

Report on

**WMO/Romanian National Meteorological Administration**

**Training Course for South-East European NMHS's on  
Nowcasting Techniques**

26-30 November 2007

Bucharest, ROMANIA

# WMO/Romanian National Meteorological Administration

## Training Course for South-East European NMHS's on Nowcasting Techniques

**Bucharest, Romania , 26-30 November 2007**

### 1. Introduction

The WMO/Romanian National Meteorological Administration Training Course for South-East European NMHSs on Nowcasting Techniques was held at the National School of Meteorology and the National Meteorological Administration facilities in Bucharest, Romania, from 26 to 30 November 2007. The workshop was a first action in the spirit of the Joint Nowcasting Applications Services (JONAS) Steering Committee strategic plan. Participants were drawn from a part of RA VI of WMO, i.e. South-Eastern Europe. The idea to organize it came as a consequence of strong impact of severe weather during the summer of 2007 in Europe and the first actions to organize it started in September 2007. Despite the short time notice, the Met Services invited to participate responded with big interest and the course was appreciated by the participants.

The National Meteorological Administration organized several international workshops in previous years on radar meteorology and nowcasting, but this one was aimed to try a different approach, extending the area of topics to an end-to-end complete nowcasting system. Thus, new topics such satellite meteorology, lightning, wild-fires, avalanches and nivology were considered. Systems for the delivery of information toward the public, civil defence and mass-media were presented.

### 2. Objectives

The objectives of the training course were aimed at sustaining capacity building in developing countries through “open laboratories” activities by:

- providing basic knowledge on the underlying science of nowcasting and severe weather warning systems,
- providing information about advanced nowcasting systems in use in different countries,
- promoting the use of advanced technologies in nowcasting and service provision.

Through these activities the workshop will provide mentorship in nowcasting techniques within developing countries in RA VI to advance the WMO mission.

### 3. Participants

Participants were in general from meteorological and hydrological services of countries neighbouring Romania (see list below)

- **Tatiana Strugac** – Hydro-meteorological State Service - Republic of Moldova
- **Dragoslav Dragoslavic** - Meteorological and Hydrological Service - Republic of Croatia (dragojlovic@cirus.dhz.hr)
- **Anna Yordanova Diakova** - National Institute of Meteorology and Hydrology - Bulgaria (anna\_diak@yahoo.com)
- **Alina Prodan** - Ukrainian Hydrometeorological Centre - Ukraine (icd@ukrweather.kiev.ua)
- **Kostadinka Arsovska** - Hydrometeorological Service - Macedonia
- **Goran Mihajlovic** - Republic Hydrometeorological Service - Serbia (gmihajlovic@hidmet.sr.gov.yu)
- **Tanja Porja** - Hydrometeorological Institute - Albania (tanjaporja@yahoo.it)
- **Jaroslava Hajakova** - Hydrometeorological Institute - Czech Republic (jaroslava.hajakova@chmi.cz)

Their travel and subsistence during the course has been supported by WMO. They varied in experience from those who had no nowcasting services in their countries to others who were experienced in the area. They were asked to complete a pre-course questionnaire about their needs and experience and an after-course plan of actions.

### 4. Lecturers

A list of presenters, many of them leading experts in nowcasting and radar meteorology are in **Appendix 1**. The lecturers were Romanians experts that developed the local nowcasting system and also three lecturers from foreign countries whom travel and subsistence has been supported by WMO. The course was opened by the director of the National School of Meteorology and by Dr. Ion Draghici, former DET with WMO.

### 5. Content and style of workshop

The course had more detailed information accessible to the participants on a web site: <http://193.26.129.60/scoaladevara/>

The training course was different in style compared to previous workshops hosted in Romania. Participants were asked to share their local nowcasting challenges and needs in a short presentation at the commencement of the course. Although the timetable was predetermined (see **Appendix 2**), there was plenty of scope to adjust the level and pace to meet the needs of all participants and this was done by all presenters.

Lectures were highly interactive and were based on case studies and forecasting methodologies. They were chosen to highlight particular aspects of radar and satellite meteorology in nowcasting. They were universally well received.

All participants completed personal Action Plans before the end of the training to ensure that the benefits of the workshop were passed on to their colleagues and institutions upon their return home. Follow-up emails confirmed that they were being implemented.

Participants were provided with a copy of all relevant resources on DVD (all presentations and workshops).

## **6. Accommodation and logistics**

Full accommodation was provided for the students at the Romanian National School of Meteorology, where the training workshop was being held. This had the advantage of keeping costs low and providing plenty of opportunities for informal discussion on workshop related matters. It was a successful model.


The National Administration of Meteorology provided computers for use in the workshops. Workshop Case studies were pre-loaded. There was one computer available for every participants as well as a central unit.


## **7. Conclusion and recommendations**

End of course evaluations (written and verbal) were very positive. The main criticisms were that the training was too short to fully discuss all the issues of such a complex matter like nowcasting that would like to have more time on case studies and real work with the Romanian systems. They indicated that would like to come back for a future edition of this training.

It is recommended that similar training workshops be conducted in the future if funds are available. The National Meteorological Administration is going to provide two more laboratories for “hands-on” workshops in quasi real time for future workshops. They will be available and operational in May 2008.

## Presenters

	<p style="text-align: center;"><b>Roger Deslandes</b></p> <p style="text-align: center;">Manager / Senior Meteorologist</p>	<p style="text-align: right;">Curriculum Training and Development Group Australian Bureau of Meteorology Training Centre Ph: +61 3 9669-4101 Fax: +61 3 9669-4366</p> <p style="text-align: right;">700 Collins St</p>
<p>Roger has specialised in Nowcasting thunderstorms and has also spent considerable time providing Fire Weather forecasts for south-east Australia (one of the most fire-prone regions in the world). The lectures addressed the practical aspects of severe thunderstorm and fire situations - integrating all data (NWP, observations, satellite imagery and radar data) to provide nowcasts that are utilised by state emergency management agencies. He joined the Australian Bureau of Meteorology in 1986 working initially in the National Meteorological and Oceanographic Centre in Melbourne. As manager of the severe weather section in the Victorian Regional Forecast Centre in Melbourne he provided forecasts for Severe Thunderstorm and Fire Weather warning services. In 1995 he was awarded a study scholarship and published papers on the dynamics of dry-frontal boundaries. During this year he joined the Bureau of Meteorology Training Centre (B.M.T.C). From 1995 until 2001 he delivered courses to trainee forecasters on the subjects of Thermodynamics, Mid-latitude Meteorology, Cloud microphysics and severe weather forecasting. Currently he delivers a fourth year course on thunderstorm dynamics at Monash University. Over the last five years, as manager of the Curriculum Development and Ongoing Education Group in the B.M.T.C, has taken an active role in the development of severe weather forecast process, forecaster competencies and the development and management of in-service training programs for Australian forecasters. He spent several months at the Co-operative for Operational Meteorology Education and Training (COMET) in Boulder, Colorado developing web-based severe weather training modules for forecasters. In 2004 he was awarded the Christopher Taylor Award by the Australian Meteorological and Oceanographic Society (AMOS) for contributions to operational meteorology through training. His recent activities have included the implementation of a national radar-training course for Australian forecasters to support the introduction of the Bureau of Meteorology new S-band Doppler radars and services.</p>		
	<p style="text-align: center;"><b>Christo Georgiev</b></p> <p style="text-align: center;">Physicist, Meteorologist Senior researcher in satellite meteorology</p>	<p style="text-align: right;">National Institute of Meteorology and Hydrology (NIMH) Sofia Bulgaria</p>
<p>He gave lectures on PV thinking and use of MSG WV channels in nowcasting convection, to help participants appreciate the thermodynamic context of the convection environment, interpretation of large- and meso-scale features responsible for convective development by using satellite imagery and PV concept.</p> <p><b>Operational activities:</b> Working in operational satellite meteorology since 1984. Responsible for organizing implementation of satellite technology at NIMH Bulgaria.</p> <p><b>Research activities:</b> Researcher at NIMH Bulgaria since 1986, PhD from 1997, Senior Researcher since 2004. Guest scientist at INM, Madrid (1998). Water Vapour Imagery Project with Forecast Laboratory, Forecast Direction, Meteo-France, Toulouse (2001-2007) Papers presented at EUMETSAT Scientific Conferences in Cascais (1994), Vienna (1996), Paris (1998), Dublin (2002), Dubrovnik (2005), Amsterdam (2007) Author of a book on Weather Analysis and Forecasting: Applying Satellite Water Vapor Imagery and Potential Vorticity Analysis, Academic Press, Elsevier Inc., 2005</p> <p><b>Lecturer experience:</b> Teacher at training courses in satellite meteorology at NIMH Bulgaria. Lecturer at EUMETSAT training courses in Krakow (2001), Sofia (2002, 2006), Cheia (2004), Mikulov (2005), Athens (2007),</p>		

	<p style="text-align: center;"><b>Aurora Stan-Sion</b></p> <p style="text-align: center;">PhD, Physicist, Meteorologist Head of the Laboratory of Nowcasting Techniques</p> <p style="text-align: right;">National Meteorological Administration (NMA) Bucharest Romania</p>
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She gave lectures on : Principles of Nowcasting and Use of Doppler radar in nowcasting

**Operational/Research activities:**

responsible for the implementation of nowcasting methodologies at RNMA

Study and development of radar conceptual models

Analyses of severe storm cases in Romania

Most recent papers presented at Vienna (2006), Utrecht (2005), Toulouse (2005) and Barcelona (2006)

Representative of RNMA with WMO in the Group of Public Weather Services and is the Focal Point for Regional Training

Coordinator of Education and Training in EUFAR Project

**Lecturer experience:**

Lecturer at the RNSM on radar meteorology, mesocale meteorology and nowcasting

Lecturer at international training courses on radar meteorology Bucharest (2005)

	<p style="text-align: center;"><b>Gerard Spreitzhofer</b></p> <p style="text-align: center;">Researcher</p> <p style="text-align: right;">Institute of Meteorology and Geophysics University of Vienna Althanstrasse 14, UZA2 A-1090 Vienna Austria</p>
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He lectured on : MetGIS - a combined meteorological-geographic information system to support high-resolution short-range forecasts. MetGIS (see <http://www.univie.ac.at/AMK/metgis>) is a new, combined Meteorological and Geographic Information System, with a specific emphasis on snow and mountain weather. This prediction scheme was developed within the framework of interdisciplinary international research projects with contributions from research institutes, universities and meteorological services of Austria, Switzerland, Japan, Peru, Chile, Argentina and the USA. A principal focus of the system is the production of high-resolution, down-scaled forecast maps of meteorological parameters, using a Java-based Graphical User Interface (GUI). When operated in an automated mode, this GUI can be used to feed a web-interface providing special purpose meteorological forecasts. The geographic part of the system includes a topographic database relying on data of the Shuttle Radar Topographic Mission (SRTM, horizontal resolution approx. 90m) and representations of roads, rivers, railway lines, political borders and cities. Various modes of topography (elevation, slope, aspect) may be displayed, all for freely selectable thresholds and resolutions. On top of these, partly linked to terrain features, down-scaled meteorological information can be visualized in a variety of display styles. Meteorological forecast data of any numerical model can be included into MetGIS and refined by the system, provided the model output is compatible with NetCDF or GrADS-compatible formats. Currently mainly GFS is used as the base model. Regarding features of the system specifically related to mountain areas, the high resolution terrain allows a very detailed estimation of the spatial distribution of surface temperature, of the form of precipitation (snow, sleet, rain), of the depth of fresh snow, the height of the snow line and the freezing level. Moreover, the system is already prepared for the integration of the output of snowpack models.



**Narcisa Milian**  
Physicist, Meteorologist

Regional Center of Forecasting  
National Meteorological Administration  
Sibiu  
Romania

Lectured on : Avalanche forecasting in Romania: Snow basics and Avalanche forecasting in Romania: Case studies



**Simona Oancea**  
Physicist, Meteorologist

Laboratory of Nowcasting Techniques  
National Meteorological Administration (NMA)  
Bucharest  
Romania

She lectured on : Visualization of Meteosat-9 satellite images: RGB composites and Meteosat-9 Applications: RGB composites products at NMA of Romania



**Bogdan Antonescu**  
Physicist, Meteorologist  
Researcher

Laboratory of Nowcasting Techniques  
National Meteorological Administration (NMA)  
Bucharest  
Romania

He lectured on : The electrical activity of storms and The use of lightning data in nowcasting



**Sorin Burcea**  
Researcher

Laboratory of Nowcasting Techniques  
National Meteorological Administration (NMA)  
Bucharest  
Romania

He lectured on : SIMIN - (Romanian National Integrated Meteorological System ) - General overview

# Training Course for South-East European NMHS's on Nowcasting Techniques

Bucharest, Romania 26 - 30 November 2007

## Provisional timetable

	Monday 26 November	Tuesday 27 November	Wednesday 28 November	Thursday 29 November	Friday 30 November
9.00 - 10.00	<b>FORMAL OPENING AND ORGANIZATIONAL ASPETCTS</b>  (Ion DRĂGHICI)  (Ion POIANĂ)	<b>METEOSAT-9 SATELLITE IMAGES: RGB COMPOSITES</b> (Simona OANCEA)	<b>NOWCASTING</b> (Aurora STAN-SION)	<b>SNOW FORECASTING</b> (Narcisa MILIAN)	<b>FIRES NOWCASTING</b> (Roger DESLANDES)
10.00 - 10.30 Coffee brake					
10.30 - 11.30	<b>OVERVIEW</b>  <b>Action Plan</b>  (Aurora STAN-SION)	<b>RADAR AND NOWCASTING</b>  (Roger DESLANDES)	<b>NOWCASTING</b> (Aurora STAN-SION)	<b>SNOW FORECASTING</b> (Cristi Flueraru)	<b>FIRES NOWCASTING</b> (Roger DESLANDES)



11.30 - 12.30	<b>WATER VAPOUR IMAGERY</b>  (Christo GEORGIEV)	<b>RADAR AND NOWCASTING</b>  (Roger DESLANDES)	<b>RADAR AND NOWCASTING</b>  (Roger DESLANDES)	<b>SNOW FORECASTING</b>  (Gerard Spreitzhofer)	<b>Action Plan</b>  (Aurora STAN-SION)  (Roger DESLANDES)
12.30 - 1.45 Lunch					
1.45 - 2.45	<b>WATER VAPOUR IMAGERY</b>  (Christo GEORGIEV)	<b>RADAR AND NOWCASTING</b>  (Roger DESLANDES)	<b>RADAR AND NOWCASTING</b>  (Roger DESLANDES,  Aurora STAN-SION)	<u>Visit to National Meteorological Administration</u>	<b>CLOSING</b>  Ion POIANA  Aurora STAN-SION
2.45 - 3.00 Coffee brake					
3.00 - 5.00	<b>WATER VAPOUR IMAGERY</b>  (Christo GEORGIEV)	<b>RADAR AND NOWCASTING</b>  (Roger DESLANDES)	<b>RADAR AND NOWCASTING</b>  (Roger DESLANDES,  Aurora STAN-SION)	<b>SIMIN PROJECT</b>  (Sorin BURCEA)  <b>LIGHTNING</b>  (Bogdan Antonescu)	<u>Visit to BUCHAREST</u>
	<b>Ice Breaker</b>			<b>Dinner offer by NMA</b>	

