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| WORLD METEOROLOGICAL ORGANIZATIONCOMMISSION FOR BASIC SYSTEMS OPAG on DPFSEXPERT TEAM ON EMERGENCY RESPONSE ACTIVITIES (ET-ERA) BUENOS AIRES, ARGENTINA, 30 NOVEMBER – 4 DECEMBER 2015 |  | CBS-DPFS/ET-ERA/Doc. 4.3(1)  (23.10.2015)  \_\_\_\_\_\_\_  Agenda item : 4.3  ENGLISH ONLY |

**Cooperation with other international organizations**

**(IAEA, ICAO, WHO, CTBTO)**

*[Submitted by Anton Muscat (RSMC Exeter) Gerhard Wotawa (RSMC Vienna) and Guenther Winkler (IAEA)]*

##### Summary and purpose of document

This document provides a brief report about the International Conference on Global Emergency Preparedness and Response, Vienna, Austria, 19-23 October 2015, organized by the IAEA. WMO was invited to participate at the conference.

##### Action Proposed

The meeting is invited to consider the document.

**Reference:** An International Conference on Global Emergency Preparedness and Response, was held at the IAEA building in Vienna, Austria, from 19-23 October 2015. This meeting was attended, on behalf of WMO, by Dr. Xu Tang, Mr. Ata Hussain, Mr. Anton Muscat (representing RSMC Exeter) and Mr. Gerhard Wotawa (representing RSMC Vienna). This document provides a brief overview of the meeting from a WMO and RSMC perspective, as well as highlighting some issues, pertinent to the RSMCs, identified ahead of and during the conference.

1. **Opening of the Conference**
   1. The Conference began at 0930 on Monday 19th October with addresses made by the Conference President and the Director General and Deputy Director General for Nuclear Safety and Security of IAEA. In addition, Dr. Xu Tang, Director of the Weather and Disaster Risk Reduction Services Department within WMO, addressed the Conference, talking about the WMO ERA programme and how WMO and IAEA had worked closely and successfully for more than 25 years. Dr. Tang also described how WMO also worked with other international organisations (e.g. CTBTO, WHO) in order to provide these organisations with relevant information, enabling them to make sensible decisions in the event of disasters, e.g. in the event of a release of a contaminant into the atmosphere.
   2. Dr. Tang then made a presentation to the conference, entitled: *Long Standing Cooperation Between WMO and IAEA*. This presentation described the relationship between WMO and IAEA, specifically related to the services that are provided by the RSMCs for ATM in case of a release of radiation into the atmosphere. In this presentation some of the products provided by RSMCs to IAEA were described, including the proposed Time of Arrival (ToA) plots. In addition, references was made to the RSMC Mirrored web pages. It was also made clear that the RSMCs with responsibility for ATM were planning to establish a non-nuclear capability.
2. **Presentations at the Conference**
   1. The purpose of the Conference was for all parties involved in the field of Emergency Preparedness and Response to come together and discuss a range of issues, sharing information and Best Practice where possible. As such, there were many presentations and talks that were not directly relevant to RSMCs and, therefore, not referred to in this report.
   2. There were, however, some presentations that were very relevant to the work and outputs of the RSMCs. One such presentation was provided by Gale Sugiyama (USA) of the National Atmospheric Release Advisory Centre (NARAC) at the Lawrence Livermore Institute in the US. This presentation provided an overview of the dispersion modelling capability carried out by NARAC, including the ability to provide high resolution modelling on request. In addition, the NARAC team are able to overlay additional information onto their plumes, e.g. relating to land use, location of schools, etc, meaning that they could provide very detailed, pertinent information to users of their products, helping those users to make decisions with more confidence.
   3. The presentation also outlined a NARAC capability entitled IXP – International Exchange Programme. This was described as a web-based tool that subscribers could use to run dispersion models for their locality, anywhere in the world.
   4. Anton Muscat (RSMC Exeter) talked with Gale Sugiyama after the presentation. Gale explained that, within the US, NARAC are able to run their dispersion models based on high-resolution WRF model data. However, the WRF data available for the IXP component was of a much lower resolution, Gale admitted. In addition, it was established that the NARAC team do not offer a 24/7 capability within the US. Gale was also asked on how her team collaborated with RSMC Washington. Gale stated that NARAC do work with NOAA but the extent to which the two organisations collaborate was not clear.
   5. Other presentations, around the theme of atmospheric dispersion modelling for radiological events, were made. In a similar way to the NARAC presentation, the products generated appeared to contain a good deal of information and the information was presented in a clear way. However, for some of the presentations, the quality of the meteorological data used for the dispersion modelling was questionable, i.e. it was not clear whether the meteorological data was current. In addition, it appeared that the interpretation of the meteorological and dispersion data was not being undertaken by a trained meteorologist.
3. **Poster session**
   1. On the morning of Thursday 22nd October a 90 minute poster session took place in the main conference hall. This was an opportunity for the presenters at the conference to display a poster showing the work that they undertake and to talk to interested parties about this work.
   2. A poster describing the work of WMO and the RSMCs for IAEA was displayed. Anton Muscat (RSMC Exeter) provided a commentary on the work of the RSMCs during this session. Around eight separate individuals were engaged by Mr. Muscat, these individuals asking pertinent questions about the role of the RSMCs. There was a lot of ignorance about the RSMCs, and many did not understand the role that their National Meteorological Services (NMSs) could provide to them in the event of a radioactive release into the atmosphere.
4. **Issues 1 - Improved RSMC support for EPR Community**
   1. As described in section 2 (above) there were a number of presentations made during the Conference that were concerned with atmospheric dispersion modelling products and, therefore, relevant to the RSMC ATM community. Aesthetically, these products were good, but may often be generated without using the best available meteorological data, e.g. they may well be generated using meteorological data that is not current, or is of a very coarse resolution.
   2. The danger, however, is that the Emergency Response and Preparedness (EPR) community find these products of greater use than the RSMC products. WMO and the RSMCs would like the EPR community to liaise closely with their NMHSs and/or the RSMCs in order to ensure that they do utilise the best meteorological data and expert advice. It is important to remember that the EPR community are not obliged to collaborate with, or use the products of, the RSMCs or the NMHSs.
   3. One way to encourage greater collaboration between the EPR community and the RSMCs/NMHSs is to ask that the IAEA encourage their members, and the wider EPR community, to regard the RSMCs and NMHSs as the “authoritative voice” on meteorology and suggest that their members should collaborate with the RSMCs/NMHSs whenever possible. This suggestion has been passed to Dr. Tang and is expected to be promoted at higher levels within the WMO.
   4. It is worthwhile mentioning that, set against the availability of dispersion products from non-meteorological institutions, the current RSMC charts look rather basic and “tired”; this is, perhaps, not surprising given that the RSMC charts were conceived in the 1990s and have not changed too much since then. In the face of the availability of “better” looking charts from non-RSMC sources, there is a risk that the RSMCs will lose their credibility, not necessarily with the IAEA but with the IAEA’s members.
   5. Therefore it is important to think about how the RSMCs can update the image of the charts. There have been moves in this direction recently, e.g. the development of the Time of Arrival (ToA) charts, as well as the suggestion to provide RSMC data in different data formats, e.g. shape files. Progress on these, and other, fronts needs to be maintained to prevent the RSMCs falling further behind.
   6. Besides the need for improvement of the graphical presentation of results, there is also a need to create an interoperability of RSMC products with other models applied by the EPR community, for example accident impact and response models. This interoperability would certainly improve the usability. Also the methodology of multi-day unit runs needs to be updated, using the TCM/SRS approach already proposed by the WMO Fukushima Task Team.
   7. More widely, there are suggestions from some of the operators of the Nuclear Power Plants, and their regulators, that they do not want to receive modelled plumes from the RSMCs and/or their NMHSs. Instead, they would like to receive “raw” meteorological (forecast) data so that they can run their own dispersion models. There is, of course, the risk that this approach will effectively remove the meteorological expert (the RSMCs and the NMHSs) from the process. Such a move, as well as undermining the “authoritative voice” of the RSMCs and the NMHSs, may also lead to misinterpretation of the meteorological data. Therefore, there is a need to improve the reception of RSMC products in this community, which could be achieved by improving interoperability and by making available high-resolution ATDM products.
   8. To address inherent uncertainties of ATDM calculations, there is also increased need to provide new ensemble RSMC products to the EPR community.
   9. Besides the RSMC modelling work, it is also noted that the IAEA IEC could benefit from on-site WMO support during a nuclear emergency as provided by RSMC Vienna. Procedures for such a support, in particular access to the IEC and objectives and scope of the assistance, need to be worked out.
5. **Issues 2 – The need for RSMC products for other sectors, in particular aviation**
   1. The current RSMC products (deposition charts, air concentration charts and trajectory chart) are designed specifically for the NMHSs and the IAEA. These charts tend to only consider the lowest layers of the atmosphere.
   2. During the last 6 to 12 months, aviation users have become increasingly aware that there are no agreed products that RSMCs can provide to the aviation community in the event of a release of radiation following, e.g. an accident at a NPP. The current suite of RSMC products, provided to both the IAEA and NMHSs, only consider the lowest 500m or so of the atmosphere and do not provide information for higher levels, i.e. levels where aircraft are most likely to be operating. There is a definite appetite from the aviation sector (e.g. CAAs, Air Traffic, etc.) that relevant products are developed and a process agreed for how these would be distributed if there was a polluting accident.
   3. The non-availability of charts is complicated by the fact that the aviation sector do not really know what constitutes “dangerous” levels of radiation as far as operating aircraft is concerned. There has been some recent work undertaken, specifically between ICAO, WMO and IAEA, to try and begin the process of identifying what is required. However, progress has been slow, and there is no agreed roadmap for how RSMCs could deliver such products. This would include not only an understanding of what is “dangerous” but also what type of products the aviation industry need, their frequency of issue, who should receive them, etc. etc.
6. **Closing of the Conference**
   1. Following an address from the Conference President, and other members of the IAEA Executive, the Conference was closed at 1330 on Friday 23rd October