Summary and purpose of the document

This document provides information on the outcome of JCOMM-III regarding education and training, technology transfer and implementation support. It also reviews progress on DMCG-III action items related to capacity building and lists capacity building activities implemented during the inter-sessional period.

ACTION PROPOSED

The Group will be invited to comment, and particularly make decisions or recommendations, as appropriate on the following topics:

(a) Review the information contained in this report and comment as appropriate;

Appendices: A. JCOMM Capacity Building Principles
DISCUSSION

1. OUTCOME OF JCOMM-III

1.1 During the 3rd Session of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology, Marrakech, Morocco, 4-11 November 2009 the issue of education and training, technology transfer and implementation support was discussed extensively in Agenda Item 9.

1.2 In terms of specialized education and training the Commission had noted that during the intersessional period, activities related to specialized education and training in marine meteorology, physical oceanography and data management had taken place as part of the work programmes of its Programme Areas (PAs), and agreed to continue with this approach and to assign one of its Management Committee members to oversee these activities and to liaise closely with the relevant educational and training activities such as the WMO Education and Training Programme, IOC’s Capacity-Building Section and the IODE Ocean Teacher and ODIN projects (para 9.1.1). The Commission agreed that, in general, the activities undertaken in this area had been particularly successful, especially with regard to the workshops and training seminars, which were considered of great value in stimulating and assisting in the further development of marine meteorological and oceanographic observing systems and enhancing the capability of Members/Members States, especially Least Developed Countries (LDCs) and Small Island Developing States (SIDS), in accessing existing products and providing marine forecasting and warning services.(para 9.1.2).

1.3 The Commission had further recognized that it was essential that all maritime Members/Member States should be in a position to both contribute to and benefit from the work of JCOMM. This applied equally to the operation of ocean observing systems, the receipt and management of marine data and the generation and delivery of products and services. It therefore adopted a statement of principles for JCOMM Capacity-Building to better represent the requirements and describe the implementation mechanism and activities to be undertaken by JCOMM, including training, transfer of technology, and development of projects, which is included as (Appendix A). The Commission requested that these principles should be transmitted to the Executive Councils of WMO and UNESCO/IOC, to seek their assistance in implementation, and that they should be kept under review by the JCOMM Management Committee

1.4 The Commission agreed that the series of international and regional seminars and workshops had very well achieved its purpose, and that the new orientation, namely, to plan and implement courses in more specific subjects, corresponded well with national and regional requirements. In this context, the Commission commended all Members/Member States which had hosted seminars, workshops and training events during the intersessional period. It particularly thanked the UNESCO/IOC and its Project Office for IODE for hosting and supporting a number of training events in its excellent facilities in Ostend, Belgium, and expressed the hope that the productive partnership between JCOMM and IODE of UNESCO/IOC would be expanded in the future.

1.5 In liaison with the relevant WMO and UNESCO/IOC branches and offices, JCOMM-III proposed that consideration should be given to workshops on marine services including links to public weather services and disaster risk reduction aspects, with a focus on regions of specific concern, such as coastal inundation in vulnerable low-lying areas. It emphasized the need for future training to focus in particular on “training the trainers”, to maximize the benefit of the training. The Commission agreed that efforts should be directed towards the development of additional training tools for effective communication to users of the products and services coordinated through the SPA, and that additional efforts should be made to engage the space agencies more extensively in JCOMM capacity-building, to ensure an effective pooling of resources. The Commission also noted the need to encourage the development of courses in operational oceanography within universities, to work closely with the new EC-PORS on training related to polar regions, and it encouraged Members/Member States to further share their training facilities and courses in marine meteorology and oceanography with others. The Commission recalled that the Ice Analysts Workshops, organized by the ETSI with the
International Ice Chart Working Group (IICWG) and local hosts, had been of particular value to national ice services, and it agreed that they should continue during the coming intersessional period.

1.6 The Commission noted with appreciation that both the UNESCO/IOC and the WMO facilitate access to a wide range of training materials, through OceanTeacher (http://www.oceanteacher.org) that was developed by the IODE of UNESCO/IOC, the UNESCO Bilko (http://www.bilko.org) for remote-sensing image analysis, and Met e-learning (http://www.met-elearning.org), which was managed by the WMO Education and Training Programme. It recommended that these efforts should be closely coordinated, to avoid duplication. Additionally, it recalled that one of the main developers of high quality Distance Learning material in different languages, is the Cooperative Programme for Operational Meteorology, Education and Training (COMET, http://www.meted.ucar.edu/), that COMET Modules cover many fields of interest to the marine meteorological and oceanographic communities, covering atmospheric and oceanic processes as well as remote sensing of marine and oceanographic elements, and that work was now underway to translate some COMET modules into Spanish. It requested the Management Committee to explore developing an expanded partnership with COMET. The Commission also noted other virtual training centres and e-learning tools, such as Eumetcal – EUMeTrain (http://www.eumetcal.org/). The Commission agreed that such e-learning tools could be used as a selection mechanism for candidate trainees, as well as to assist trainees in preparing for courses, and requested the Secretariats to take the necessary actions in this regard.

1.7 The Commission created the new positions of “JCOMM Activity Leaders on Capacity Building”. These were subsequently identified as: (i) Mr Noon-Sik SUK (Korea Republic) for the SPA; (ii) Mr Vitaly Sychev (Russian Federation) for the OPA; and (iii) Mr Hassan Bouksim (Morocco) for the Management Committee.

1.8 The Commission urged the Activity Leaders on Capacity-Building to work with the PA coordinators and the Secretariats to revise the JCOMM CB strategy that builds on existing capacity-building work in both WMO and UNESCO/IOC, to implement a range of JCOMM-focused capacity-building activities.

1.9 The Commission also recognized the importance and value of the training courses in satellite oceanography provided by several of the space agencies. In this regard, it would be timely and worthwhile to seek further coordination and sharing of efforts and responsibilities between JCOMM and the space agencies to support the strengthening of capacity for training and education.

1.10 In terms of technology transfer and implementation support the Commission, noting the success of the WMO/CBS Severe Weather Forecasting Demonstration Project (SWFDP) and the Ocean Data and Information Network (ODIN) strategy developed by the IODE of UNESCO/IOC, the Commission recommended that these concepts should be used by the different PAs in developing their regional projects.

2. CAPACITY BUILDING ACTIVITIES RELATED TO THE DMPA DURING THE INTERSESSIONAL PERIOD (March 2008- April 2010)

2.1 The following activities were organized contributing to JCOMM capacity building between March 2008-April 2010:

16 - 17 February 2009: JCOMM/IODE Jamboree-3 planning meeting
   Informal consultation meeting between IODE staff and Johannes Guddal and Murray Brown (OceanTeacher) on possible organization of Jamboree-3, Oostende, Belgium

31 Aug - 4 Sep 2009: WESTPAC Training Course for IODE Ocean Data Portal data providers, Seoul, Korea Rep

13 October 2009: Training Course on the establishment of IODE Ocean Data Portal data providers Oostende, Belgium

19 - 23 October 2009: MetOcean Modeling Jamboree-III, Oostende, Belgium

14 - 18 December 2009: EUMETSAT/NOAA /IODE Training Course on the Use of Satellite Wind and Wave Products for Marine Forecasting (Co-sponsored by EUMETSAT and the Government of Flanders (through the IOC Project Office for IODE, Oostende), Oostende, Belgium

21 - 23 December 2009: Training Course on the Establishment of National OceanDataPortal nodes in the Black Sea region (ODINBlackSea) for Georgian and Turkish NODCs, Istanbul, Turkey

3. REVIEW OF DMCG-III ACTION ITEMS RELATED TO CAPACITY BUILDING

3.1 Reference is made to Document DMCG-IV/Doc 3.1 and in particular to:

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<tr>
<th>Agenda/para</th>
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<td>4 2/1/2.2</td>
<td>Para 11.5.17: recommended that training material on the application of data management to marine hazards be included in OceanTeacher.</td>
<td>Keeley to coordinate with SPA Chair and OT Editor</td>
<td>Sep 2008</td>
<td>No materials received</td>
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| 8 2.2/2.2.2 | Agenda Item 2.4 Capacity Building – b: Identify missing digital library material and course material for OceanTeacher related to JCOMM subject areas: The Group expressed concern about the lack of clarity regarding future cooperation of WMO and IOC regarding OceanTeacher and called on the Management Committee to address this | Keeley | Sep 2008 | Our invitation to JCOMM to submit training materials to OceanTeacher remains open. No materials have been received from WMO. IODE has taken the initiative to host the "EUMETSAT/NOAA /IODE Training Course on the Use of Satellite Wind and Wave Products for Marine Forecasting" Co-sponsored by EUMETSAT and the Government of Flanders (through the IOC Project Office for IODE, Oostende). The course was held between 14-18 December 2009 and was attended by 12 meteorologists from 6 countries. The training materials are available in OceanTeacher. UNESCO/IOC and WMO facilitate access to a wide
range of training materials, through OceanTeacher (http://www.oceanteacher.org), UNESCO Bilko (http://www.bilko.org), and Met e-learning (http://www.metelearning.org). MAN-7 agreed that JCOMM CB strategy was not required. JCOMM CB activities now the responsibility of the respective PAs, being coordinated by a member of MAN. Statement of principles for CB adopted by JCOMM-III.

It remains unclear who IODE PO should contact at WMO regarding training materials.

| 45 | 4.2.6 | Arrange for Murray Brown and Eliot Christian to meet at the IODE Project Office to discuss how to reference OT training material in WMO search | Secretariat | June 2008 | Some discussions between E. Christian and M Brown by email. Action still open. Latest information (March 2010): Eliot Christian informed Dr Brown that actual content of information resources such as Ocean Teacher does not fit within the scope of the WMO Information System (WIS). WIS can help with cataloging such content, and WIS can help expose such a collection of content to external searchers |
| 83 | 6.2/6.1.9 | Involve the IODE Ocean Data and Information Networks (ODINs) in ODP implementation, e.g. as data providers, as well as in WIGOS. In this regard the Group also called for closer collaboration with SeaDataNet | ODP Pilot Project team | 2008-2009 | Done |

3.2 It is noted that establishing collaboration between WMO and IOC/IODE’s OceanTeacher in terms of contribution of content for the OceanTeacher Digital Library and Classroom materials has, to date, not been successful.
Appendices: 1
APPENDIX A
Annex to paragraph 9.1.3 of the general summary (JCOMM-III)

JOINT WMO/IOC TECHNICAL COMMISSION FOR
OCEANOGRAPHY AND MARINE METEOROLOGY
CAPACITY-BUILDING PRINCIPLES

1. INTRODUCTION

1.1 The purpose of this document is to lay down the guiding principles on which JCOMM capacity-building activities in marine meteorology and oceanography should be based. The document has been prepared taking into account previous documents and initiatives on capacity development undertaken by JCOMM. A member of the JCOMM Management Committee will be charged with coordinating capacity-building activities.

2. CAPACITY-BUILDING PRINCIPLES

WMO and UNESCO/IOC Capacity-Building Programmes

2.1 The JCOMM is jointly sponsored by the WMO and the UNESCO/IOC and therefore its capacity-building activities must operate within, and draw upon, the overall principles of its governing bodies. The WMO and UNESCO/IOC should also assist with the development of partnerships with potential donor agencies and with links with other UN and other relevant regional and global organizations. The activities also must be compatible and work with similar efforts in other WMO and UNESCO/IOC Programmes. In addition, the JCOMM should seek partnerships to pursue mutual objectives in the development of capability. Finally, capacity-building requirements of the WMO Regional Associations and GOOS Regional Alliances (GRAs) must be considered.

2.2 It is generally agreed that a separate capacity-building programme for JCOMM was not required, taking into consideration the existing capacity-building strategies of WMO and UNESCO/IOC.

Rationale for JCOMM Capacity Principles

2.3 JCOMM should support capacity development elements that are not fully included in other ocean or atmosphere programmes, and draw attention specifically to other capacity-building programmes of the WMO or UNESCO/IOC. Examples include specialized observations and resulting products, e.g., those of some satellite missions, the Argo profiling float programme, or the Data Buoy Cooperation Programme, and other applications.

2.4 The three JCOMM Programme Areas each should include capacity-building activities for a more integrated, focused and proactive approach.

The JCOMM Capacity-Building Principles

Note that there is no priority implied by the order of these principles:

(i) The primary objective of JCOMM capacity-building is to enhance the implementation of the overall JCOMM Programme through enhancing capacity in all Members/Member States to contribute to and benefit from the programme;

(ii) The Activity Leader on Capacity-Building should work with the PA coordinators and the Secretariats to revise the JCOMM capacity-building strategy that builds on existing capacity-building work in both
WMO and UNESCO/IOC, to implement a range of JCOMM-focused capacity-building activities;

(iii) Specific JCOMM-focused capacity-building activities should be implemented by the respective Programme Areas and included in their respective workplans;

(iv) JCOMM capacity-building activities should aim to fill-in gaps and avoid overlapping at national, regional and international levels. It is highly desirable that national partners from both JCOMM themes (i.e., oceanography and marine meteorology) be involved so the complementary and “symbiotic” benefits of JCOMM are clearly demonstrated;

(v) JOMMM capacity-building will include continuous professional development;

(vi) JCOMM capacity-building will aim, where possible, for a “train the trainer” approach to help ensure continuity by countering staff turnover/brain drain problems and to promote the wide spread of knowledge and practices;

(vii) At the regional level, JCOMM capacity-building will develop programmes and projects that follow WMO and UNESCO/IOC strategies (e.g. the ODIN strategy, developed by IODE of UNESCO/IOC; the SWFDP, developed by WMO/CBS; the PANGEA concept, developed by the JCOMM OPA);

(viii) At the regional level, JCOMM capacity-building will develop, preferably, medium to long-term programmes and projects that will result in national structural and embedded capacity that can be sustained by national funding sources;

(ix) Creating awareness in the minds of the public and policy makers is essential for raising national and international support;

(x) JCOMM capacity-building activities will include assessment of feedback regarding the satisfaction and requirements of users of JCOMM observations, products and services;

(xi) One member of the JCOMM Management Committee will be responsible for liaison with the three Programme Areas regarding capacity-building activities;

(xii) JCOMM capacity-building activities should endeavour to utilize existing methods, courses, tools and other capacity-building aids, particularly those of the WMO and UNESCO/IOC.

3. TYPES OF EDUCATION AND TRAINING ACTIVITIES AND IMPLEMENTATION

Methods and Tools

3.1 Capacity-building activities will be implemented using a wide variety of methods, tools and resources that are currently available within WMO (including its 23 Regional Training Centres (RTCs)) and the IODE of UNESCO/IOC, or which will need to be developed by JCOMM and its parent bodies.

Training Courses

3.2 A traditional mechanism for transfer of capacity is the training course. This will also be the case for JCOMM’s capacity-building activities. Each JCOMM capacity-building activity (programme or project) should include a training component. The project document should contain a clear statement on what expertise needs to be built. Based upon this information training activities will be planned.
Training Tools

3.3 The JCOMM Management Committee, at its fifth session (Geneva, October 2006) identified OceanTeacher (http://www.oceanteacher.org), a training tool that was developed by the IODE of UNESCO/IOC, as one of the suitable tools for the management of JCOMM-related knowledge and training materials. Other tools also were identified and should be explored. WMO/ETR Met e-learning modules (http://www.met-elearning.org) have been used for the management of educational and training materials on meteorology, including for marine meteorology. Other virtual training centres and e-learning tools, such as the Cooperative Programme for Operational Meteorology, Education and Training (COMET, http://www.meted.ucar.edu/) and the Eumetcal – EUMetTrain (http://www.eumetcal.org/), make available Modules covering many fields of interest to the marine meteorological and oceanographic communities, including atmospheric and oceanic processes as well as remote-sensing of marine and oceanographic elements.

3.4 It is important to maintain the highest possible standards for the quality of materials entered into OceanTeacher and Met e-learning, and interoperability between these tools should be ensured. It will also be desirable to establish and agree upon standard curricula for all topics. This can be achieved through close coordination between the resource persons and between the resource persons and the Chief Editors. It may be necessary to identify multiple Chief Editors, e.g. one per Programme Area.

3.5 E-learning modules use dynamic content management technology. As such, materials can be entered by resource persons from their usual place of work. In principle, the number of resource persons who can enter materials is unlimited.

3.6 Bilko is a complete data analysis system developed primarily for learning and teaching remote sensing image analysis skills, providing a powerful application capable of handling ocean model data. Current lessons teach the application of remote sensing to oceanography and coastal management, but Bilko routines may be applied to the analysis of any image in an appropriate format, and include a wide range of standard image processing functions. Supported by UNESCO, Bilko is available to users absolutely free including a wide variety of satellite and ocean model outputs with associated self-study lessons that are ideally suited for ‘off the shelf’ training courses in oceanography (see http://www.bilko.org/).

3.7 In many cases material in the Digital Library and Training Curriculum materials make extensive use of hyperlinks to other content both within and outside OceanTeacher and WMO Digital Library. An important quality control task for the Secretariats is therefore, to regularly check whether links are still valid. It is noted that the use of these e-learning modules is free and open to all. Access to the Digital Library is open and does not require registration. Access to the training Curriculum also is free, but registration is required for full functionality.

Workshops

3.8 Workshops are useful tools to promote the sharing of expertise and experience at the national, regional and global levels.

Travel and Study Grants

3.9 Travel and Study Grants allow national experts to benefit from the expertise acquired in other institutions. They also are effective in promoting long-term informal professional relations between experts. As an example, the WMO Fellowship Programme enables fellowship holders to derive from their training the knowledge and professional competence, which will increase their ability to make essential contribution to enhancing the capabilities of the National Meteorological and Hydrological Services (NMHS) and enable them to participate more actively in the economic and social development of their countries. The fellowships granted by WMO are for studies or training in meteorology, including marine meteorology and hydrology, at universities or training institutes with appropriate facilities. Fellowships are awarded only at the request of the
candidate's government and the candidates must be endorsed by the Permanent Representative of the candidate's country with WMO (more information is available at [http://www.wmo.int/pages/prog/etr/fellowship_en.html](http://www.wmo.int/pages/prog/etr/fellowship_en.html)).

**Communication and Outreach Tools**

3.10 As a way of documenting and monitoring JCOMM capacity-building activities, the use of the UNESCO/IOC-IODE Alumni database to record all JCOMM capacity-building events and alumni is recommended. This will assist in tracking JCOMM training course participants and in assessing the long-term impact of the training provided.