WORLD METEOROLOGICAL ORGANIZATION

COMMISSION FOR INSTRUMENTS AND METHODS OF OBSERVATION
OPAG-CAPACITY BUILDING

CIMO/OPAG-CB/
/ET-RICs/Doc. 4

CIMO EXPERT TEAM ON
REGIONAL INSTRUMENT CENTRES, QUALITY MANAGEMENT SYSTEMS AND COMMERCIAL INSTRUMENTS INITIATIVES
Reduced Session

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STRENGTHENING OF THE REGIONAL INSTRUMENT CENTRES

(Submitted by J. Duvernoy, France)

Summary and purpose of document

The document provides results of evaluation of the RICs and proposals for their further strengthening

Action proposed

The Expert Team is invited to consider the results of the evaluation of RICs in discussing item 4.

STRENGTHENING OF THE REGIONAL INSTRUMENT CENTRES

Study
by
Dr Jérôme Duvernoy

13 March 2006

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0. Background to the request:

CIMO-XIII and CIMO Management Group requested to strengthen further the services of the Regional Instrument Centres (RICs), especially those in developing countries, to better assist Members of the Region in providing services as defined in their TOR. In this regard, RICs should be evaluated against the agreed criteria and proposals for their further strengthening developped.

It is suggested to request the service of an individual contractor to develop evaluation criteria and to conduct the evaluation visits to RICs in Alger (Algeria), Cairo (Egypt), Nairobi (Kenya), Gaborone (Botswana), Buenos Aires (Argentina), Bridgetown (Barbados), San José (Costa Rica) and Manila (Phillippines).

0. Description of the duties to be performed :

1. Review the existing TOR of the RICs;
2. Prepare criteria for the evaluation of the RICs and submit them to the CIMO-MG (through the Secretariat) for the approval;
3. Prepare a programme of the evaluation visits to RICs in Alger (Algeria), Cairo (Egypt), Nairobi (Kenya), Gaborone (Botswana), Buenos Aires (Argentina), Bridgetown (Barbados), San José (Costa Rica) and Manila (Phillippines);
4. Prepare Questionnaire for the evaluation of the RICs in Beijing (China), Tsukuba (Japan), Mount Washington (USA), Melbourne (Australia) and Trappes (France);
5. Conduct the evaluation visits to RICs listed in #3;
6. Evaluate all RICs (listed in #3 and #4);
7. Prepare the Final report on the evaluation, which should include, among others, a proposal for the revised TOR of RICs, infrastructure available at individual RICs and the list of services they provided to Members in the last 2 years, suggestions for individual RICs to comply with the revised TOR, suggestions on how to strengthen further individual RICs and how to improve further the concept of RIC and monitoring of their functionalities.

1. Review the existing TOR of the RICs

(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;

(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;

(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;

(d) To organize instrument evaluations and comparisons, following standard methods;

(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;

(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;

(g) To keep a library of books and periodicals on instrument theory and practices;

(h) To cooperate with other Regional Instrument Centers to provide standardization of meteorological instruments

2. Criteria for the evaluation of the RICs

- Level 1 called Basic level is absolute minimum working level; TOR a) and g) are satisfied
- Level 2 called Promotion Level; c) is also satisfied
- Level 3 called Standard Level; b) and e) are satisfied
- Level 4 called Extended Level; d) and f) are completed
- Level 5 called Certified Level: The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Those criteria was established to the evaluation of RIC. They are classified by level, but most of the time, each level is not completely cleared but only partly. A discussion on theses criteria is done in a next chapter.

3. Program of evaluation visits

The program of the evaluation visits was done in collaboration between the visited service and the WMO. It was not so easy to coordinate all these evaluation missions with the foreign Meteorological department and my own schedule.

Algeria and Egypt has been visited earlier for a calibration mission, so it was not necessarily to visit then again. Some exchanges by mail have been done to update the information.

- Algiers: Calibration Mission in the frame of bilateral collaboration with France from 2 to 10 October 2004
- Cairo: WMO calibration mission from 1 to 6 April 2004

In the frame of the evaluation visits the program was established as follow:

- Manila from 4 to 11 April 2005
- San José from 6 to 12 June 2005
- Gaborone combined with Nairobi from 18 to 30 August 2005
- Buenos Aires from 12 to 19 September 2005
- Georgetown from 6 to 11 October 2005

4. Questionnaire

W O R L D M E T E O R O L O G I C A L O R G A N I Z A T I O N

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REGIONAL INSTRUMENT CENTRES (RICs)

Information on the general terms of reference
and
the location of the RICs

The following text reflects the general terms of reference of Regional Instrument Centres (RICs) as recommended by CIMO-IX in 1985. This is the basis for the specific terms of reference refined and approved by the Regional Association concerned for the RICs established within their field of responsibility. The text reproduced below is excerpted from the sixth edition of the Guide to Meteorological instruments and Methods of Observation, WMO-No. 8 (1996), Part I, Chapter 1 "General", Annex 1.A.:

1. Considering the need for regular calibration and maintenance of meteorological instruments to meet the increasing needs for high quality meteorological and hydrological data, the requirements of Members for standardization of meteorological instruments, the need for international instrument comparisons and evaluations, and for training of instrument experts, it is recommended to establish Regional Instrument Centres.

2. Regional Instrument Centres are designated to carry out the following functions:

   (a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;

   (b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;

   (c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;

   (d) To organize instrument evaluations and comparisons, following standard methods;

   (e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;

   (f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;

   (g) To keep a library of books and periodicals on instrument theory and practices;

   (h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.

3. The following Regional Instrument Centres have been designated by the Regional Associations concerned:

Algiers (Algeria), Cairo (Egypt), Nairobi (Kenya), and Gaborone (Botswana)	RA I
Beijing (China) and Tsukuba (Japan)	RA II
Buenos Aires (Argentina)	RA III
Georgetown (Barbados), San-Jose (Costa Rica), and United States	RA IV
Manila (Philippines) and Melbourne (Australia)	RA V[1]
Trappes (France)	RA VI

[1] The RICs of RA V are not yet contained within the CIMO-Guide, sixth edition, it will be supplemented soon.

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

2. **IDENTIFICATION**

2.1. ***Member country:*** ..... ***WMO Region: RA*** .....

2.2. Regional Instrument Centre (RIC):

Title, first name and surname of the Director

Dr, Ms, Mr [2] ..... / .....
(Family Name) *(First Name)*

Postal Address of the RIC:

.....

.....

.....

Telecommunication links:

Telephone: ..... E-mail: .....

Telefax: ..... Website .....

2.3. PRIMARY CONTACT PERSON FOR YOUR RIC

2.3.1. Technical / Scientific Manager

Name: ..... / .....
(Family Name) *(First Name)*

Position: .....

Phone: .....

Fax: .....

E-mail: .....

2.3.2. Resource Manager

Name: Dr, Ms, Mr [2] ..... / .....
(Family Name) *(First Name)*

Position: .....

Phone: .....

Fax: .....

E-mail: .....

2.4. STAFF AVAILABLE AT YOUR RIC

2.4.1. Technical staff

Number of experts: .....

Specify as far as possible: .....

2.4.2. Lecturers and trainers

Number of experts: .....

Specify as far as possible: .....

3. PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

- Level 1 called Basic level is absolute minimum working level; TOR a) and g) are satisfied
- Level 2 called Promotion Level; c) is also satisfied
- Level 3 called Standard Level; b) and e) are satisfied
- Level 4 called Extended Level; d) and f) are completed
- Level 5 called Certified Level: The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Method: You start at level 1 (one), you try to complete that level, then you fill the next level, and so on.
You may consider that a level is clear if your answer is "Yes" to at least two thirds of this level.
Then you try to self evaluate your RIC level.

Please send the file by mail at jerome.duvernoy@meteo.fr as soon as possible..

Thank you very much for your participation.

Level 1	Basic	YES	NO	Partly	Comments
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;				Please complete sheet in Annex A
	Are your meteorological standard instruments linked to international or national standards				
	Have you documented the performance of your standards as compared to the standard to which linked				Uncertainty
	(g) To keep a library of books and periodicals on instrument theory and practices;				Specify small Moderate Huge
Level 2	Promotion				
	(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;				
	The instruments of the main observing network is managed and regularly calibrated				
	Calibration reports are established				
	RIC has got external customers				How many
Level 3	Standard				
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;				
	Your RIC assisted Members of the Region falling in your responsibility[2] in calibrating their instruments with the standard instruments available at your centre				
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;				
	Your RIC assisted Members of the Region falling in your responsibility[3] in training their staff, especially dealing with instrument maintenance and calibration.				

[2] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

[3] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

Level 4	Extended				
	(d) To organize instrument evaluations and comparisons, following standard methods;				
	Have you organized or participate in international instrument evaluations or comparisons?				
Specify as far as possible					
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;				
	Have you organized international symposia, seminars or workshops?				
	More especially, have you organized symposia, seminars or workshops dealing with instruments, maintenance or calibrations?				
Specify as far as possible					
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.				
	Have you established relationships with other Regional Instrument Centres?				
Specify as far as possible					
Level 5	Certified or Accredited				
	Have you established a standard certification process?				
Specify as far as possible					

Estimated level achieved by the RIC … : 1 2 3 4 5
(Select the level)

Add any comments:

5. Evaluation visits

Note that the questionnaire has been filled as possible during each visit. It was not exactly the aim of the visit but only a support.
In fact the questionnaire was established regarding results of the two or three visits. Then the questionnaire was ready to by send to the unvisited RICs.
To evaluate all the RIC the previous questionnaire was used as a support. In the case of Algiers and Cairo, the questionnaire was fulfilled after the visit because these missions were done before the request.
Most of the time, in the other cases the questionnaire was filled during the visit in collaboration with the staff. Then a presentation of the visit was done at the debriefing meeting.

5.1. ALGIERS

Purpose of mission: Standard barometer calibration

Mission schedule and arrangements:
From 2 October to 9 October 2004, in Algiers, Dar el Beida, ONM
This mission is a part of a collaboration program between France and Algeria.

Some exchanges via email with Mr Naili have been necessary to know precisely the purpose and the frame of the mission. The program has been established and customs formalities have been prepared.

Schedule of the mission

At the same time, Mr. Olivier Lemaître from RESO/PMO should present the organization of the French observing network. The aim was to help the ONM in its own organization.
The welcoming was complete, not only during working session but also during free session.
So, I want to thanks all the member of ONM. (Organization Météorologique Nationale).
The planed program has been quite followed in its main guideline. We only should adapt it because of local requirements. Debriefing has been put at the Thursday evening and a last meeting with an ONM consultant was organized at the hotel on the Friday night.

Saturday, 2 October:
Flight Paris-Alger, welcome at the airport, customs formalities due to the standard and generator. A first partial visit of the laboratories in the center. Materials have been let and set up in the laboratories. Then we could go and rest at the hotel Royal, in the quarter of Bordj El Kiffan ex- Fort de l'eau. Some renewing works have been settled at the center of the ONM because of the earthquake in May 2003.

Sunday, 3 October:
The materials were settled completely, methods were presented. Then after a consensus on the range, the calibration of numerical barometers could start. To validate the results, all calibration measurements were done with two traveling reference barometers. This method reduced risks but is of course twice longer.

Monday, 4 October

Calibration of numerical barometers was going on. The first main series was complete. The second complementary series was beginning. The evaluation and the exchanges in the frame of RIC were initiated.

Tuesday, 5 October

The morning was spending into calibration measurements. It was the beginning of mercury barometer measurements. The first result was incoherent. So the staff of the ONM decided to remove on of the barometer and renewed the second one.
In the afternoon and in collaboration with Mr. Lemaitre a presentation of methods and maintenance organization was done. The French organization was explained. Some works was quickly presented and the special software used by Meteo-France was more completely presented.
The Laboratory of Meteorology and the Term of Reference of a RIC was presented. Algiers is also a RIC concerning the RA I and then should held this function.
Algeria was just buying new Automatic Weather Station with numerical sensors. These instruments should also be maintained and calibrated regularly. The ONM should perhaps buy new adapted calibration systems.

Wednesday 6 October

The calibration of numerical barometer was going on. At the same time, exchanges on methods and means are done between the French and Algerian meteorological offices.
The calibration of mercury barometers could be restarted. The CRI evaluation could also continue with the different areas where calibration is proceeding. The ONM is equipped with a climatic chamber for thermo-hygrometer calibration. This chamber was out of order, but it was just waiting for some spares parts. It should be repaired now. The stirred bath was also out of order. The problem was that no notice was available and that the manufacturer did not yet exist. Tow pressure generator was used. The first one was used for numerical barometer but without software and trained staff, this equipment was not used. The second generator was used for barograph and was still in order. Other equipment was also available in Oran for mercury barometer. To be efficient this last chamber should also be in Algiers.

Thursday 7 October

End of the numerical and mercury barometer calibration. Some exchanges on the new equipments they should buy and the old equipment they should maintain are discussed.

Friday 8 October

A last debriefing and updating of the report with Mr Tagnit, consultant and previous manager of the ONM.

Saturday, 9 October

Visit of the library and the departure to the airport with all the numerous formalities and finally departure to Paris.

5.2. CAIRO

1st April:
I want to thanks all the member of EMA (Egyptian Meteorological Agency), M. Mourad Shawky Sah Allah, in charge of EMA. and Mr. El Sayed In charge of Instruments & LAP. Department, who takes care of me during the whole duration.
After a quite travel and the welcome by Hotel driver, a first phone call with Mr Mohamed El Sayed to set an appointment for the beginning of the mission was necessary because Friday is a day-off in Egypt.

2nd April:
Mr El Sayed accompanied me during the whole stay into EMA. He also dealt with accommodation and comfort outside EMA. I want sincerely to thank him.
First, laboratories were visited. Barometers and pressure generators were been showed. We had explanations about generators capabilities, traceability methods. EMA owned a primary standard mercury barometer. This barometer is derived from a Fortin type barometer built by Fuess (Germany). In this type a barometer, the level of mercury in the cistern can be adjusted and measured by a secondary scale. A second barometer of the same type is here to improve measurements. A working standard barometer built by Theodor Friedrich & Co is used to calibrate the network mercury and aneroid barometers. This barometer is a fixed cistern type. All barometers are well maintained. The calibration work begun with the working standard barometer. All observed readings of mercury barometer were done by Mr Samir Tolba Mohamed. I want to thank him for his professional work.

3rd April:
The working standard barometer calibration was finished. Results were compared with EMA results and first calibration results. These results were not confirmed and needed to be but we could say that they are quite good.

4th April:
The calibration of the primary barometer has begun.
We have some discussions about numerical barometers calibration. The second reference barometer needs to be cleaned to improve the secondary scale reading.

5th April:
Then first test of the second primary barometer gave very bad measurements. Because of the cleaning, some air bubbles came into the mercury pipe. These bubbles need to be pumped outside. So the barometer is a second time completely dismantled and air bubbles are pumped.

6th April:
The second reference barometer has been completely calibrated.
We have a debriefing with Dr Arafat, the EMA director.

5.3. SAN JOSE

Mission schedule and arrangements:

Firstly, I want to thanks all the member of IMN (Instituto Meteorologico National), especially M. Paulo Menso, in charge of IMN and Mr. Alfonso Liao In charge of Meteorological Data Department, who takes care of me during the whole duration.
The welcoming has been very good. A visit to an agromet station in cooperation with the Universidad de Costa Rica was also the opportunity of a discovering travel of countryside.

Monday, 6 June: Travel from Trappes (France) to Costa Rica Intl (airport). Transfer to La Amistad Hotel.

Tuesday, 7 June: Welcoming by Mr Alfonso Liao, visit of the headquarter. It is a small centre with 70 people working there.
Some presentation of the exact aim of the mission, presentation of IMN (structure and budget), observation network and AWS network. 180 stations for the operational network and 54 for AWS stations and 5 dual automatic and operated stations in the main airports. This network is due to an earlier WMO program in the 90's. Meeting with the manager, his point of view are those: quality of data real time control), representativity of area, cooperation with hydrometeorological station. He said that the problem is automatic system is not trusted by any one, neither maintenance technician, neither customer. The network is based on population diversity instead of climatic or forecasting exigencies.

Wednesday 8 June:

AM Visit to a typical AWS in the countryside. This station is cooperation with Universidad de Costa Rica. Both system mechanical and automatic are present.
PM Visit to Instituto Costarricense de Electricidad. They have an AWS network most hydrological, but they also own a meteorological network that measure temperature, humidity, rainfall and wind. We visited they calibration and spare parts facilities. The laboratory deals with humidity calibration using a Vaisala HMK 11 saturated salt solution generator. Raingauge are calibrated against a siphon system.

Thursday 9 June:
The morning is spending into visiting the calibration laboratories. Due to the inter-tropical situation the most important parameter is the rainfall amount. Calibration is done by a self-made siphon system that provides a quasi-stable rain intensity (about 50 mm/h). The reference is a mechanical weight system. The periodicity of calibration is not really determined. The humidity calibration generator is a HMK 15 saturated salt solution. They also own a Young system to control wind meter. The radiometer system is still not working. But it is planned to get it update. Some spare parts are needed (stable battery).
The visit of the Laboratorio Costarricense de Metrologia (National Metrology Laboratory). They deal with calibration of temperature, pressure, mass, humidity, volume which may interest the IMN. LACOMET just signed the Mutual Recognition Arrangement with the BIPM with insure the quality of measurements. The IMN may be traceable to LACOMET to guarantee the tractability of their equipments.

Friday 10 June: Debriefing with Mr Alfonso Liao.
Define the disposition of stations with customers included internal customers such as forecasting and climatic department.
Subtracting first degree maintenance.

Saturday 11 June to Sunday 12 mornings: return to Paris via Miami International airport.

5.4. MANILA

Mission schedule and arrangements:

First of all I want to thank all the member of PAGASA, especially Dr Graciano P. Yumul, Jr; Officer in Charge, PAGASA, Dr. In charge of RIC IV and Ms Venus OIC Public Information and International Affairs Staff, who takes care of me during the whole duration.
The welcoming has been very good, even after the working time and working days. An informal dinner was organized with the Director and Japanese members of Oriental Electronics Incorporated. A visit to an agreement station was also the opportunity of a discovering travel of countryside.

Monday, 4 April and Tuesday 5 April: Travel from Trappes (France) to Manila international airport in Philippines. Transfer to SULO Hotel.

Wednesday 6 April:
First meeting with the Communication manager Ms Venus Valdemoro, who has been my contact to prepare this mission. Overview and revision of the time schedule. Then transfer to PAGASA and meeting with the Manager of RIC. Then visit of the centre. One building is still built since four years a second one is projected.
Some presentation of the exact aim of the mission, presentation of PAGASA, observation network and AWS network. This network is due to two programs with Sofreavia in the 90's. 60 stations for the operational network and 15 for AWS stations especially destined to main airports.
In the afternoon, a visit is planed to NMLPhil, National Metrology Laboratory. The Laboratory is a member of the Asia Pacific Metrology Program, Asia Pacific Legal Metrology Forum and an Associate State Member of the General Conference of Weights and Measures. It is also a signatory to the Global Mutual Recognition Arrangement among national metrology institutes.

Thursday 7 April:
The morning is spending into visiting the calibration laboratories. Before being regrouped in the same building not yet built, there are spread in the garden science area. We firstly visited the wind tunnel. This one is old (40 years at least) is just being repaired and is working in good conditions, the standard reference is a Pitot tube calibrated by the NML in pressure, a transfer function compute the wind speed. A project is to rise up the capabilities until 250 km/h. Then, we visited the radiometer laboratory, the reference is calibrated in Davos every 5 years, the next is planned this year. Finally, we visited the pressure, temperature and humidity calibration laboratory. The pressure reference is a mercury Fuess barometer, the generation is done by a Fuess high- and low-pressure chamber. It is possible to calibrate aneroid barometer, barograph, mercury barometer with or without pressure socket, and electronic barometer. We have done some measurements with a portable quartz barometer that is taking. We found an incredible 1 hPa difference between their barometer and mine. We also found a leak at low pressure. High pressures are very stable. I think that this system needs to be entirely revised, connecting pressure wire need to be replaced by polyethylene wire or similar. Rubber parts must be replaced.
On afternoon, the debriefing was done with all the technical staff.

Friday 8 April: day off visit of Manila Rizal

Saturday 9 April: informal visit of an agromet station in Tugayan small village. This station is a part of the second cooperation program between Sofreavia and PAGASA. It is a Degreane AWS with is automatic sensor. In the park, there are a standard wooden shelter with mercury thermometer, hygrograph and two mini and maxi thermometers. Inside the station there also a mercury barometer, a barograph and a rain graph connected to the in-field sensor. All sensor seem in a good state, but the settlement could not been classified in the first class weather station.

Sunday 10 to Monday 11 mornings: return to Paris via Amsterdam airport. Due to importance of the distance between hotel and airport, the traffic jam and the security reinforced because of terrorism fear, the departure from hotel has been quite early.

5.5. GABORONE

Mission schedule and arrangements:

I want to thanks all the member of The Department of Meteorological Services, especially Ms Gladys Ramothwa, in charge of the Department and Mr. Dira Fred Molotsi In charge of Meteorological Data Department, who takes care of me during the whole duration. The welcoming has been very good, but because of official duties, I regretted that I could not see Ms Ramothwa.

Thursday, 18 August to Friday 19 August: Travel from Trappes (France) to Gaborone (airport). 2 connecting flights the first one in London (Great Brittany) and the second in Johannesburg (South Africa). Welcome at the airport and transfer to Oasis Motel. After a light meal, return to Meteorological Services for a first meeting with Mr Molotsi and then we visited the labs.
Three parameters are calibrated in these labs. Basically it is Pressure, temperature and moisture. They have got a climatic chamber to calibrate hygrographs, a stirred bath to calibrate the liquid glass thermometers and a pressure chamber for barometers quite mercury and analogical, and also barographs. Globally all apparatus are still working and standards are used and linked to South Africa labs but the technicians need training, general training but also specific training because all the notices have been lost. Seven members should be working in labs but two are in long duration training, and have not been replaced,

Saturday 20 August: It is normally a day off but Mr Molotsi drove me kindly around the city and to the city museum

Sunday 21 August: Day off. Some visit and preparing the time schedule for other days

Monday 22 August:
Visit of mechanical workshop. A lot of place and apparatus but not yet completely operational before moving place. (5/6 year ago). A lack of staff. Visit to the airport station. Barometer PTB 220 is calibrated every year.

Tuesday 23 August:
A visit to BOBS (National Metrology) was planned but only a phone call has been possible because the building was not at this moment fully operational. All traceability must be insured by South Africa Metrology.

The equipment is verified if they are in the following fields:

- Weighing instruments used in trade including vehicle scales
- Liquid fuel dispensers
- Bulk flow meters
- Length measuring instruments
- Measures of Length
- Measures of Volume
- Mass pieces (metric and metric carat)

So there is no possibility for the meteorological equipment. Those need to be sending to South Africa.

Wednesday 24 August:
Departure early to Kenya via Johannesburg (SA).

5.6. NAIROBI

Mission schedule and arrangements:

First of all, I want to thanks all the member of the Kenya Meteorological Department, especially Mr MUKABANA Joseph, in charge of the Department and Mr Dira Molotsi in charge of Engineers, who takes care of me during the whole duration. The welcoming has been very good.

Wednesday 24 August: Travel from Gaborone to Nairobi International airport with a connecting flight in Johannesburg (SA). This flight was very pleasant with a beautiful view of Kilimanjaro Mount. Welcome at the airport and transfer to the Hotel.

Thursday 25 August and Friday 26 August
Three parameters are calibrated in these labs. Basically it is Pressure, temperature and moisture. They have got a climatic chamber to calibrate hygrographs, a stirred bath to calibrate the liquid glass thermometers and a pressure chamber for barometers quite mercury and analogical, and also barographs. Globally all apparatus are very old and not operating. Standards are not used and not linked.

Saturday 27 August: Visit of a typical metrological station in the countryside.
Sunday 28 August:
Return to Nairobi.

Monday 29 August:
A visit to the Kenya Bureau of Standards (National Metrology Laboratory) was planned (www.kebs.org).
Metrology Services are provided in the following fields:

- Mass
- Hardness
- Moisture Content
- Dimensional Metrology
- Time and Frequency
- Pressure
- Electrical Energy
- Temperature & Humidity
- Volume & Flow
- Density and Viscosity
- Force
- Torque
- Direct & alternating current
- Instrumentation Services
- Designing, fabrication & installation
- Repair & maintenance
- General consultancy & advisory services
- Instrumentation information services
- Mechanical fabrication

We visited the Pressure, temperature and Humidity laboratories.
Then we had an informal debriefing with the whole staff.
Departure in the night to France.

Tuesday 30 August:
Arrival in Paris airport in the morning.

5.7. BUENOS AIRES

Mission schedule and arrangements:

Firstly, I want to thanks all the member of the Servicio Meteorolico National and especially, Commodoro Miguel Angel Rabiolo, officer in charge of and Commodoro Carlos Alberto Damboriana, Director of logistic department, who takes care of me during the whole duration. The welcoming has been very good and very well organized.

Monday 12 to Tuesday, 13 September: Departure in the evening from Paris CDG, flight to Buenos Aires via Sao Paulo. Welcome at the airport and transfer to Concorde Hotel. This hotel is just near the Met Office.

Wednesday, 14 September: Visit of the labs and calibration facilities. The laboratories and workshop are located in the airport area, not far from the main building.
Wind measurement, the calibration of wind meter is performed in a wind tunnel built by Santos Zaghi in 1978, the range is 1.5 to 25 m/s and estimated uncertainty is 1 m/s. The standard is a Pitot Tube, seconded by a digital Vaisala PA 11. Inter-comparison is made between each other but traceability is not insured.
The barometer lab offers complete maintenance facility for mercury barometer. Tube washing bench with 3 adapted solutions (typically different acids), mercury purification (distillation and 3 levels filtration) and warm filling system.
The reference used for calibration is a mercury barometer Model MS3-V31-11 from Hass Instrument (USA). Its number is 3275 and is range of operation is 0 to 790 mm of Hg (0 to 1055 hPa). This standard is completed with working standards. Pressure generation is insured by a Zambra & Negretti (GB) generator with two pressure chambers (operating range from 440 to 1100 hPa) to calibrate mercury barometers.
This system is completed by two other Zambra & Negretti pressure chambers and generator for barograph calibration. The working standard is a Vaisala PA11.
Two climatic chamber performed thermo-hygrograph calibration from -70 to +70 °C for Antarctic sensors and from -50 to 80°C to classic sensors. A thermo-quartz from HP is used as temperature standard and a pair of thermometers is used for the psychrometric measurement of humidity.
Two liquid baths are also performing mercury and alcohol thermometer calibration. From -5 to 60°C.

Thursday, 15 September: Visit of a weather station, and ozone and solar-meter labs. The solar instruments are linked to Davos inter-comparison. The ozone measurement is traceable to US metrological department.

Friday, 16 September: Debriefing at headquarter, last administrative question.

Saturday, 17 September: day off

Sunday, 18 to Monday 19 September: return to Paris via Sao Paolo

The only problem is a lack of traceability, the solution was found later during the visit of BIPM.

5.8. GEORGETOWN

Mission schedule and arrangements:

I want to thanks all the member of the Caribbean Institute for Meteorology and Hydrology and especially, Dr Depradine Colin, principle in charge of and Mr Leslie Ronald, who takes care of me during the whole duration. The welcoming has been very good and quite well organized.

Monday, 3 October:
Departure in the evening from Paris CDG, flight to Barbados via Miami International at the airport and transfer to the accommodation. This apartment is near the Institute.

Tuesday, 4 October and Wednesday, 5 October:
Visit of the labs and calibration facilities. The laboratories and workshop are located in the Caribbean Institute for Meteorology and Hydrology. An old Friedrich pressure generator is still in use with an electronic barometer. A very old Eppley solar-meter is remaining in its box but not in order to be used.
Collaboration between the Finish governments via WMO is on the way to equip the Caribbean Institute with brand new equipment. A Climatic chamber a new pressure generator is still there. But this equipment is not yet completely set up.

Thursday, 6 October:
Visit of the local Meteorological weather station at the Airport. They are equipped with a barograph and also a quartz barometer. This equipment is a lab apparatus use for network measurements.

Friday, 7 October:
Debriefing with Dr Depradine and Mr Leslie.

Saturday, 8 October:
Very early return to Paris via Miami International

The conclusion could be that they need more staff and a real internal policy for the RIC.

6. EVALUATION OF RICs

6.1. RIC CAPABILITIES

The following table summaries the RIC capabilities and the level obtained

RIC CAPABILITIES								LEVEL
	Pressure	Temperature	Humidity	Solar	Rain	Wind	Other	
RA I								
Algiers (Algeria)	Y	Y	O	Y	-	Y		2 -> 4
Gaborone (Botswana)	Y	Y	O	-	-	-		2
Cairo (Egypt)	Y	Y	Y	Y	-	-		2 -> 4
Nairobi (Kenya)	O	Y	O	O	-	-	-	1
RA II								
Beijing (China)	Y	Y	Y	Y	Y	Y	-	3 (4)
Tsukuba (Japan)								4
RA III								
Buenos Aires (Argentina)	Y	Y	Y	Y	Y	Y	UV	(1)-> 5
RA IV								
Georgetown (Barbados),	Y	O	O	O	-	-	-	1-> 3 (?)
San-Jose (Costa Rica),	-	-	-	O	Y	-	-	1
United States	Y (?)	Y (?)	Y (?)	Y (?)	Y (?)	Y (?)	Y (?)	5 (?)
RA V								
Manila (Philippines)	Y	Y	-	Y	-	Y	-	2
Melbourne (Australia)	Y	Y	Y	Y	Y	Y	ozone	5
RA VI								
Bratislava (Slovakia)	Y	Y	Y	-	Y	Y	-	5
Ljubljana (Slovenia)	Y	Y	Y	Y	Y	Y	Air quality	4 (5)
Trappes (France)	Y	Y	Y	Y	Y	Y	IR	5

X: in order
O: out of order, that means existing but not in order
- : nothing
? : Not filled

6.2. COMMENTS ON RICs

6.2.1. ALGIERS

A bilateral collaboration with France started in the last years should maintained the level of this RIC. The traceability is insured for pressure calibration. The staff is globally well trained in old technologies (mercury and so on) but should probably be trained in new electronic equipment and especially numerical barometer. The level obtained is 2 because there is nothing into the third level but a lot of work is still done in the forth level.

6.2.2. CAIRO

Both pressure generator and reference are well maintained and well known and used.
The primary standard barometer and the working barometer could be at the same level to avoid altitude correction during calibration.
A project has been written to strengthen the capabilities of this RIC in term of temperature, humidity (climatic chamber) and wind (tunnel) calibration.

6.2.3. GABORONE

The RIC is clearly mentioned in the hierarchical organigram. The national metrology is in a rising way. This should be profitable to the RIC.

6.2.4. NAIROBI

All equipments are very old but some are still in working conditions. This RIC has been in old time at a good level but those equipments are know to old and should be clearly changed or renewed. Then the level reached is only 1 but capabilities are there to reach quickly a third or forth level.

6.2.5. BEIJING

The self estimated level was 3 but some international workshops have been organized in China, so the level should be 4.

6.2.6. TSUKUBA

The estimated level is 4, no certification is obtained.

6.2.7. BUENOS AIRES

This RIC achieved a very good level, it was very impressive. A certification process could start if needed and will without doubts succeed in a short time.
They have got a problem with the traceability of pressure standard. Their reference is a very big mercury barometer. Some arrangements could have been found during the Workshop on Metrology in Trappes.
So the actual level haw been estimated to 1 because of the lack of traceability but this level should rise quickly to the forth level.

6.2.8. GEORGETOWN

Cooperation is actually in operation with the Finish Government and WMO. We must wait to the end of this cooperation. Actually, the brand new systems are still remaining in boxes. But waiting for the settlement of these apparatus the level achieved is just 1.

6.2.9. SAN JOSE

The main parameter for Costa-Rica is the rainfall precipitation. So the limited means in term of budget and personnel are spend into this network management. Cooperation with external organizations, internal brainstorming could perhaps enhance the situation. A new design of the network could perhaps get some new possibilities.

The pressure measurement lab could be set up not only for their own network (only five barometers) but also for a real RIC.
Some possibilities are existing but should be developed with help inside and outside the country. The level reached is 1.

6.2.10. MOUNT WASHINGTON

No data are available from this RIC. This matter of fact is probably due to the hugeness of the country. So the RIC is in fact a set of multiple laboratories spread into US.

6.2.11. MANILA

Most of parameters are quite well managed but no cooperation with the members of the Region limited to level to 2.

6.2.12. MELBOURNE

This RIC is accredited, so level is 5. Each criterion is filled. Due to the shape of the Region, there is not a lot of cooperation with members of the Region.

6.2.13. BRATISLAVA

This RIC is accredited, so level is 5. Each criterion is filled. This RIC is young in this function so there is not a lot of cooperation with other members of the Region but cooperation with RIC in the Region exist since a long time.

6.2.14. LJUBLJANA

The self-estimated level is 4 but this RIC is accredited, so level is 5. Each criterion is filled. This RIC is young in this function so there is not a lot of cooperation with other members of the Region but cooperation with RIC in the Region exist since a long time.

6.2.15. TRAPPES

This RIC is accredited, so level is 5. Each criterion is filled. Due to the richness of metrology in the west European countries, cooperation are not only with members of the Region but also with French speaking countries or associations of RA I.

7. REVISION OF TOR

7.1. INTRODUCTION

Some TOR needs a too high level for some developing countries. A discussion of actual TOR is following. Then revised TOR are proposed and some ideas are thrown.

7.2. TERMS OF REFERENCE

Regional Instrument Centers are designated to carry out the following functions:

(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;

This TOR is the basis of metrology and so of RIC and must be kept but simplified.

(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;

This one also is the basis and should be kept but perhaps in association with c), e) and h). This one is also is redesigned.

(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;

When all measurements are well managed, this TOR is quite obvious. But for developing countries, WMO could perhaps give two level recommendations on measurements accuracy.

(d) To organize instrument evaluations and comparisons, following standard methods;

This TOR should be perhaps more precise and just restricted to inter-comparisons.

(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;

(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;

This TOR is not for the RIC level but for national meteorological office.

(g) To keep a library of books and periodicals on instrument theory and practices;

This is the basis of documentation, this TOR is satisfied but in realty not by the RIC but by the national Met office. Because the library is not settled only for instrument but for all the meteorology.

(h) To cooperate with other Regional Instrument Centers to provide standardization of meteorological instruments.

Collaboration with other RIC should not by only on standardization.

7.3. REVISED TOR

Regional Instrument Centres are designated to carry out the following functions:

(a) To keep a set of meteorological standard instruments linked with recognized international or national standards;

This first one is still remaining but simplified. This means that the RIC needs to identify the monitoring end measuring that should be done and where it should be accomplished.

(b) To be able to estimate the quality of their standards instruments

(c) Capacities of the RIC in term of training and calibration should be communicate regularly to the other members of the Region, to the other RIC and to WMO.

(d) RIC must contribute positively to member of Region measurement quality

(e) The RIC must participate to inter-comparison, instrument’s certification.

(f) The RIC must participate actively to workshop, conference and round table organized by WMO

(g) Notice that the requirement of WMO is also applicable, that means members of region should be assisted in term of calibration, training and more generally all piece of advice concerning instrument, calibration, metrology.

(h) a report of RIC activity should be send regularly to WMO and others RIC of the same Region

7.4. GUIDELINE FOR RICs

a) The management of the Meteorological department should be engaged in the purpose of RIC. This imply that a politic letter must be written by the management, send to WMO and communicate to the staff and the customers. To assist members, these should be aware of what are capabilities, so more communication with WMO and Members of the Region

b) The infrastructure should be adapted to the capabilities and maintained. That is including building, workspace, hardware, software utility equipment and support service needs.

c) The RIC manager should determinate the resources in term of budget and in term of personnel for the RIC functioning That means budget resources should be available and that personnel should be competent with the right experience, the right training to achieve to right competence

d) An the other hand, the customer's requirement should be determined and expressed. So meeting are organized between RIC and customers.

e) Reviews are organized by the management to insure that all requirements are still remaining and satisfied

f) All these requirements should be survey by an external organism (that means that certification or accreditation is recommended, but WMO internal audit is also possible)

9. SUGGESTIONS TO RICs

Each visited RIC is reviewed one by one.

7.5. ALGIERS

A new humidity reference is needed. The temperature stirred bath should be repaired or changed if it is not possible because of its age. Specific software and a training course are needed for the numeric barometer calibration.

Pressure:
The existing equipments may insure good level calibration. The ONM wanted to use numerical barometer as transfer and national standards. This solution must be put in front others because the ONM begun AWS settlement with numerical barometers. Special software adapted to these equipments should complete the system. Mercury barometers could be calibrated with a chamber available in Oran.
A specific training course at the manufacturer could also be mentioned.

Temperature:
A stirred bath from MPC is not in used because the manual has not been given by the manufacturer. Some new electronic device could be needed for this calibration bench.

Humidity:
A climatic chamber is also available but is also out of order. A spare part was lacking but might be repaired in a few moments.
A new reference was planned to be bought for this parameter.

Wind:

Control systems have been given by manufacturers to the equipments used in the observing network.

7.6. CAIRO

Some inter-comparison could be done between primary reference barometer and the second reference barometer. The working reference barometer should be calibrated regularly against primary reference barometer.
The primary reference barometer should be calibrated regularly by an outside reference.
A numerical barometer associated with a computer and specific software will increased calibration possibilities of the laboratory especially in numerical barometers.
A calculator or a worksheet on a computer could be used to improved temperature and gravity corrections use.

7.7. SAN-JOSE

Some simple solutions could be adapted to insure traceability of the measurement.
For example the use of a 1 kg mass regularly (every 5 years) calibrated by LACOMET would preserve the balance capability. This balance is used to weight the water quantity in the rain gage bench.
The LACOMET may also calibrate the mercury reference barometer. Then the calibration of the transfer standard could be available to calibrate in situ the only 5 barometers. This measurement is very important in airport.
Some inter comparisons could be operated with LACOMET and Instituto Costarricense de Electricidad in humidity measurements. The means are identical but results never compared.
The solar bench must be repaired, update and maintained. The reference must by calibrated to the nearest reference available (US, I presume) or during the Davos inter-comparison.

7.8. MANILA

Problem with Mercury Reference barometer needs to be changed by a new reference quartz barometer.

7.9. BUENOS AIRES

They need a numerical transfer standard for pressure measurement easily transportable to United States or somewhere else.

7.10. GABORONE

The solar bench must be repaired, update and maintained. The reference must by calibrated to the nearest reference available (SA, I presume) or during the Davos inter-comparison.
A new pressure standard is needed. The traceability will be guarantee by South Africa National Metrology.

7.11. NAIROBI

All equipment must be renewed.

The solar bench must be repaired, update and maintained. The reference must by calibrated to the nearest reference available or during the Davos inter-comparison.

Traceability of pressure, temperature, humidity and rain (masses) could be insured by the KEBS without any problem.

7.12. GEORGETOWN

The staff should the trained on the new equipment. More people should work in the meteorology department (only two at this moment). A head of the department must be appointed. This department should be developed by the Regional management or some help from university (for example Thesis students) should be found.

8. STRENGTHENING OF RICs

All new Term of reference are reviewed to see what possibilities of strengthening exist.

Regional Instrument Centres are designated to carry out the following functions:

(a) To keep a set of meteorological standard instruments linked with recognized international or national standards;

This means that the RIC needs to identify the monitoring end measuring that should be done and where it should be accomplished. The update tables as shown in questionnaire are send regularly to WMO.

(b) To be able to estimate the quality of their standards instruments

The uncertainty is estimated. The 5 level RIC may help the other one.

(c) Capacities of the RIC in term of training and calibration should be communicate regularly to the other members of the Region, to the other RIC and to WMO.

(d) RIC must contribute positively to member of Region measurement quality

Measurement quality should be adapted to the country. A first level of uncertainty should be reached in a first time then a second. It is more positive to have reachable goals and then to improve.

(e) The RIC must participate to inter-comparison, instrument's certification.

Inter-comparisons are organized in different domains. These comparisons are organized by developed RIC with WMO help or directly by WMO.

(f) The RIC must participate actively to workshop, conference and round table organized by WMO

For example TECO. Perhaps WMO may develop Workshop on Metrology. A domain per year is, I presume, a good way to explore meteorological parameters.

Politic letter, capabilities of RIC are available on WMO website. Also inter-comparisons results are published regularly by WMO.

RIC should give the proof of its capabilities. These capabilities are shown through certification or accreditation. If it is not the case, WMO may organize audit or inter-comparisons. If a problem occur, the RIC have got for example half a year to react. And like a certification, if during the next audit the problem is still remaining the RIC is not suspended and WMO looks for other candidates.

Internet facilities are present in quite every country, this should be used. WMO may recommend that every RIC has got its website.

9. CONCLUSION

In term of conclusion, the level of RIC is quite related to the richness of the country. The RIC of most rich country are certified or accredited.

Metrology is based on traceability, so all RIC must be really conscious that this is the main purpose. These measurement capabilities should be shared with the other region members. But the training part should also be present.

Quality of RIC should be also guaranteed with periodical review, audit and inter-comparisons.

The accreditation or the certification is a proof a capacities of RIC. Those RIC should help the others. For example they may organize inter-comparison, audit, and training courses. WMO give some recommendations on the type of measurement which should be developed.

Certification or accreditation is based on main points such as:

- laboratory
- apparatus
- operator
- method
- policy
- quality

These points should be adapted to RIC and recommended to RIC:

- Laboratory: RIC should have a or more rooms adapted to good measurement in adapted conditions (stabilized temperature, no dust and so on)
- Apparatus: system should be adapted to uncertainty needed, instruments to be calibrated
- Operator: should exist and be trained
- Method: adapted and well know by operator and given to customers, even if internal
- Policy: management should have internal and external policy and communicate it
- Quality: must remain on all previous points.

ANNEX QUESTIONNAIRES OF RIC

RA I

Algiers (Algeria)
Cairo (Egypt)
Gaborone (Botswana)
Nairobi (Kenya)

RA II
Beijing (China)
Tsukuba (Japan)

RA III
Buenos Aires (Argentina)

RA IV
Georgetown (Barbados),
San-Jose (Costa Rica),
United States

RA V
Manila (Philippines)
Melbourne (Australia)

RA VI
Bratislava (Slovakia)
Ljubljana (Slovenia)
Trappes (France)

The table shows a summary of RIC capabilities.

Country	Area (km2)	Habitant	PIB / hab ($us)	Level	Comments
Algeria	2 381 741	31 277 942	1630	3	
Argentina	2 791 810	39 144 753	6 391	5	
Australia	7 703 580	20 124 071	20 900	5	
Barbados	430	278 289	15 560	2	
Botswana	581 730	1 812 547	7 820	2	
China	9 574 479	1 306 313 812	1 030	?	
Costa-Rica	51 090	4 019 723	4 266	2	
Egypt	1 002 000	77 505 756	1 140	2	
United States	9 640 000	295 734 134	36 731	5	
France	552 000	60 000 000	24 386	5	
Japan	378 000	127 000 000	31 433	5	
Kenya	581 000	32 021 856	980	2	
Philippines	300 437	870 857 473	1 050	3	
Slovenia	20 273	2 011 070	17 130	5	
Slovakia	49 034	5 423 567	11 960	5	

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

4. IDENTIFICATION

4.1. ***Member country: ALGERIA*** ..... ***WMO Region: RA I*** ....

4.2. Regional Instrument Centre (RIC):

Title, first name and surname of the Director

Mr Kirouane..... / Abdelmalek .....
(Family Name) *(First Name)*

Postal Address of the RIC:

1 Avenue Mohamed Khemisti

B.P. 153 Dar el Beida

16012 ALGER, ALGERIE.....

Telecommunication links:

Telephone: +213 21 50 73 93 ..... E-mail: a.kirouane@meteo.dz.....

Telefax: +213 21 50 88 49..... Website www.meteo.dz .....

4.3. PRIMARY CONTACT PERSON FOR YOUR RIC

4.3.1. Technical / Scientific Manager

Name : Mr. Naili ..... / Rabah.....
(Family Name) *(First Name)*

Position : Director of National Center for Settlement and Materials (CNIM).....

Phone : +213 21 50 73 93.....

Fax : +213 21 50 88 49.....

E-mail : r.naili@meteo.dz.....

4.3.2. Resource Manager

Name : ..... /.....
(Family Name) *(First Name)*

Position : Responsible of Human Resource Department .....

Phone : +213 21 50 73 93.....

Fax : +213 21 50 88 49.....

E-mail : .....

4.4. STAFF AVAILABLE AT YOUR RIC

4.4.1. Technical staff

Number of experts: 10.....

Specify as far as possible: .....

4.4.2. Lecturers and trainers

Number of experts: 3.....

Specify as far as possible:. .....

5. PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

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- Level 1 called Basic level is absolute minimum working level ; TOR a) and g) are satisfied
- Level 2 called Promotion Level ; c) is also satisfied
- Level 3 called Standard Level ; b) and e) are satisfied
- Level 4 called Extended Level ; d) and f) are completed
- Level 5 called Certified Level : The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Method: You start at level 1 (one), you try to complete that level, then you fill the next level, and so on.
You may consider that a level is clear if your answer is "Yes" to at least two thirds of this level.
Then you try to self evaluate your RIC level.

Please send the file by mail at jerome.duvernoy@meteo.fr as soon as possible and no later than.

Thank you very much for your participation.

Level 1	Basic	YES	NO	partly	comments
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;	YES			Please complete sheet in annex A
	Are your meteorological standard instruments linked to international or national standards	YES			Pressure to Trappes
	Have you documented the performance of your standards as compared to the standard to which linked		NO		uncertainty
	(g) To keep a library of books and periodicals on instrument theory and practices;	YES			Moderate
Level 2	Promotion				
	(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;	YES			
	The instruments of the main observing network is managed and regularly calibrated	YES			
	Calibration reports are established	YES			
	RIC has got external customers	YES			<10
Level 3	Standard				
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;		NO		
	your RIC assisted Members of the Region falling in your responsibility[4] in calibrating their instruments with the standard instruments available at your centre		NO		No demand
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;	YES			
	your RIC assisted Members of the Region falling in your responsibility[5] in training their staff, especially dealing with instrument maintenance and calibration.		NO		NO demand

[4] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

[5] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

Level 4	Extended				
	(d) To organize instrument evaluations and comparisons, following standard methods;	YES			
	Have you organized or participate in international instrument evaluations or comparisons?	YES			Shield, solar
Specify as far as possible					
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;	YES			
	Have you organized international symposia, seminars or workshops?		NO		
	More especially, have you organized symposia, seminars or workshops dealing with instruments, maintenance or calibrations?		NO		But possible
Specify as far as possible	A shield comparison is organized with France inside WMO				
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.	YES			
	Have you established relationships with other Regional Instrument Centres ?	YES			historical
Specify as far as possible	The pressure reference is linked to RIC VI Trappes, The bilateral collaboration is annually since 2 or 3 years				
Level 5	Certified or Accredited				
	Have you established a standard certification process ?	NO			
Specify as far as possible					

Estimated level achieved by the RIC … : 2 / 4
(selected the level)

Add any comments:

Domain	Type of standard	Type	Manufacturer	Range	Uncertainty	Traceability to	certification	observation
Temperature	Secondary	mercury	Thermo Schneider	-40°C to 60°C	indeterminate	Manufacturer		Last calibration 1972 MPC Bath
Pressure	Secondary	numerical	paroscientific	700-1100 hPa	indeterminate	Météo-France		
Humidity	Secondary	psychrometer	MPC		indeterminate			MPC Climatic chamber
Solar	Secondary	Eppley			indeterminate	Davos		
Wind	Other		Chauvin Arnoux		indeterminate			control
Rain								

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

1. IDENTIFICATION

1.1 Member country: BOTSWANA ..... ***WMO Region: RA I*** ....

1.2 Regional Instrument Centre (RIC):

Title, first name and surname of the Director / Chief / Head of the RIC[6]

Name: Ms RAMOTHWA..... / Gladys .....
(Family Name) *(First Name)*

Postal Address of the RIC:

DEPARTMENT OF METEOROLOGICAL SERVICES.....

Box 10100 .....

GABORONE

Website www.wheather.info.bw .....

Telecommunication links:

Telephone: +267 3956284 ..... E-mail: gramathwa@gov.bw .....

Telefax: +267 3956282.....

***1.3* PRIMARY CONTACT PERSON FOR YOUR RIC**

1.3.1 Technical / Scientific Manager

Name : Mr BAITSE ..... / BOIKANYO.....
(Family Name) *(First Name)*

Position : Deputy Manager of RIC.....

Phone : +267 3956281 .....

Fax : +267 3956282 ..... E-mail : bbaitse@gov.bw

1.3.2 Resource Manager

Name : Mr MOLOTSI..... / Dira, Fred.....
(Family Name) *(First Name)*

Position : Head of Engineering.....

Phone : +267 3956282 .....

Fax : +267 3956282 .....E-mail : dmolotsi@gov.bw

***1.4* STAFF AVAILABLE AT YOUR RIC**

1.4.1 Technical staff

Number of experts: 6.....

Specify as far as possible: 2 in long duration training , 1 back in June 2006, the second back in January 2007

1.4.2 Lecturers and trainers

Number of experts: 0.....

[2] Please delete the inappropriate.

PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

- Level 1 called Basic level is absolute minimum working level ; TOR a) and g) are satisfied
- Level 2 called Promotion Level ; c) is also satisfied
- Level 3 called Standard Level ; b) and e) are satisfied
- Level 4 called Extended Level ; d) and f) are completed
- Level 5 called Certified Level : The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Method: You start at level 1 (one), you try to complete that level, then you fill the next level, and so on.
You may consider that a level is clear if your answer is "Yes" to at least two thirds of this level.
Then you try to self evaluate your RIC level.

Please send the file by mail at jerome.duvernoy@meteo.fr as soon as possible..

Thank you very much for your participation.

Level 1	Basic	YES	NO	partly	comments
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;	YES			Please complete sheet in annex A
	Are your meteorological standard instruments linked to international or national standards	YES			
	Have you documented the performance of your standards as compared to the standard to which linked		NO		uncertainty
	(g) To keep a library of books and periodicals on instrument theory and practices;	YES			Moderate
Level 2	Promotion				
	(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;	YES			
	Be sure that the national sensor are regularly calibrated	YES			
Level 3	Standard				
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;	YES			
	Assisted Swaziland in 2002				
	To what level has your RIC assisted Members of the Region falling in your responsibility[7] in calibrating their instruments with the standard instruments available at your centre				
	How frequently do you advise Members of the region falling in your responsibility regarding instrument performance and the availability of relevant guidance material				
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;		NO		

[7] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in shearing the work.

Level 4	Extended				
	(d) To organize instrument evaluations and comparisons, following standard methods;		NO		
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;		NO		
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.		NO		
Level 5	Certified or Accredited				
	Have you established a standards certification process		NO		But planned in the next year with the come back of foreign trained people

LEVEL OBTAINED… : 2
(……..)

Comments

Thermometer bath is out of order
Climatic chamber is out of order. Display of Humidity is out of order.
Pressure standard is as reliable as it should be (PA11)
A well trained person should come back in June 2006

Domain	Type of standard	Type	Manufacturer	Range	Uncertainty	Traceability to	certification	observation
Temperature	Secondary	Mercury			not evaluated	SA		HETO Bath
Pressure	Secondary	Aneroid Numeric	Vaisala PA11		not evaluated	SA		Generator Friedrich
Humidity	Secondary	Numeric	Rotronic	Out of order	not evaluated	?		Climatic chamber

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

6. IDENTIFICATION

6.1. ***Member country: EGYPT*** ..... ***WMO Region: RA I*** ....

6.2. Regional Instrument Centre (RIC):

Title, first name and surname of the Director

Mr Mourad Shawky Sah Allah .....
(Family Name) *(First Name)*

Postal Address of the RIC:

P.O.Box 11784 –

Koubry El-Qobba,

Cairo - Egypt .....

Telecommunication links:

Telephone: +202-6820790, +202-6849858 ..... E-mail: ma@idsc.gov.eg .....

Telefax: +202-6849857 ..... Website http://nwp.gov.eg.....

6.3. PRIMARY CONTACT PERSON FOR YOUR RIC

6.3.1. Technical / Scientific Manager

Name: Mr. Magdy A. Abbas..... /.....
(Family Name) *(First Name)*

Position : **Director General of Instruments and Labs**.....

Phone : 002 02 6846596.....

Fax : 002 02 6846596.....

E-mail : ma@idsc.gov.eg.....

6.3.2. Resource Manager

Name : Ms El Azab / Aziza ....
(Family Name) *(First Name)*

Position : General Director of workers affairs.....

Phone : 002 02 6837118.....

Fax : 002 02 6837118.....

E-mail : .....

6.4. STAFF AVAILABLE AT YOUR RIC

6.4.1. Technical staff

Number of experts: 10

Specify as far as possible: .....

6.4.2. Lecturers and trainers

Number of experts: 3

Specify as far as possible: .....

7. PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

- Level 1 called Basic level is absolute minimum working level ; TOR a) and g) are satisfied
- Level 2 called Promotion Level ; c) is also satisfied
- Level 3 called Standard Level ; b) and e) are satisfied
- Level 4 called Extended Level ; d) and f) are completed
- Level 5 called Certified Level : The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Method: You start at level 1 (one), you try to complete that level, then you fill the next level, and so on.
You may consider that a level is clear if your answer is "Yes" to at least two thirds of this level.
Then you try to self evaluate your RIC level.

Please send the file by mail at jerome.duvernoy@meteo.fr as soon as possible..

Thank you very much for your participation.

Level 1	Basic	YES	NO	partly	comments
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;	YES			Please complete sheet in Annex A
	Are your meteorological standard instruments linked to international or national standards			partly	Traceability planned
	Have you documented the performance of your standards as compared to the standard to which linked		no		uncertainty
	(g) To keep a library of books and periodicals on instrument theory and practices;	yes			Specify Moderate
Level 2	Promotion				
	(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;				
	The instruments of the main observing network is managed and regularly calibrated	yes			
	Calibration reports are established	yes			
	RIC has got external customers		no		How many
Level 3	Standard				
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;				
	your RIC assisted Members of the Region falling in your responsibility[8] in calibrating their instruments with the standard instruments available at your centre		no		
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;				
	your RIC assisted Members of the Region falling in your responsibility[9] in training their staff, especially dealing with instrument maintenance and calibration.		no		No demand

[8] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

[9] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

Level 4	Extended				
	(d) To organize instrument evaluations and comparisons, following standard methods;				
	Have you organized or participate in international instrument evaluations or comparisons?		no		
Specify as far as possible					
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;				
	Have you organized international symposia, seminars or workshops?	yes			Planned In 2006
	More especially, have you organized symposia, seminars or workshops dealing with instruments, maintenance or calibrations?	yes			
Specify as far as possible					
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.				
	Have you established relationships with other Regional Instrument Centres?	yes			
Specify as far as possible	Météo-France calibration relationship in 2004				
Level 5	Certified or Accredited				
	Have you established a standard certification process ?		No		
Specify as far as possible					

Estimated level achieved by the RIC … : 2
(select the level)

Add any comments:

Level 2 obtained, but could quickly reach level 4.

Domain	Type of standard	Type	Manufacturer	Range	Uncertainty	Traceability to	certification	observation
Temperature	Other	mercury				Planned 2006		Stirred bath
Pressure	Other	mercury	Fuess	700-1050 hPa	Not established	Météo-France		Theodor Friedrich ch
Humidity	Other	psychrometer				Planned 2006		chamber
Solar	Other	Eppley				Davos		
Wind								Wind tunnel planed

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

1. IDENTIFICATION

1.1 Member country: KENYA ..... ***WMO Region: RA I*** ....

1.2 Regional Instrument Centre (RIC):

Title, first name and surname of the Director

Dr, Ms, Mr [2] MUKABANA ..... / Joseph R. .....
(Family Name) *(First Name)*

Postal Address of the RIC:

KENYA METEOROLOGICAL DEPARTMENT .....

Po Box 30259 Dagoretti Corner Ngong Road .....

NAIROBI 00100 KENYA .....

Telecommunication links:

Telephone: 254 20 3867880 ..... E-mail: director@meteo.go.ke .....

Telefax: 245 20 3876955..... Website www.meteo.go.ke .....

***1.3* PRIMARY CONTACT PERSON FOR YOUR RIC**

1.3.1 Technical / Scientific Manager

Name : Mr KIBIRU ..... / Georges .....
(Family Name) *(First Name)*

Position : .....

Phone : .....

Fax : 245 20 3876955.....

E-mail : kibiru@meteo.go.ke.....

1.3.2 Resource Manager

Name : Dr, Ms, Mr [2] ..... / .....
(Family Name) *(First Name)*

Position : .....

Phone : .....

Fax : .....

E-mail : .....

***1.4* STAFF AVAILABLE AT YOUR RIC**

1.4.1 Technical staff

Number of experts: .....

Specify as far as possible: .....

1.4.2 Lecturers and trainers

Number of experts: .....Specify as far as possible:
School with experts but separate from RIC.

2. PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

- Level 1 called Basic level is absolute minimum working level ; TOR a) and g) are satisfied
- Level 2 called Promotion Level ; c) is also satisfied
- Level 3 called Standard Level ; b) and e) are satisfied
- Level 4 called Extended Level ; d) and f) are completed
- Level 5 called Certified Level : The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Method: You start at level 1 (one), you try to complete that level, then you fill the next level, and so on.
You may consider that a level is clear if your answer is "Yes" to at least two thirds of this level.
Then you try to self evaluate your RIC level.

Please send the file by mail at jerome.duvernoy@meteo.fr as soon as possible..

Thank you very much for your participation.

Level 1	Basic	YES	NO	partly	comments
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;				Please complete sheet in annex A
	Are your meteorological standard instruments linked to international or national standards		No		
	Have you documented the performance of your standards as compared to the standard to which linked		No		uncertainty
	(g) To keep a library of books and periodicals on instrument theory and practices	Yes			Specify huge
Level 2	Promotion Level				
	(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;				
	The instruments of the main observing network is managed and regularly calibrated			partly	
	Calibration reports are established		No		
	RIC has got external customers		No		
Level 3	Standard Level				
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;				
	your RIC assisted Members of the Region falling in your responsibility[10] in calibrating their instruments with the standard instruments available at your centre		No		
Specify as far as possible					
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability		No		

[10] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

	of relevant guidance material;				
	your RIC assisted Members of the Region falling in your responsibility[11] in training their staff, especially dealing with instrument maintenance and calibration.	yes			
Specify as far as possible	A lot of training course in the school of the centre				
Level 4	Extended				
	(d) To organize instrument evaluations and comparisons, following standard methods;				
	Have you organized or participate in international instrument evaluations or comparisons?				
Specify as far as possible			No		
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;				
	Have you organized international symposia, seminars or workshops?		No		
	More especially, have you organized symposia, seminars or workshops dealing with instruments, maintenance or calibrations?		No		
Specify as far as possible					
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.				
	Have you established relationships with other Regional Instrument Centres ?		No		
Level 5	Certified or Accredited				
	Have you established a standard certification process ?		NO		
Specify as far as possible					

[11] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

Estimated level achieved by the RIC … : 2 *(select the level)*

Add any comments:

Domain	Type of standard	Type	Manufacturer	Range	Uncertainty	Traceability to	certification	observation
Temperature	other	mercury		0-20°C	Not established	No traceability		Out of order
Pressure	other	mercury			Not established	No traceability		Out of order
Humidity	other	nothing			Not established	No traceability		Out of order
Solar	other	out of order	Eppley		Not established	No traceability		Out of order
Wind	other	nothing			Not established	No traceability		Out of order
Rain	other				Not established	No traceability		Out of order

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

8. IDENTIFICATION

8.1. ***Member country:*** ***P. R. China*** ..... ***WMO Region: RA II*** ...

8.2. Regional Instrument Centre (RIC):

Title, first name and surname of the Director

Dr, Ms, Mr [2] Zong ..... /Manye .....
(Family Name) *(First Name)*

Postal Address of the RIC:

Atmospheric Observation Technology Centre .....

China Meteorological Administration (CMA).....

No. 46, Zhongguancun Nandajie, Beijing, 100081, P.R. China.....

Telecommunication links:

Telephone: 86-10-68406778 ..... E-mail: zongmanye@163.com.....

Telefax: 86-10-68400936 ..... Website Http://www.wmic.cn.....

8.3. PRIMARY CONTACT PERSON FOR YOUR RIC

8.3.1. Technical / Scientific Manager

Name: Sha ..... / Yizhuo .....
(Family Name) *(First Name)*

Position : Director of National Centre for Meteorological Metrology (NCMM) & Executive Director

of RIC II (Beijing) .....

Phone : 86-10-68407915 .....

Fax : 86-10-68407915 .....

E-mail : syz@cams.cma.gov.cn.....

8.3.2. Resource Manager

Name : Dr, Ms, Mr [2] He..... / Xiaolei .....
(Family Name) *(First Name)*

Position : Deputy Director of National Centre for Meteorological Metrology (NCMM).....

Phone : 86-10-68407915 .....

Fax : 86-10-68407915 .....

E-mail : xiaolei.he@263.net.....

8.4. STAFF AVAILABLE AT YOUR RIC

8.4.1. Technical staff

Number of experts: 9.....

Specify as far as possible: Mr. Sha Yizhuo; Mr. He Xiaolei; Mr. Zhu Lekun; Mrs. Yang Yun; Mrs. Mo Yueqin; Mrs. Chang Shicong; Mrs. Li Jianying; Mrs. Wen Xiaoqing; Mr. Yu Hejun.....

8.4.2. Lecturers and trainers

Number of experts: 5.....

Specify as far as possible: Mr. Sha Yizhuo; Mr. He Xiaolei; Mr. Zhu Lekun; Mrs. Yang Yun;

Mrs. Mo Yuegin .....

9. PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

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- Level 1 called local level is basic working level ; TOR a) and g) are satisfied
- Level 2 called national Level ; c) is also satisfied
- Level 3 called Regional Level ; b) and e) are satisfied
- Level 4 called Worlwide Level ; d) and f) are completed
- Level 5 called Certified Level : The RIC or the laboratory or the organization is certified or accreditated by an external organization against ISO normalization (ISO 9xxx or ISO 17 025)

Method: You start at level 1 (one), you try to complete that level, then you fill the next level, and so on.
You may consider that a level is clear if your answer is "Yes" to at least two thirds of this level.
Then you try to self evaluate your RIC level.

Please send the file by mail at jerome.duvernoy@meteo.fr as soon as possible and no later than.

Thank you very much for your participation.

Level 1	Basic	YES	NO	partly	comments
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;	√			Please complete sheet in annex A
	Are your meteorological standard instruments linked to international or national standards	√			
	Have you documented the performance of your standards as compared to the standard to which linked	√			uncertainty
	(g) To keep a library of books and periodicals on instrument theory and practices;	√			Specify small √ Moderate Huge
Level 2	Promotion	√			
	(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;	√			
	The instruments of the main observing network is managed and regularly calibrated	√			
	Calibration reports are established	√			
	RIC has got external customers	√			How many
Level 3	Standard				
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;	√			
	your RIC assisted Members of the Region falling in your responsibility[12] in calibrating their instruments with the standard instruments available at your centre	√			
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;	√			
	your RIC assisted Members of the Region falling in your responsibility[13] in training their staff, especially dealing with instrument maintenance and calibration.	√			

[12] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

[13] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

Level 4	Extended				
	(d) To organize instrument evaluations and comparisons, following standard methods;		√		
	Have you organized or participate in international instrument evaluations or comparisons?	√			
Specify as far as possible					
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;		√		
	Have you organized international symposia, seminars or workshops?		√		
	More especially, have you organized symposia, seminars or workshops dealing with instruments, maintenance or calibrations?		√		
Specify as far as possible					
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.		√		
	Have you established relationships with other Regional Instrument Centres?		√		
Specify as far as possible					
Level 5	Certified or Accreditated				
	Have you established a standard certification process ?				
Specify as far as possible	Supposed to be		√		

Estimated level achieved by the RIC : 3
(selected the level)

Add any comments:

Domain	Type of standard	Type	Manufacturer	Range	Uncertainty	Traceability to	certification	observ
Temperature	First-class	WZPB	DAFANG	-189.3442°C to 100°C	7mK	NIM P.R.C.		
Pressure	First-class	2465	RUSKA	14hPa to 1720hPa	0.0035%	NIM P.R.C.		
Humidity	Second-class	M4/1111	GEI	10%RH to 99%RH	1%RH	NIM P.R.C.		
Solar	Primary	H-F	USA	0W/m^2 to 1600 W/m^2	0.25%	WRC		
	Primary	PMO-6	Swiss	0W/m^2 to 1600 W/m^2	0.25%	WRC		
Wind	First-class	NPL	NPL	2.0m/s to 70.0m/s	0.1%	NPL		
Rain	Last-class	LR-2	China	157.08mL	0.200 mL	NIM P.R.C.		
			China	314.16 mL	0.500 mL			
			China	942.48 mL	2.000 mL			

NIM P.R.C –National Institute of Metrology of P. R. China

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

2. IDENTIFICATION

2.7. Member country: Japan ..... ***WMO Region: RA II*** ...

2.8. Regional Instrument Centre (RIC):

Title, first name and surname of the Director

The director of RIC is temporarily a vacant seat due to the human affairs of JMA. Because new director will be appointed in April, his or her name will be reported until the ET meeting.

Mr / .....
(Family Name) *(First Name)*

Postal Address of the RIC:

1-2 Nagamine, Tsukuba-city, Ibaraki Japan, 305-0052.....

.....

.....

Telecommunication links:

Telephone: +81-3-3212-8341 ex. 4131 ..... E-mail: ric-jma@met.kishou.go.jp .....

Telefax: ..... Website http://www.jma.go.jp/.....

2.9. **PRIMARY CONTACT PERSON FOR YOUR RIC**

2.9.1..... Technical / Scientific Manager

Name: Mr Kinoshita / Nobuyuki.....
(Family Name) *(First Name)*

Position: Senior coordinator for observational technology .....

Phone: +81-3-3211-8341 ex. 4185 .....

Fax: +81-3-3211-7084 .....

E-mail: ric-jma@met.kishou.go.jp .....

2.9.2..... Resource Manager

Name: Mr Ishikawa / Shoumei .....
(Family Name) *(First Name)*

Position: Director of Meteorological Instruments Center .....

Phone: +81-29-851-4122 .....

Fax: +81-29-851-1670 .....

E-mail: ric-tsukuba@met.kishou.go.jp .....

2.10. **STAFF AVAILABLE AT YOUR RIC**

2.10.1..... Technical staff

Number of experts: 11.....

Specify as far as possible: .....

2.10.2..... Lecturers and trainers

Number of experts: 3.....

Specify as far as possible: .....

3. PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

- Level 1 called Basic level is absolute minimum working level; TOR a) and g) are satisfied
- Level 2 called Promotion Level; c) is also satisfied
- Level 3 called Standard Level; b) and e) are satisfied
- Level 4 called Extended Level; d) and f) are completed
- Level 5 called Certified Level: The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Method: You start at level 1 (one), you try to complete that level, then you fill the next level, and so on.
You may consider that a level is clear if your answer is "Yes" to at least two thirds of this level.
Then you try to self evaluate your RIC level.

Please send the file by mail at jerome.duvernoy@meteo.fr as soon as possible..

Thank you very much for your participation.

Level 1	Basic	YES	NO	Partly	Comments
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;				
	Are your meteorological standard instruments linked to international or national standards	√			
	Have you documented the performance of your standards as compared to the standard to which linked	√			Uncertainty in annex
	(g) To keep a library of books and periodicals on instrument theory and practices;	√			Moderate
Level 2	Promotion				
	(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;				
	The instruments of the main observing network is managed and regularly calibrated	√			
	Calibration reports are established	√			
	RIC has got external customers	√			
Level 3	Standard				
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;				
	your RIC assisted Members of the Region falling in your responsibility[14] in calibrating their instruments with the standard instruments available at your centre	√			
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;				
	your RIC assisted Members of the Region falling in your responsibility[15] in training their staff, especially dealing with instrument maintenance and calibration.	√			

[14] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

[15] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

Level 4	Extended				
	(d) To organize instrument evaluations and comparisons, following standard methods;				
	Have you organized or participate in international instrument evaluations or comparisons?		√		
Specify as far as possible					
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;				
	Have you organized international symposia, seminars or workshops?	√			
	More especially, have you organized symposia, seminars or workshops dealing with instruments, maintenance or calibrations?	√			
Specify as far as possible	1998 WMO Training Workshop for Instrument Specialists of RA II				
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.				
	Have you established relationships with other Regional Instrument Centres?	√			
Specify as far as possible	2002 The 2nd meeting of JMA and CMA regarding the RIC activities in RA II				
Level 5	Certified or Accredited				
	Have you established a standard certification process?	√	Our standard process has not been certified by an external organization, however.		
Specify as far as possible					

Estimated level achieved by the RIC … : 4
(selected the level)

Add any comments:

ANNEX QUESTIONNAIRES OF RIC JAPAN

Domain	Type of standard	Type	Manufacturer	Range	Uncertainty	Traceability to	Certification	Observation
Temperature	Primary	Platinum	Netsushin Co.,Ltd	-80°C to +50°C	0.000008 with resistance ratio 1.609470 at indium point 0.0000035 with resistance ratio 0.8442204 at mercury point	AIST,Japan		
Pressure	Primary	Weight piston	Futaba Sokki Co.,Ltd	50hPa to 1150hPa	0.032hPa	AIST,Japan		
Humidity	Primary	Chilled mirror Dew point	General Eastern Instrument Co.,Ltd	-10°C to +25°C	0.08 to 0.22°C	AIST,Japan		
Solar	Secondary	Pyranometer	Kipp&Zonen Co.,Ltd	305 to 2800 nm		RRC, RA		
Wind	Primary	Supersonic	Kaijo Co.,Ltd	0 to 20m/s	0.006 to 0.059m/s	AIST,Japan		
		Pitot tube Differential pressure gauge	Rikaseiki Co.,Ltd Yokogawadenki Co.,Ltd	20 to 90m/s	0.0030 to 0.0040m/s			
Rain	Secondary	Buret	Yoshinokeiki Co.,Ltd	0 to 1571ml		ILAC-JCSS0114		

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

2. IDENTIFICATION

2.1. ***Member country: BUENOS AIRES*** ..... ***WMO Region: RA III*** .....

2.2. Regional Instrument Centre (RIC):

Title, first name and surname of the Director

Dr, Ms, Mr [2] RABIOLO ..... / Miguel Angel .....
(Family Name) *(First Name)*

Postal Address of the RIC:

SERVICIO METEOROLOGICO NACIONAL .....

25 de Mayo 658 .....

1002 BUENOS AIRES, CAITAL FEDERAL, ARGENTINA .....

Telecommunication links:

Telephone: (54-11)5167-6712 ..... E-mail:rabiolo@meteofa.mil.ar .....

Telefax: (54-11)5167-6712..... Website: www.meteofa.mil.ar .....

2.3. PRIMARY CONTACT PERSON FOR YOUR RIC

2.3.1. Technical / Scientific Manager

Name : DAMBORIANA..... / Carlos Alberto .....
(Family Name) *(First Name)*

Position : Director Logistico (Logistic Director).....

Phone : (54-11)5167-6714.....

Fax : (54-11)5167-6714.....

E-mail : cdambo@meteofa.mil.ar.....

2.3.2. Resource Manager

Name : Dr, Ms, Mr [2] CORTES ..... / DANIEL .....
(Family Name) *(First Name)*

Position : Chief of Instrumental Department.....

Phone : (54-11)5167-6714.....

Fax : (54-11)5167-6714.....

E-mail : cortes@meteofa.mil.ar.....

2.4. STAFF AVAILABLE AT YOUR RIC

2.4.1. Technical staff

Number of experts: 12.....

Specify as far as possible: technicians.....

2.4.2. Lecturers and trainers

Number of experts: 4 teachers full time, 25 teachers part time

Specify as far as possible: 4 class I, 10 class I, 15 class II.....

3. PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

.

- Level 1 called Basic level is absolute minimum working level; TOR a) and g) are satisfied
- Level 2 called Promotion Level; c) is also satisfied
- Level 3 called Standard Level; b) and e) are satisfied
- Level 4 called Extended Level; d) and f) are completed
- Level 5 called Certified Level: The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Method: You start at level 1 (one), you try to complete level, then you fill the next level. And so on.
A level is clear is you answer Yes to at least two third of the level.
Then you try to self evaluate your RIC level.

Please send the file by mail at jerome.duvernoy@meteo.fr as soon as possible and no later than 15 October.

Thank you very for your participation.

Level 1	Basic	YES	NO	partly	comments
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;	X			Please complete sheet in annex A
	Are your meteorological standard instruments linked to international or national standards			X	Solar and Ozone
	Have you documented the performance of your standards as compared to the standard to which linked		X		uncertainty
	(g) To keep a library of books and periodicals on instrument theory and practices;	X		moderate	Specify small Moderate huge
Level 2	Promotion				
	(c) To be prepared to certify the instrument's conformity with the standards with reference to WMO recommendations;	X			
	The instruments of the main observing network is managed and regularly calibrated	X			
	Calibration report are established	X			
	RIC has got external customers	X		300/year	How many
Level 3	Standard				
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;	X			
	your RIC assisted Members of the Region falling in your responsibility[16] in calibrating their instruments with the standard instruments available at your centre	X			
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;	X			

[16] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in shearing the work.

	your RIC assisted Members of the Region falling in your responsibility[17] in training their staff, especially dealing with instrument maintenance and calibration.	X			
Level 4	Extended				
	(d) To organize instrument evaluations and comparisons, following standard methods;	X			
Specify as far as possible	2 intercomparisons DAVOS and US (Ozone)				
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;	X			
Specify as far as possible	5 regulars workshops per year; some others specials cooperation with university				
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.	X			
	With US				
Level 5	Certified or Accreditated		X		
	Have you established a standards certification process ?		X		
	Specify as far as possible.				

Estimated level achieved by the RIC … : 4
(select the level)

Add any comments:

Actual level is 4 and could easily achieved 5 but the First level (traceability) is not yet complete.

Note: during the workshop contact have been established with the BIPM. The calibration of the standards would be done in the next future.

[17] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in shearing the work.

ANNEX QUESTIONNAIRES OF ARGENTINA

Domain	Type of standard	Type	Manufacturer	Range	Uncertainty	Traceability to	certification	observation
Temperature	secondary	mercury		-5 to +60 °C	Not established			Looking for traceability
Pressure	Primary	mercury	Hass Instrument	500-1060 hPa	Not established			Micrometer standard barometer
Humidity	Secondary	psychrometer	thermoquartz	-70 C to +70°C -50°C to +80°C	Not established	temperature		Two Climatic chambers
Solar	secondary	solarmeter	?		Not established	Davos		Send to Davos during visit
Wind	secondary	Pitot tube	Santos Zaghi	1.5 to 25 m/s	U<1 m/s	pressure		Wind tunnel
Ozone	secondary	spectrophotometer	Dobson	200 to 500 DU		US		

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

2. IDENTIFICATION

2.1. ***Member country: BARBADOS*** ..... ***WMO Region: RA IV*** .....

2.2. Regional Instrument Centre (RIC):

Title, first name and surname of the Director

Dr, DEPRADINE ..... / Colin. .....
(Family Name) *(First Name)*

Postal Address of the RIC:

CARIBBEAN INSTITUTE FOR METEOROLOGY AND HYDROLOGY .....

P.O. BOX 130 .....

BRIDGETOWN, BARBADOS .....

Telecommunication links:

Telephone: (246) 425 1362..... E-mail: depradinec@cimh.edu.bb.....

Telefax: (246) 424 4733 ..... Website: www.cimh.edu.bb .....

2.3. PRIMARY CONTACT PERSON FOR YOUR RIC

2.3.1. Technical / Scientific Manager

Name : Mr LESLIE ..... / Ronald .....
(Family Name) *(First Name)*

Position : Instruments Section (Technical officer I) .....

Phone : (246) 425 1362 .....

Fax : (246) 424 4733 .....

E-mail : leslier@cimh.edu.bb .....

2.3.2. Resource Manager

Dr, DEPRADINE ..... / Colin. .....
(Family Name) *(First Name)*

Postal Address of the RIC:

CARIBBEAN INSTITUTE FOR METEOROLOGY AND HYDROLOGY .....

P.O. BOX 130 .....

BRIDGETOWN, BARBADOS .....

Telecommunication links:

Telephone: (246) 425 1362.....

Telefax: (246) 424 4733 .....

E-mail: depradinec@cimh.edu.bb .....

2.4. STAFF AVAILABLE AT YOUR RIC

2.4.1. Technical staff

Number of experts: 2 .....

Specify as far as possible: technicians.....

2.4.2. Lecturers and trainers

Number of experts: 2 teachers.....

Specify as far as possible: 2 technicians in instruments training .....

3. PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

.

- Level 1 called Basic level is absolute minimum working level; TOR a) and g) are satisfied
- Level 2 called Promotion Level; c) is also satisfied
- Level 3 called Standard Level; b) and e) are satisfied
- Level 4 called Extended Level; d) and f) are completed
- Level 5 called Certified Level: The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Level 1	**Basic**	**YES**	**NO**	**partly**	**comments**
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;			X	Please complete sheet in annex A
	Are your meteorological standard instruments linked to international or national standards		X		
	Have you documented the performance of your standards as compared to the standard to which linked		X		uncertainty
	(g) To keep a library of books and periodicals on instrument theory and practices;	X		Small	Specify small Moderate huge
Level 2	**Promotion**	**YES**	**NO**	**partly**	**comments**
	(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;		X		
	The instruments of the main observing network is managed and regularly calibrated		X		
	Calibration reports are established		X		
	RIC has got external customers		X		How many
Level 3	**Standard**	**YES**	**NO**	**partly**	**comments**
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;		X		
	your RIC assisted Members of the Region falling in your responsibility[18] in calibrating their instruments with the standard instruments available at your centre		X		
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;	X			
	your RIC assisted Members of the Region falling in your responsibility[19] in training their staff, especially dealing with instrument maintenance and calibration.	X			

[18] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in shearing the work.

[19] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in shearing the work.

Level 4	**Extended**	**YES**	**NO**	**partly**	**comments**
	(d) To organize instrument evaluations and comparisons, following standard methods;		X		
Specify as far as possible					
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;	X			
	Have you organized international symposia, seminars or workshops?	X			
	More especially, have you organized symposia, seminars or workshops dealing with instruments, maintenance or calibrations?	X			
Specify as far as possible	Not regularly, not frequent cooperation with university SIDS project workshop				
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.		X		
Level 5	**Certified or Accredited**	**YES**	**NO**	**partly**	**comments**
	Have you established a standard certification process ?		X		
Specify as far as possible					

Estimated level achieved by the RIC … : 1
(selected the level)

Add any comments:
With The SIDS-Caribbean project, this RIC should increase quickly to level 2 or 3. But the traceability problem should not remain.
The staff numbers should be reinforced. An organizational structure is needed.

Domain	Type of standard	Type	Manufacturer	Range	Uncertainty	Traceability to	Certification	Observation
Temperature								Stirred liquid bath
Pressure	Secondary	DPI 140	DRUCK	35-1150 hPa		MET OFFICE (1992)		Theodor Friedrichs generator FR700
Humidity	Secondary							Climatic chamber Salt solution generator Just received not in order
Solar	Secondary	Angstrom electrical compensation pyrheliometer	Eppley			1968		Connected to a Norma galvanometer and a resistance bridge network Out of order
Wind								
Rain								
Other (specify)								

The SIDS project includes some calibration facilities but no standards are supplied only a reference pyranometer is mentioned.
Some information from WMO is requested.

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

1. IDENTIFICATION

1.1 Member country: COSTA RICA (San-José)..... ***WMO Region: IV*** .....

1.2 Regional Instrument Centre (RIC):

Title, first name and surname of the Director RIC[20]

Mr MANSO ..... / Paulo .....
(Family Name) *(First Name)*

Postal Address of the RIC:

Barrio Aranjuez.....

5583-1000 SAN JOSE, COSTA-RICA .....

.....

Website www.imn.ac.cr .....

Telecommunication links:

Telephone: 506-222-5616 (108)..... E-mail: pmanso@imn.ac.cr.....

Telefax: 506-223-1837 .....

***1.3* PRIMARY CONTACT PERSON FOR YOUR RIC**

1.3.1 Technical / Scientific Manager

Name: Mr LIAO..... / Alfonso
(Family Name) *(First Name)*

Position: Meteorological Data Department.....

Phone: 506-222-5616 (140).....

Fax: 506-223-1837 .....

E-mail: aliao@imn.ac.cr.....

1.3.2 Resource Manager

Name: Mr Villalobos..... / Roberto.....
(Family Name) *(First Name)*

Position: Administrative and Financial Unit .....

Phone: 506-222-5616 .....

Fax: 506-223-1837 .....

E-mail: rvilla@imn.ac.cr.....

***1.4* STAFF AVAILABLE AT YOUR RIC**

1.4.1 Technical staff

Number of experts: 5.....

Specify as far as possible: 1 engineer 4 technicians

1.4.2 Lecturers and trainers

Number of experts: 0.....

[20] Please delete the inappropriate.

2. PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

.

- Level 1 called Basic level is absolute minimum working level; TOR a) and g) are satisfied
- Level 2 called Promotion Level; c) is also satisfied
- Level 3 called Standard Level; b) and e) are satisfied
- Level 4 called Extended Level; d) and f) are completed
- Level 5 called Certified Level: The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Method: You start at level 1 (one), you try to complete that level, then you fill the next level, and so on.
You may consider that a level is clear if your answer is "Yes" to at least two thirds of this level.
Then you try to self evaluate your RIC level.

Please send the file by mail at jerome.duvernoy@meteo.fr as soon as possible and no later than.

Thank you very much for your participation.

Level 1	Basic	YES	NO	Partly	Comments
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;			Partly	Please complete sheet in Annex A
	Are your meteorological standard instruments linked to international or national standards		NO		
	Have you documented the performance of your standards as compared to the standard to which linked		NO		Uncertainty
	(g) To keep a library of books and periodicals on instrument theory and practices;	YES			small
Level 2	Promotion				
	(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;		NO		
	The instruments of the main observing network is managed and regularly calibrated			partly	raingauge
	Calibration reports are established	YES			
	RIC has got external customers		NO		How many
Level 3	Standard				
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;	NO			
	your RIC assisted Members of the Region falling in your responsibility[21] in calibrating their instruments with the standard instruments available at your centre	NO			
Some regular assistance is done to the central American countries, especially political and technical visit and assistance to near neighbors.					
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;		YES		
	your RIC assisted Members of the Region falling in your responsibility[22] in training their staff, especially dealing with instrument maintenance		YES		

[21] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work. √

[22] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

	and calibration.				

Level 4	Extended				
	(d) To organize instrument evaluations and comparisons, following standard methods;		NO		
	Have you organized or participate in international instrument evaluations or comparisons?		NO		
Specify as far as possible	Not prepared now				
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;				
	Have you organized international symposia, seminars or workshops?	YES			
	More especially, have you organized symposia, seminars or workshops dealing with instruments, maintenance or calibrations?	YES			
Specify as far as possible	many visits from neighbors, but not especially on technical points				
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.	YES			Hurricane forecasting
	Have you established relationships with other Regional Instrument Centres?	YES		Partly	forecasted
Specify as far as possible	Collaboration is done with other metrological center in the RIC and within RIC of other region, especially for hurricane commission and numerical models. Some contacts with USA to technical problem (calibration, spare parts and so on)				
Level 5	Certified or Accredited				
	Have you established a standard certification process?		NO		
Specify as far as possible	The certification process is planned for the next five years but it is not the priority				

Estimated level achieved by the RIC … : 1
(Select the level)

Add any comments:

The certification process is planned for the next five years but it is not the priority.

Some strengthened must be done very quickly. Some collaboration with local metrology and local organizations (EDF, Agua) must be initiated.

Domain	Type of standard	Type	Manufacturer	Range	Uncertainty	Traceability to	Certification	Observation
Temperature	Nothing					NO		
Pressure	Primary	Mercury	Fuess	Out of order	Undetermined	NO		Not calibrated since a long time
Humidity	Saturated salt solution generator	HMK 15	Vaisala	11% 95%	Not establish	NO		No reference
Solar	Solar meter		Kipp & Zonen		Not establish	NO		Bench not operational
Wind			young			NO		Service control
Rain	Bench	Siphon	Self-made	50 mm/h		NO		Balance reference

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

1. IDENTIFICATION

1.1 Member country: PHILIPPINES ..... ***WMO Region: RA V*** ...

1.2 Regional Instrument Centre (RIC):

Name: Mr ROLLIN Jr. / Martin F. .....
(Family Name) *(First Name)*

Position: Deputy Director for Administration & Engineering Services

Postal Address of the RIC:

Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)

Science Garden Complex .....

Agham Road, Diliman .....

QUEZON CITY 1101 .....

PHILIPPINES .....

Phone: (632) 434 2579 .....

Fax: (632) 932-2335 .....

E-mail: mfr_jr@pagasa.dost.gov.ph .....

1.3 PRIMARY CONTACT PERSON FOR YOUR RIC

1.3.1 Technical / Scientific Manager

Name: Mr DOCTOR / Claro S
(Family Name)(First Name)

Position: Engineering and Maintenance Division .....

Phone: (632) 932 5107 .....

Fax: (632) 932-2335 .....

Remark: until august 2005 .....

1.3.2 Resource Manager

Dr, SORIANO JR. ..... / Bernardo M. .....
(Family Name) *(First Name)*

Telecommunication links:

Telephone: (632) 434-2675 ..... E-mail: bmsorianojr@yahoo.com .....

Telefax: (632) 434-2675 .....

1.4 STAFF AVAILABLE AT YOUR RIC

1.4.1 Technical staff

Number of experts: 33.....

Specify as far as possible: 14 engineers and 19 technicians.....

1.4.2 Lecturers and trainers

Number of experts: 14.....

Specify as far as possible: 14 engineers + cooperation with university .....

2. PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

.

- Level 1 called Basic level is absolute minimum working level; TOR a) and g) are satisfied
- Level 2 called Promotion Level; c) is also satisfied
- Level 3 called Standard Level; b) and e) are satisfied
- Level 4 called Extended Level; d) and f) are completed
- Level 5 called Certified Level: The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Method: You start at level 1 (one), you try to complete that level, then you fill the next level, and so on.
You may consider that a level is clear if your answer is "Yes" to at least two thirds of this level.
Then you try to self evaluate your RIC level.

Please send the file by mail at jerome.duvernoy@meteo.fr as soon as possible and no later than.

Thank you very much for your participation.

Level 1	Basic	YES	NO	Partly	Comments
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;	YES			Please complete sheet in Annex A
	Are your meteorological standard instruments linked to international or national standards	YES			Australia
	Have you documented the performance of your standards as compared to the standard to which linked				uncertainty
	(g) To keep a library of books and periodicals on instrument theory and practices;	YES			Moderate
Level 2	Promotion				
	(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;				
	The instruments of the main observing network is managed and regularly calibrated	YES			Project of increasing calibration capabilities.
	Calibration reports are established		NO		
	RIC has got external customers		NO		How many
Level 3	Standard				
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;		NO		
	your RIC assisted Members of the Region falling in your responsibility[23] in calibrating their instruments with the standard instruments available at your centre		NO		
	Project of producing cheap balloon for upper air				measurement.
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;				
	Your RIC assisted Members of the Region falling in your responsibility[24] in training their staff, especially dealing with instrument maintenance and calibration.				

[23] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

[24] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

Level 4	Extended				
	(d) To organize instrument evaluations and comparisons, following standard methods;		NO		
	Have you organized or participate in international instrument evaluations or comparisons?		NO		
Specify as far as possible					
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;		NO		
	Have you organized international symposia, seminars or workshops?		NO		
	More especially, have you organized symposia, seminars or workshops dealing with instruments, maintenance or calibrations?		NO		
Specify as far as possible					
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.				
	Have you established relationships with other Regional Instrument Centres?	YES			Australia
Specify as far as possible					traceability
Level 5	Certified or Accredited				
	Have you established a standard certification process?				
Specify as far as possible		YES			Started in 2002

Estimated level achieved by the RIC … : 2
(Select the level)

Add any comments:
The certification (ISO 9001:2000) process has begun in 2002.
Some possibilities are existent to go to level 3 or 4

Domain	Type of standard	Type	Manufacturer	Range	Uncertainty	Traceability to	Certification	Observation
Temperature	Secondary	Mercury thermometer		5-45°C	Not established	Australia/1999		Climatic chamber and water bath
Pressure	Secondary	Mercury siphon barometer	FUESS	940-1020	Not established	Australia		Fuess generator
Humidity	Working	Mercury psychrometer		20-95%	Not established	internal		Climatic chamber
Solar	National	Radiometer			Not established	DAVOS/2005		
Wind	Working	Pitot tube	140 km/h		Not established	ITDI/NML		Wind tunnel
Rain		Bottle			Not established			
Temperature	Working	Mercury thermometer		5-45°C	Not established	Australia/1999		Climatic chamber and water bath

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

1. IDENTIFICATION

3.7. Member country: ***Australia*** ..... ***WMO Region: RA*** *... V*

3.8. Regional Instrument Centre (RIC):

Title, first name and surname of the Director

Dr, Ms, Mr [2] ..... Gorman / ..... John
(Family Name) *(First Name)*

Postal Address of the RIC:

Australian Regional Instrument Centre, Bureau of Meteorology, ...

700 Collins Street, Docklands Melbourne 3008 .....

Australia.....

Telecommunication links:

Telephone: .....+61 3 9669 4508 ..... E-mail:j.gorman@bom.gov.au

Telefax: .....+61 3 9669 4736 .....W Website

3.9. **PRIMARY CONTACT PERSON FOR YOUR RIC**

3.9.1..... Technical / Scientific Manager

Name: ..... Dollery / ..... Ian
(Family Name) *(First Name)*

Position: ..... Laboratory supervisor

Phone: .....+61 3 9669 4704

Fax: .....+61 3 9669 4736

E-mail: .....i.dollery@bom.gov.au

3.9.2..... Resource Manager

Name: Dr, Ms, Mr [2] ..... Gorman / ..... John
(Family Name) *(First Name)*

Position: .....SRLR

Phone: .....+61 3 9669 4508

Fax: .....+61 3 9669 4736

E-mail: ..... j.gorman@bom.gov.au

3.10. **STAFF AVAILABLE AT YOUR RIC**

3.10.1..... Technical staff

Number of experts: 8

Specify as far as possible: .....

Dr Bruce Forgan
Expert in solar and terrestrial radiation, member of BSRN, National Association of Testing Authorities (NATA) assessor. ISO 17025 signatory. Expert in quality systems design and implementation.

Dr Jim Easson
Expert in ozone measurement by Dobson spectrophotometer and total column ozone determination by sonde.
Mr Arthur Downey
RA-V rapporteur for ozone measurement, expertise in total column ozone measurement via Dobson or sonde, and the modeling of the data.

Dr Matthew Tully
Expert in total column ozone measurement and modeling.

Mr Donald Anderson
Expert in Dobson spectrophotometer, UV spectroradiometers and shortwave solar radiometry.

Dr John Gorman
Expert in humidity, temperature, long wave radiation and anemometry, member of the Australian Standards Committee (EV 007) for environmental monitoring.

Mr Ian Dollery
Expert in pressure, National Association of Testing Authorities (NATA) assessor. Expert in uncertainty analysis. ISO 17025 signatory.

Mr John Storm
Expert in rainfall, temperature, staff training and statistical methods.

3.10.2..... Lecturers and trainers

Number of experts: 2

Specify as far as possible: .....

Dr John Gorman
Lectures trainee observers and technicians from RA-V on measurement theory and uncertainty analysis.

Mr John Storm
Lectures trainee observers and technicians from RA-V on measurement theory and uncertainty analysis.

4. PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

- Level 1 called Basic level is absolute minimum working level; TOR a) and g) are satisfied
- Level 2 called Promotion Level; c) is also satisfied
- Level 3 called Standard Level; b) and e) are satisfied
- Level 4 called Extended Level; d) and f) are completed
- Level 5 called Certified Level: The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Method: You start at level 1 (one), you try to complete that level, then you fill the next level, and so on.
You may consider that a level is clear if your answer is "Yes" to at least two thirds of this level.
Then you try to self evaluate your RIC level.

Please send the file by mail at jerome.duvernoy@meteo.fr as soon as possible..

Thank you very much for your participation.

Level 1	Basic	YES	NO	Partly	Comments
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;	Yes			Please complete sheet in annex A Done
	Are your meteorological standard instruments linked to international or national standards	Yes			
	Have you documented the performance of your standards as compared to the standard to which linked	Yes			Uncertainty attached
	(g) To keep a library of books and periodicals on instrument theory and practices;	Yes			Specify small Moderate Huge
Level 2	Promotion				
	(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;	Yes			
	The instruments of the main observing network is managed and regularly calibrated	Yes			
	Calibration reports are established	Yes			
	RIC has got external customers	Yes			How many 15 - 20
Level 3	Standard				
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;	Yes			
	Your RIC assisted Members of the Region falling in your responsibility[25] in calibrating their instruments with the standard instruments available at your centre	Yes			
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;	Yes			
	Your RIC assisted Members of the Region falling in your responsibility[26] in training their staff, especially dealing with instrument maintenance and calibration.	Yes			

[25] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

[26] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

Level 4	Extended				
	(d) To organize instrument evaluations and comparisons, following standard methods;	Yes			
	Have you organized or participate in international instrument evaluations or comparisons?	Yes			
Specify as far as possible	In the past 12 months the ARIC has: • Taken part in the 10th International Pyrheliometer Inter-comparison at Davos. • Completed barometer inter-comparisons with Meteo France, The Solomon Islands, New Zealand, Papua New Guinea and the Philippines. • Completed a temperature inter-comparison with Malaysia. • Attended the CIMO workshop for RIC metrology (Trappes) and Radiation (Davos). • Undertaken the WMO Dobson inter-comparison in Melbourne. • Provided repair and calibration of the Singapore Dobson. • Completed 3 Instrument Test Reports.				
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;				
	Have you organized international symposia, seminars or workshops?	Yes			BSRN Melbourne 2000
	More especially, have you organized symposia, seminars or workshops dealing with instruments, maintenance or calibrations?	Yes			BSRN Melbourne 2000
Specify as far as possible					
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.				
	Have you established relationships with other Regional Instrument Centres?	Yes			Philippines
Specify as far as possible					
Level 5	Certified or Accredited				
	Have you established a standard certification process?	Yes			17025 for solar radiation
Specify as far as possible					

Estimated level achieved by the RIC … : 5
(Select the level)

The Australian Regional Instrument Centre (ARIC) is hosted by the Australian Bureau of Meteorology. The ARIC also includes elements of the Bureau of Meteorology Training College and the National Meteorological Library.
The ARIC draws on the expertise of approximately 15 scientists and technicians to provide advice and metrology services to the Bureau and the members of WMO Region V. The areas of competency covered by the ARIC are:

- ✓ Atmospheric Pressure
- ✓ Temperature
- ✓ Humidity
- ✓ Surface Wind
- ✓ Rainfall
- ✓ Solar and Terrestrial Radiation
- ✓ Ozone

Add any comments:

Facilities

The ARIC has a series of laboratories at 700 Collins Street and a field test facility in the outer suburbs of Melbourne.
The laboratories have a number of unique systems for the testing, calibration and evaluation of meteorological instruments. For example:

- ∇ A 1 cubic meter capacity environmental chamber (-40 + 100^{o}C);
- ∇ A number of large pressure chambers and controllers;
- ∇ Automated rain gauge testing systems;
- ∇ An automated humidity probe verification systems;
- ∇ Automated barometer verification systems;
- ∇ A low speed wind tunnel
- ∇ Automated systems for verifying temperature probes;
- ∇ Automated systems for the calibration of pyrheliometers and pyranometers, pyrgeometers and net radiometers.

Domain	Type of standard	Type	Manufacturer	Range	Uncertainty 95% confidence	Traceability to	Certification	Observation
Temperature	ITS-90 fixed points (4)	Hg, H_2O, Ga, In	Isotech	-38 – 156°C	20 x10^{-3}K	NPL Great Britain		
Pressure	Dead Weight Tester	Gas piston gauge	Ruska	500 – 1100 hPa	2 Pa	NMI Australia		
Humidity	Dew Point Hygrometer	Chilled mirror	Eastern General	DP -70 - +40	0.15°C DP	NMI Australia		
Solar – short wave	Pyrheliometers	Absolute cavity radiometers	Eppley	0 – 1400Wm^{-2}	2%	WRC Davos	17025	
Solar – long wave	Black Body	Heated cone	CSIRO	70 - 130°C	5%	One of original 5 world standard black bodies (1965)	17025	
Wind	Anemometer	Hot wire anemometer	TSI Instruments	0 – 30 ms^{-1}	1% or 0.5 ms^{-1} which ever is larger	NMI Australia		
Rain	Mass set	Stainless steel	Selby	25 – 500 mm/h	0.0029% of mass	NMI Australia		
Ozone	Photometric O_3 analyzer		Thermo Environmental	1 -	2 ppb	NMI Australia		
	Spectrophotometer	Dobson	Beck		1%	CMDL (NOAA)		

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

2. IDENTIFICATION

2.1. ***Member country: SLOVAKIA*** ..... ***WMO Region: RA VI*** .....

2.2. Regional Instrument Centre (RIC):

Title, first name and surname of the Director

Dr, Ms, Mr [2] RNDr. Pastirčák (Mr. Pastircak)...../ Vladimir.....
(Family Name) *(First Name)*

Postal Address of the RIC:

Slovensky hydrometeorologicky ustav (Slovak Hydrometeorological Institute) .....

Kalibracne laboratorium (Calibration Laboratory) .....

Jeséniova 17, 833 15 Bratislava, Slovakia .....

Telecommunication links:

Telephone: ++421 2 54 77 40 52..... E-mail: Vladimir.Pastircak@shmu.sk

Telefax: ++421 2 54 77 36 20 ..... Website www.shmu.sk

2.3. PRIMARY CONTACT PERSON FOR YOUR RIC

2.3.1. Technical / Scientific Manager

Name: Danč (Mr. Danc)..... / Ján (Jan) .....
(Family Name) *(First Name)*

Position: Head of the Calibration Laboratory.....

Phone: ++421 2 59415136 (I prefer E-mail communication)

Fax: ++421 2 54 77 36 20.....

E-mail: Jan.Danc@shmu.sk

2.3.2. Resource Manager

Name: Dr, Ms, Mr [2]..... / .....
(Family Name) *(First Name)*

Position: .....

Phone: .....

Fax: .....

E-mail: .....

2.4. STAFF AVAILABLE AT YOUR RIC

2.4.1. Technical staff

Number of experts: 3 (+1 external for meteorological instrument theory)

Specify as far as possible: quality system, calibration of met. instruments, calibration of analyzers,

2.4.2. Lecturers and trainers

Number of experts: in this time in Slovak language (in future depends on request)

Specify as far as possible: .....

3. PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

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- Level 1 called Basic level is absolute minimum working level; TOR a) and g) are satisfied
- Level 2 called Promotion Level; c) is also satisfied
- Level 3 called Standard Level; b) and e) are satisfied
- Level 4 called Extended Level; d) and f) are completed
- Level 5 called Certified Level: The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Method: You start at level 1 (one), you try to complete that level, then you fill the next level, and so on.
You may consider that a level is clear if your answer is "Yes" to at least two thirds of this level.
Then you try to self evaluate your RIC level.

Please send the file by mail at jerome.duvernoy@meteo.fr as soon as possible and no later than.

Thank you very much for your participation.

Level 1	Basic	YES	NO	Partly	Comments
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;	X			Please complete sheet in annex A
	Are your meteorological standard instruments linked to international or national standards	X			
	Have you documented the performance of your standards as compared to the standard to which linked	X			Uncertaint y
	(g) To keep a library of books and periodicals on instrument theory and practices;	X			Specify small Moderate Huge
Level 2	Promotion				
	(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;	X			
	The instruments of the main observing network is managed and regularly calibrated	X			
	Calibration reports are established	X			ILAC MRA
	RIC has got external customers	X			46
Level 3	Standard				
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;		*		
	Your RIC assisted Members of the Region falling in your responsibility[27] in calibrating their instruments with the standard instruments available at your centre		*		
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;		*		
	Your RIC assisted Members of the Region falling in your responsibility[28] in training their staff, especially dealing with instrument maintenance and calibration.		*		

[27] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

[28] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

Level 4	Extended				
	(d) To organize instrument evaluations and comparisons, following standard methods;				
	Have you organized or participate in international instrument evaluations or comparisons?	X			
Specify as far as possible	We have only participated in international interlaboratory comparisons with Météo-France, CHMI - Czech Hydrometeorological Institute, Danish Technological Institute (proficiency testing)				
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;				
	Have you organized international symposia, seminars or workshops?		X		
	More especially, have you organized symposia, seminars or workshops dealing with instruments, maintenance or calibrations?		X		
Specify as far as possible					
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.				
	Have you established relationships with other Regional Instrument Centres?		X		
Specify as far as possible					
Level 5	Certified or Accredited	X			
	Have you established a standard certification process?	X			
Specify as far as possible	Accreditation with according to ISO 17 025 by accreditation body SNAS (Slovak National Accreditation Servis), signatory ILAC MRA				

Estimated level achieved by the RIC … : **1** **2** **3** **4** **5**
(Select the level)

Add any comments:

* On request we will able to realize level 3.

ANNEX QUESTIONNAIRES OF RIC SLOVAKIA

Domain	Type of standard	Type	Manufacturer	Range	Uncertainty (Traceability)	Tractability to	Certification	Observation
Temperature	Primary secondary primary	SPRT bridge resistors	Rosemount Hart Scientific Tinsley	-30°C, +40°C 25,100Ω	0.005 °C 0,02°C 2.10^{-6}	SMÚ – national standard		
Temperature	secondary	in-glass-thermometers	TWG	-30°C, +40°C	0,04°C – 0,07°C	SMÚ – national standard		
Pressure	secondary	quartz	DH Instruments, PPC2+	600 – 1100hPa	0,05 hPa	SMÚ – national standard		
Humidity	secondary	Dew point meter	General Eastern D2	-20°C, +20°C	0,22°C (DP)	SMÚ		
Wind	secondary	thermal vane Pitot tube with diff. pressure	Testo	0 – 5 2 – 40 15 – 40 0 – 10 mbar	0,05 m/s 0,21 m/s 0,02 mbar	DKD, Testo SMÚ		
Rain	secondary secondary	volumetric flask set of weight		500 ml 2g–500g	0,07 ml 10^{-4} (of value)	SMÚ		

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

4. **IDENTIFICATION**

4.1. ***Member country: SLOVENIA*** ..... ***WMO Region: RA VI*** ....

4.2. Regional Instrument Centre (RIC):

Title, first name and surname of the Director

Dr. ŽLEBIR..... / SILVO .....
(Family Name) *(First Name)*

Postal Address of the RIC:

Vojkova 1b.....

1001 Ljubljana p.p. 2608 .....

Slovenia.....

Telecommunication links:

Telephone: +386 1 478 4110 ..... E-mail: Silvo.Zlebir@gov.si .....

Telefax: +386 1 478 4054..... Website www.arso.sigov.si.....

4.3. PRIMARY CONTACT PERSON FOR YOUR RIC

4.3.1. Technical / Scientific Manager

Name: GROSELJ ..... / DRAGO.....
(Family Name) *(First Name)*

Position: Head of Calibration Laboratory Service.....

Phone: +386 1 478 4100.....

Fax: + 386 1 478 4054.....

E-mail: Drago.Groselj@gov.si .....

4.3.2. Resource Manager

Name: Mr. Knez..... / Joško.....
(Family Name) *(First Name)*

Position: Head of Monitoring Office .....

Phone: + 386 1 478 4123 .....

Fax: + 386 1 478 4054.....

E-mail: Josko.Knez@gov.si .....

4.4. STAFF AVAILABLE AT YOUR RIC

4.4.1. Technical staff

Number of experts: 7.....

Specify as far as possible: Calibration laboratory service employs five experts in the field of metrology. Professional research work in calibration procedures development and evaluation of measurement uncertainty is confirmed with 10 papers published at international or national conferences. Section for Quality Assurance of Measurements employs three engineers working in the field of intercomparison analyses of the meteorological and hydrological measuring equipment

4.4.2. Lecturers and trainers

Number of experts: 3.....

Specify as far as possible: Lecturers in the filed of temperature, relative humidity and air pressure calibrations are available

5. PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

- Level 1 called Basic level is absolute minimum working level; TOR a) and g) are satisfied
- Level 2 called Promotion Level; c) is also satisfied
- Level 3 called Standard Level; b) and e) are satisfied
- Level 4 called Extended Level; d) and f) are completed
- Level 5 called Certified Level: The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Method: You start at level 1 (one), you try to complete that level, then you fill the next level, and so on.
You may consider that a level is clear if your answer is "Yes" to at least two thirds of this level.
Then you try to self evaluate your RIC level.

Please send the file by mail at jerome.duvernoy@meteo.fr as soon as possible..

Thank you very much for your participation.

Level 1	Basic	YES	NO	Partly	Comments
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;	YES			Please complete sheet in annex A
	Are your meteorological standard instruments linked to international or national standards	YES			
	Have you documented the performance of your standards as compared to the standard to which linked	YES			Uncertainty
	(g) To keep a library of books and periodicals on instrument theory and practices;	Huge			Specify small Moderate Huge
Level 2	Promotion				
	(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;	YES			
	The instruments of the main observing network is managed and regularly calibrated	YES			
	Calibration reports are established	YES			
	RIC has got external customers	YES (18/year)			How many
Level 3	Standard Level				
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;		Not yet		
	Your RIC assisted Members of the Region falling in your responsibility[29] in calibrating their instruments with the standard instruments available at your centre		Not yet		
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;		Not yet		
	Your RIC assisted Members of the Region falling in your responsibility[30] in training their staff, especially dealing with instrument maintenance and calibration.		Not yet		

[29] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

[30] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

Level 4	Extended				
	(d) To organize instrument evaluations and comparisons, following standard methods;	YES			
	Have you organized or participate in international instrument evaluations or comparisons?		Not yet		
Specify as far as possible	Calibration laboratory had participated in intercomparisons on national level in the field of air pressure, temperature relative humidity standards and air quality quantities. Some latest laboratory or field instrument intercomparisons: - field intercomparison of the ultrasonic anemometers, - field and laboratory intercomparison of weighing rain gauges, - field and laboratory intercomparison of radiosondes, - laboratory intercomparison of water level instruments, - test of time domain reflectometers for agro-meteorological use, - test of present weather detectors				
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;		Not yet		
	Have you organized international symposia, seminars or workshops?		Not yet		
	More especially, have you organized symposia, seminars or workshops dealing with instruments, maintenance or calibrations?		Not yet		
Specify as far as possible					
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.		Not yet		
	Have you established relationships with other Regional Instrument Centres?		Not yet		
Specify as far as possible					
Level 5	Certified or Accredited	YES			
	Have you established a standard certification process?	YES			
Specify as far as possible	Accreditation, based on EN 45000 standard, was achieved in 1999 in the field of temperature calibrations by joined assessment of French accreditation service – COFRAC and Slovenian Accreditation - SA. Scope of accreditation, based on ISO/IEC 17025 standard, was extended in the field of air pressure in 2002. Calibration Laboratory is now in a final stage of accreditation process in the field of relative				

Estimated level achieved by the RIC … : 4
(Select the level)

Add any comments:

Domain	Type of standard	Type	Manufacturer	Range	Uncertainty	Traceability to	Certification	Observation
Temperature	Primary	Standard platinum resistance thermometer SPRT 25	ISOTECH	-38°C to +156°C	0.002°C	LMK[31]		
Pressure	Primary	Digital piston manometer	Degranges et Heot, model 24610	600 hPa to1200hPa	6 Pa	BNM-LNE		
Humidity	Primary	Two-pressure humidity generator	Thunder Scientific 2500	10% rh to 95%rh (-10 to50°C)	1% of measured value	Thunder Scientific		
Solar	Secondary standard working standard	Pyrheliometer pyranometer	KIPP&ZONEN CM1, CM11,	305 -2800 nm,	20W/m2	KIPP&ZONEN		
Wind		Electronic for testing cup anemometers and wind direction instruments	AMES[32]	0-50m:s,0-360°				
Rain		Set of masses	-		-			

[31] Laboratory of Metrology and Quality – LMK, Slovenian national laboratory for temperature
[32] AMES – Automatic measuring systems for the environment, Slovenian company

QUESTIONNAIRE NO. 5
ON
REGIONAL INSTRUMENT CENTRES (RICS)

1. IDENTIFICATION

1.1. Member country: FRANCE ..... ***WMO Region: RA VI*** ..

1.2. Regional Instrument Centre (RIC):

Title, first name and surname of the Director

Mr BOIRET ..... / Philippe .....
(Family Name) *(First Name)*

Postal Address of the RIC:

7, Rue Teisserenc de Bort.....

B.P. 202.....

78195 TRAPPES Cedex, FRANCE.....

Telecommunication links:

Telephone: +33 (0)1.30.13.63.19 ..... E-mail: philippe.boiret@meteo.fr.....

Telefax: +33 (0)1.30.13.60.10 ..... Website www.meteo.fr .....

1.3. **PRIMARY CONTACT PERSON FOR YOUR RIC**

1.3.1..... Technical / Scientific Manager

Name: DUVERNOY ..... / Jérôme.....
(Family Name) *(First Name)*

Position: Head of Metrology Laboratory .....

Phone: +33 (0)1.30.13.63.50 .....

Fax: +33 (0)1.30.13.60.20 .....

E-mail: jerome.duvernoy@meteo.fr .....

1.3.2..... Resource Manager

Name: Ms GUEGEN ..... / Catherine.....
(Family Name) *(First Name)*

Position: Responsible of Human Ressourse Department .....

Phone: +33 (0)1.30.13.65.91 .....

Fax: +33 (0)1.30.13.60.64 .....

E-mail: catherine.guegen@meteo.fr .....

1.4. **STAFF AVAILABLE AT YOUR RIC**

1.4.1..... Technical staff

Number of experts: 60.....

Specify as far as possible: .....

1.4.2..... Lecturers and trainers

Number of experts: 7.....

Specify as far as possible: Training course organized for technical staff in Trappes and in Toulouse. Workshop organized in Trappes for RIC in October 2005. A second planned for French spoken countries of RA I. .....

2. PROGRAMME AND FUNCTIONS

Considering the purpose for the establishment of Regional Instrument Centres (RICs), please answer the following questions, necessary to CIMO's continuing evaluation of progress of each individual RIC.

Evaluation of RIC is made considering TOR review.

.

- Level 1 called Basic level is absolute minimum working level; TOR a) and g) are satisfied
- Level 2 called Promotion Level; c) is also satisfied
- Level 3 called Standard Level; b) and e) are satisfied
- Level 4 called Extended Level; d) and f) are completed
- Level 5 called Certified Level: The RIC or the laboratory or the organization is certified or accredited by an external organization against ISO normalization (ISO 9001 or ISO 17 025)

Method: You start at level 1 (one), you try to complete that level, then you fill the next level, and so on.
You may consider that a level is clear if your answer is "Yes" to at least two thirds of this level.
Then you try to self evaluate your RIC level.

Please send the file by mail at jerome.duvernoy@meteo.fr as soon as possible and no later than.

Thank you very much for your participation.

Level 1	Basic	YES	NO	Partly	Comments
	(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;				Please complete sheet in annex A
	Are your meteorological standard instruments linked to international or national standards	Yes			
	Have you documented the performance of your standards as compared to the standard to which linked	Yes			uncertainty
	(g) To keep a library of books and periodicals on instrument theory and practices	Moderate in Trappes Huge in Toulouse			Specify small Moderate Huge
Level 2	Promotion Level				
	(c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;				
	The instruments of the main observing network is managed and regularly calibrated	Yes			
	Calibration reports are established	Yes			
	RIC has got external customers	Yes			About 20
Level 3	Standard Level				
	(b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instruments mentioned in (c) below and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;				
	Your RIC assisted Members of the Region falling in your responsibility[33] in calibrating their instruments with the standard instruments available at your centre	Yes			
	But also with cooperation with French speaking countries in other RA				
	(e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant				

[33] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

	guidance material;				
	Your RIC assisted Members of the Region falling in your responsibility[34] in training their staff, especially dealing with instrument maintenance and calibration.	Yes			

Level 4	Extended				
	(d) To organize instrument evaluations and comparisons, following standard methods;				
	Have you organized or participate in international instrument evaluations or comparisons?	Yes			regularly
Specify as far as possible	Shelter and humidity sensors comparison in cooperation with Algeria in Sahara desert				
	(f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;				
	Have you organized international symposia, seminars or workshops?	Yes			
	More especially, have you organized symposia, seminars or workshops dealing with instruments, maintenance or calibrations?	Yes			
Specify as far as possible	Workshop on Metrology in October 2005, participation to Workshop, WMO Commission…				
	(h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.				
	Have you established relationships with other Regional Instrument Centres?	Yes			
Specify as far as possible	Algiers, Cairo, Manilla, Melbourne, Bratislava and Ljubljana				
Level 5	Certified or Accredited				
	Have you established a standard certification process?	Yes			
Specify as far as possible	Laboratories are accredited (ISO 17025 mars 2003) Direction of Observation is certified (ISO 9001) June 2004 Meteo-France is certified (in progress)				

[34] May need specific considerations in Regions with more than one RICs, i.e. depending on the agreement in sharing the work.

Estimated level achieved by the RIC … : 5
(Select the level)

Add any comments:

Considering the level of the Europeans countries in term of metrology and instruments, the number of cooperation inside de RA VI is not important but more developed with French speaking countries of other RA.

Domain	Type of standard	Type	Manufacturer	Range	Uncertainty	Traceability to	Certification	Observation
Temperature	secondary	Platinum	Heraus sensor	-50°C to +50°C	0.025 °C	LNE	accredited	Heraus stired bath
Pressure	secondary	Quartz (Paroscientific)	DHI	500-1060 hPa	8.3+ 5.10^{-5}p	LNE	accredited	PPC1 generator +portable generator
Humidity	secondary	capacitive	Vaisala	10-99% 23°C	2.4%	CETIAT	accredited	
Humidity	secondary	Recirculating bench	Cetiat	1-99% 50/+50°C	Dew point 0.1°C Humidity 1.5%	LNE	certified	
Solar	Primary	Absolute radiometer	TMI		Pyrgeometer 5.3 % Pyrheliometer 1.5% Pyranometer 3 %	DAVOS	certified	
Wind	Secondary	Hot wire windmeter	TSI	0-4.75 m/s	0.1 m/s		Certified	
Rain	Secondary	Flow bench	internal	0-2000mm/h	1%	LNE via masses	Certified	WMO Intercomparison
Visibility	secondary	FD 12	Vaisala	10m-50 km	10%	Internal intercomparison	Certified	