Activity 4.1.1: On-the-job training at suitable opperatinal centre for forecasters from IPA beneficiaries

On-the-job Training on Severe Weather Forecasting and Warnings

National Meteorological Administration, Bucharest, Romania

3-21 September 2012 (First phase)

Performance Evaluation Report

Prepared by: Sorin BURCEA, Head of the Nowcasting Laboratory

Report date: 01.10.2012

Contents

I. Executive Summary

The On-the-job Training Course on Severe Weather Forecasting and Warnings was designed to help forecasters from Western Balkans and Turkey to acquire the knowledge they need to produce forecasts and warnings on severe weather. It was scheduled in three phases: 3-21 September 2012, 8-26 April 2013 and 13-31 May 2013. All three phases are to be held in Bucharest, Romania, at the Romanian National Meteorological Administration under the auspices of the Operational Nowcasting Center.

The First phase of the Training Course was conducted from 3 to 21 September 2012, and it gathered a group of three (3) forecasters from Bosnia and Herzegovina, The Former Yugoslav Republic of Macedonia and Turkey. It was an intensive, interactive, "hands-on" course based around thunderstorm forecasting and warning of severe weather events. Furthermore, the course aimed at forming the nowcasting competences of the trainees.

Overall, the participants found the course to be very useful.

However, a detailed Evaluation of the Implementation performance has been done using various evaluation methodologies, described in the Evaluation Section of the Report, which also reveal the major findings and give, to the Project Steering Committee, recommendations to ensure the long-term sustainability of the outcomes and results achieved.

II. Introduction

II.1. Background

This Training Course has been planned within the Sub-task 4.1 of the IPA Project 2012/290-552: "Building Resilience in Western Balkans and Turkey", which aims at Enhancement of the severe weather forecasting capabilities of IPA beneficiaries in support of Early Warning Systems: advanced training for meteorological forecasters required for 24/7 operations.

The National Meteorological Administration of Romania has been chosen as the training venue due to the existence of excellent operational and technical facilities as well as the rich experience in dealing with severe weather forecasting and warnings. Romania was also considered as a suitable place for training due to the similar climate conditions as those in the project region, that would allow the trainees to use the knowledge and experience gained directly at their National Meteorological Services.

A Letter of Agreement was concluded between the National Meteorological Administration of Romania and the World Meteorological Organization to specify the working arrangements.

II.2. Objectives

The course objectives were to improve thunderstorm initiation, monitoring, forecasting, and warnings in case of severe weather events:

- through upgraded knowledge gained by assisting at presentations of the trainers,
- through upgraded skills gained by performing operational, hands-on, nowcasting activity,
- through application of the gained expertise in developing a project.

The objectives of the training were well met (see Evaluation section).

II.3. Participants

Three forecasters attended this first stage of the training. They came from Turkey (Mr. Mehmet ÜNLÜER), The Former Yugoslav Republic of Macedonia (Ms. Maja Kojdovska Markoska), and the Republic Srpska from Bosnia & Herzegovina (Ms. Milica Djordjevic).

All participants met the requirements stated in *Information Note for participants on the training arrangements (attached as Annex I)*, though there was a wide range of experience amongst participants. Their presentations were well done, therefore the trainers and the course' colleagues became familiar with their activities. In summary, their presentations contained useful information on the National Meteorological Services (NMS) they represent, on the responsibilities they have, and on the forecast process and tools used in this regard.

All participants were active and very interested in assimilating new knowledge on severe weather forecasting and warnings.

III. Description of the Training Activity

The Activity was scheduled in three phases: 3-21 September 2012, 8-26 April 2013 and 13-31 May 2013 to enable the conduction of the training sessions in small groups of 2-3 trainees.

The First phase of the Training Course was conducted from 3 to 21 September 2012, and it gathered a group of three (3) forecasters from Bosnia and Herzegovina, The Former Yugoslav Republic of Macedonia and Turkey.

The training programme was scheduled over a 3-week period, various scientific activities taking place during this time. During first week the participants attended the classes on the principles of nowcasting and knowledge on severe thunderstorm forecasting and monitoring. See attached the Course Schedule as Annex II. The emphasis was on practical forecasting aspects with particular attention on the provision of timely products for disaster mitigation. These aspects include:

- Forecasting thunderstorm initiation
- Forecasting thunderstorm development
- Forecasting organised convection – single cell, multicell and supercell storms
- Forecasting severe weather – flash floods, hail, damaging winds
- Detection and monitoring of thunderstorms – interpretation of radar, satellite, lightning, and observational data
- Developing conceptual models for particular areas

During the second week, the trainees were performing operational activity by assisting the nowcasters. In this week, they became familiar with the tools needed to forecast and warn the severe thunderstorms. Although not many severe weather events occurred within this period, the trainees had the chance to monitor a weather system that passed over and left quite consistent precipitation. Nevertheless, lack of severe weather events was substituted through several case studies.

The last week of the training was dedicated to the project, the trainees had to develop. They have been doing that very well, applying various methods and knowledge gained during the first two weeks.

The course was intensive but was also opportunistic and flexible, adjusting for the speed of learning and topics of interest or in which participants had difficulties. In particular, the learning aspects were often demonstrated along the way. The course was very much “hands on”, being based around thunderstorm forecasting and warnings.

Participants commented appreciatively on the informal, friendly and supportive atmosphere during the training period.

The Training–related costs, including the trainees’ accommodation and travel, have been covered by the IPA Project budget.

IV. Evaluation of the Activity Implementation’ Performance

The Course’ Performance was evaluated in a number of ways, using the following evaluation methodologies:

- The self-completion questionnaires, i.e. the participants completed *The evaluation forms* (attached as Annex III),
- Face–to-face interviews, in form of evaluation sessions, also, provided opportunities of getting the trainees’ feedback and suggestions. While considering the ways forward, they were required to discuss an Action Plan, stating what they would do to implement ideas from the course on return to their workplace. Various proposals were made on how the trainees would apply the gained knowledge and experience in their activity. Such proposals include the use of gained knowledge in forecasting thunderstorms, with emphasis on severe storms development, or developing conceptual models for a particular area, or looking at the thermodynamics and movements of severe storms.
- Observations, throughout the course period and during the informal exchanges.

The participants were uniformly positive and enthusiastic about the value of the course and the way it was run.

On the question on what did they wish to get from this course, the trainees answered that they wanted to learn about nowcasting forecast and warning issuing process, to improve their skills on monitoring the severe weather events and to apply all these in their work. Further, on the question “Did this course meet your expectations? If not, why not?” all participants stated that the course met their expectations and they have learned new, useful things.

Participants would also recommend this course to others.

V. Conclusions & Recommendations

V.1. Conclusions:

1. The first phase of the training was organized as planned from 3rd to 21st September 2012 under the auspices of the Operational Nowcasting Center of the National Meteorological Administration of Romania;

2. The requirements, related to the organization of the training, stipulated in the Letter of Agreement signed with the World Meteorological Organization, were fulfilled;.

3. Three forecasters participated in the first phase of the training, from Bosnia and Herzegovina, The Former Yugoslav Republic of Macedonia and Turkey;

4. The Trainees well appreciated the format, the content and the duration of the training course.

V.2: Recommendations for future stages:

1. Given the strong demand for such topics it is recommended that the course be held.
2. The style and content of the course should be retained.
3. Although the course extended over three weeks, participants said that was not difficult to attend. Consequently it is recommended to retain this format.
4. As a means of consolidation and support of their activity, it is recommended that the trainees should participate at other similar courses.

VI. Annexes

The Report has three (3) annexes, as follows:

Annex I: Information Note for participants on the training arrangements

Annex II: Course Schedule

Annex III: Evaluation Forms

Building Resilience to Disasters in Western Balkans and Turkey

IPA/2012/290-552 Project:
"Building resilience to disasters in Western Balkans and Turkey"
(funded by the European Commission DG Enlargement and implemented jointly by WMO and UNISDR)

On-the-job training on Severe Weather Forecasting and Warnings

Scheduled in 3 stages: September 2012, April 2013 and May 2013
Bucharest, Romania

INFORMATION NOTE FOR PARTICIPANTS ON THE TRAINING ARRANGEMENTS

Background

The IPA/2012/290-552 Multi-beneficiary Project: "Building resilience to disasters in Western Balkans and Turkey" has been approved by the European Commission Directorate General for Enlargement for joint implementation by the UNISDR and the WMO, for a period of 24 months (May 2012 – May 2014).

The project is part of the EC DG Enlargement Instrument for Pre-accession Assistance (IPA) Programme for the Western Balkans and Turkey.

The overall objective of the project is to reduce vulnerability of IPA beneficiary countries to disasters caused by natural hazards in line with the Hyogo Framework for Action and increase their resilience to climate change. The direct beneficiaries are the national authorities in charge for the disaster risk reduction and disaster risk management and the National Meteorological and Hydrological Services of Albania, Bosnia and Herzegovina, Croatia, Montenegro, Serbia, Kosovo (under UNSCR 1244/99), the former Yugoslav Republic of Macedonia and Turkey.

The project activities are grouped in eight Work Packages, out of which four are to be implemented under WMO management.

On-the-job training activity targets the forecasters from all IPA beneficiaries and is planned within the Sub-task 4.1 which aims at Enhancement of severe weather forecasting capabilities of IPA beneficiaries in support of Early Warning Systems: advanced training for meteorological forecasters required for 24/7 operations.

Dates and venue

The Training activity is scheduled in 3 stages, as follows:

1. The first stage – for 3-21 September 2012,
2. The second stage – for 8-26 April 2013, and
3. The third stage – for 13-31 May 2013.

It will be hosted by the National Meteorological Administration of Romania due to the existence of excellent operational and technical facilities as well as the rich experience in dealing with severe

weather forecasting and warnings. These conditions will allow the trainees to get hands-on experience with modern technology, utilization of state-of-the art forecasting and nowcasting methods and learn about the operational procedures used in providing services for disaster risk management. Romania was also considered as a suitable place for the training due to the similar climate conditions as those in the project region, that would allow the trainees to use the knowledge and experience gained directly at their own Hydrometeorological Services.

The Training Format & the Training Coordinator / Focal Point

The Training activity is scheduled in 3 stages, as follows:

4. The first stage – for 3-21 September 2012,
5. The second stage – for 8-26 April 2013, and
6. The third stage – for 13-31 May 2013.

The training is considered to be useful for the forecasters of all project beneficiaries, which are supposed to be grouped by 2-3 trainees for each stage.

As the training programme is scheduled over 3 week's period, various activities will take place.

The training will be led by **Dr Sorin Burcea**, Head of the Nowcasting Laboratory of the National Meteorological Administration of Romania

Ist week

During the first week the trainees will learn about the principles of Nowcasting based on remote sensing, obs. data and NWP. This will include the following topics:

- Synoptic and mesoscale meteorology
- Types of mesoscale circulations
- Cyclogenesis
- Atmospheric fronts
- Particular mesoscale circulations (e.g., sea breeze)
- Identification of mesoscale convective systems

- Severe convection
- Conceptual models used to forecast severe storms
- Doppler weather radar basic principles
- Benefits and limitations of radar measurements
- Weather radar data analysis
- Radar rainfall estimation
- Interpretation of Doppler velocity data
- Severe thunderstorm signature in radar and satellite data
- Use of NWP in the forecast process
- Use of meteorological satellite data in nowcasting
- Use of lightning information in nowcawsting

2nd week

During the second week, the trainees will assist the nowcasting forecasters within National Center of Forecasting. In this time, they will become familiar with the tools we use to forecast severe storms and with the process of issuing warnings.

During this activity, they will have the opportunity to apply some of the knowledge gathered during the "theory" classes.

Shortly, this week the trainees will perform real-time operational activity that will help them to develop nowcasting competencies.

3rd week

The last week of the training programme is dedicated to a project that the trainees need to develop.

This can be a severe case study or a project in which they would adapt the procedures used in Romania to the reality of their own metservice.

Requirements to the trainees

The trainees are required:

- to have basic knowledge on synoptic and mesoscale meteorology, convection, radar and satellite meteorology,
- to prepare a presentation that will include general information on the NMS they represent, on the specific tasks and responsibilities they have at their working place, trainings they have had lately, if a nowcasting activity is included in the forecast process at their NMS, technical equipment used for forecasting, and other relevant information.

This information will act as an overview of the skills for radar and thunderstorm nowcasting.

Electricity connections:

220 V

Entry requirements

Entry visa is required for some countries. For more info please visit the website of the Romanian Ministry of Foreign Affairs: www.mae.ro

Hotel reservation

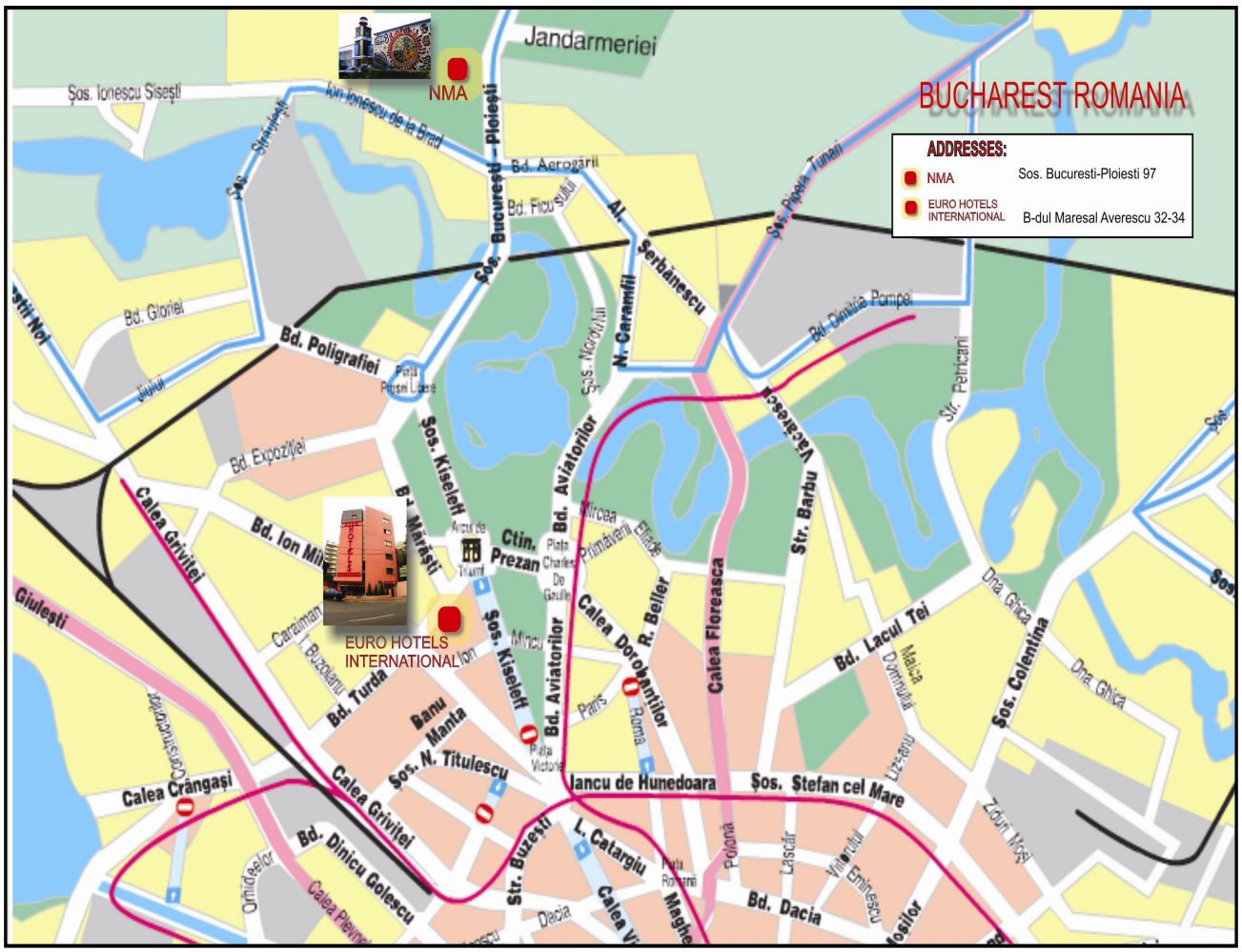
The National Meteorological Administration of Romania has made block reservation of single rooms, with breakfast included, in a hotel located not far from the training venue:

EURO HOTELS INTERNATIONAL *** (Triumf area)
32-34, Maresal Averescu Bd., sector 1, 011455, Bucharest
Tel: +40 21 224 5496
+40 21 224 5497
Fax: +40 21 224 5554
www.euro-hotels.ro
Tariff: 45 Euro/night/person (breakfast included)

Location: 10 minute walk to the nearest bus stop, close to the Arch of Triumph and the Herastrau Park

Note: Upon request, NMA will make the reservations for the trainees after receiving their arrival/departure date/times (the trainees are kindly asked to announce cancellation 48 hrs prior the entry date)

* No credit card is requested to guarantee booking



Meals

The breakfasts will be available in the hotel, lunch can be served in the NMA's canteen and the dinners would be available in city restaurants. Please see below a short list of restaurants:

– close to the training venue:

- Baneasa Shopping Centre

-close to the hotel:

- Club 41 (41, Clucerului Street),
- Perfetto Restaurant (60, Ion Mihalache Blvd. (1 May Square))
- Bistro Oliviers Restaurant (19, Clucerului Street)
- Casa Elisabeta Restaurant (63, Neculce Ion Street)

Local transportation

Public transportation in Bucharest is well organized by trams and buses:

Magnetic cards are for use in buses, trams, trolley buses, underground and 783 express bus. For buses, trams and trolley buses one trip is 1,30 lei, for the underground and the express bus, the

price is a little bit higher (2 lei and 3,5, respectively) . These cards can be bought from dedicated kiosks ("RATB"), generally located near the main bus stops.

Directions

HOW TO REACH EURO HOTELS INTERNATIONAL FROM THE AIRPORT

By bus (quite easy!):

Once in the hall of the "Arrivals" building, go downstairs, at the ground floor, by using the escalator. Near the exit door, you will readily see the bus-stop indicator for EXPRESS BUS no. 783 and the ticket kiosk, where you can buy the necessary magnetic travel cards. The price for one card is 7 lei / 2 trips and it has to be validated on the machines near the doors.

The succession interval of bus 783 is around 15 minutes. The last bus is scheduled to leave the airport at around 22:30.

You will have to ask the driver to make a stop at bus-stop "ARCUL DE TRIUMF" (marked on the map with…) As you approach that bust stop, you may see a large monument in front of you, the Arch of Triumph, ("Arcul de Triumf") If the get off the bus before crossing the square with the monument in its centre, you take a brief walk in a semi-circle, then walk on the left-hand side of Blvd A. Averescu, till you reach Euro Hotels International (marked on the map.)

If the bus stops and you get off after crossing the square, you have to walk backwards to the Arch of Triumph square. Then turn slightly to the left and walk briefly in a semi circle, till you reach Blvd. A Averescu. Walk the left-hand sign of Blvd. Averescu, till you reach Euro Hotels International (marked on the map).

HOW TO REACH THE NATIONAL METEOROLOGICAL ADMINISTRATION FROM EURO HOTELS INTERNATIONAL

As you exit the hotel, you walk on Blvd. A. Averescu towards the Arch of Triumph square. Then you encircle the square and you reach a bus stop at the entrance in a park. That bus stop is across the road, from the place you had got off when coming from the airport. That is a stop for more busses, of which you must get on bus no. 783. After you validate your magnetic card, ask the driver to make a stop at "Institutul Meteorologic" bus stop. If you take bus 131 or 335, you will get off at "Baneasa Airport" and take bus 301, from the same place, up to "Institutul Meteorologic" bus stop.

As you get off, cross the road, walk briefly ahead, under the bridge, and make another cross. You will see, in front of you, the buildings of the National Meteorological Administration.

Note: *The hotel, lunches, as well as the bus tickets for the public transport during the training period will be paid directly through the National Meteorological Administration of Romania from the project budget.*

Pocket money

The participants will receive from the project budget a lump sum to cover the round-trip travel, the dinners, the lunches during the weekends or the days-off and other eventual costs, during the training period.

Currency

The Romanian currency is the LEU. The LEU underwent denomination on 1 July 2005, when four zeroes were cut from its former value. At present, the official exchange rate is around 4,30 Lei for 1 €. Private exchange offices operate slightly different rates.

At the airport, we advice you to exchange only a small amount of money (10 Euros or so), especially for local travel tickets. When you reach the exit hall of the airport, you will notice guiding panels, showing you the way to the exchange office.
There are also ATMs for currency exchange operations.

Info on local climate

Mean air temperature in Bucharest: 12,6^{o} C (April), 17,7^{o} C (May), 18,9^{o} C (September)
Maximum air temperature in Bucharest: 34,4^{o} C (April), 36,6^{o} C (May), 39,6^{o} C (September)
Mean precipitation amounts in Bucharest: 46,8 l/m^{2} (April), 70,1 l/m^{2} (May), 44,8 l/m^{2} (September)

For any further local information, please contact:

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Building Resilience to Disasters in Western Balkans and Turkey

On-the-job training on Severe Weather Forecasting and Warnings

Course Schedule

Week 1 [3-7 September 2012]				
Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
09:00-10:30 – Synoptic Meteorology	09:00-10:30 – Mesoscale Meteorology	09:00-10:30 – Basic principles of Doppler weather radars	09:00-10:30 – Understanding severe storms signatures	09:00-10:30 – Nowcasting convective storms
10:30-11:00 Coffee break	10:30-11:00 Coffee break	10:30-11:00 Coffee break	10:30-11:00 Coffee break	10:30-11:00 Coffee break
11:00-12:30 – Synoptic Meteorology	11:00-12:30 – Mesoscale Meteorology	11:00-12:30 – Basic understanding of storm evolution	11:00-12:30 – Radar rainfall estimation	11:00-12:30 – Nowcasting convective storms
12:30-14:00 – Lunch Break	12:30-14:00 – Lunch Break	12:30-13:30 – Lunch Break	12:30-13:30 – Lunch Break	12:30-13:30 – Lunch Break
14:00-16:00 – Introduction of the Project and Training Course	14:00-16:00 – Presentations among participants	13:30-15:00 – Severe convection and conceptual models	13:30-15:00 – Cloud electrification and charging mechanisms	13:30-15:00 – Nowcasting convective storms
		15:00-15:30 – Coffee break	15:00-15:30 – Coffee break	15:00-15:30 – Coffee break
		15:30-16:30 – Diagnosing thunderstorms using radar information	15:30-16:30 – Lightning data analysis	15:30-16:30 – Nowcasting convective storms
Week 2 [10-14 September 2012]				
Operational activity by assisting the nowcasting forecasters within the National Center of Forecasting Participation to presentations on the use of NWP, satellite, and observation data in operational Nowcasting				
Week 3 [17-21 September 2012]				
Preparation of projects				

Evaluation
On-the-job Training on Severe Weather Forecasting and Warnings

September 2012

Completing this evaluation will let us know how you have experienced this course and will help us to improve future courses. Please be frank and honest as that will help us the most.

Name... Mehmet İNCÜER Country..... TURKEY.....

What did you wish to get from this course?

I want to improve my nowcasting knowledges

Did this course meet your expectations? If not, why not?

Better than my expeet

What will you do differently in your job after this course?

High probably after this course, I will working as a Nowcaster

Would you recommend this course to others?

Yes, In these days It's very important

Overall

Interest in course	Bored					✓	Enthused
Understanding gained	Little/None					✓	Much
Content	Irrelevant					✓	Relevant
Scope	Too narrow				✓		Too wide
Emphasis	Too theoretical					✓	Too practical
Depth	Too detailed			✓			Superficial (shallow)
Presentation standard	Poor					✓	Excellent
English	Hard to understand					✓	Easy to follow
Standard	Difficult				✓		Easy
I would like	More lectures					✓	More activities
Learning and Action Guide	No use					✓	Very useful
Action plans	No use					✓	Very useful
Length of course	Too short				✓		Too long

Particular topics

	No Use				Very Useful
Learning nowcasting objectives/competencies					✓
The forecast process					✓
Ingredients approach					✓
Composite analysis					✓
Instability, CAPE, CIN					✓
Conceptual models – local flows in your country					✓
Hodograph					✓
Storm types and structures					✓
Severe weather					✓
Case studies - NWP					✓
- radar					
Radar conceptual model					✓
End to end forecast process					✓
Satellite RGB imagery					✓
Lightning data					✓

Logistics

Transport	Unsatisfactory					✓	Satisfactory
Arrival - transfer	Unsatisfactory					✓	Well looked after
Accommodation	Unsatisfactory					✓	Comfortable
Meals	Unsatisfactory					✓	Delicious
Classroom	Unsatisfactory					✓	Excellent
Internet access	Unsatisfactory					✓	Excellent
Staff and trainer availability	Unavailable					✓	Accessible

Further comments and suggestions:

Thank you for taking the time to assist us with planning and improving our course.

Evaluation
On-the-job Training on Severe Weather Forecasting and Warnings

September 2012

Completing this evaluation will let us know how you have experienced this course and will help us to improve future courses. Please be frank and honest as that will help us the most.

Name MILICA DJORDJEVIĆ Country REPUBLIC OF SERPSKA, BOSNA AND HERCEGOVINA

What did you wish to get from this course?

HEW KNOWLAGE ABOUT HOW CASTING PROCESS ABOUT WARNINGS

Did this course meet your expectations? If not, why not?

YES, BECAUSE I LEARNED A LOT OF HEW THINGS.

What will you do differently in your job after this course?

I WILL USE HEW KNOWLEDGE ON MAKING A FORECAST FOR SEVERE WEATHER, ESPECIALY FOR STORMS DEVELOPMENT.

Would you recommend this course to others?

YES. EVERYONE WHO WORKS ON EVERYDAY MAKING OF FORECAST AND NOWCAST,

Overall

Interest in course	Bored					X	Enthused
Understanding gained	Little/None				X		Much
Content	Irrelevant					X	Relevant
Scope	Too narrow			X			Too wide
Emphasis	Too theoretical			X			Too practical
Depth	Too detailed		X				Superficial (shallow)
Presentation standard	Poor				X		Excellent
English	Hard to understand						Easy to follow
Standard	Difficult						Easy
I would like	More lectures				X		More activities
Learning and Action Guide	No use					X	Very useful
Action plans	No use				X		Very useful
Length of course	Too short			X			Too long

Particular topics

	No Use				Very Useful
Learning nowcasting objectives/competencies					X
The forecast process				X	
Ingredients approach				X	
Composite analysis					
Instability, CAPE, CIN					X
Conceptual models – local flows in your country					X
Hodograph			X		
Storm types and structures					X
Severe weather					X
Case studies - NWP					X
- radar					X
Radar conceptual model					X
End to end forecast process					
Satellite RGB imagery					X
Lightning data					X

Logistics

Transport	Unsatisfactory					X	Satisfactory
Arrival - transfer	Unsatisfactory					X	Well looked after
Accommodation	Unsatisfactory					X	Comfortable
Meals	Unsatisfactory					X	Delicious
Classroom	Unsatisfactory					X	Excellent
Internet access	Unsatisfactory					X	Excellent
Staff and trainer availability	Unavailable					X	Accessible

Further comments and suggestions:

Thank you for taking the time to assist us with planning and improving our course.

Evaluation
On-the-job Training on Severe Weather Forecasting and Warnings

September 2012

Completing this evaluation will let us know how you have experienced this course and will help us to improve future courses. Please be frank and honest as that will help us the most.

Name MAJA KOJDOVSKA MARKOSKA Country R. MACEDONIA

What did you wish to get from this course?

IMPROVE MY NOWCAST SKILLS AND WARNING AND DEAL WITH SEVERE EVENTS
TO HAVE MORE PRACTICAL WORK;

Did this course meet your expectations? If not, why not?

MORE THAN ENOUGH, ~~EXPECT~~ EXEPT PRACTICAL PART WAS MISING, AT THE END ~~THAT~~ PROJECT THING FILLED UP THE MISSING PARTS

What will you do differently in your job after this course?

CONCEPTUAL MODEL, LOOK AT THERMODYNAMICS AND KINETICS OF THE SEVERE SYSTEMS

Would you recommend this course to others?

OF COURSE! EVERYBODY THAT DEALS WITH ~~WITH~~ THIS TOPIC OR

Overall

Interest in course	Bored					✓	Enthused
Understanding gained	Little/None					✓	Much
Content	Irrelevant					✓	Relevant
Scope	Too narrow			✓			Too wide
Emphasis	Too theoretical		✓				Too practical
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Length of course	Too short			✓			Too long

Particular topics

	No Use				Very Useful
Learning nowcasting objectives/competencies					✓
The forecast process					✓
Ingredients approach					✓
Composite analysis					✓
Instability, CAPE, CIN					✓
Conceptual models – local flows in your country					✓
Hodograph					✓
Storm types and structures					✓
Severe weather					✓
Case studies - NWP					✓
- radar					✓
Radar conceptual model					✓
End to end forecast process					✓
Satellite RGB imagery				✓	
Lightning data					✓

Logistics

Transport	Unsatisfactory					✓	Satisfactory
Arrival - transfer	Unsatisfactory					✓	Well looked after
Accommodation	Unsatisfactory					✓	Comfortable
Meals	Unsatisfactory					✓	Delicious
Classroom	Unsatisfactory					✓	Excellent
Internet access	Unsatisfactory					✓	Excellent
Staff and trainer availability	Unavailable					✓	Accessible

Further comments and suggestions:

Thank you for taking the time to assist us with planning and improving our course.