WORLD METEOROLOGICAL ORGANIZATION

INSTRUMENTS AND OBSERVING METHODS

REPORT No. 103

EVALUATION SCHEME FOR REGIONAL INSTRUMENT CENTRES AND OTHER CALIBRATION LABORATORIES

by

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WMO/TD No. 1545
2010

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FOREWORD

The calibration of instruments and the traceability of meteorological measurements to the International Standard (SI) of units are crucial to ensure the quality of meteorological observations and to meet the users' requirements. Regional Instrument Centres (RICs) play a key role in this context, by providing calibration services to other Members of their Region.

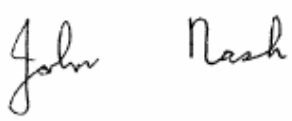
In view of the need to ensure the quality of the services provided by the RICs, and the need for strengthening of RICs, the WMO Executive Council requested CIMO to develop a mechanism for their continuous evaluation to ensure quality of their services and to verify the traceability of the basic meteorological variables.

This publication describes the first Evaluation Scheme developed for Regional Instrument Centre's regular assessment. It was developed by a member of the CIMO Expert Team on Regional Instrument Centre, Mr Jérôme Duvernoy. This report explains how to use the Evaluation Scheme for Regional Instrument Centres and Other Calibration Laboratories that consists in an Excel Sheet. It describes briefly the background of the Evaluation Scheme, the user manual and provides some guidance on the ISO 17025 standard "General requirements for the competence of testing and calibration laboratories".

The Evaluation Scheme itself is based on the Terms of Reference of RICs and on the ISO 17025 standard on which they rely. The Evaluation Scheme has been prepared in a way to help users in maintaining or strengthening their quality management system. It contains three main parts in the form of a questionnaire, results and improvement advices.

This IOM Report can be considered as a tool that is useful for the regular assessment of RICs, but also as a help to establish the quality system of a RIC or of a calibration laboratory. The main benefits of correctly implementing ISO/IEC 17025 in a RIC or a NMHSs' calibration laboratory are the continuous improvement of calibration quality and laboratory effectiveness, which also improve the data quality of observing parameters exchanged within WIGOS, as well as the improved national and regional recognition of the laboratory.

I wish to express my sincere gratitude and that of CIMO to the author of this report, J. Duvernoy (France), for his remarkable work done in elaborating this evaluation scheme.



(Dr. J. Nash)

President Commission
for Instruments and Methods of Observation

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1. Introduction

The general concept and Terms Of Reference (TOR) of Regional Instrument Centres (RICs) were developed by CIMO-IX in 1985 and further refined by CIMO-XIV in December 2006. As defined by the TOR the establishment of a RIC requires the approval of the concerned Regional Association. The latest version of the RIC's TORs [1] is based on ISO/IEC 17025 Standard "General requirements for the competence of testing and calibration laboratories" [2], the globally recognised standard for testing and calibration laboratories. The current version of ISO/IEC 17025, published in 2005, if implemented properly will improve a laboratory's ability to consistently produce valid results as well being the basis for accreditation from an accreditation body.

Implementing ISO/IEC 17025 may provide direct benefits to RICs or NMHS's calibration laboratories, however, before implementing such a system a detailed analysis of the required work and associated costs should be considered. Indirect benefits may include an improvement to the reputation and image of the RIC or NMHS's Calibration Laboratory in the Region.

For a RIC or Calibration Laboratory the main difference between good practices and the formal ISO/IEC 17025 accreditation process is the level of required documentation. According to the RIC's TORs, RICs and NMHS Calibration Laboratories should have suitably qualified personnel performing calibration functions as well as ensuring that the performance of equipment used to calibrate instrumentation is operating within specification and that well defined calibration procedures are in use. However, in order to achieve ISO/IEC 17025 accreditation an RIC or NMHS Calibration Laboratory requires the full implementation of a formal and robust documentation environment – 'what is not documented is just a rumour,' and if this is not the case accreditation assessors would regard non-documented procedures as 'not being done'.

An additional function of the RICs is to provide assistance to all WMO Members in their Region, as described in the RICs' TORs, "a RIC must advise Members on inquiries regarding instrument performance, maintenance and the availability of relevant guidance materials".

It is important to notice that this report is composed of this document and of an associated Excel Workbook (Evaluation Scheme). The Evaluation Scheme can be downloaded from WMO website.

2. Evaluation Scheme

2.1 Objectives

The Evaluation Scheme, based on RIC's TOR and on the ISO 17025 Standard, is an evaluation and improvement checklist system developed for the regular auditing of RICs. The main objective of the Evaluation Scheme is to measure the differences between real practices and requirements.

The Evaluation Scheme and this document provide a mechanism that assists with identifying where improvement actions should be implemented to a RIC or NMHS Calibration Laboratory quality system. The system can also be used as a framework for internal and external audits. In order to use this system effectively users must have basic knowledge of quality management and metrology.

Also, this report presents the most important requirements for implementing a quality system in a RIC (or NMHS calibration laboratory) as well as describing the associated impacts on the organization and operation of the Calibration Laboratory. The Evaluation Scheme and this document provide an essential overview of the assessment and accreditation processes that a certification or an accreditation body requires. The information provides help in understanding the importance of ISO/IEC 17025 and the key requirements for implementing a quality system but it should not be regarded as a substitute for the complete ISO/IEC 17025 Standard. It should also be noted that this document does not include tools such as quality manual sample, operating procedures and templates that would greatly assist with implementing ISO/IEC 17025.

ISO/IEC 17025 is divided into five clauses, two annexes, and one bibliography section:

- Clause 1: Scope. The standard covers the technical activities of a laboratory as well as the management and organizational aspects to perform the technical activities in a competent way.
- Clause 2: Normative References
- Clause 3: Terms and Definitions
- Clause 4: Management Requirements. Most of the requirements are similar to those specified in the ISO Standard 9001:2000.
- Clause 5: Technical Requirements. Most of the requirements come from the ISO Guide 25.
- Annex A: Cross References to ISO 9001:2000
- Annex B: Guidelines for Establishing Applications for Specific Fields
- Bibliography

The most important clauses of the ISO/IEC 17025 Standard are Clause 4 and 5. These two clauses describe the management and technical requirements as well as including the notes and further explanations and recommendations for implementing ISO/IEC 17025. The parts of these two clauses that are relevant to RICs are covered by the Evaluation Scheme.

2.2 Overview

The Evaluation Scheme has been developed as an Excel Workbook, composed of 11 separate worksheets, as shown in Fig. 1.

Fig. 1: Worksheets of the Evaluation Scheme

The first worksheet “User Manual” contains a detailed summary of the full operation and the functionality of the Evaluation Scheme. The User Manual also incorporates a menu selection system of dynamic links (Fig. 2) allowing users to navigate directly to worksheets, compute results as well as a worksheet providing advice for improvements.

Fig. 2: Menu system of the Evaluation Scheme

The “RIC” worksheet must be filled with administrative data, such as the Region, the name of the Head of the RIC…

The “Capabilities” worksheet summarizes the calibration capabilities of the calibration laboratory.

The “Scheme” worksheet is the core of the Evaluation Scheme. The Questions of this worksheets are also available in the Annex to this report for information. These questions are separated into 3 mains chapters. The so-called chapters 4 and 5 are based on the clauses 4 and 5 from the ISO/CEI 17 025 standard. They are also briefly described in this report in the following chapter 4

(Management requirements) and 5 (Technical requirements). The Chapter 6 is dedicated to RIC' TORs.

The “Calculation” worksheet is used internally to compute the results of the evaluation.

The “Synthesis” worksheet provides the results, recalling results obtained for the management and technical requirements, and RIC TORs.

Four worksheets show the results as graphs for “Chapter 4 Results”, “Chapter 5 Results” and “RIC Results”. The first worksheet “Global Results” gives a sum up of all results.

The “NonConforming” worksheet provides advice on areas requiring improvement.

3. Evaluation Scheme

Benchmarking was proven to be a useful system in establishing auto-diagnostic tools used by accreditation bodies (Reference [3], [4] and [5]). This Evaluation Scheme, based on these references, has been adapted to Meteorological Calibration Laboratories and more specifically for RICs. The System uses a simple method of data entry. Each section (Chapter 4, Chapter 5, RIC TOR) of the worksheet "Scheme" provides an extensive list of questions with additional information on each question if the curser is placed over the cell identified with the red triangle.

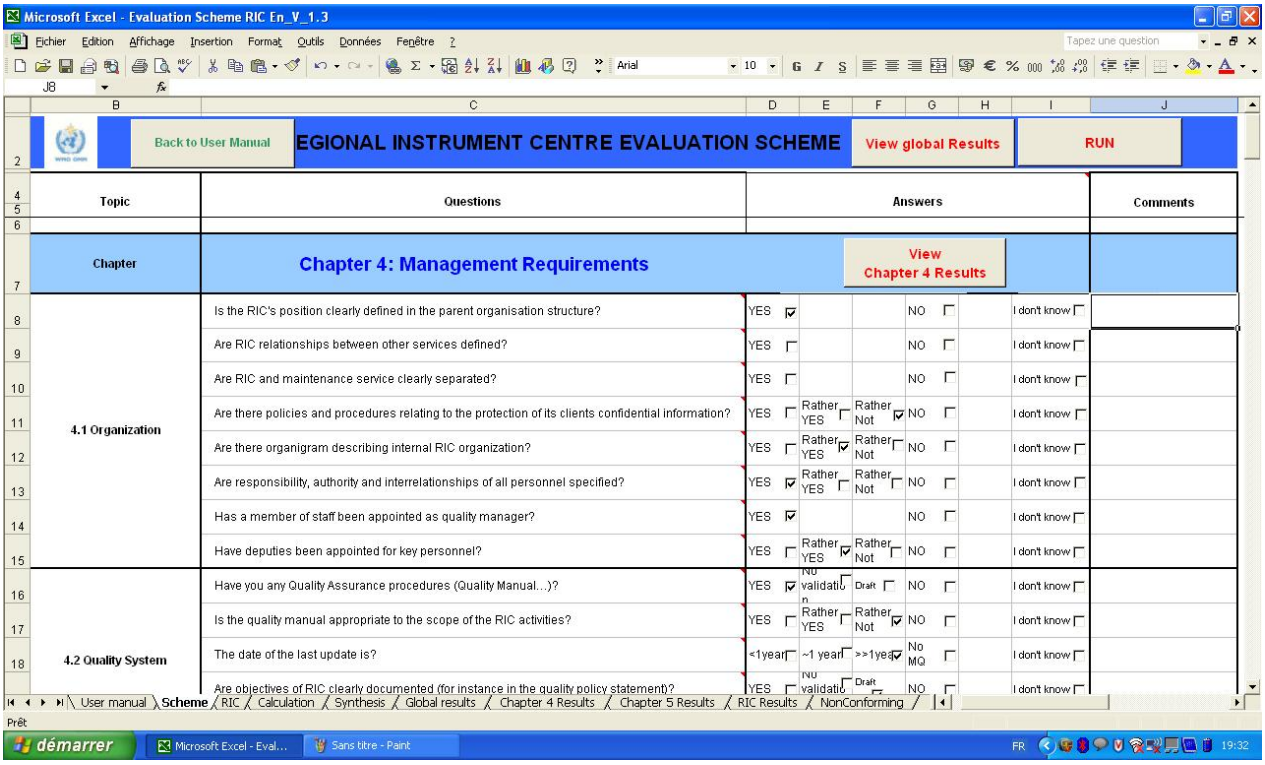

Fig 3: RIC Evaluation Scheme

The approach used is based on the two main Clauses in ISO/IEC 17025 Standard – Clause 4 Management Requirements and Clause 5 Technical Requirements. The management requirements of the Standard are related to the operation and effectiveness of the quality management system within the laboratory, similar to those in the ISO 9001 Standard. The technical requirements address the competence of staff, calibration methodology, equipment quality and reporting of calibration results. The third section addresses the RIC's TORs. Some of the questions of this sections are the same as those of the Clause 4 and 5 sections.
To fill in the scheme replying to the questions, two possibilities are given to the user. The first possibility is to open the Scheme sheet and to tick all the questions one by one (Fig. 3). Help is then obtained by mouse over the red triangle when available. The second possibility is to click on the "RUN" button in the right top (or Ctrl+W). Then a new window opens requesting input for each of the questions.

The questionnaire contains three main parts for the evaluation: Chapter 4 and 5 (Management and Technical Requirements) from ISO 17025 and a third part adressing RICs' TORs. It is possible to fill only one part and go to results. When Chapter 4 and/or Chapter 5 is/are filled, answers are automatically inserted in relevant RIC's part. If a RIC is accredited, only the RIC's part has to be filled.
The questions of the Evaluation Scheme ("Scheme" worksheet) are presented in the Annex and described succinctly in the following chapters of this report. Chapter 4 summaries the Clause 4 of the ISO Standard (Management Requirement), the Chapter 5 describes briefly the Clause 5 ("Technical requirement") and the Chapter 6 is specific to the RICs' Terms Of Reference.

4. Management Requirement

4.1 *Organization*

As described in the ISO/IEC 17025 Standard, the roles and responsibilities of the laboratory, organizational structure, management, and key personnel have to be well defined. It is also recommended that a quality assurance manager be appointed to oversee the operations of a quality management system.

4.2 *Quality System*

This section of the Standard describes how to effectively maintain and put in place a system of continual improvement for a quality management system. This includes developing a quality manual (example presented in Fig. 4) with policy statements that fully describes the quality system and document the laboratory's goals and its conformity to ISO/IEC 17025.

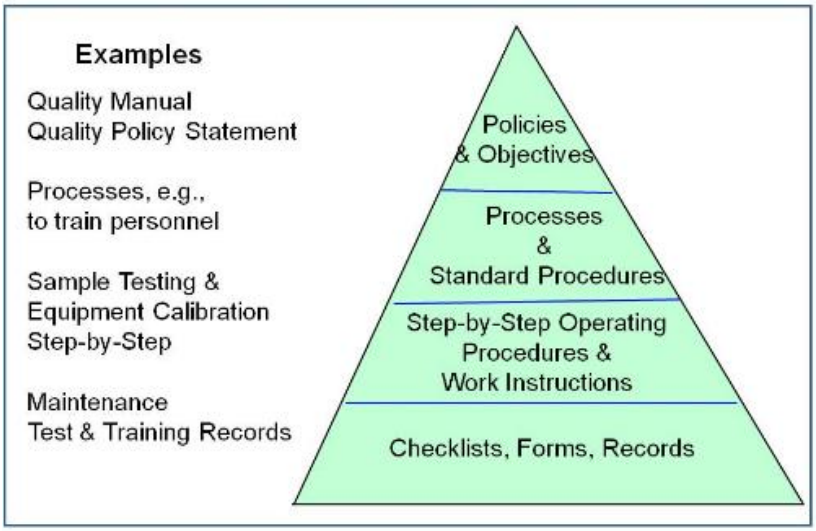

Fig. 4: Documentation Pyramid for ISO/IEC 17025

4.3 *Document Control*

This chapter describe how to ensure that all documents related to the management system are uniquely identified and created, approved, issued, and changed following documented procedures. It is essential that all documents be regularly reviewed and updated when necessary. Typical review cycles are between one and three years, depending on the type of document.

Controlled documents include both internal documents, such as Standard Operating Procedures (SOPs), quality manuals, and training plans and external documents, such as regulations, standards (ISO/IEC 17025, ISO 9001, etc), calibration methods, instrument operating manuals, WMO documents (CIMO Guide, RICs ToR, etc). The procedure for document control should ensure that:

- Official documents are created or acquired, reviewed, and approved prior to use;
- Documents are uniquely identified with document and revision number, date of revision, and issuing authority;
- A list of all controlled documents must be maintained;
- Current authorized versions of documents must be readily available at the user's workspace; and
- Users of the documents must be informed when a new issue of the documents is released.

4.4 *Additional Components*

There are a number of additional areas of the ISO/IEC 17 025 Standard that are very important when considering developing a Quality Management System for your Laboratory, these include the following areas:

- Subcontracting of Calibrations
- Purchasing Services and Supplies
- Service to the Customer
- Complaints
- Control of Nonconforming Calibration Work
- Corrective Action
- Preventive Action
- Control of Records
- Internal Audits
- Management Review

5. Technical Requirement

The technical requirements of the Standard directly address the competency of the laboratory personnel, calibration procedures, equipment, and the quality and reporting of calibration results. The main aim of this chapter is to raise awareness of requirements for uncertainty and reliability of calibration results and the different factors impacting on the quality of results.

5.1 *Personnel*

RICs and NMHSs Calibration Laboratory Personnel potentially have the highest impact on the quality of calibration results. In order to avoid negative impacts it is recommended that the area under the Standard that covers personnel issues be fully implemented. This area of the Standard describes how to ensure that all laboratory personnel who can impact on calibration results and procedures are adequately qualified and trained, as only competent and trained personnel should perform calibrations.

5.2 *Calibration Methods and Method Validation*

Accurate calibration results can only be obtained with appropriate methods and procedures that are validated for their intended use. This area of the Standard deals with the selection and validation of laboratory-developed and calibration methods, measurement uncertainty and data control.

5.3 *Measurement Traceability*

Traceability of equipment to the same standard is a prerequisite for comparability of calibration results. All measurements should be traceable to the International System of Units (SI). Traceability of laboratory standards must be achieved through an unbroken chain of calibration comparisons between the laboratory standard, secondary standard, and primary or national standard. If traceability to SI is not possible or easily achieved in the country, the laboratory should use appropriate portable standards, and utilize RIC capabilities to calibrate those portable standards and ensure their traceability.

5.4 *Additional Components*

As with the management requirements there are a number of additional areas of the ISO/IEC 17025 Standard that are very important when considering the specific technical

requirements for developing a Quality Management System for your Laboratory, these include the following areas:

- Accommodation and Environmental Conditions
- Equipment
- Handling Calibration Items
- Assuring the Quality of Calibration Results
- Reporting of Results

6. Term Of Reference

The latest release of the RIC's TORs [1] is based on ISO/IEC 17025 Standard "General requirements for the competence of testing and calibration laboratories" and is listed below for ease of reference:

Capabilities:

(a) A RIC must have, or have access to, the necessary facilities and laboratory equipment to perform the functions necessary for the calibration of meteorological and related environmental instruments;
(b) A RIC must maintain a set of meteorological standard instruments and establish traceability of its own measurement standards and measuring instruments to the SI;
(c) A RIC must have qualified managerial and technical staff with necessary experience in fulfilling its functions;
(d) A RIC must develop its individual technical procedures for calibration of meteorological and related environmental instruments using calibration equipment employed by the RIC;
(e) A RIC must develop its individual quality assurance procedures;
(f) A RIC must participate in, or organize inter-laboratory comparisons of standard calibration instrument s and methods;
(g) A RIC must, as appropriate, utilize the resources and capabilities of the Region to the best interest of the Region;
(h) A RIC must, as far as possible, apply international standards applicable for calibration laboratories, such as ISO 17025;
(i) A recognized authority must assess a RIC, at least every five years, to verify its capabilities and performance;

Corresponding Functions:

(j) A RIC must assist Members of the Region in calibrating their national meteorological standards and related environmental monitoring instruments;
(k) A RIC must participate in or organize, WMO and/or regional instrument intercomparisons, following relevant CI MO recommendations;
(l) According to relevant recommendations on the WMO Quality Management Framework a RIC must contribute positively to Members regarding quality of measurements;
(m) A RIC must advise Members on inquiries regarding instrument performance, maintenance and the availability of relevant guidance materials;
(n) A RIC must actively participate in, or assist in the organization of regional workshops on meteorological and related environ mental instruments;
(o) The RIC must cooperate with other RICs in standardization of meteorological and related environmental measurements;
(p) A RIC must regularly inform Members and report, on an annual basis, to the president of the Regional Association and to the WMO Secretariat on services offered to Members and activities done;

The table below compares the RICs TOR and ISO/CEI 17 025 requirements.

Term Of Reference	ISO 17 025
(a) A RIC must have, or have access to, the necessary facilities and laboratory equipment to perform the functions necessary for the calibration of meteorological and related environmental instruments;	**5.3. Accommodation and environmental conditions**
(b) A RIC must maintain a set of meteorological standard instruments and establish traceability of its own measurement standards and measuring instruments to the SI;	**5.5. Equipment** **5.6. Measurement traceability** **5.6.1. General**
(c) A RIC must have qualified managerial and technical staff with necessary experience in fulfilling its functions;	**4.1 Organization** **5.2. Personnel**
(d) A RIC must develop its individual technical procedures for calibration of meteorological and related environmental instruments using calibration equipment employed by the RIC;	**5.4. Calibration methods and method validations** **5.4.1. General** **5.4.2. Selection of methods**
(e) A RIC must develop its individual quality assurance procedures	**4.2 Quality System** **5.4. Calibration methods and method validations**
(f) A RIC must participate in, or organize inter-laboratory comparisons of standard calibration instruments and methods;	**No equivalence**
(g) A RIC must, as appropriate, utilize the resources and capabilities of the Region to the best interest of the Region;	**No equivalence**
h) A RIC must, as far as possible, apply international standards applicable for calibration laboratories, such as ISO 17 025;	**ISO 17 025**
(i) A recognized authority must assess a RIC, at least every five years, to verify its capabilities and performance	**4.13. Internal audits**
(j) A RIC must assist Members of the Region in calibrating their national meteorological standards and related environmental monitoring instruments;	**No equivalence**
(k) A RIC must participate in or organize, WMO and/or regional instrument intercomparisons, following relevant CIMO recommendations;	**No equivalence**
(l) According to relevant recommendations on the WMO Quality Management Framework a RIC must contribute positively to Members regarding quality of measurements;	**No equivalence**
(m) A RIC must advise Members on inquiries regarding instrument performance, maintenance and the availability of relevant guidance materials;	**No equivalence**
(n) A RIC must actively participate in, or assist in the organization of regional workshops on meteorological and related environmental instruments;	**No equivalence**
(o) The RIC must cooperate with other RICs in standardization of meteorological and related environmental measurements;	**No equivalence**
(p) A RIC must regularly inform Members and report, on an annual basis, to the president of the Regional Association and to the WMO Secretariat on services offered to Members and activities done;	**No equivalence**

7. Calculation

This worksheet (Fig. 5) is used internally to compute results.
It has two functions:
- to calculate a score to each answer,
- to weight answers relatively to their significance.

This worksheet should not be modified by users, as one of the purposes of this Evaluation Scheme is to get comparable results for each RIC (or NMHSs' Calibration Laboratories).

Back to User Manual

CALCULATION GRID

Requirements	QUESTIONS	weighted answer	weight	Mark (%) pe line
	Chapter 4: Management Requirements	99.5		
4.1 Organization	Is the RIC's position clearly defined in the parent organisation structure?	0.00	1	0%
4.1 Organization	Are RIC relationships with other services defined?	0.00	2	0%
4.1 Organization	Are RIC and maintenance services clearly separated?	0.00	1	0%
4.1 Organization	Are there policies and procedures relating to the protection of its clients confidential information?	0.00	3	0%

Fig. 5: Calculation worksheet

8. Results

To sum up results in graphical view, the results are combined using the Ishikawa method for Chapter 4 (Management Requirements), for Chapter 5 (Technical Requirements) and for RIC' TORs.

The Ishikawa diagrams for Chapter 4 "Management requirements" are comprise 5 main bones:

- Management = § 4.1 and 4.2
- Documentation = § 4.3 ; 4.10 ; 4.11 and 4.12
- Customers = § 4.4 ; 4.7 ; 4.8 and 4.9
- Supplier = §4.5 and 4.6
- Improvement = § 4.13 and § 4.14

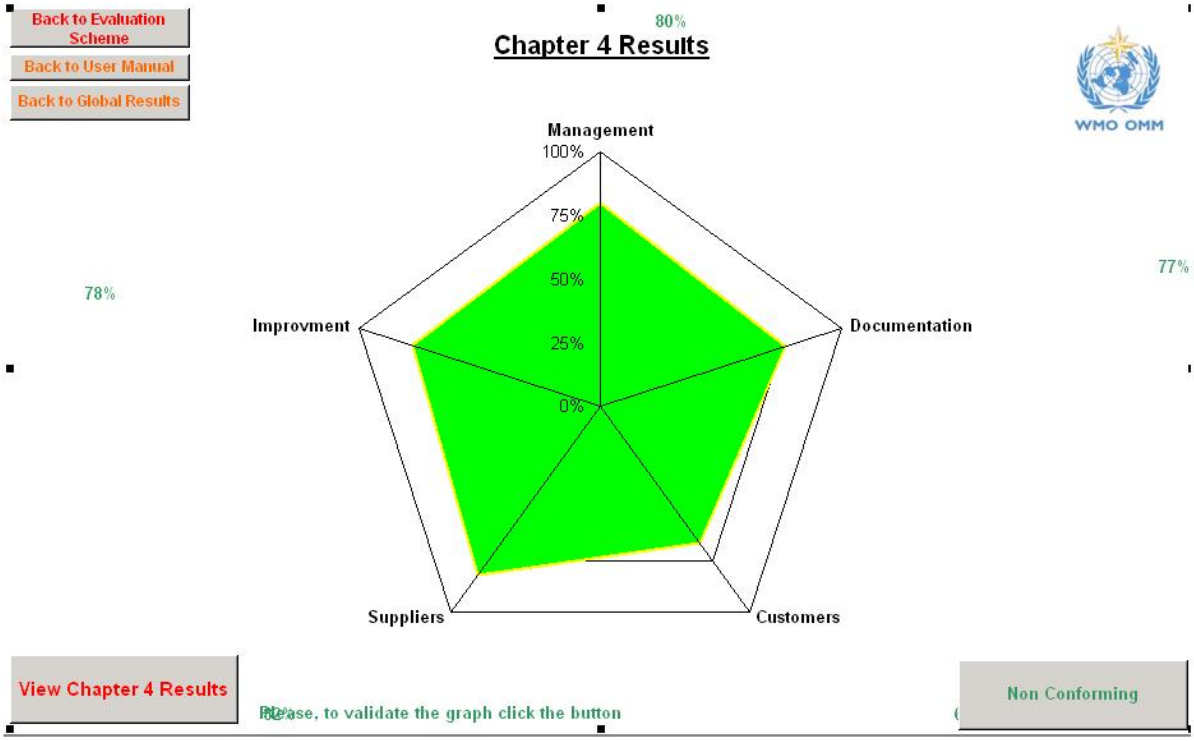

Fig. 6: Results

This graph (Fig 6) allows a simple and synthetic view. It also helps to identify areas requiring improvement actions.

The Chapter 5 « Technical Requirements » is decomposed into 6 main bones (so called 6 M):

- **M**an Power = §5.2
- **M**other Nature (environment) = § 5.3
- **M**ethod = § 5.4
- **M**achine (Equipment) = § 5.5
- **M**easurement (Traceability) = § 5.6
- **M**aterial (Input/output) = § 5.8 ; 5.9 and § 5.10

9. Synthesis

The “Synthesis” worksheet (Fig. 7) provides an overview of the results, grouping individual results by topics. A colour code is given from Orange (Not performing) to Green (Good).
A comment area is free for the evaluator to add his own remarks.

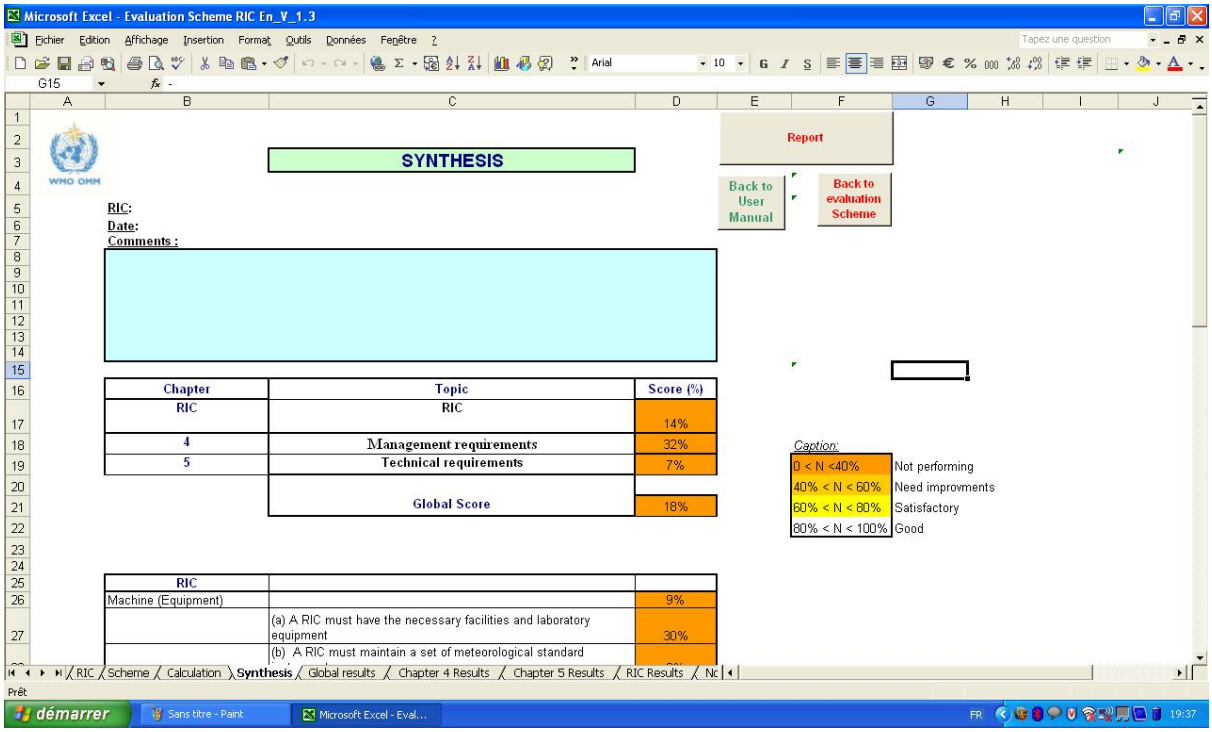

Fig. 7: Synthesis worksheet

Results are reported using the colour scale as below:

0 < N <40%	Not performing	
40% < N < 60%	Need improvments	
60% < N < 80%	Satisfactory	
80% < N < 100%	Good	

Figure 7: Colour scale

10. Non Conforming

At the end, the worksheet “Non-Conforming” provides help to improve the RIC capabilities and compliance with the RIC TOR (Fig. 8). However, the results of this worksheet are only available when the scheme is fully filled.

ITEMS BELOW MUST BE IMPROVED

Topic	Question	our answ	
Chapter 4: Management Requirements			
4.6 Purchasing supplies	Is a policy for purchasing supplies expressed?	n/a	§4.6.1 The labo purchasing sup Purchasing car
4.6 Purchasing supplies	Are the purchasing procedures written and validated?	n/a	§4.6.1 The labo purchasing sup
4.6 Purchasing supplies	Are the evaluation of critical material suppliers performed?	n/a	§4.6.4 The labo consumables... But you can als
4.10 Corrective action	Are corrective actions monitored to ensure effectiveness?	Rather Not	§4.10.4 The lab
Chapitre 5: Technical requirements			
5.3. Accomodation and environmental c	Do you have special dispositions dealing with neighbouring areas (for instance storage) ?	Rather Not	§5.3.3 There sh neighbouring ar §5.3.4 Access calibrations sha
5.4. Calibration methods and method va	Has a member of staff been appointed as technical manager (or equivalent), which is in charge p	No	§5.4.2 ...the lab
5.5. Equipment	Do you have special procedure(s) for equipment going out of your direct control?	Rather Not	§5.5.9 When e
5.8. Handling	Have you established a procedure(s) for the transportation, receipt, storage of instruments to be	Yes	§5.8.1 The labo
5.9. Assuring the quality	Have you established a procedure(s) for monitoring the validity of your calibrations?	Rather Not	§5.9 The labora monitoring the For instance in
5.10. Reporting the results	If needed, are calibration data, which are obtained before and after adjustment or reparation, repo	n/a	§5.10.4.3 Whe

Fig. 8: NonConforming worksheet

This worksheet summarizes the topics, the questions, the answers and some advices for improvement. It is only applied to the main required procedures.

11. Conclusion

“A RIC must develop its individual quality assurance procedures”. The ISO/IEC 17025 standard is the best standard that can be used to develop and establish a quality system for a RIC or a NMHS’ Calibration Laboratory. The standard can also be used as a criterion for RICs’ regular assessment. Working according to global standards is especially important for laboratories to ensure validity and global comparability of calibration results. One of the goals of using internationally recognized standards is to increase homogeneity in meteorological data.
It should also be noted that testing and calibration laboratories that comply with ISO/IEC 17025 will also operate in accordance with ISO 9001, as the ISO 9001 requirements are included in ISO/IEC 17025.
Accreditation bodies that recognize the competence of testing and calibration laboratories use ISO/IEC 17025 as the basis for their accreditation.

There are eight key steps towards laboratory accreditation, to achieve an accreditation or also to create a quality system:

1. Management defines a project owner (quality manager…)
2. The project owner studies details of the standard, supporting literature, and other relevant information
3. The project owner defines the preliminary scope of accreditation and works with laboratory professionals to prepare a list with requirements
4. The project owner and laboratory professionals perform a gap analysis to determine the difference between the requirements and what is currently implemented in the laboratory.
5. Based on the outcome of the gap analysis, the project owner, laboratory professionals, financing and documentation professionals, and external consultants estimate the costs for accreditation
6. Estimated costs (included timing) are presented to management, along with incremental opportunities.
7. Management decides to proceed with accreditation or quality framework.
8. The project owner leads implementation steps.

In conclusion, I wish to recall that the Evaluation Scheme should be considered as a tool that is useful for the regular assessment of RICs, but also as a help to establish the quality system of a RIC or of a calibration laboratory.

The main benefits of correctly implementing ISO/IEC 17025 in a RIC or a NMHSs’ calibration laboratory are:

- the continuous improvement of calibration quality and laboratory effectiveness,
- the improvement of the data quality of observing parameters exchanged within WIGOS,
- the recognition of the laboratory by national and regional organization and Members.

12. References

- [1] Terms of Reference for Regional Instrument Centres
  http://www.wmo.int/pages/prog/www/IMOP/instrument-reg-centres.html

- [2] ISO/CEI 17025:2005 "General requirements for the competence of testing and calibration laboratories"
  http://www.iso.org/iso/home.htm

- [3] COFRAC (Comité Français d'accréditation): http://www.cofrac.fr/,

- [4] Réalisation d'une grille d'évaluation ISO 9001 version 2000, simple d'utilisation et associant des outils graphiques, Jeannal BOURGET, Hassna HAMDOUCH, Rose MORET, Projet d'Intégration, MASTER Management de la Qualité (MQ), UTC, 2006-2007. URL : http://www.utc.fr/mastermq; Université de Technologie de Compiègne

- [5] Royaume du Maroc, Ministère de l'Industrie, du Commerce et des Nouvelles Technologies, Questionnaire d'évaluation préalable à une demande d'accréditation.
  http://www.mcinet.gov.ma/mciweb/QualiteNormalisation/updoc/questionnaire.pdf

ANNEX

Chapter 4: Management Requirements
Is the RIC's position clearly defined in the parent organisation structure?
Are RIC relationships with other services defined?
Are RIC and maintenance services clearly separated?
Are there policies and procedures relating to the protection of its clients confidential information?
Are there organigrams describing internal RIC organization?
Are responsibility, authority and interrelationships of all personnel specified?
Has a member of staff been appointed as quality manager?
Have deputies been appointed for key personnel?
Do you have Quality Assurance procedures (Quality Manual…)?
Is the quality manual appropriate to the scope of the RIC activities?
The date of the last update is?
Are objectives of RIC clearly documented (for instance in the quality policy statement)?
Does the quality manual include the structure of the documentation and the responsibilities of technical staff and quality managers?
Are there procedures to control documents?
Are there instructions or procedure dealing with the review and approval of documents?
Are updates and modifications clearly identified in all documents?
Are the latest versions of documents promptly available?
Are all documents, included external sources, controlled?
Are the procedures for the review of requests and contracts established?
Are reviews and discussions with clients maintained?
Are you subcontracting some of your calibration works?
Are selecting criteria clearly defined?
Is the client advised of the subcontract?
Is a policy for purchasing supplies expressed?
Are the purchasing procedures written and validated?
Are the conformity criteria used for materials acceptance clearly defined, especially for materials used in calibration works?

Is the evaluation of critical material suppliers performed?
Do you have a procedure or dispositions concerning relationship with your clients?
Are clients allowed to be present during your calibration work?
Is the confidentiality of clients ensured during all the process?
Do you have a policy for the resolution of clients' complaints?
Do you have procedure(s) for the resolution of clients' complaints?
Do you have a policy for the resolution of nonconforming work?
Do you have a procedure dealing with nonconforming calibration work?
In case of nonconforming work, is the responsibility for authorizing the resumption of work defined?
Are dispositions taken in case of nonconforming calibration report?
Have you established a policy for implementing corrective actions when nonconforming work has been identified?
Have you established a procedure(s) for implementing corrective action when nonconforming work has been identified?
Are corrective actions monitored to ensure effectiveness?
Have you established procedure(s) for preventive actions?
Have you established procedure(s) for the control of quality and technical records?
Is the retention time of quality and technical records clearly established?
Are all records kept securely?
Are internal audits of RIC conducted periodically?
Have you established a procedure to schedule internal audits?
The period of internal audits is
All elements of the RIC quality system are covered by audits?
Have you established a schedule for quality system review?
Have you establish a procedure to organize quality system review?
The periodicity of such review is?
Are the decided actions recorded and reviewed regularly?

Chapter 5: Technical requirements
Have you established a policy for training of personnel?
Do you ensure that personnel are qualified to perform calibration work?
Is every job described in the quality system from managerial to technical staff?
Have you described competency and responsibility of every technical staff?
Does the RIC have all facilities to perform calibration work for the expressed capabilities?
Are environmental conditions controlled and recorded?
Are measures taken for housekeeping of laboratory areas?
Do you have special dispositions dealing with neighboring areas (for instance storage) ?
Do you have manuals for the use of all equipments used in calibration work?
Has the laboratory established instructions on the use and operation of all relevant equipment?
Is the client informed by the laboratory of the method used for calibration?
Has a member of staff been appointed as technical manager (or equivalent), which is in charge particularly of method selection and validation?
Has the laboratory validated its calibration methods?
Are clients' needs in term of performance and accuracy clearly defined? Or are your capabilities in term of range, steps and accuracy clearly defined?
Do you apply a procedure to estimate the uncertainty of all calibration measurement covered by quality system?
Are calculations and data transfers systematically under control or checked?
Have you developed and validated special software for calibration work?
Have you established a procedure(s) for data protection?
Does the RIC have all equipment to perform calibration work for each claimed parameter?
Is the required accuracy specified for all equipment (reference standards in particular)?
Is every equipment (reference standard, particularly) uniquely identified?
Have you established records for all equipments?
Have you established instructions dealing with defective equipment or software?
Do you have special procedure(s) for equipment going out of your direct control?
Have you established a programme for the calibration of reference standards and associated systems?
Have you established a procedure(s) for the calibration of reference standards and associated systems?

Can the RIC give real proofs of traceability to SI units for all reference standards and associated equipments?
Do the calibration certificates of reference standards contain measurement results, including the measurement uncertainty and/or a statement of compliance?
Have you performed regular checks to maintain confidence in the calibration status of reference?
Have you established a procedure(s) for handling, transport, storage and use of your reference standards?
Are you using equipments which are not able to ensure traceability to SI units? (please add comments)
Have you established a procedure(s) for the transportation, receipt, storage of instruments to be calibrated?
Have you established instructions for identifying such items?
Have you established a procedure(s) for monitoring the validity of your calibrations?
Are all relevant information and data reported in the calibration certificate given to the client after calibration work?
If needed, are calibration data, which are obtained before and after adjustment or reparation, reported?
Are you able to give opinion or interpretation to satisfy client requirements?
Are you able to give a compliance or non-compliance opinion?
Are compliance criteria reported in the calibration report?
Have you established instructions dealing with amendments of a calibration certificate?

REGIONAL INSTRUMENT CENTRE
Does the RIC have all facilities to perform calibration work for the expressed capabilities?
Are environmental conditions controlled and recorded?
Are measures taken for housekeeping of laboratory areas?
Does the RIC have all equipment to perform calibration work for each claimed parameter?
Required accuracy is specified for all equipment (reference standards in particular)?
Is every equipment (reference standard, particularly) uniquely identified?
Have you established instructions dealing with defective equipment or software?
Have you established a programme for the calibration of reference standards and associated systems?
Can the RIC give real proofs of traceability to SI units for all reference standards and associated equipments?
Are there organigram describing internal RIC organization?
Are responsibility, authority and interrelationships of all personnel specified?
Have you establish a policy for training of personnel?
Do you ensure that personnel are qualified to perform calibration work?
Is every job described in the quality system from managerial to technical staff?
Have you described competency and responsibility of every technical staff?
Have the laboratory established instructions on the use and operation of all relevant equipment?
Is the client informed by the laboratory of the method used for calibration?
Have you established a procedure(s) dealing with uncertainty associated with calibration results?
Has a member of staff been appointed as technical manager (or equivalent), which is in charge particularly of method selection and validation?
Do you have any Quality Assurance procedures (Quality Manual…)?
Are objectives of RIC clearly documented (for instance in the quality policy statement)?
Do the quality procedures include the structure of the documentation and responsibilities of technical and quality managers?
Have you organized or participated in an interlaboratory comparison?
Have results of intercomparison been published (for instance on WMO or RIC Web)?
Does the RIC have contact or meetings with other Members of the Region?
Is a member of staff responsible of RIC quality assurance?

Are RIC and maintenance service clearly separated?
Does the RIC apply international standards, such as ISO 17 025?
Is the laboratory certified or accredited against ISO 9001 or ISO 17025 standard?
Have you established a procedure to schedule internal audits?
The period of internal audits is
Have you been audited or evaluated within the last five years by a recognized authority?
Have you external clients (external to organisation)?
Do you have Members (NMHSs) of the Region as client?
Have you received any demand concerning the calibration of national standards of Members of the Region (NMHSs)?
Did you organize or participate in a WMO comparison campaign?
Have you calibrated instruments (transfer standards or other sensors) for other Region Member(s) within the last five years?
Have you collaborated within instrument domain with other Region Member(s) within the last five years?
Have you received demands dealing with instrument domain coming from other Region Members?
Have you received demands of Region Members dealing with instrumental documentation?
Have you contributed to the training of staff on instruments in the Region (workshop, trainee…)?
Have you participated in or organized workshop on metrology or instruments?
Have you had contact(s) with other RICs within the last five years?
Do you inform regularly Members, president of the Region and WMO Secretariat, about your activities as RIC?
Have you a specialized web-site on your RIC activities?