISO: )

☐No.

##### **(b)Temperature**

☐Yes, I have a laboratory -->☐in the NMHS.  
-->☐out of the NMHS.

--> ISO17025 ☐Yes.

☐No.

☐Other ISO accreditation or certification(ISO: )

☐No.

##### **(c)Humidity**

☐Yes, I have a laboratory -->☐in the NMHS.  
-->☐out of the NMHS.

--> ISO17025 ☐Yes.

☐No.

☐Other ISO accreditation or certification(ISO: )

☐No.

##### **(d)Wind**

☐Yes, I have a laboratory -->☐in the NMHS.  
-->☐out of the NMHS.

--> ISO17025 ☐Yes.

☐No.

☐Other ISO accreditation or certification(ISO: )

☐No.

##### **(e)Precipitation**

☐Yes, I have a laboratory -->☐in the NMHS.  
-->☐out of the NMHS.

--> ISO17025 ☐Yes.

☐No.

☐Other ISO accreditation or certification(ISO: )

☐No.

**(f)Radiation**

☐Yes, I have a laboratory -->☐in the NMHS.  
-->☐out of the NMHS.

--> ISO17025 ☐Yes.

☐No.

☐Other ISO accreditation or certification(ISO: )

☐No.

**(g)Sunshine duration**

☐Yes, I have a laboratory -->☐in the NMHS.  
-->☐out of the NMHS.

--> ISO17025 ☐Yes.

☐No.

☐Other ISO accreditation or certification(ISO: )

☐No.

**(h)Others( Meteorological variable )**

☐Yes, I have a laboratory -->☐in the NMHS.  
-->☐out of the NMHS.

--> ISO17025 ☐Yes.

☐No.

☐Other ISO accreditation or certification(ISO: )

☐No.

**(Q4-2) Supplementary comments with regard to (Q4-1), if any.**

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**Q5. Questions or comments about instruments and calibrations, if any.**

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## Part II Training

**Q1. Do you wish to join any training courses on meteorological instruments held by RICs?**

**Please tick the appropriate box.**

***If your answer is “No”, skip to Q4.***

- ☐Yes      ☐No

**Q2. If your answer is “Yes” in Q1., which kind of trainings do you require? Please tick the appropriate boxes.**

- ☐Principle and operation of instruments

Which instruments do you wish to be trained about?

- ☐Pressure  
☐Temperature  
☐Humidity  
☐Wind  
☐Precipitation  
☐Radiation  
☐Sunshine duration  
☐Radiosonde  
☐Visibility meter  
☐Ceilometer  
☐Snow depth meter  
☐Others(Meteorological variable : \_\_\_\_\_)

- ☐Measurement traceability  
☐Procedure of uncertainty calculation  
☐Calibration methods of instruments  
☐Establishment and management of calibration laboratories/ISO 17025  
☐Quality management of observation data  
☐Quality assurance of meteorological observation network  
☐Handling to instruments troubles  
☐Maintenance of the environmental condition of observing stations  
☐Installation and operation of AWS  
☐Commercial instrument initiatives  
☐Others(\_\_\_\_\_)

**Q3. If your answer is “Yes” in Q2., how do you wish the training programs are conducted ?**

**Please tick the appropriate boxes.**

- ☐Regional training workshop at RICs, etc.  
☐Training at member's laboratory(lecturers are dispatched from WMO or RICs etc.)  
☐Training at RICs for each member  
☐Provision of training materials  
☐E-learning website  
☐Others(\_\_\_\_\_)

**Q4. Do you have any training courses or materials which can be shared among RAI members? Please tick the appropriate boxes.**

☐ **E-learning website (building own website which includes some e-learning materials etc.)**

(1)Contents: \_\_\_\_\_ Language: \_\_\_\_\_

(2)Contents: \_\_\_\_\_ Language: \_\_\_\_\_

☐ **Training materials(Training textbook etc.)**

(1)Contents: \_\_\_\_\_ Language: \_\_\_\_\_

(2)Contents: \_\_\_\_\_ Language: \_\_\_\_\_

☐ **E-learning software(developing a software which people can learn about meteorological instruments by themselves etc.)**

(1)Contents: \_\_\_\_\_ Language: \_\_\_\_\_

(2)Contents: \_\_\_\_\_ Language: \_\_\_\_\_

☐ **Training events open to other members (organizing workshops on meteorological instruments etc.)**

(1)Contents: \_\_\_\_\_ Language: \_\_\_\_\_

(2)Contents: \_\_\_\_\_ Language: \_\_\_\_\_

☐ **Others(\_\_\_\_\_)**

(1)Contents: \_\_\_\_\_ Language: \_\_\_\_\_

(2)Contents: \_\_\_\_\_ Language: \_\_\_\_\_

☐ **Others(\_\_\_\_\_)**

(1)Contents: \_\_\_\_\_ Language: \_\_\_\_\_

(2)Contents: \_\_\_\_\_ Language: \_\_\_\_\_

**Q5. Supplementary comments with regard to Q1-Q4, if any.**

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**Q6. Questions or comments about trainings, if any.**

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*Please send the completed questionnaire to the Regional Instruments Centre Tsukuba at the following address not later than **31 January 2012**:*

WMO Regional Instruments Centre Tsukuba for RA II (Asia)

Attention: Mr Koichi NAKASHIMA

Nagamine 1-2, Tsukuba, 305-0052

JAPAN

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FAX: +81-298-51-1670

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