WORLD METEOROLOGICAL ORGANIZATION

Meeting of the Subgroup on Regional Aspects of PWS in RAVI

Bucharest, Romania

4-7 December 2006

FINAL REPORT

Introduction

The meeting of the subgroup on Regional Aspects of PWS in RAVI was opened at 9:00 am by the subgroup Coordinator, Mr David Robinson, who chaired the meeting.

The list of participants is attached as Annex A. The Terms of Reference can be found at Annex B.

Dr Cornel Soci (Scientific Director, National Meteorological Administration, Romania) welcomed participants to Bucharest and provided a brief presentation on the work of the National Meteorological Administration (Romania).

Ms Haleh Kootval, Chief, Public Weather Services Programme of WMO presented on the WMO PWS programme and its activities since the last meeting of the Sub-group. (Presentation, Haleh Kootval)

Adoption of the agenda

The meeting agreed changes to the proposed agenda which can be found at Annex C.

In reviewing the agenda, the sub-group noted the potential for overlapping activities between the PWS and DPM programmes of WMO. The sub-group requested that this observation be reflected within WMO.

Review of actions arising from the last meeting in Pilsen (April 2005)

The actions arising from the last meeting were reviewed. It was recognised that clear deadlines and actions had not been set in case of all necessary follow ups and that it was rather difficult to ascertain whether all actions and recommendations had been completed.

To ensure this does not happen in the future it was agreed that specific actions, timescales and individuals responsible for the actions would be identified. The Coordinator agreed to be responsible for following up with members to ensure actions were completed.

Session 1: Cross Border Exchange of Warnings

(Presentation, Herbert Gmoser).

This project has been very well received by the user community and has demonstrated a real benefit in the cross-border exchange of warnings.

Czech Republic and Hungary have joined with Germany, Italy, Austria, Switzerland and Slovenia in the operational exchange of warnings. Slovakia has approached Austria for details on how the exchange scheme works.

It is recommended that this work stream should now be closed as an activity for the sub-group. It is further recommended that WMO Regional Associations be encouraged to adopt this initiative.

The role of EMMA (now referred to as METEOALARM) as a future delivery mechanism was discussed. The Coordinator of the sub-group requested that at the next meeting an update on these activities be presented. A concern expressed by the Coordinator was that EMMA, as it currently operates, would not provide a 'pop-up' to notify those involved in the scheme that a warning had been issued or updated.

Further discussion led by Dr Herbert Gmoser identified the need for a risk management process to ensure audit compliance was available for this activity, or indeed any other operational activity. See presentation by Dr Gmoser. It was noted that in Portugal a daily briefing was held with civil protection agencies to ensure they were up-to-date with the latest weather information and warnings. The sub-group felt that this was a good example of good cooperation with the user community and how warning information could be disseminated beyond the NMHSs.

EMMA - developments since Pilsen, (Ms Teresa Abrantes)

(Presentation, Teresa Abtrantes).

Ms Teresa Abrantes provided an update on the EMMA project and its move into the operational phase (METEOALARM). This service will be launched in March 2007. EUMETNET Council supported the possibility of using the World Meteorological Day (23rd March 2007) as a key date for the EMMA website launch, possibly with a media event in the Commission. A communications plan will be prepared so that users understand how to use and benefit from the information contained on the website. A link to the website was made available to members of the sub-group. The resilience of the website has been tested up to a maximum of 1 million users a day. If EMMA is to be used as the primary method for conveying warnings across Europe, the sub-group questioned whether the current level of resilience is sufficient. Ms Abrantes agreed to reflect this concern back to the EMMA project.

The sub-group fully supported any activities that the EMMA project will take forward to harmonise warning parameters. Given the experience the sub-group has developed in the cross-border exchange of warnings project, it was felt that there was benefit to both the NMHSs and the public from having a common understanding of warnings.

Austrian Warning Concept, (Dr Herbert Gmoser)

(Presentation Herbert Gmoser)

Dr Gmoser gave a presentation on Austrian Warning concept. The key themes of this concept are;

- Warnings are displayed in standardised red, amber, and green.

- The thresholds for these alarms are based on climatological data and geographical areas.

- The alarms are therefore objective and in an average year, the following number of alarms would be issued:

  Green - no warning
  Yellow - 18 times per year. Impact: Possible damage to infrastructure.
  Orange - less than 4 times per year .Impact: Likely damage to infrastructure.
  Red - less than 2 times per 3 years. Impact: Large scale damage to infrastructure.

- In the case of thunderstorms, hail and ice, the forecaster can determine subjectively the colour of the warning.

- The colours are based on the same parameters as used in EMMA.

Weather warnings are distributed via the Internet, SMS and GPS (in development).

Cross Border Warning, (Mr Jan Sulan)

(Presentation, Jan Sulan)

Mr Sulan gave a short presentation on how warnings are represented in the Czech Republic. The key themes of the presentation were;

- Warnings are represented using a similar traffic light system to EMMA.
- Impacts and probabilities are also represented.
- The website also provides linkage to neighbouring countries websites.

Civil protection and the media, (Ms Teresa Abrantes)

Ms Abrantes raised the issue of harmonising of colour codes. For example, in Portugal the media and civil protection agencies use differing colour codes, which can lead to confusion when the media obtains the information via the two different sources. A clear definition of the roles of different agencies with respect to issuing warnings and calls to action would help prevent such confusion.

Session 2: Education and Training, (Mr Dave Robinson)

Mr Robinson highlighted the need to educate users of weather information so that they are better positioned to mitigate against the impacts of both weather and climate. This process is not simply about educating the end user, although this is a critical factor, but is also equally important to educate those senior staff who have a responsibility within government for developing legislation.

The importance of understanding and influencing, where appropriate, legislation across Europe was also discussed. European legislation on important issues relating to the work of NMHSs, such as the Air Quality directive, INSPIRE and the Water Directive, were given as examples.

Mr Robinson demonstrated how in the UK the public can find out about more about the weather through the UK Met Office and the BBC websites. In addition, basic advice on how the public can mitigate against the potential impacts of severe weather events is also available on the Met Office website given below: http://www.metoffice.gov.uk/weather/uk/advice/index.html

As part of its public education activities, the Met Office works closely with the Department for Education and Skills to provide educational resources and information to schools, www.metoffice.gov.uk/education.

These initiatives were seen as setting a good example for other NMHSs to follow.

Road Weather Sensing, (Mr Jan Sulan)

(Presentation, Jan Sulan).

Mr Sulan highlighted that meteorology for road users did not form part of the PWS activities of all NMHSs. In some countries meteorology for road users was a commercial activity. Road meteorology is not explicitly covered by a specific WMO Programme outside of the PWS Programme.

Mr Sulan felt that there would be some benefit if a co-ordinated approach to developing meteorology for road users could be investigated e.g. through a consistent approach to training and establishing good practice.

His experience within the Czech Republic highlighted that there appeared to be gaps in both road managers' understanding of meteorological phenomena and forecasters' understanding of the impacts of weather on roads.

Following the PWS RAVI meeting in Pilsen, Mr Sulan had proposed to WMO a pilot project for exchanging road weather data in BUFR format (a template for which had been developed by CHMI and DWD). It is not clear whether the previous Coordinator of the sub-group had informed the Coordinators of CBS OPAG on ISS of current developments.

Session 3. Nowcasting initiatives in Europe, (Dr Aurora Stan-Sion)

(Presentation, Aurora Stan-Sion).

Dr Aurora Stan-Sion presented her thoughts on Nowcasting initiatives within Europe. One of these initiatives had resulted in a jointly funded Nowcasting course (Romania NMA and WMO). This course covered topics such as flash floods, operational principles etc. and looked to share best practice and research activities between participants.

Those who attended this course identified the need for future training activities. The Romanian NMA has taken this initiative forward and intends to facilitate future training activities which will be made available at no cost to attendees (excluding travel). The sub-group encouraged WMO to support joint-funding of these activities in the future.

Dr Stan-Sion explained that at present she was not aware of any central repository for Nowcasting information and research. Through the organising and running of future training events a library of reference material could be established.

The Coordinator of the sub-group recognised that this was a sensible approach, and enquired as to whether Nowcasting was being addressed in other regions of WMO in addition to RAVI. Ms Kootval acknowledged that Nowcasting was being addressed through a PWS expert group covering all WMO Regions.

Dr Stan-Sion gave a separate presentation on tornado and thunderstorm forecasting in Europe and the Romanian radar network [insert hyperlink]. She described the need for a better overall understanding of convective thunderstorms in Europe and greater co-operation across national boundaries. This requirement is highlighted by figures which suggest that up to 8 billion Euros of damage is caused due to these storms in Europe each year.

Nowcasting System in Austria - (Dr Herbert Gmoser)

(Presentation Dr. Herbert Gmoser).

Dr Gmoser demonstrated the INCA Nowcasting system (Integrated Nowcasting through Comprehensive Analysis) which has been developed in Austria. Dr Gmoser explained that the first version of the INCA system has been put into operations in 2005. Based on station observations and remote sensing data it provides three-dimensional hourly analyses and nowcasts of temperature, humidity, and wind, two-dimensional hourly analyses and nowcasts of cloudiness, and two-dimensional 15-min analyses and nowcasts of precipitation. It also provides hourly analyses of convective analysis fields such as LCL, CAPE, or CIN. INCA fields are used operationally as input for flood forecasting systems in Austria, for various web portals used by customers of ZAMG (e.g. in the energy sector), and as an additional tool for the forecaster. The next steps of development will be a unification of extrapolation procedures for different variables using the concept of error motion vectors, a more sophisticated quality check of observational data and the consideration of mutual dependencies between forecasts of different variables, such as a modification of the temperature forecast due to cooling by extrapolated rainfall.

Verification and Service Assessment (Mr Axel Thomalla)

(Presentation, Alex Thomalla)

Mr Thomalla provided an update on the forecast verification scheme which is being led by DWD.

This work stream has identified a number of issues;

- why verify;
- what to verify;
- how to verify those elements identified; and
- the value of human intervention in the forecasting chain.

Dr Gmoser drew attention to the Third International Workshop on verification to be held at ECMWF (Jan 29th – Feb 2nd 07).

Mr Robinson gave a presentation on the public perception survey carried out by the UK Met Office. This contributes towards the verification process by understanding how the public perceive the accuracy, timeliness and relevance of the forecasts. (Presentation, Dave Robinson)

DWD also carry out a public perception survey – Mr Robinson commented on the benefit of developing a range of standardised questions to enable a better understanding of the value

for money that the public receive from PWS forecasts. This would be part of an index which encompassed accuracy (through verification) and perception of utility within Europe.

Dr Stan-Sion proposed that the WMO website should feature a page where all information surrounding severe weather can be found. The Severe weather Information Centre (SWIC) developed under PWS Programme currently features global warnings of tropical cyclones and reports of severe precipitation received from the participating NMHSs.

Session 6: Co-ordination issues in Europe

Mr Victor Stefanescu (NMA Romania) presented the web application he has developed for NMA Romania. (Presentation, Victor Stefanescu)

Ms Ortansa Jude (NMA Romania) presented products and services dedicated to the public within Romania. (Presentatio, Ortansa Jude).

Ms Jude explained that the NMA is the single authorised source for meteorological information disseminated to the governmental policy makers and emergency management bodies (under law 139/2000 and law 216/2004). Additionally NMA is the single authorised source, at present, for meteorological information disseminated by the media.

Ms Jude's presentation stimulated some discussion within the sub-group on the question of legislated responsibility by NMHSs in issuing meteorological information.

The sub-group asked the PWS Programme to gather information on this subject and make it available to the sub-group.

Technology transfer across Europe

The technology behind EMMA was seen as a good example of how information could be transferred across Europe. The potential use of EMMA in the future to facilitate cross-border warning exchange was regarded by the sub-group as a particularly useful example of the application of such technology. Whilst there are many other technologies e.g. SMS, mobile phones, etc, at present, these are not considered the primary method for disseminating PWS products. As these technologies become more robust this may change.

The issue of technology and information exchange stimulated further discussion about Intellectual Property Rights (IPR) and how this may impact on public weather service products and commercial exploitation in the future. The Coordinator of the sub-group believed that this was a very complex contractual issue and while NMHSs should be encouraged to keep abreast of developments in this area, the current terms of reference of the sub-group do not extend to covering this issue.

Session 7: Regional issues with impact on the PWS programme

Work of the DWD during the World Cup, (Mr Axel Thomalla)

Mr Thomalla presented the DWD experience of providing a PWS service during the World Cup in 2006.

The main findings from this experience suggest that when hosting a major international sporting event;

- It's never too early for the NMHS to engage with the event organisers to discuss the products and services required;
- There is always a need for information on meteorology and climatology;
- There will be a variety of different users ranging from the public, the media, participants and specialist users;
- A range of different technologies will be required to provide the services and products required, e.g. web, mobile phone, SMS etc;
- A communications plan is required.

The Coordinator of the sub-group suggested that the DWD experience may be of use to the Expert Team on Services and Products Improvement (ET/ SPI) in their work in respect to defining the climate and weather requirements of the International Olympics Committee. Mr Thomalla, who is a member of ET/SPI, agreed to make the information available to the chair of the ET.

Agreed work packages to support terms of reference

TOR 1

To provide a synopsis to Ms Kootval of how road forecasting is done within their respective NMHS and how this information is communicated to both the travelling public, and professional partners responsible for road safety and maintenance e.g. government departments and private companies. Ms Kootval will make this information available on the WMO PWS website. Complete.

Action: **ALL (Deadline: 31 January 2007)**

TOR 1 & 7

Assessment of the current situation on how Region VI works with the media and disaster management in respect to the regional aspects of PWS.

Action: **Ms Abrantes & Dr Stan-Sion:** to develop a list of prompting questions to ask other NMSs by **end of January 2007**.

ALL: Each member of the sub-group to carry out the research concerning the countries as shown below and collate and send responses to Mr Robinson **(Deadline: end of July 2007)**

UK -	(Ireland, France)
Austria -	(Italy, Slovenia, Hungary)
Czech Republic -	(Slovakia, Poland)
Germany -	(Denmark, Belgium, Netherlands)
Finland -	(Sweden, Norway, Iceland)
Portugal -	(Spain)

Romania - (Bulgaria, Moldova, Ukraine, Russian Federation, Albania, Greece, The Former Yugoslav Republic of Macedonia, Croatia, Serbia, Montenegro, Bosnia & Herzegovina, Cyprus, Turkey)

Mr Robinson to pick out recurring themes and to report back to the group at the next meeting and submit findings to the WMO.

TOR 2 & 3

Ms Abrantes & Dr Gmoser to continue to monitor EMMA to ensure it continues to support cross-border exchange. Provide feedback at the next meeting.

TOR 4

Ms Kootval to put forward a recommendation to the Education and Training Department of WMO regarding training the trainers on subjects related to PWS and to provide feedback at the next meeting.

Mr Robinson to investigate and report back to the next sub-group meeting on whether the previous Coordinator had informed the Coordinators of CBS OPAG on ISS of current developments regarding a pilot project for exchanging road weather data in BUFR format.

TOR 5

Mr Robinson to provide details of how the UK Met Office provides verification of warnings over land. **Mr Markku Seppanen** to provide information on how the FMI does the same for the sea areas. **Mr Thomalla** to circulate draft report on WIS verification. **(Deadline for action: 31 March 2007)**

TOR 6

Mr Robinson to show a blue print communications plan on PWS activities within the United Kingdom at the next sub-group meeting. This plan addresses such issues as raising awareness, changes in outputs and press and media releases.

Ms Abrantes to investigate what current training opportunities are available through WMO for PWS activities, and pull out key issues in order to take specific requirements forward, in particular how to deal with media & civil protection authority.

Dr Stan-Sion to review, and circulate to sub-group members, information that currently exists within WMO in relation to warnings of severe weather including formats, contents, recommended practices, responsibilities and coordination with other responsible organisations (e.g. civil protection agencies and the media).

Dr Gmoser to send to sub-group Co-ordinator the proposal on Risk Management.

Ms Abrantes to submit proposal to sub-group Co-ordinator on training needs.

Deadline for all actions under TOR 6: 30th September 2007 and to be circulated to sub-group members prior to next sub-group meeting.

TOR 7

The sub-group Coordinator to report to the Chair of the RAVI Working Group on Planning and Implementation of World Weather Watch (PIW) at its next meeting to be held in Langen, Germany from 23 to 25 January 2007.

Further actions in relation to TORS:

Mr Robinson / Ms Becky Hughes to circulate the first draft of the report by **31 December 2006. Complete**

Mr Robinson to discuss with the BBC whether they would be happy to release information on their surveys on public perception, reach and utility of PWS/BBC outputs by **31 March 2007**.

Mr Thomalla to send information to Mr John Guiney (Chair, ET/SPI) about Germany's experience with the World Cup Team. **Ms Kootval** to remind John about his undertaking to provide the Olympic guidelines by **31 January 2007**.

Ms Hughes to circulate GMES documents to other sub-group members by **31 March 2007. Complete** (Presentation, Dave Robinson)

Mr Robinson to discuss with chairman of PIW the procedure for updating TORs for region VI PWS sub-group, and to report back to WMO PWS Programme by **28 February 2007**.

Date and Place of the next meeting of the sub-group

Noting the long time elapsed since the last meeting of the sub-group, the sub-group Coordinator expressed the desirability of holding the 2007 meeting of the sub-group within the next twelve months to ensure proper follow-up to the actions agreed to by the sub-group. It was agreed that the place and date of the next meeting would be determined following consultations among the sub-group members.

Closure

The meeting of the RAVI Sub-group on PWS closed at 11.30 hrs on 7 December 2006.

Annex A

Participants

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Annex B

Terms of Reference of the Subgroup on Regional Aspects of Public Weather Services (PWS) approved by the RA VI session in Heidelberg, September 2005:

1. Develop documentation and advice on the regional aspects of the PWS Programme and its implementation, containing information:

    - On liaison between NMHSs and the media and others involved in the dissemination of public weather forecasts and warnings

    - On Collaboration between NMHSSs and disaster authorities

2. Keep abreast of and evaluate technical and scientific developments related to the formulation, presentation and dissemination techniques and make recommendations on a regional scale

3. Review the status of the implementation of the pilot project of cross-border exchange and consider future developments in this area

4. Continue activities in education and training to the PWS Programme

5. Develop guidance material on, and prepare common procedures for, verification of public forecasts and warning

6. Elaborate proposals for demonstrating the benefits of PWS and heightening the visibility of NMHSs

7. Advise and report to the chairman of the working group and the association on all matters concerning the public weather service in the Region

8. Represent the Region at sessions of the relevant CBS Implementation Coordination Teams on PWS through participation of its coordinator

Annex C

SUBGROUP ON REGIONAL ASPECTS OF PWS IN RA VI

Bucharest, Romania, 4-7 December 2006

AGENDA

Monday, 4 December

09h00 Opening of the meeting
- Host
- Chairman

Adoption of the agenda

Working arrangements

09h30 Report of the Chairman (Dave Robinson)

Report by Haleh Kootval, Chief, PWS, WMO Secretariat

10h30 *coffee break*

11h00 Review of actions arising from the meeting of the subgroup in Pilsen and the current status: report by all participants

12h30 *lunch break*

14h00 Session 1. "Cross border exchange"

Pilot project:
- Herbert Gmoser, ZAMG
- Axel Thomalla, DWD

15h00 "EMMA": Developments since Pilsen
- Teresa Abrantes
- Haleh Kootval

15h30 *coffee break*

16h00 Austrian Warning Concept
- Herbert Gmoser

Cross Border Warning
- Jan Sulan

Civil protection and the media
- Teresa Abrantes

16h30 Discussion and recommendations
- (All participants)

Tuesday, 5 December

09h00 Session 2. "Education and Training"
- Dave Robinson (to lead)
- Haleh Kootval

Road Sensing
- Jan Sulan

Discussion and recommendations

10h30 *coffee break*

11h00 Session 3. "Nowcasting initiatives in Europe"
- Aurora Stan-Sion

Nowcasting system in Austria – INCA
- Herbert Gmoser

Discussion and recommendations
- (All members)

12h30 Visit to House of People (All Members)

15h30 Session 4. "Warnings: Content and Presentation" – How to represent impacts of hazards
- Dave Robinson (to lead)

16h00 Session 5. "Verification and Service Assessment"
- Axel Thomalla
- Dave Robinson

Wednesday, 6 December

09h00 Session 6. "Coordination Issues in Europe"
- Media, presentation from NMA (Romania)
- Disaster Management

Future of forecasting and product dissemination, NMA (Romania)
- Teresa Abrantes/Aurora Stan-Sion

10h30 *coffee break*

11h00 Technology transfer across the Region

12h00 Visit to the National Meteorological Administration

Visit to the National School of Meteorology

14h30 Session 7. "Regional Issues with impact on the PWS Programme"

GMES
- Dave Robinson

14h45 Work of DWD during the World Cup
- Axel Thomalla

15h15 *coffee break*

15h45 Discussion and recommendations

Agree work packages for next RA VI PWS meet

Thursday, 7 December

09h30-12h30 Completion and adoption of the report of the meeting.