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COMMISSION FOR INSTRUMENTS AND METHODS  
OF OBSERVATION

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CIMO MANAGEMENT GROUP  
Second session

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## **REVIEW OF THE WORKING STRUCTURE OF CIMO**

**(Submitted by the Secretariat)**

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### **Summary and purpose of document**

This document provides information on the working structure as agreed by CIMO-XIII

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### **Action proposed**

For information only

**13. FUTURE WORKING STRUCTURE OF THE COMMISSION, ESTABLISHMENT OF GROUPS AND NOMINATION OF EXPERTS** (*agenda item 13*)

(Excerpt from the Abridged Final Report with Resolutions and Recommendations of the Thirteenth Session of the Commission for Instruments and Methods of Observation, WMO-No. 947)

13.1 The Commission considered structures that would enable it to meet the needs of Members most effectively during the next intersessional period. In doing so, it took account of its performance over the previous period, the recommendations of its working groups and Rapporteurs, the conclusions of other WMO constituent bodies on issues related to CIMO, and the roles of other relevant intergovernmental and non-governmental organizations. In particular, the Commission took note of the conclusions of Thirteenth Congress and the Executive Council on the WMO structure, including that of the technical commissions.

13.2 The Commission noted that, when discussing the WMO structure, the fifty-third session of the Executive Council agreed that structural changes should better facilitate the realization of WMO's Long-term Plans. The Executive Council also agreed that in the light of rapid changes, new structures should allow for flexibility, responsiveness and delegation of responsibility. In that connection, the Council noted that the implementation of a new structure within CBS had been successful in achieving objectives of the World Weather Watch Programme, and in improving links with other technical commissions and regional associations. The Council considered that the CBS experience might also be useful to other commissions, but that it was up to each commission to consider its appropriateness, in all or in part, to its particular requirements.

13.3 The Commission recognized the need for a structure that would improve its efficiency and effectiveness and permit greater participation of Members, regional associations and other WMO technical commissions in its activities, while responding more effectively to their evolving needs. The kind of structure adopted should lead to the Commission achieving its goals as defined in the WMO Long-term Plan and its terms of reference to the maximum extent possible.

13.4 The Commission agreed that a new structure would need to relate to the operational responsibilities facing NMHSs, including commercialization, the important private manufacturing sector and prevailing global financial constraints. The working mechanisms should support improved coordination, flexibility, timeliness, appropriate delegation of responsibilities, better information flow, responsiveness to the needs of stakeholders, and promote creativity and innovation. The new structure would enable the use of appropriate expertise to tackle specific problems, lead to closer working relationships with the regional associations and other technical commissions to better address cross-cutting issues, and would facilitate the use of expertise from outside the Commission.

13.5 The Commission concluded that the most effective, flexible and responsive means of carrying out CIMO tasks would be a system of Expert Teams (ET) complemented by suitable ways to inform and involve all CIMO members in the process. The Commission agreed that its activities and teams should be grouped together and handled by Open Programme Area Groups (OPAGs) that do not hold meetings and whose members would be regularly consulted and informed by the chairpersons of each group by e-mail or correspondence or through the WMO/CIMO Web site. That would achieve a broad ownership through the involvement of experts from among Members. The Commission noted that the success of the system would depend on the selection of active and committed co-chairpersons of each OPAG. An ET would be based mainly on the expertise needed, equitably selected from different geographical areas whenever feasible.

13.6 The co-chairpersons would determine the appropriate allocation of responsibilities for the leadership of the ETs, including coordination of their work, reports, etc., and were responsible for the management and scientific/technical guidance of the work of the OPAG area.

13.7 The Commission decided to establish three Open Programme Area Groups, each group comprising a set of specific programme activity areas, and adopted Resolution 1 (CIMO-XIII). It agreed on preliminary terms of reference given in Annex V to this report. The OPAGS were as follows:

- (a) OPAG on Surface Observation Technology (OPAG-Surface). Taking into account user requirements, the OPAG would evaluate appropriate instrumentation in varying environments, recommend observing methods and provide information on new technologies and systems for measurement of surface meteorological variables;

- (b) OPAG on Upper-air Observation Technology (OPAG-Upper-air). Taking into account user requirements, the OPAG would evaluate appropriate instrumentation (both *in situ* and remote sensing) in a variety of atmospheric conditions and provide information on new sensors for measurement of upper-air meteorological variables;
- (c) OPAG on Capacity Building (OPAG-CB). The OPAG would address all CIMO aspects of capacity building activities (through training, technical conferences and RIC). It would also coordinate the ongoing update of the *Guide to Meteorological Instruments and Methods of Observation* (WMO-No. 8), as well as publications in the IOM Report series and on the WMO/CIMO Web site. Furthermore, it would interact with other organizations and other WMO technical commissions.

13.8 The Commission noted that topics could overlap among the programme areas and therefore stressed the need for appropriate interactions to ensure that such topics were managed effectively. The Commission agreed that a highly effective Management Group was needed to ensure proper integration of its programme areas, evaluate progress achieved, decide upon priorities, coordinate strategic planning and decide on necessary adjustments to the working structure during the intersessional period. It recognized that a complex structure of teams with many active links to other technical commissions, regional associations and relevant bodies outside WMO required an effective and flexible management. It requested the CIMO Management Group (see annex to Resolution 1 (CIMO-XIII)) to ensure the technical and scientific integrity of the IMOP programme areas and to review the availability of resources, and it authorized the president to make the necessary adjustments as needs arose.

13.9 The Commission agreed that overarching activities, such as the development of the Commission's strategy regarding the integrated observing systems, resource mobilization and cost reduction of high-cost observational systems, also pertain to the responsibility of the MG.

13.10 The Commission emphasized that the essential criteria for establishing ETs and defining their membership were the achievement of the identified tasks and the assessment of how they should be implemented. The Commission also requested each of the OPAG co-chairpersons to ensure that specific work areas, described in respective parts of the final report of the thirteenth session of CIMO, were adequately addressed as well as the WMO 6LTP. The Commission agreed that ETs should normally be established at sessions of the Commission. However, the Commission found it difficult to establish the ETs during the session and authorized the president, with assistance from the Management Group, to establish the ETs that would address programme activity areas, and to determine their membership in the near future to facilitate early activation of their work on agreed priorities. The Commission also urged that special efforts should be made to explore extrabudgetary resources to support the work programme.

13.11 The Commission noted with appreciation the experts proposed by the Members who were available to work within the OPAGs. A preliminary list of experts proposed to actively support the working programme of the Commission was given in Annex VI to this report. The Commission underlined the open nature of the OPAGs, meaning that any interested expert could become a member of an OPAG. The Commission also welcomed Members to propose additional experts, who would be suitable for the tasks identified by the Commission, prior to the first meeting of the Management Group, which is intended to be held in the first quarter of 2003.

13.12 The Commission agreed to establish a CIMO Management Group by adopting Resolution 2 (CIMO-XIII), and to designate the co-chairpersons of the OPAGs by adopting Resolution 3 (CIMO-XIII).

**Annex to paragraph 13.7**

**PRELIMINARY TERMS OF REFERENCE OF OPAGs**

**A. GENERAL TERMS OF REFERENCE OF THE SURFACE AND UPPER-AIR TECHNOLOGY OPAGs**

1. Carry out the activities of the OPAG and ensure contributions are relevant and timely.
2. Review and publish results and recommendations relating to the state-of-the-art of operational instrumentation, calibrations and methods of observation as well as their use in different application areas and report on their performance.
3. Work closely with other technical commissions and regional associations through representatives.
4. Respond to requirements of users of all WMO Programmes and to recommend appropriate action of the Commission, including provision of guidance material.
5. Facilitate effective collaboration on cross-cutting issues.
6. Propose, coordinate implementation, review and evaluate intercomparisons of instrumentation in collaboration with relevant manufacturers.
7. Review, develop and update guidance material related to instruments and methods of observation.
8. Monitor and cooperate with the relevant work of international and regional bodies, such as the International Organization for Standardization (ISO) and the International Committee for Weights and Measures (CIPM/BIPM), report on such work and advise on action as necessary.

**B. GENERAL TERMS OF REFERENCE OF THE OPAG ON CAPACITY BUILDING**

1. Work closely with other technical commissions and regional associations on issues related to capacity building, such as their involvement in instrument comparison, workshops, seminars and activities of the RICs.
2. Maintain close liaison with the regional Rapporteurs on Instrument Development, Related Training and Capacity Building, review their reports and recommend action to deal with indicated deficiencies.
3. Develop proposals on resource mobilization including how to engage manufacturers in building capacity.
4. Review the needs for building national capacities related to IMOP with the view to making developing countries more self-reliant.
5. Review, develop and update guidance and training material related to instruments and methods of observation and liaise with the RMTCs on these matters.
6. Ensure guidance information on modern technology is available to Members.
7. Promote the use of calibration standards by RICs and Members and facilitate associated technology transfer activities.
8. Develop further basic procedures for quality management of observations, instrument maintenance, calibration and operation (based on the sixth edition of the *CIMO Guide*).
9. Provide guidance to Members on strategies for the procurement process of instrumentation and related management.

**PROPOSED TASKS TO BE UNDERTAKEN BY THE OPAGs**

**A. OPAG-SURFACE**

1. Report and recommend methods for automated visual and subjective observations:
  - Systems measuring present weather (including clouds, icing, state of the ground, lightning and thunderstorms);
  - Standardization of algorithms.

2. Provide guidance on the state-of-the-Art of Instruments and Automated Surface Observing Systems:
  - Review and report on development of instruments and ASOS;
  - Provide guidance to members and other users on the implementation of ASOS;
  - Provide guidance on implementation in varying environmental conditions;– Provide improved guidance for siting of meteorological instrumentation and update WMO regulations;– Provide guidance on meta data requirements.
3. Prepare proposals for instrument intercomparisons:
  - Newly developed instruments;
  - Currently operational instruments;
  - National, regional and international intercomparisons.
4. Review advances in calibration methods.
5. Facilitate further activities related to meteorological radiation measurements:
  - Liaise with the World Climate Research Programme on matters related to Baseline Surface Radiation Network and inform Members of developments;
  - Review operational practice associated with total ozone measurements. Prepare recommendations for automation of ozone measurements suitable for a standard automated observational site;
  - Review operational practice associated with UV and aerosol optical depth measurements.
6. Report on progress of urban and road meteorological measurements:
  - Monitor the emerging requirements for measurements and develop pertinent technical recommendations for standards and practices to be included in the *CIMO Guide*.

**B. OPAG-UPPER AIR**

1. Facilitate upgrading the global radiosonde network:
  - Prepare and perform comparison tests to detect error characteristics of various types of aerological measurement systems, establish links to previous designs and systematic differences between new radiosonde designs (over four years);
  - Develop techniques and report annually on the performance of radiosonde types in the GOS;
  - Solicit agreement on BUFR code table and descriptors for international use (1–2 years).
2. Investigate error characteristics of water vapour measurements and explore compatibility between the different types of measurement:
  - Prepare guidance material on developing national GPS water vapour network;
  - Monitor and assist in the introduction of humidity measurements by AMDAR.
3. Investigate the suitability of modern conventional and Doppler radars for deployment in NMHSs:
  - Improve quality and availability of remotely sensed upper wind measurements;
  - Report on the suitability of modern radars and wind profilers for deployment in NMHSs;
  - Report and advise manufacturers on the operational performance of weather radars in developing countries.
4. Monitor and report on new development of other upper-air measurement techniques:
  - The techniques are expected to include lidar, microwave radiometer, sodar, RASS, etc.;
5. Monitor and report on calibration of satellite remote sensing instrumentation.
6. Investigate the standardization of data-processing algorithms for radiosondes.
7. Report on progress of lightning detection:

- Monitor and report on national and regional lightning detection projects and networks;
  - Propose evaluation methods for operational lightning detection systems;
  - Review the progress in the compatibility of lightning detection remote sensing and conventional *in situ* observations.
8. Promote, facilitate and assist with developments in integrated observing systems.
  9. Continue radiofrequency allocation studies for ground-based observing systems:
    - Improve coordination of radiosonde operating frequencies between neighbouring countries.

**C. OPAG-CAPACITY BUILDING**

1. Work with regional associations to ensure effective RIC activities and to develop proposals for strengthening the role of the RICs, particularly those located in developing countries.
  2. Organize technical conferences and training in collaboration with other technical commissions and the HMEI as appropriate.
  3. Provide advice on *Quality Management Systems* procedures for instruments and methods of observations (based on the *CIMO Guide*) and implement links with relevant international organization active on this area.
  4. Maintain and update the *Guide to Meteorological Instruments and Methods of Observation* (WMO-No. 8) and advise on changes required for the Instrument Catalogue.
  5. Review available and prepare additional training material for scientists beginning work in instrumentation development.
  6. Review and provide guidance to develop the IMOP capacities of developing countries, in particular the development and fabrication of instruments.
  7. Develop proposals for joint procurement mechanisms for consumables to assist developing countries in achieving a reduction in the cost of instrument operation.
8. Evaluate technical reports concerning instrument requirements in developing countries generated by experts, and provide technical advice on related project implementation.

**Annex to paragraph 13.11**

**Preliminary list of experts proposed to actively support the working programme of the Commission**

The preliminary list of experts and their areas of expertise are given in the table.

**Areas of expertise:**

1. Development of Instruments and Automated Observing Systems;
2. Meteorological Radiation including UV Measurements;
3. Point Precipitation and Evapotranspiration Measurements;
4. Road and Urban Meteorological Observations;
5. Atmospheric Composition, including Atmospheric Ozone Measurements;
6. Atmospheric Turbidity Measurement;
7. Wind and Temperature Profilers;
8. Weather Radars;
9. Lightning Detection;
10. GPS-derived Precipitable Water Content;
11. Radiosonde Systems;
12. Other Upper-air Measurement Techniques;
13. Capacity Building;
14. Regional Instrument Centres (RICs);
15. Training.

[TABLE: PRELIMINARY LIST OF EXPERTS]

**Resolution 1 (CIMO-XIII) – WORKING STRUCTURE OF THE COMMISSION FOR INSTRUMENTS AND METHODS OF OBSERVATION**

**THE COMMISSION FOR INSTRUMENTS AND METHODS OF OBSERVATION,**

**NOTING:**

- (1) The endorsement by Thirteenth Congress (1999) of the need to encourage and promote overall participation in, and cooperation among, the technical commissions and regional associations,
- (2) The agreement at the fifty-third session of the Executive Council (Geneva, 2001) that structural changes would better facilitate the realization of WMO's Long-term Plans and that, in the light of rapid changes, would allow for more flexibility, responsiveness and delegation,
- (3) The consideration of the fifty-third session of the Executive Council that the new structure within the Commission for Basic Systems had been successful in achieving objectives of the World Weather Watch Programme and in improving the links with other technical commissions and the regional associations,
- (4) The need for far greater resources in terms of expertise to fulfil its responsibilities,

**CONSIDERING** the need to:

- (1) Provide a greater opportunity for experts, including representation from other bodies dealing with issues related to CIMO, to work in highly focused teams on important specific technical problems,
- (2) Enhance participation of experts from developing countries in the work of the Commission,
- (3) Build and maintain effective links to the regional associations, and relevant instrument manufacturers,
- (4) Improve the flow of technical information concerning the activities of the Commission to all Members,

**DECIDES:**

- (1) To implement the new working structure consisting of Open Programme Area Groups (OPAGs) as given in the annex to this resolution;
- (2) To keep under review and evolve further the terms of reference of the OPAGs through the Management Group, in response to the evolving requirements during the intersessional period;

**AUTHORIZES** the president to establish and activate Expert Teams in accordance with priorities agreed by the Commission and the Management Group;

**AUTHORIZES FURTHER** the president, with assistance from the Management Group, to establish during the intersessional period Expert Teams for areas additional to those agreed by the Commission, if a demand arises;

**REQUESTS** the president of the Commission, with assistance from the Management Group, to keep the impact and effectiveness of the new working structure under review and to provide a report to the next session of the Commission;

**INVITES** the Secretary-General to arrange, within available resources, for the support of the new structure that will facilitate the participation of the members of the OPAGs and the Expert Teams in the work of CIMO.



**Annex to Resolution 1 (CIMO-XIII)**

**WORKING STRUCTURE OF THE COMMISSION FOR INSTRUMENTS AND METHODS OF OBSERVATION**

1. The working structure of the Commission will comprise a system of small, task-focused Expert Teams (ET) complemented by suitable ways to involve and inform all CIMO members in the process. The activities of CIMO are grouped under three main open programme areas:
  - (a) Surface Observation Technology (Surface);
  - (b) Upper-air Observation Technology (Upper-air);
  - (c) Capacity Building (CB).
2. The activities under each of these open programme areas are handled by Open Programme Area Groups (OPAG):
  - (a) OPAG on Surface Observation Technology (OPAG-Surface);
  - (b) OPAG on Upper-air Observation Technology (OPAG-Upper-air);
  - (c) OPAG on Capacity Building (OPAG-CB).
3. The members of the OPAGs are regularly consulted and informed through suitable means of distribution, such as circular letters from the CIMO president or co-chairpersons and the WMO/CIMO Web site.

**CIMO Management Group (MG)**

4. The CIMO MG shall consist of the president and vice-president, the co-chairpersons of the three OPAGs, along with the minimum additional experts needed to ensure regional representation. The CIMO MG should not normally exceed eight members in total. The group has a strong, active and pivotal role in guiding and managing the Commission's activities between sessions. It is responsible for ensuring the integration of the programme areas, for strategic planning issues, for the evaluation of the progress achieved in the agreed work programme and for related necessary adjustments to the working structure in the intersessional period. The CIMO MG should meet at least once, preferably twice, in the intersessional period. The Commission, by means of a resolution, decides the terms of reference for the CIMO MG. The reports of the CIMO MG meetings will be accessible through the WMO/CIMO Web site and distributed to members of CIMO.
5. The Management Group must be fully committed to its management responsibilities. The MG should:
  - Focus on user requirements;
  - Monitor and make adjustments to the terms of references of the OPAGs;
  - Coordinate the specific tasks and schedules resulting from the work of the specific programme activities (ETs);
  - Set standards for the documentation/reporting of the Commission;

Conduct a regular management review.

**Open Programme Area Groups (OPAG)**

6. The terms of reference of the OPAGs and the designation of co-chairpersons are decided by the session of the Commission. The terms of reference of a general nature are defined for each OPAG, together with specific tasks, and are approved by the Commission. The co-chairpersons of each OPAG coordinate and manage the work of the ETs. The ETs, established by the Commission or its president with the assistance of the CIMO Management Group, carry out specific tasks assigned to them. The co-chairpersons will determine the appropriate allocation of responsibilities for the leadership of the ETs, including coordination of their work, reports, etc. The co-chairpersons are responsible for the management and technical guidance of the work of the OPAG area.

### **Expert Teams (ET)**

7. An ET is mainly based on expertise to develop proposed solutions to scientific/technical problems and for studying issues for which specific expert knowledge is needed. In some cases it may be more effective to establish a Rapporteur instead of a team for certain specific tasks. The Rapporteur should be seen within this working structure as a “one-member” team, for example either providing expert guidance or input, or enhancing the reporting on regional issues and on implementation. The terms of reference of the ETs are established by the session of the Commission, the president, or the MG.
8. The leaders of the ETs are normally designated by a session of CIMO. If this is not possible, the team leaders will be designated by the president upon a recommendation from the co-chairpersons of the OPAG.
9. Members of the ETs will be designated by their team leaders in consultation with the OPAG co-chairpersons and approved by the MG. If this is not possible, an alternative mechanism agreed to by the president will be invoked. Subsequent establishment and activation of the ETs is normally done by the session of CIMO or its president under guidance from the MG. The OPAG co-chairpersons will invite suitable experts from other interested bodies to participate in CIMO Expert Teams.
10. The ETs are expected to deliver their working results within a specific time period to their parent body. Work by correspondence or meetings, as necessary, should achieve this. The need for the meetings of the ETs will be considered by the MG in consultation with the Secretariat taken due note of the nature and urgency of the task(s) entrusted to the teams. The reports of the ETs will generally be accessible through the WMO/CIMO Web site or distributed by regular mail, as necessary.
11. ET chairs may, with the approval of the MG, draw upon CIMO experts as required to accomplish their tasks. ET chairs should plan their tasks and mile stones and report regularly on the progress achieved in carrying out tasks assigned to their teams.

**Resolution 2 (CIMO-XIII) – COMMISSION FOR INSTRUMENTS AND METHODS OF OBSERVATION  
MANAGEMENT GROUP**

**THE COMMISSION FOR INSTRUMENTS AND METHODS OF OBSERVATION,**

**NOTING:**

- (1) The *Abridged Final Report with Resolutions and Recommendations of the Twelfth Session of the Commission for Instruments and Methods of Observation* (WMO-No. 881),
- (2) The *Abridged Final Report with Resolutions of the Thirteenth World Meteorological Congress* (WMO-No. 902), paragraph 6.4.3,

**RECOGNIZING:**

- (1) That the effectiveness of the Commission depends to a large extent on the effective management of its activities between sessions,
- (2) That an ongoing management function is required to ensure the integration of programme areas, decide upon priorities taking account of the availability of resources, evaluate the working progress achieved, coordinate strategic planning, and decide on necessary adjustments to the working structure of the Commission during the intersessional period,

**DECIDES:**

- (1) To establish a CIMO Management Group (CIMO-MG) with the following terms of reference:
  - (a) Advise the president on all matters related to the work of the Commission;
  - (b) Plan, coordinate and actively manage the work of the Commission, its Open Programme Area Groups and Expert Teams, including evaluating the progress achieved in the work programmes and advising on the new priority activities;
  - (c) Ensure the overall integration of the programme areas and coordinate strategic planning issues, focusing on user requirements;
  - (d) Advise the president on matters related to cooperation with other technical commissions, regional associations and other relevant international organizations and governmental or non-governmental bodies;
  - (e) Mobilize resources to enable the work of the Commission to be achieved;
  - (f) Keep under review the internal structure and working methods of the Commission and make adjustments, as necessary, with a view to increasing its efficiency;
  - (g) Keep under review the terms of reference of the Open Programme Area Groups and Expert Teams and make necessary adjustments;
  - (h) Advise the president on all team leader designations necessary between sessions of the Commission;
- (2) That the composition of the CIMO Management Group shall be as follows:
  - (a) The president of CIMO (chairperson);
  - (b) The vice-president of CIMO;
  - (c) The co-chairpersons of the OPAGs.

**Resolution 3 (CIMO-XIII) – OPEN PROGRAMME AREA GROUPS (OPAGs) OF THE COMMISSION FOR INSTRUMENTS AND METHODS OF OBSERVATION**

**THE COMMISSION FOR INSTRUMENTS AND METHODS OF OBSERVATION,**

**RECALLING:**

Resolution 1 (CIMO-XIII) – Working Structure of the Commission for Instruments and Methods of Observation

Resolution 2 (CIMO-XIII) – Commission for Instruments and Methods of Observation Management Group

**DECIDES:**

To select, in accordance with WMO General Regulation 32, the co-chairpersons for each of the Open Programme Area Group as follows:

- (a) OPAG on Surface Observation Technology:
  - Co-chairperson C. Richter (Ms) (Germany)
  - Co-chairperson J. van der Meulen (Netherlands)
- (b) OPAG on Upper-air Observation Technology:
  - Co-chairperson R. Dombrowsky (United States of America)
  - Co-chairperson J. Nash (United Kingdom)
  - Co-chairperson A. Ivanov (Russian Federation)
- (c) OPAG on Capacity Building:
  - Co-chairperson E. Bazira (Uganda)
  - Co-chairperson H. Zhou (China)