WMO OMM

WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

World Meteorological Organization
Organisation météorologique mondiale
Organización Meteorológica Mundial
Всемирная метеорологическая организация
المنظمة العالمية للأرصاد الجوية
世界气象组织

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Form for Regular Reporting of Regional Instrument Centres

(please expand the cells as required to properly reflect your activities)

Terms of Reference for Regional Instrument Centres (RICs) are available under:
https://www.wmo.int/pages/prog/www/IMOP/instrument-reg-centres.html

Regional instrument Centre - General Information	
Name of RIC	RIC Tsukuba
RIC's website	http://www.jma.go.jp/jma/jma-eng/jma-center/ric/RIC_HP.html
Institute hosting RIC	Japan Meteorological Agency
City	Tsukuba
Country	Japan
Regional Association	Region II

Contact Person for the Regional Instrument Centre		
Courtesy Title	Mr	
First name	Kouichi	
Family name	NAKASHIMA	
Street and number	1-2 Nagamine	
Postal code	305-0052	
City	Tsukuba	
State/Province	Ibaraki	
Country	Japan	
Tel. number(s)	+81 298 51 4123	
Fax number(s)	+81 298 51 1670	
Email(s)	kouichi.nakashima@met.kishou.go.jp ric-tsukuba@met.kishou.go.jp	
Has contact person changed since 2013?	☒ Yes	☐ No

If yes, provide the previous contact person?	- Mar. 2015: Kouichi NAKASHIMA Apr. 2015 - Mar.2017: Hiroshi YOSHIMURA Apr. 2017 - :Kouichi NAKASHIMA

RIC's staff

(Please specify the number of your managerial and technical staff)

- Managerial: 3
- Technical: 5

Interlaboratory Comparisons

Have you organized any interlaboratory comparison? (If yes, please specify the event(s) and final reports, including their web links, if available)**:**

- No.

Have you participated in any interlaboratory comparison? (If yes, please specify the event(s) and the report(s), including their web links, if available)**:**

- No.

Applied International Standards/Norms

Is your RIC accredited according to ISO/IEC 17025?

☒ **Yes** (please, specify the following):

Accreditation/certification body: National Institute of Technology and Evaluation (Japan)

Date of the last audit:30-Aug-2016

Link to the Certificate of Accreditation:
http://www.nite.go.jp/en/iajapan/jcss/labsearch/pdf/d0295m-e.pdf

☐ **No** (please, indicate if you have already applied any quality management system, and provide a reason for a lack of accreditation, if possible)

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Assessment by a recognized authority other than accreditation body

Was your RIC assessed by a recognized authority other than an accreditation body? (e.g. certification body, NMI, another RIC)

☐ **Yes** (please, specify the following):

Name of a recognized authority:

Date of the last assessment:

Standard against which the assessment was carried out:

☒ **No** (please, explain why, if possible)

-RIC Tsukuba is accredited by ISO/IEC 17025.

WMO/CIMO Evaluation Scheme (excel file)

Have you filled out the WMO/CIMO Evaluation Scheme (excel) and submitted it to the WMO Secretariat?

☒ **Yes** (please, specify when):26 June 2013.

☐ **No** (please, explain why, if possible)

-

Calibrations of the Members' Instruments

Which calibration services, were provided by your RIC for other Members/countries since 2013? (Please specify)

Year	Type of instruments	Number of calibrated instruments	WMO Member/Country
2013	Barometer, Thermometer	Barometer: 1, Thermometer: 3	Bangladesh
2015	Anemometer	6	Hong Kong, China
2015	Pyranometer	1	Indonesia
2015	Barometer, Thermometer, Hygrometer	Barometer: 1, Thermometer: 1, Hygrometer: 1	Fiji
2015	Barometer	1	Philippines
2016	Barometer, Thermometer	Barometer: 1, Thermometer: 3,	Mozambique
2016	Barometer	1	Sri Lanka
2016	Barometer, Thermometer, Hygrometer	Barometer: 1, Thermometer:	Fiji

		1, Hygrometer: 1	
2017	Anemometer	1	Philippines

Capacity Development and Training Activities

Which capacity development/training activities have been carried out by your RIC since 2013 within the Region? (please specify events, WMO Members that participated and the number of participants)

- JMA/WMO Training Workshop on Calibration and Maintenance of Meteorological Instruments in RA II (Japan, 19-20 Feb 2013)

  In collaboration with WMO, JMA held a training workshop on calibration and maintenance of meteorological instruments in RA II. The workshop was attended by 13 experts in the region in addition to an expert from RIC Beijing. The documents and presentations on the workshop are available at:

  http://www.jma.go.jp/jma/en/Activities/RIC_Workshop_2013/RIC_Workshop_2013.html

- Technical training for Bangladesh Meteorological Department (BMD)

  Technical and practical training on thermometer and barometer calibration was conducted in 2013 at RIC Tsukuba with three invited BMD experts. Several months after the training, two RIC Tsukuba experts were dispatched to BMD to check staff proficiency and provide additional instruction on calibration activities.

  http://www.jma.go.jp/jma/jma-eng/jma-center/ric/Our%20activities/RICpackage/BMD/BMD.html

- Technical training for Department of Meteorology, Sri Lanka (DOM)

  In February 2016, four DOM experts were invited to RIC Tsukuba for training on the importance of instrument traceability/calibration and practical training on thermometer and barometer calibration.

  http://www.jma.go.jp/jma/jma-eng/jma-center/ric/Our%20activities/RICpackage/DOM/DOM.html

Has your RIC provided services on capacity development and training outside the Region? (If yes, please specify to whom and when)

- Technical training for Fiji Meteorological Service (FMS)

  Technical and practical training on thermometer and barometer calibration was conducted at RIC Tsukuba in June 2015 with three invited FMS experts.

In November 2015, two RIC Tsukuba experts were subsequently dispatched to FMS to check staff proficiency and provide training on on-site calibration using traveling standard instruments at four AWS stations in Fiji.

In July 2016, three FMS experts were hosted at RIC Tsukuba to review methods of barometer and thermometer calibration and rain gauge maintenance.

http://www.jma.go.jp/jma/jma-eng/jma-center/ric/Our%20activities/RICpackage/FMS/FMS.html

- Technical training for National Institute of Meteorology of Mozambique (INAM)

In December 2015, four INAM experts were invited to RIC Tsukuba for training on the importance of instrument traceability/calibration and practical training on thermometer and barometer calibration.

Two RIC Tsukuba experts were subsequently dispatched to INAM to check staff proficiency and visit a local station to provide technical advice on on-site calibration.

http://www.jma.go.jp/jma/jma-eng/jma-center/ric/Our%20activities/RICpackage/INAM/INAM.html

Which guidance documents, standard procedures or other publications were developed and published by your RIC since 2013? (Please, include full reference and web-link if available)

- JMA/WMO Training Workshop on Calibration and Maintenance of Meteorological Instruments in RA II (Japan, 19-20 Feb 2013)

  The documents and presentations on the workshop are available at:

  http://www.jma.go.jp/jma/en/Activities/RIC_Workshop_2013/RIC_Workshop_2013.html

- WMO IOM Report No. 122

  Survey on Meteorological Instruments, Calibration and Training Regional Association II (Asia) (K. Nakashima (Japan), 2015)

  The survey was conducted via a questionnaire which was based on the work of the Regional Instrument Centre (RIC) Tsukuba and RIC Beijing together with the Regional Radiation Centre (RRC) Tokyo and RRC Pune.

  https://library.wmo.int/pmb_ged/iom_122_en.pdf

- Training materials on traceability and calibration are on RIC Tsukuba's website.

  http://www.jma.go.jp/jma/jma-eng/jma-center/ric/RIC_HP.html

Utilization of Resources and Capabilities of the Region

(Have you collaborated with other RICs, RRCs, RTCs, NMHSs or NMIs on standardization of meteorological and other related environmental measurements? If yes, please specify when and how)

- RIC Tsukuba staff paid a visit to France's RIC in December 2009 for discussions.
- A calibration trial using traveling standard instruments was conducted in collaboration with the Thai Meteorological Department (TMD) in Bangkok, Thailand, in February 2010.
- Staff from RIC Beijing and RIC Tsukuba (both in RA II) took part in an exchange visit program for discussions in February and March 2010.

- RIC Tsukuba staff paid a visit to RIC Manila in March 2016 and RIC Manila staff paid a visit to RIC Tsukuba in January 2017 for discussions.

Recent Changes in Circumstance

Have there been any changes in your RIC's capabilities since 2013? (If so, please specify)

- RIC Tsukuba was accredited by ISO/IEC 17025 on pressure and humidity in 2013 in addition on temperature in 2012.

Have there been any significant changes in your RIC's infrastructure since 2013? (If so, please specify)

- No.

Have there been any changes in your staffing since 2013? (If so, please specify)

- No.

Future Plans and any other relevant information

(Please provide plans/projects of your RIC for 2017, and add any other information you find relevant about your RIC)

- So-called "RIC-Tsukuba Package", combination of the following cooperative activities which has been incorporated into Japan International Cooperation Agency (JICA) technical projects and are intended to support the establishment of international traceability for meteorological instruments and capacity building, have been successfully implemented in some NMHSs (i.e. Bangladesh, Fiji, Mozambique and Sri Lanka) since 2013:

  (a) Preliminary survey,

  (b) Provision of standard instruments and/or inspection equipment,

  (c) On-the-job training,

  (d) Follow-up.

- Enhancement of RICs Services

  According to Regional WIGOS Implementation Project in RA II "Enhance the Availability and Quality Management Support for NMHSs in Surface, Climate and Upper-air Observations" at WMO RA II 16th session (February 2017, Abu Dhabi, United Arab Emirates), RICs plan to implement the following action items for further enhancement of their services in capacity-building and calibration during the project (2017-2020);

  (a) Organization of a training workshop on in-situ check and calibration of instruments at observation stations, as well as instrument maintenance management and field environment.

  (b) Seek, and promotion of, package-type cooperation (including calibration of standards, lectures and practices, and technical support) if funds are available.

  (c) Maintaining and expansion of elements for the International Standard ISO/IEC 17025 - General requirements for the competence of testing and calibration laboratories.

(d) Promotion of intercomparison between RICs (including other RAs).

(e) Update of training materials on calibration and maintenance of instruments and sharing through RIC's website.

(f) Development of database of RIC's calibration results and sharing through RIC's website.

Are you in agreement with publishing this reporting form on WMO/CIMO website?

☒ Yes ☐ No

11 May 2017
Date

Hideo Tada.
Name and Signature of Person in Charge of RIC

ANNEX

(Following information will be a part of your RIC's website as published on the WMO/CIMO website)

Specific information on Instrument Calibration Capabilities

Temperature:

Instrument Undergoing Calibration	Calibration Range	Reference standard, Equipment	Calibration and Measurement Capability (CMC)*	Traceability of Reference equipment	
				Last standard calibration date	Calibration body
Contact Type Thermometer	-40~50 °C	Platinum resistance thermometer NSR-160 (Netsushin)	From -40 °C to less than 0 °C : 45 mK, 0 °C : 13 mK, from more than 0 °C up to 50 °C : 36 mK (Level of confidence approximately 95 %)	17 August 2016	Tanaka Kikinzoku Kogyo K.K. Isehara Works Thermometer Calibration Laboratory
		Triple point of water cell 5901C-G (Hart Scientific, Inc.)		18 August 2015	Japan Electric Meters Inspection Corporation

Status of accreditation (date of the latest accreditation): 30 August 2016
Link to the accreditation certificate:
http://www.nite.go.jp/en/iajapan/jcss/labsearch/pdf/d0295m-e.pdf
Accreditation body: National Institue of Technology and Evaluation (Japan)
(http://www.nite.go.jp/en/iajapan/information/index.html)

Relative Humidity:

Instrument Undergoing Calibration	Calibration Range	Reference standard, Equipment	Calibration and Measurement Capability (CMC)*	Traceability of Reference equipment	
				Last standard calibration date	Calibration body
Dew point hygrometer	Dew point From -5~0 °C	Chilled-mirror dewpoint hygrometer (display) DewStar S-1M-0 (sensor) DewStar S-2S-0K (Shinyei technology, Japan)	Dew point 0.12 °C (Level of confidence approximately 95 %)	23 February 2017	National Metrology Institute of Japan
	Dew point From 0~25 °C		Dew point 0.09 °C (Level of confidence approximately 95 %)		

Electronic hygrometer	Relative humidity from 20~30 % at calibration temperature 20~26 °C		Relative humidity 0.8 % (Level of confidence approximately 95 %)		
	Relative humidity from 30~95 % at calibration temperature 20~26 °C		Relative humidity 1.7 % (Level of confidence approximately 95 %)		
	Relative humidity from 20~30 % at calibration temperature 20~26 °C(*)		Relative humidity 0.6 % (Level of confidence approximately 95 %)		
	Relative humidity from 30~95 % at calibration temperature 20~26 °C(*)		Relative humidity 1.4 % (Level of confidence approximately 95 %)		

(*)Calibration which regards a dew points a dew point hygrometer as the hygrometer of a reltive humidity indication.
Status of accreditation (date of the latest accreditation): 30 August 2016
Link to the accreditation certificate: http://www.nite.go.jp/en/iajapan/jcss/labsearch/pdf/d0295m-e.pdf
Accreditation body: National Institue of Technology and Evaluation (Japan) (http://www.nite.go.jp/en/iajapan/information/index.html)

Atmospheric pressure:

Instrument Undergoing Calibration	Calibration Range	Reference standard, Equipment	Calibration and Measurement Capability (CMC)*	Traceability of Reference equipment	
				Last standard calibration date	Calibration body
Digital Pressure Gauge	50~1150 hPa	Pressure balance AV-02 (Futaba sokki)	The lager one of the two 0.0081% or 6.3 Pa (Level of confidence approximately 95 %)	24 September 2015	National Metrology Institute of Japan

Status of accreditation (date of the latest accreditation): 30 August 2016
Link to the accreditation certificate:
http://www.nite.go.jp/en/iajapan/jcss/labsearch/pdf/d0295m-e.pdf
Accreditation body: National Institue of Technology and Evaluation (Japan)
(http://www.nite.go.jp/en/iajapan/information/index.html)

Wind:

Instrument Undergoing Calibration	Calibration Range	Reference standard, Equipment	Calibration and Measurement Capability (CMC)*	Traceability of Reference equipment	
				Last standard calibration date	Calibration body
Anemometer	0.5~90 m/s	0~20m/s Ultrasonic anemometer DA-700 (Sonic, Japan) 20~90m/s Pitot tube F-202(Rika seiki, Japan), Differential pressure gauge MT210(2sets) (YOKOGAWA, Japan)	N/A	7 December 2015	National Metrology Institute of Japan

Status of accreditation (date of the latest accreditation): No
Link to the accreditation certificate:
Accreditation body:

Precipitation:

Instrument Undergoing Calibration	Calibration Range	Reference standard, Equipment	Calibration and Measurement Capability (CMC)*	Traceability of Reference equipment	
				Last standard calibration date	Calibration body

Status of accreditation (date of the latest accreditation):
Link to the accreditation certificate:
Accreditation body:

Other (please specify if applicable):

Instrument Undergoing Calibration	Calibration Range	Reference standard, Equipment	Calibration and Measurement Capability (CMC)*	Traceability of Reference equipment	
				Last standard calibration date	Calibration body

Status of accreditation (date of the latest accreditation):
Link to the accreditation certificate:
Accreditation body:

* A **CMC (calibration and measurement capability)** is the smallest uncertainty (k=2) of measurement that can be expected to be achieved by the RIC during a calibration under normal conditions. This CMC is evaluated by the RIC itself and described in the scope of accreditation of the RIC, if available.