



WORLD WEATHER WATCH

Instruments and Methods of
Observation Programme

Commission for Instruments and
Methods of Observation

CIMO Newsletter

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Tel.: (+41 22) 730 8409 - Fax: (+41 22) 730 8021

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The CIMO Newsletter is intended as a complementary means of keeping informed all CIMO members and getting them involved in the work of the Commission, by reporting regularly on its activities as well as on other related organizational matters, meetings, publications, etc.

Readers are encouraged to provide their comments.

REPORTS ON CIMO EXPERT TEAMS' ACTIVITIES

Expert Team on Upgrading the Global Radiosonde Network

The Expert Team on Upgrading the Global Radiosonde Network met in Geneva, Switzerland, from 3 to 7 November 2003. This expert team session was the first within CIMO to invite participation of the Association of Hydro-Meteorological Equipment Industry (HMEI). In addition to the ET and HMEI, additional invited experts and observers participated. A total of twenty-one experts participated in the discussions.

For many years various groups have attempted to develop reference radiosonde systems. However, the development of a fully capable reference radiosonde has not been successfully achieved. The ET, therefore, proposed that a designation of "higher quality radiosonde" be adopted for the best new generation of operational radiosondes and for systems being developed by the research community. Once developed it would be necessary to indicate the accuracy achievable by the different systems and also the limitations of the different systems. Users would then be able to identify suitable combinations of systems to provide the measurement quality required. In this regard, the ET discussed the requirements for reference radiosondes and their associated problems and a number of recommendations were developed.

The ET agreed to review the BUFR code tables applicable to the radiosonde network and to recommend suitable changes to identify additional radiosonde/system identification requirements and any additional data encoding requirements.

The ET noted the report on the status of implementation of the Aircraft Meteorological Data Relay (AMDAR) observing system and agreed that assistance from CIMO-experts and manufacturers is required to assess the quality of humidity data reported through the operational AMDAR programme. It also agreed

that technical guidance should be provided on operational performance standards for all meteorological elements reported by AMDAR.

The ET recognizes that there is a problem due to the incompatibility between the coding algorithms used by different operators for encoding the upper-air TEMP messages. This problem should be largely resolved for future data once the migration to BUFR code has been achieved. The ET noted, however, that because no change will be made to TEMP message format the problem will always exist for those using TEMP message data. The ET invited manufacturers of upper-air equipment and Members, who develop their own coding software, to provide information about details of implementation of coding algorithms. The consistency of algorithms then could be studied both by expertise of those description and by simulation experiments.

The ET discussed the “universal” upper-air systems, the systems that can possibly use different navigation and tracking systems and can use both GPS and non-GPS radiosondes from different manufacturers. Many experts and manufacturers expressed a range of views on this subject. In this regard, the ET on UGRN recommends:

- (a) Further discussion of this issue among its members to develop a concept and assess its viability, in order to safeguard the best interests of the meteorological community;
- (b) That GCOS explore the possibility of providing partial funding to assist in development of such a system and for subsequent testing and possible introduction at some of its GUAN stations.
- (c) That these systems not be referred to as “Universal Systems”, but “Flexible Systems” to eliminate any misunderstanding as to the capability of the system.

In discussing the outcome of the Workshop to improve the usefulness of operational radiosonde data, the ET suggested:

- (a) To expand the regional radiosonde workshop training programme as a follow-up of the Botswana Workshop on Upper-air Observations.
- (b) To improve the level of identifying and resolving deficiencies in the global radiosonde network through a new Rapporteur on radiosonde compatibility.
- (c) Better co-ordination between radiosonde monitoring centers, and the supply of data to other parties such as the climatological community or the operators/ manufacturers.

Regarding the Radiosonde compatibility analysis, the ET recommended that:

- (a) The Rapporteur maintains a catalogue of upper-air stations and radiosonde types/systems in use. This catalogue should be updated regularly and made available via the WMO web site. Where possible, more detailed metadata should be included with the catalogue (i.e. operating radio frequency, radiation correction)
- (b) The Rapporteur continues to monitor the “long term” performance of radiosonde networks & designs using the ECMWF “OB-FG” Statistics. These statistics to be made available on an annual basis, in tabular format, with a final report being submitted to CIMO at the end of the session.
- (c) The Rapporteur prepares recommendations for the use of the ECMWF statistics to monitor the wind measurement performance of global systems.

- (d) The Rapporteur will act as a liaison between the ET Members, HMEI & WMO Permanent Representatives for the exchange of information (metadata & monitoring statistics) and for informing/resolving system & network issues

On the final day of the session the ET came to agreement on the work plan. Details on the plan and presentations made by ET members and invited experts can be found on the CIMO/IMOP website.

Joint Expert Team on Surface-based Instrument Intercomparisons and Calibration Methods and International Organizing Committee on Surface-based Instrument Intercomparisons

The Joint Expert Team on Surface-based Instrument Intercomparisons and Calibration Methods (ET on SBII&CM) and International Organizing Committee (IOC) on Surface-based Instrument Intercomparisons was held in Trappes, France from 24 to 28 November 2003. The ET/IOC, in response to the request of CIMO-XIII discussed both operational and organizational aspects for WMO Laboratory Intercomparisons of Rainfall Intensity (RI) Gauges, WMO Field Intercomparisons of RI Measuring Instruments and WMO Intercomparison of Thermometer Screens/Shields in conjunction with Humidity Measurements. In addition to members of the ET and IOC, two representatives of the HMEI participated in the first session and provided significant inputs towards successful outcome of the meeting.

The ET/IOC agreed on the main objectives, possible places, dates and duration of the intercomparisons. The operational aspects related to a smooth running of the WMO intercomparisons were discussed in details, namely conditions for participation, type of instruments, intercomparison rules, responsibility of host(s) and participants, data acquisition, processing analysis methodology and publication results.

It was suggested that Laboratory Intercomparisons of RI gauges should be held in recognized laboratories of the Royal Netherlands Meteorological Institute, Météo France and University of Genova. The preparatory works should be finished in mid 2004 so that the intercomparisons may start in mid September 2004 and last until the end of March 2005. It was agreed that only catchment type of instruments, that are currently being used in national networks or are being considered for use in national networks and are capable of measuring rainfall intensity of at least 200 mm/h at a time resolution of 1 minute, will be accepted for participation.

WMO Field Intercomparisons of RI Measuring Instruments should be preferably held in areas of good likelihood of high intensity rainfall events. Places in Germany, Italy, Slovakia and USA were discussed, however further efforts should be made to identify suitable locations for the field intercomparison. The intercomparison would start as soon as the laboratory intercomparisons are concluded, preferably in April 2005 and should last until December 2005. Only in situ instruments that are currently being used in national networks or are being considered for use in national networks and are capable of measuring rainfall intensity of at least 200 mm/h at a time resolution of 1 minute will be accepted for participation.

As for the WMO Intercomparison of Thermometer Screens/Shields in conjunction with Humidity Measurements, at least two test sites will be necessary. One in an arctic region and one in tropical or desert regions, the main interest being warm temperature and high solar radiation, as a combination of different conditions, e.g. warm/hot humid region, warm/hot dry region, cold region. Further efforts should be made to identify suitable locations for the field intercomparison, giving priorities to existing RICs or other centers such as ASECNA, which existing infrastructure may be strengthened through an assistance from a developed RIC (e.g. RIC Trappes). Intercomparison in an arctic region may start as soon as in mid 2005 and in a tropical/desert region in the beginning of 2006. The duration should be at least 12 months,

however in case of a region with no significant changes during the year, it may be shortened to about 6 months.

More details can be found on the CIMO/I MOP website.

Joint Expert Team on Upper-Air Systems Intercomparisons and International Organizing Committee on Upper-Air Systems Intercomparisons

The first session of the Joint meeting of the Expert Team on Upper-Air Systems Intercomparisons (ET on UASI) and International Organizing Committee on Upper-Air Systems Intercomparisons (IOC) will be held in Geneva, Switzerland from 10 to 13 March 2004.

The ET will review the previous intercomparisons and tests, such as WMO radiosonde intercomparisons, recent national tests and comparisons, national progress reports on testing quality of new radiosondes and will also review the requirements for further tests and intercomparisons. It will assess the Radiosonde Compatibility Report and the progress in the development of high quality upper-air measurements of temperature and water vapour. It will also review the relevant guidance material and suggest necessary updates.

ET/IOC will decide on the WMO intercomparison of high quality radiosonde systems with a priority given to improved temperature and relative humidity measurements since the last WMO intercomparison, especially: main objective, place, date and duration, conditions for participation, type of participating instruments, identification of participants, intercomparison rules, responsibility of the host and responsibility of participants, radiofrequency issues, possibility of remote sensing systems as references, data acquisition and data policy, processing and analysis methodology and publication of results.

TRAINING WORKSHOP ON UPPER-AIR OBSERVATIONS

Training Workshop on Upper-air Observations for RA I (Africa) French speaking countries was hosted by Morocco Meteorological Service in Casablanca from 1 to 5 December 2003. The Training Workshop was aimed at improving the knowledge and skills of senior operational personnel in-charge of the national upper-air networks. It had both theoretical and practical lessons. The theory was conducted in the training premises of Morocco Meteorological Service and the practical part was performed at the Casablanca Upper-air station. Morocco Meteorological Service provided necessary infrastructure at both sites for the successful outcome of the Workshop, however for the practical demonstration at the Upper-air station two additional ground receiving and processing stations were provided by VAISALA Oyj and one by MODEM together with some consumables. Twenty-one trainees from nineteen countries participated at the Workshop.

Based on the lecture notes prepared by UK Met Office and USA NWS Training Centre, three lecturers from Canada, France and Switzerland with the help of two lecturers from Morocco and representatives of the Association of HMEI delivered lectures and conducted practical lessons. The theory covered topics, such as basic introduction to radiosonde soundings and presently used technology and all activities before launching radiosondes. The practical part dealt with all activities during and after a radiosonde launch. During the practical demonstration two Vaisala RS80, four Vaisala RS92 and three Modem M2K2 radiosondes were launched. Availability of additional ground receiving and processing stations enabled to divide trainees into small groups allowing them to spend sufficient time to master the equipment they are currently using and/or to acquaint themselves with the new equipment. Review of the presently used technology was complemented by information on possible future systems, such as wind profilers, RASS and radiometers.

The Workshop also addressed the operational problems experienced in Africa through country reports presented by trainees. Lecturers as well as the representatives of the Association of HMEI, represented by two Vaisala experts and two Modem experts, provided some suggestions on how to resolve pertinent problems and on how to optimize best the equipment performance in African conditions.

A fruitful dialog was set-up between the lecturers, the HMEI representatives and participants that led to a better understanding of the needs and requirements regarding the operation and maintenance of instruments as well as training needs relevant to upper-air observations in African conditions. This would assist CIMO in planning of future training events and assist WMO in better provision of assistance to African countries.

The participants showed a great deal of dedication, enthusiasm and will to learn and to know more about equipment and methods used in upper-air observations for the benefit of their own country, the Region and the whole meteorological community. The objective of the Training Workshop was achieved. It is therefore hoped that participants will be able to share newly acquired knowledge with their home counterparts so that the knowledge and skill of other personnel employed in the national upper-air networks will also be improved.

A set of the guidance and training material was also provided to participants on a CD to assist them in the follow-up training at national levels. Thanks to a productive dialogue between participants and lecturers in reviewing the effectiveness and contents of the Workshop, the training materials will be further improved.

CIMO is considering the organization of similar workshops in RA III and V.

The Newsletter will be issued at least twice a year and will be distributed by e-mail to CIMO members and affiliates, including the Hydro-Meteorological Equipment Industry Association (HMEI) and the International Bureau of Weights and Measures (BIPM)*, provided that the e-mail addresses are known to the Secretariat.*

The contents of the Newsletter may be forwarded to other persons interested in contributing to the work of CIMO or in receiving information, by e-mail, on the activities of CIMO.

Information on the work of CIMO can be found at the IMOP/CIMO home page available through the World Weather Watch website www.wmo.int/web/www/www.html

Contact persons at WMO Secretariat:

IMOP/CIMO: Dr. Miroslav Ondráš, Observing Systems Division (mondras@wmo.int)

WWW web: Ms Sary Vargas, Web Editor (svargas@wmo.int)