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JOINT MEETING

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**CIMO EXPERT TEAM ON
UPPER-AIR SYSTEMS INTERCOMPARISONS**
First Session

(17.III.2004)

AND

ITEM: 2

**INTERNATIONAL ORGANIZING COMMITTEE (IOC) ON
UPPER-AIR SYSTEMS INTERCOMPARISONS**
First Session

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GENEVA (SWITZERLAND), 17-20 MARCH 2004

REPORT OF THE CHAIRMAN

(Submitted by John NASH, ET Chair)

Summary and purpose of document

This document provides information on the purpose, scope and activities carried out by the Expert Team on Upper-Air System Intercomparisons (UASI) since its establishment.

Action proposed

The meeting is invited to note and comment on the information contained in the report and take actions on the issues raised, as appropriate.

2 REPORT OF THE CHAIRMAN

- 2.1 In the current intersessional period, CIMO has been tasked with performing four instrument comparisons. At least one of these is to be a major Radiosonde Comparison in the WMO Radiosonde Comparison series.
- 2.1.1 Mauritius has volunteered to host this test and a date of February 2005 has been suggested. Following the meeting of the Expert Team on Upgrading the Global Radiosonde Network in November 2003, it has been proposed that the test in Mauritius should be designated for high quality radiosonde systems, i.e. those radiosonde systems based on operational radiosondes with additional high quality sensors, e.g. chilled mirror hygrometer for relative humidity, three thermistor temperature sensors, height measured by GPS for referencing height/pressure. These types of radiosonde would be suitable for testing other national radiosonde developments; or embedded within national networks at some stations would allow measurement quality to be more traceable for climate studies in the future.
- 2.1.2 Following a recent informal meeting with the President of CIMO, it was suggested that the test was conducted in a manner which would generate collocated data with satellite overpasses, and hence be useful for satellite verification studies.
- 2.1.3 It was also noted that collocated ground-based remote sensing systems are valuable in identifying inconsistencies in radiosonde relative humidity measurements. -Should efforts be made to include equipment of this type at the next test site, or would a longer term deployment at selected radiosonde sites with both day and night time measurements be more beneficial?
- 2.1.4 The expert team and the associated IOC needs to agree on the equipment and the targets for the next test.
- 2.2 In recent WMO comparisons, most effort during the planning phase has been concentrated on performing the field work. Subsequently, significant problems have been encountered in completing the data analysis and issuing the final reports. For instance the relative humidity test in 1995 showed very large problems with several humidity sensors, and even now nearly ten years later, these have not been adequately resolved by the manufacturers.
- 2.2.1 The expert team will need to provide guidance on methods and responsibility for data processing and time scales for submission of the necessary results
- 2.3 WMO Radiosonde Comparison tests are intended to provide quantitative measurements of the differences between different radiosonde types. The origins of the differences are to be identified as far as possible, so efforts can be made to minimise these in future and harmonise the performance of the global radiosonde network as far as possible.
- 2.3.1 This can only be effective if the manufacturers are open about the changes made following a test, so the users can trace changes that are introduced. -Should the expert team consider nominating a member as a focal point to liaise with the manufacturers and keep accurate records of the changes that are introduced?
- 2.3.2 As the WMO Comparison can only measure performance under conditions specific to the host site, should the expert team consider setting up supporting tests. These could be based at RIC's or sites chosen specifically for the conditions experienced. Overlap tests could be performed when new radiosonde types are introduced, or high quality

radiosondes could be flown periodically to check the performance of the routine national operational measurements. -Is this desired by the user community, and are there sources of funding for this work, which have not yet been exploited?

- 2.3.3 Manufacturers have clearly not been happy about the length of time to achieve publication of the results from recent WMO Radiosonde Comparisons. WMO has taken actions to ensure that data processing in the next test will be supported under contract. -What other actions need to be taken?
- 2.3.4 Results from WMO tests need to be related to the results obtained by the scientific community on some types of radiosonde. It is suggested that a member of the expert team should be tasked with performing this task and improving liaison with the scientific community
- 2.3.5 Currently, it takes between 3 to 10 years from the time a serious problem is identified with a radiosonde system to the time when it is remedied. -Is this inevitable or should there be better liaison mechanisms between manufacturers and users? The expert team needs to consider how the results from the comparison should be used, and how the information can be better provided to both manufacturers and operators.
- 2.4 The chairman recognises that the proposed test in Mauritius as specified will not satisfy the requirements of all CIMO Members for Upper-air System Intercomparisons. The expert team will have to identify those upper air systems that will need testing other than in Mauritius. It will be necessary to decide whether systems are best tested by a dedicated smaller scale test in a country where the new upper air systems have been developed, or whether it is envisaged that another larger scale WMO Comparison will be required in the foreseeable future, for instance at a location in Asia.
- 2.5 As there is considerable national development of new radiosonde systems in progress, the expert team needs to develop procedures on archiving test results and making these useful for radiosonde data users.
- 2.6 The expert team should also consider how international collaboration can be used to speed up the development of radiosonde systems. For instance, new radiosonde systems benefit from testing against mature upper air systems of high quality. -Should the expert team /WMO take actions to facilitate the provision of systems suitable for providing these working reference systems, in the countries where the developments are required? A specific example of testing of this type is the requirement for testing the universal system purchased for Tanzania, which will be discussed under agenda item 3.3
- 2.7 The WMO Secretariat has been very supportive in proposing the structure of the work plan for the expert team. The chairman wishes to express his thanks for this help. The expert team is being given the chance to adopt working procedures using more flexible arrangements. It needs to target activities to produce results of value to the user community. Extra funding invested in the CIMO expert teams must be seen to lead to improved products/information for Members.
 - 2.7.1 Thus, the expert team must be very realistic in identifying the tasks it can undertake with the resources currently available. The membership of the expert team can be modified upon request to the OPAG Co-chairs, if additional expertise is required.
 - 2.7.2 It is also important that benefits are seen to be delivered to HMEI, so that WMO liaison with the manufacturers can be seen to work to mutual benefit.