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| **World Meteorological Organization****Commission for Instruments and Methods of Observation OPAG on Remote-Sensing Technologies****Inter-Programme Expert Team on Operational Weather Radars**Tokyo, Japan, 13-16 March 2017 | **CIMO/OPAG-RST/IPET-OWR-1/Doc. 5.2(9)**  |
| Submitted by:Daniel Michelson, Canada24.02.2017**Version 1** |

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# intercomparisons of weather radar algorithms and products (radar quality control and quantitative precipitation intercomparison (RQQI), ET-ORST, Task 9)

### SUMMARY

This document provides information on how the CIMO Radar Quality Contol and Quantitative Precipitation Intercomparison Project (RQQI) has been officially ended, and elements of it incorporated into IPET-OWR. The CIMO President’s decision is given, and the recommendation document which provides the basis for the decision is included.

### DECISIONS/ACTIONS REQUIRED:

### Participants are invited to read this document before the meeting, and to discuss any questions they may have at the meeting.

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1. **Decision to officially end RQQI**

The decision was made by the CIMO President to stop RQQI, noting that relevant activities have been included in the IPET-OWR work plan.

The background to the decision, along with the associated recommendation, is given in the pages following this one.

Proposal

To discontinue RQQI as a formal intercomparison and incorporate specific activities and tasks related to weather radar quality control, quantitative precipitation estimation, and data processing within the work plan of IPET-OWR

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**Rationale**

1. Little progress has been made so far on the intercomparison-related aspects of RQQI. This is for a few reasons:
	1. it was not foreseen that an experimental design for an intercomparison, that is general enough to be applied to weather radar globally, and that would output meaningful results, would be extremely difficult to formulate,
	2. datasets that satisfy the requirements for meaningful intercomparisons have not been collected,
	3. technical infrastructure, including processing software, required to collect and process enough data to make such an effort meaningful, has not been established.
2. It is not envisaged that a full international intercomparison of weather radar systems and QC/QPE processing chains can be achieved in the near future. However, it is believed that some of the intended outputs from RQQI might still be delivered, particularly addressing guidance on weather radar data quality control and data processing in well-constrained contexts. The critical aspect is that there is enough experience and knowledge already, based on existing results nationally and regionally, to prepare a first set of such guidance material to the Members.Other related activities have taken place since RQQI was established, and the restructuring of WMO working groups needs to be considered, including:
	* the emergence of operational dual-polarization weather radar,
	* the work of CBS/TT-WRDE on weather-radar data exchange,
	* the establishment of IPET-OWR,
	* Part 1 of the joint ISO-WMO Weather Radar Standard development,
	* open software initiatives.

It is believed that it makes sense to consolidate the coordination and development of all these activities under the umbrella of the IPET-OWR work plan. That way they can better support each other, e.g. emerging standards for representing and exchanging radar data can reach the stage of maturity whereby they can effectively support the scientific effort towards recommending best practices for QC, QPE, and compositing. Similarly, software developments can support the science openly and transparently, through creating proof-of-concept implementations of recommended best practices, contributing towards creating training and capacity development materials, and towards creating frameworks wherein the quality of radar data and products may be assessed and monitored.

1. The original purpose of the intercomparison was to generate ”Documented Evidence” leading towards the establishment of WMO recommendations on weather-radar QC/QPE; It is now believed that it would be better to take advantage of outputs from several known international projects (EUMETNET OPERA, BALTRAD, ICE-POP) related to weather radar data exchange and integration and gradually compile and analyse the results to provide relevant guidance for WMO Members on QC and QPE. There is a realization that experience resulting from such well-defined scopes can be valuable contributions in compiling the documented evidence.
2. Some intended deliverables from RQQI activities that are proposed to be integrated into the IPET-OWR work plan would contribute to the broader efforts to develop guidance for Members on weather radar networks and systems.
3. Given that much of the outcomes of RQQI relied heavily upon sound and reliable weather radar calibration and monitoring practices, it is recommended that the IPET-OWR work plan should include activities supporting the objective of developing guidance and practices for establishing this foundation, upon which downstream QC/QPE processing would be built.
4. The RQQI-related advice and guidance to Members on weather-radar data quality and data processing could constitute some of Part 2 of the joint ISO-WMO Weather Radar Standard.

**Recommendations to CIMO Management Group**

1. Discontinue RQQI as a formal intercomparison.
2. Incorporate within the IPET-OWR work plan, some of the RQQI-related activities that serve to exploit expertise gained from well-defined, existing or developing national or international intercomparison (or related) projects, with the objective to formulate guidance material for WMO Members. There is currently drafted in the IPET-OWR work plan, as Task 2, Actions 2a-f, such activities aimed at recommending best practices based on and related to:
	1. gathering/compiling user requirements, e.g. from NWP
	2. methods for calibration monitoring
	3. Quality Control
	4. Quantitative Precipitation Estimation
	5. Compositing
	6. Quality Assurance

Such outcomes could comprise WMO’s contributions towards Part 2 of the joint ISO-WMO Weather Radar Standard, or stand alone as WMO Guidance that over time might be promoted to Regulatory Material as appropriate.

1. Incorporate within the IPET-OWR work plan and activities, the establishment and maintenance of a mechanism whereby the development of radar data processing software can serve to support the harmonization of weather-radar data and product quality openly and transparently. Such a facility would support future weather radar intercomparison activities and the eventual realisation of the aims and outcomes of RQQI. An activity for the development of such a mechanism has been proposed in the IPET-OWR work plan under the area of capacity development and training..
2. At a later point in time, revisit and consider reviving relevant preconditions for effectively re-establishing RQQI, or parts of it under the IPET-OWR activities and work plan.