

Meeting of the Sub-group on Regional Aspects of PWS in RAVI

Langen, Germany, 29th – 31st August 2007



DRAFT REPORT



Wednesday 29th August

The meeting of the sub-group on Regional Aspects of PWS in RAVI was opened at 9.00am by the subgroup Coordinator, Mr David Robinson, who co-ordinated the meeting.

The list of participants is attached at Annex A. Terms of Reference of the sub-group can be found at Annex B.

The invitation to attend the meeting was extended to those RAVI NMHSs who had expressed a wish to join the sub-group at the last session of RAVI (Heidelberg, 2005). One additional NMHS had responded but requested the WMO Secretariat for financial assistance. Since as agreed, the sub-group members are supported by their own NMHSs to attend the meetings of the sub-group, this request had not been granted. The co-ordinator of the sub-group asked WMO Secretariat if in future consideration could be given to offer assistance to new members from less developed countries.

Adoption of the agenda

The meeting agreed additions to the draft agenda. The agenda can be found at Annex C.

1. Review of actions arising from the last meeting in Bucharest (December 2006)

The actions arising from the last meeting were reviewed. Feedback from actions was incorporated into the meeting agenda. Actions which were not complete were identified and taken forward to the next meeting and clarification provided where necessary. The information below provides further detail on the outcome of actions.

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.

Status: Inputs were received from Mr Jan Sulan and Axel Thomalla.

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: Dr Abrantes & Dr Stan-Sion: To develop a list of prompting questions to ask other NMHSs by end of January 2007.

Completed: Agreed and completed on 30/08/07.

ALL: Each member of the sub-group to carry out the research concerning the countries as shown below (plus their own country) and collate and send responses to Mr Robinson Deadline: end of July 2007. - *Deadline extended to 31/03/08*

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.

Request to Members: Members of the sub-group agreed on the final draft of the questionnaire. Ms Hughes agreed to circulate the questionnaire to the members of the sub-group. Members were requested to send their completed questionnaires to Dr Stan-Sion by 31/03/08. Dr Stan-Sion agreed to take the action currently identified for Mr Robinson at the previous meeting. Members were also reminded to complete the questionnaire for their own country.

TOR 2 & 3

Dr Abrantes & Dr Gmoser were to continue to monitor the METEOALARM to ensure it continues to support cross-border exchange and to provide feedback to the meeting.

Completed: Dr Gmoser presented updates on Meteoalarm.

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.

Part complete: Ms Kootval has discussed this with the relevant department and it has been acknowledged that PWS should be included in training curriculum, although this has not yet happened. Ms Kootval to report on progress at the next meeting.

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

Completed: It appears that this had been done, although it couldn't be confirmed. The UK can and does exchange data in BUFR format. However, data is also exchanged in XML with other customers and users. BUFR format is recommended for exchange of road weather data between neighbouring NMHSs and usage in visualization of severe weather of NMHSs in accordance with WMO migration policy to table driven code form.

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 WWIS verification. (Deadline for action: 31 March 2007).

Completed: *Presentations from Mr Robinson and Mr Seppanen were given at the sub-group meeting.*

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.

Completed.

Dr 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.

No report: *Dr Abrantes was unable to attend the meeting therefore no report was presented.*

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).

Completed.

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

Not complete: *A meeting is to be held on risk management in September. Dr Gmoser will update sub-group following this meeting by 31/10/07.*

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

No report: *Dr Abrantes unable to attend the meeting hence no report was submitted.*

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 Co-ordinator 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.

Completed.

Further actions in relation to TORS:

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

Completed.

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.

Action closed: *Mr Robinson was unable to complete this action.*

Mr Thomalla to send information to Mr John Guiney (Co-ordinator, 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.

Completed.

Ms Hughes to circulate GMES documents to other sub-group members by 31 March 2007.

Completed.

Mr Robinson to discuss with co-ordinator 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.

Completed.

Following a review of the actions arising from the meeting in Bucharest, the sub-group discussed other agenda items.

Discussion around NMHS responsibilities

As agreed, Ms Kootval had circulated a list of those NMHSs with comments on their legislated responsibilities. This list is posted on the PWS Website and is to be updated as more information is received from other NMHSs.

Cross Border Exchange of Warnings – Update on Meteoalarm, Dr Herbert Gmoser

Dr Gmoser demonstrated the Meteoalarm system which is now operational with up to 2 million users a day during high-impact weather events. The service and sub-group identified a number of areas where the system could be potentially improved and discussed problems surrounding harmonisation and consistency in the reporting of meteorological information and its impacts.

The sub-group requested feedback on the following issues:

- a) For end users, the ability to feedback information on the site would be of benefit. This should include questions on likes and dislikes of the site and who is using it for which purpose etc.

Response from Dr Michael Staudinger, ZAMG: It is possible to feedback via the email address provided under Meteoalarm.

The sub-group agreed that although a feedback mechanism existed, it would be better if this was available at the homepage level and further recommended that this should feature standardised fields in order to capture information and preferences in a quantitative way.

- b) How successful is the site at achieving harmonisation of thresholds for warnings?

Response from Dr Michael Staudinger, ZAMG: Most partners have adapted their thresholds well, although others are a little more reluctant to adopt common thresholds.

The sub-group noted that although according to Meteoalarm no warnings were reported for Greece it was experiencing severe forest fires. It was recognised that in this instance this was a deliberate action and was in response to concerns that fires may be started wilfully. The sub-group recommended that meteoalarm has links to the authorities who are

responsible for responding to the event and ultimately those authorities will decide the colour which features on meteoalarm.

Clearer signposting at a top level may be of benefit, for example, it is necessary to 'drill-down' in order to understand which parts of which countries are reporting which colours.

c) What will happen to Meteoalarm when the EUMETNET project has finished?

Dr Gmoser and Mr Robinson informed the group that this is a matter for EUMETNET. Dr Staudinger confirmed that it is planned that Meteoalarm will continue.

Mr Sulan demonstrated two webpages which may also be of use in relation to environmental hazards and warnings within Europe: <http://effis.jrc.it/wmi/viewer.html>; http://natural-hazards.jrc.it/activities_droughts_smdaily.html

Update on Nowcasting, Dr Herbert Gmoser

Dr Gmoser demonstrated the ZAMG's online system for nowcasting. Each client has an internet portal which they have access to. A visualisation system shows areas of heaviest rain over time-steps up to 2-6 hours. Another system shows the automatic hail detection. There is an optional SMS service which users can register for (for a small monthly fee). This SMS service sends out warnings based on the forecasted plot of the weather dependent on the postcodes that will be affected. Thresholds can be tailored for specific clients.

Update on Nowcasting, Dr Stan-Sion

Dr Stan-Sion talked about a recent EC funded project being carried out with 24 partners where aircraft are used to take atmospheric observations. 30 post-grad students and 10 lecturers were involved. The students had to design a project around the information the aircraft could collect. This in-field exercise provided high-quality reports with great value for the scientific community and was a valuable exercise for those involved. Dr Stan-Sion recommended that these exercises should be more common place, particularly within developing countries.

Media and disaster mitigation questionnaire

Dr Stan-Sion presented her findings from the South-Eastern European NMHSs who had responded to the questionnaire. Dr Stan-Sion proposed that additional information could be posted on websites, including the WMO which would provide guidelines to the media so that the public could be informed as to basic mitigation action they could take. The sub-group recognised that it was not always possible to control the media and that in some instances they would sensationalise the weather to increase circulation.

From a number of responses it is clear that the less developed nations do not have their own NWP capability and require access to free data, particularly during severe weather events. The role of ECMWF was discussed in relation to this issue.

Thursday 29th August

Visit from Mr Wolfgang Kusch, President of DWD

The co-ordinator of the sub-group welcomed Mr Kusch who had agreed to join the meeting for a short time to discuss particular questions in relation to major new initiatives in Europe

that might impact the work of the sub-group. The sub-group sought information from Mr Kusch in respect to the position of ECMWF and the support it could offer to less developed countries (see discussion under media and disaster mitigation questionnaire). Mr Kusch noted that ECMWF output on severe weather may already be available to less developed countries, but recognised that this did not allow the recipient to fully understand the model outputs i.e. they would need to be delivered continuously to allow forecasters to be fully familiar with its outputs.

Mr Kusch suggested that the sub-group made its concerns known to the appropriate authorities. Mr Robinson sought clarification from WMO as to what was the formal process for carrying out this action and it was agreed that he should brief the next meeting of the RAVI PIW and request that ECMWF be informed of this requirement.

The discussion moved onto the wider EUMETNET strategy and Mr Robinson asked if this strategy would be affected now that EUMETNET was an EC recognised Economic Interest Group (EIG). In response to the question Mr Kusch explained that at this point there were no plans to create a European Met Service but to increase co-ordination of activities across EUMETNET was a strategic aim.

Demonstration of severe weather and avalanche warnings on Romanian Met Service's website, Dr Stan-Sion

Dr Stan-Sion explained the significant risks to the public of avalanches in a country like Romania (i.e. those countries with a high percentage of mountains within their national boundaries). At present the INMH are responsible for taking samples of snow at high altitude and this combined with meteorological forecasts, as well as other elements are used to issue avalanche warnings. .

Dr Gmoser also explained that ZAMG are involved in providing information to the avalanche warning system in Austria, but are not responsible for the issue of warnings.

Verification

Description of near gale warning system used in FMI, Mr Markku Seppanen

Mr Seppanen demonstrated how the Finnish Met Service verifies near gale warnings by measuring false alarm rates, hits and misses. (See Annex D: FMI near-Gale Verification). A correction co-efficient is used to eliminate side-effects. False alarm rates vary dependent on the region in question.

A DWD survey on public weather warnings, Mr Axel Thomalla

DWD surveyed 1000 people last year to understand whether the public respond to severe weather warnings. (See Annex E: DWD survey on public weather warnings). This showed that 64% of respondents did take into consideration severe weather warnings. Like the UK, the majority took their information from the TV. The second biggest category was radio.

The public requires warnings 6-12 hours in advance of severe weather. The internet is used to gain more detailed information on warnings. DWD also used the survey to test a new presentation of severe weather warnings on the internet.

Verification of flash warnings of severe weather in the UK, Mr Dave Robinson

In the same fashion that the Finnish Met Service verify near gale warnings, UKMO also measure false alarm rates, hits and misses. Mr Robinson pointed out that verifying a warning

across an area in which there were few, if any, observations was difficult. At present, the preferred method of verifying severe weather is through the use of NIMROD (a Met Office nowcasting tool). (See Annex F: Flash Warnings of Severe Weather at the UK Met Office).

Additionally, Mr Robinson described the rolling public perception survey used by the UK. A utility index is used to measure the public's perception and a target satisfaction level of at least 75% has been set. (See Annex H: summary of June Severe Weather Omnibus Question).

Verification at ZAMG, Austria, Dr Herbert Gmoser

Dr Gmoser demonstrated the ZAMG's online system for nowcasting. Each client has an internet portal which they have access to. A visualisation system shows areas of rain over time-steps up to 2 - 6 hours. Another system shows the automatic hail detection. There is an optional SMS service which users can register for (for a small monthly fee). This SMS service sends out warnings based on the forecasted plot of the weather dependent on the postcodes that will be affected. Thresholds can be tailored for specific clients. (See Annex I: PWS-Verification of ZAMG).

Socio-economic aspects including possibility of a pilot project along the lines of discussions of ICT meeting, Ms Haleh Kootval

Following the recent WMO ICT meeting in the Oman in June, Ms Kootval informed the group of a proposal for a pilot project whose theme was 'Learning through Doing'. This proposal links back to the Madrid conference on socio-economic benefits of meteorological and hydrological services. The pilot project is likely to be taken forward by Spain in the first instance working with less developed NMHSs in South America. Additionally a further project may take place in Africa in conjunction with UK Met Office. The aim of these projects would be to help the NMHS raise awareness of the socio-economic benefits that can be delivered through a better understanding of weather, water and climate.

Marketing communications activities within the Met Office, UK, Ms Becky Hughes, Mr Dave Robinson

The communications strategy was presented and activities described. (See Annex J: PWS Communications Strategy). The issue of how to communicate with end users was discussed and the problem of databases with inaccurate data within them was perceived as an issue. Mr Robinson explained that in the UK consideration was being given to the use of a self-registration system to overcome this problem. This would put responsibility for updating details onto the user rather than the provider.

Probability Forecasting and its use in PWS, Dr Herbert Gmoser

Dr Gmoser presented on issues surrounding probability forecasting, with reference to public and media use and the need to limit confusion and only convey messages when they are useful to the public i.e. taking into account the likelihood combined with the anticipated impact for the user group. The amount of detail available to a forecaster is significant and the issue is how the forecaster extracts relevant information and communicates this to the end user. In some instances this can be conveyed as a 'deterministic forecast', but as time increases probabilities can be used to better communicate uncertainties. This in turn can lead to some perceived difficulties with the issue of automated forecasts. Another method of explaining probabilities is through the use of 'confidence', in some instances this may be easier for the general public to understand. (See Annex K: Probability Forecasts, Annex J)

Friday 31st August

Training in Road Meteorology, Mr Jan Sulan

Mr Sulan described the sources of information useful for road meteorologists, including the next SIRWEC conference which will be held next May in Prague. One of conference topics is "Education in road weather forecasting" which should allow for exchange of experiences with training tools and activities and give inspiration to countries with developing Road Weather Information Systems. Valuable source of information for such countries is the already existing SIRWEC Guide http://www.sirwec.org/en/rwis_web_guide.pdf which supplements CAL modules focused on winter weather, e.g. MetEd operated by the COMET Program. (See Annex L: Training in Road Meteorology)

Future areas of work – Probabilistic and ensemble forecasting, Mr Dave Robinson

There was general agreement that the use of ensemble forecasting is an area for growth. At present it is not clear how this is being developed within RAVI.

Ms Kootval explained that WMO was writing to PRs and asking for focal points to be nominated for PWS activities. It was agreed that these focal points may provide a good source of information on how individual NMHSs are planning to use ensembles and probabilistic forecasts.

Dr Gmoser explained how probabilistic forecasts are currently being used within ZAMG and suggested that it may be sensible to communicate with the public through deterministic forecasts for up to 3 days and to use probabilistic forecasts beyond this time as uncertainty increased.

The sub-group provided guidance to Ms Kootval to input to the meeting of the experts on the applications of probabilistic forecasting to PWS in Shanghai in the end of September. Essentially this guidance was;

Keep it simple, be driven by user requirements and not by science and combine it in accordance with the state of the art science of weather forecasting.

Provide information in a format that is understandable to the end user.

Ms Kootval agreed to feedback the information to the sub-group after the Shanghai workshop.

WMO International Symposium on Public Weather Services: a Key to Service Delivery, Ms Haleh Kootval

Ms Kootval updated the group on the planned meeting in Geneva, 3rd-5th December and explained that information had been provided to PRs and encouraged sub-group members to discuss their attendance with their PRs. Separate invitations were being sent to invited speakers.

Date of next meeting

Mr Markku Seppanen kindly offered to host the next meeting in Finland and the sub-group agreed to the dates to be 21st-23rd October 2008.

Agreed work packages to support terms of reference

Outstanding actions from the previous meeting in Bucharest

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. *Those who have not yet provided this information were encouraged to supply this to Ms Kootval.*

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. *Part complete: Ms Kootval has discussed this with the Education and Training Department of WMO and it has acknowledged that PWS should be included, although this has not yet happened. Ms Kootval to report progress at next meeting.*

New actions and associated TOR

TOR1

ACTION Ms Kootval to update the Romanian description and Mr Robinson, Mr Seppanen and Dr Gmoser to provide input from UK, Finland, Austria by Nov 07.

Action: Ms Hughes to send out final questionnaire to all members by 7th September 2007

TOR2

ACTION: Mr Robinson to discuss the sub-group's concerns over feedback and harmonisation issues with Paul Davies (UKMO) who will ensure these are fed through to the Meteoalarm project team by 30/09/07.

Action: Dr Stan-Sion to update the sub-group on the work of the WMO JONAS (Joint Nowcasting Applications and Services) Steering Committee and to report back to the next sub-group meeting on any relevant information from this working group.

Action: Mr Robinson to draft a letter on behalf of the sub-group to EUMETNET/ECMWF in respect to access ECMWF output and severe weather events by 31/03/2008.

Action: Ms Kootval to ensure a link to www.sirwec.org is added to the PWS WMO webpage by 31/12/07.

Action: Mr Jan Sulan to report back the outcomes of the SIRWEC meeting at the next sub-group meeting.

Action: Ms Kootval to circulate guidelines from Shanghai meeting to sub-group by 31st October 2007.

TOR3

Closed. No further actions.

TOR4

Action: Mr Robinson to give a presentation to the next sub-group meeting on what the UK Met Office does in relation to education.

Action: Ms Hughes to circulate the activity plan which goes with the Met Office PWS communications strategy. **Complete.**

TOR5

Action: Mr Dave Robinson to present at the next sub-group meeting a proposal of how to present verification information to the public.

TOR6

Action: Ms Kootval to report back on developments of the 'Learning through Doing' project. Ongoing.

Action: Dr Gmoser and Mr Thomalla to present on the appropriate methods of communicating ensemble/probabilistic information to the public at the next sub-group meeting.

Action: WMO Secretariat to provide a chart which details where this sub-group sits in relation to other groups within WMO by 31/10/07.

Action: All to bring to next meeting examples of studies which attempt to quantify the socio-economic impacts of severe weather events in order to catalogue this information.

Since the sub-group meeting, Mr Thomalla circulated the following weblink to sub-group members which provides information from the insurance market in respect to the cost of severe weather events:

<http://www.munichre.com/en/publications/default.aspx?publicationLanguage>

Action: ALL By next meeting to have considered the proposals from the Shanghai meeting and to have contacted 2 or 3 representatives from within RAVI (WMO Secretariat to provide sub-group members with contact details and identified NMHSs to approach). Co-ordinator of the sub-group will feed this information to the ICT to help to inform strategy within the region.

TOR7 & TOR8

Action ongoing through co-ordinator of the sub-group.

Closure

The meeting of the RAVI Sub-group on PWS closed at 12h00 hrs on 31st August 2007. Mr Thomalla was thanked by the co-ordinator for arranging and hosting the meeting.

On behalf of the sub-group the co-ordinator expressed his thanks to Ms Hughes for the excellent support she had provided during the last two sub-group meetings.

Participants

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Haleh Kootval (WMO Secretariat)	hkootval@wmo.int

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 NMHSs 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 co-ordinator 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

SUBGROUP ON REGIONAL ASPECTS OF PWS IN RA VI

Langen, Germany, 29th – 31st August 2007

AGENDA

Wednesday, 29th August

- 09h00 **Mr David Robinson (Co-ordinator)**
Opening of the meeting
Adoption of the agenda
Review of actions from last meeting
- 10h30 Coffee Break
- 10h50 **Mr David Robinson (Co-ordinator)**
Discussion around NMHS responsibilities
- 11h45 **Dr Herbert Gmoser**
Cross Border Exchange of Warnings – Update on Meteoalarm
- 12h45 Lunch
- 13h30 **Dr Herbert Gmoser**
Update on Nowcasting
- 14h00 **Dr Aurora Stan-Sion**
Update on Nowcasting
- 14h30 **Dr Aurora Stan-Sion**
Media and disaster mitigation questionnaire
- 15h00 Visit to DWD

Thursday, 30th August

- 09h00 **Visit from Mr Wolfgang Kusch, President of DWD**
Question and answer session surrounding meeting topics to date
- 10h00 **Dr Aurora Stan-Sion**
Demonstration of severe weather and avalanche warnings on
Romanian Met Service's website
- 11h00 Coffee break
- 11h20 **Mr Markku Seppanen**
Verification - Description of near gale warning system used in FMI
- 11h50 **Mr Axel Thomalla**
A DWD survey on public weather warnings
- 12h10 **Mr Dave Robinson**
Verification of flash warnings of severe weather at the Met Office, UK

- 12h20 **Mr Dave Robinson**
Public perception survey by the Met Office, UK
- 12h30 **Dr Herbert Gmoser**
Verification at ZAMG, Austria
- 13h00 Lunch
- 14h00 **Mr David Robinson, Ms Haleh Kootval**
Socio-economic aspects including possibility of a pilot project along
the lines of discussions of ICT meeting
- 15h00 **Dr Herbert Gmoser**
Probability Forecasting and its use in PWS

Friday , 31st August

- 08h45 **Mr Dave Robinson**
Agreement of where the next meeting will be held
- 09h00 **Mr Jan Sulan**
Training in Road Meteorology
- 10h00 **Mr Dave Robinson**
Future areas of work – Probabilistic and ensemble forecasting
- 11h00 **Ms Haleh Kootval**
WMO International Symposium on Public Weather Services: a Key to
Service Delivery
- 11h30 Date of next meeting and agreed work packages to support terms of
reference
- 12h00 Close