3-D View on Training in Aeronautical Meteorology (University, Trainer, Student Perspectives)

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Student – Ekaterina CHUMAK (RSHU)
1st Dimension – University Perspective
1st Dimension – University Perspective

• **RSHU since 1930**
  about 3,500 students including 250 international students from 40 countries, plus 300 teaching and academic staff

• **Six Faculties**
  including Meteorology, Hydrology, Oceanology, Ecology and Economics

• **WMO RTC in St. Petersburg**
  more than 130 WMO Fellows have graduated
1st Dimension – University Perspective

State higher educational institution (+ and -)

+ High quality staff, research work, scientific schools and good theoretical background

- State Educational Standard - not flexible in meeting the needs of employers
1st Dimension – University Perspective

- HES Reforming (1 January 2010 – freedom from the state to develop new curricula and syllabus)
  close links with potential employers
  competency based approach

- Needs Analysis 2006 – 2007 (NHMSs & Roshydromet)
  aeronautical forecasters
  (competencies in compliance with WMO 258 Supp.1 plus regional features and English speaking)
1st Dimension – University Perspective

• BSc program in Aeronautical Meteorology

*RSHU policy: to reduce on-the-job training for our students to make them more competitive when pursuing a career in meteorology*
1st Dimension – University Perspective

Pilot project – joint RSHU - ROMATSA intensive training course in forecasting techniques

Objective: to reveal any existing gaps in knowledge and skills

1) March 2009 – intensive one-week course to apply theoretical knowledge

2) August 2009 – two weeks on-the-job training in Romania to use theoretical knowledge in an operational context
March 2009 – 11 students
August 2009 – 2 students
1st Dimension – University Perspective

- Feedback from trainers and students about making a good “competence-based” university curriculum

2nd and 3rd D’s are coming ;-)
2nd Dimension – Trainer’s Perspective
2nd Dimension – Trainer’s Perspective

Romanian Air Traffic Services Administration (ROMATSA)
Training Centre for Aeronautical Meteorology

ROMATSA provides all Air Navigation Services as defined by ICAO:
- ATS,
- AIS,
- COM,
- SAR (only Rescue Coordination Centres),
- MET.
2nd Dimension – Trainer’s Perspective

Based upon the initiative of RSHU, a pilot program of developing competencies for students was started as cooperation between RSHU and Training Centre of Aeronautical Meteorology – ROMATSA.

ROMATSA’s experience in the Training Centre of Aeronautical Meteorology was limited to the education and training structure of Romania and the initiative was considered a challenge.
2nd Dimension – Trainer’s Perspective

Aviation Seminar in St. Petersburg
Dedicated to forecasting impact of CB clouds on aeronautical operations

Objectives:

To probe student’s knowledge in forecasting techniques
To apply theory in practice and develop the logical chain of forecast
To deliver basic information about forecasting techniques
2nd Dimension – Trainer’s Perspective

Aviation Seminar in St. Petersburg

Challenges:

- Differences in theoretical approach
- Training style unusual to the students
- Putting together the pieces of the forecasting puzzle in order to have a good forecast
- Understanding the logic of the system
2nd Dimension – Trainer’s Perspective

On-the-Job training at ROMATSA CFO

Two weeks training in operational environment was considered a good way to assess the benefits of competencies approach for students.

Objectives:

To get the “flavor” of what real job means

To understand the importance and the impact of aeronautical meteorology

To apply the logic of the forecast in order to deliver useful products to customers
2nd Dimension – Trainer’s Perspective

On-the-Job training at ROMATSA CFO

Challenges:

Students were unfamiliar with aeronautical meteorology products and services, at least the ones used in Romania

The use of workstations – “juggling” with different data in order to create a good forecast

Solving the “puzzle” operationally is different than case studies
2\textsuperscript{nd} Dimension – Trainer’s Perspective

Assessment of the program

The outstanding theoretical background of the students determined an easiness in approach and understanding

Students applied the interactions of parameters in order to answer the questions: \textbf{WHAT, WHY, HOW and WHEN}

Very good feedback from students and the management of RSHU
3rd Dimension – Student’s Perspective
3rd Dimension – Student’s Perspective

How it Began: a Week in March 2009

Theory

• The course in March set a perfect theoretical background and initiated applications

• It was a good start to continue learning Aeronautical Meteorology

Practice

• The On Job Training at ROMATSA – continuation of the course held in March
3rd Dimension – Student’s Perspective

We expected to…

- revise theory
- learn about modern forecasting methods
- learn how to make good forecasts for aviation
- see how MET products are made and used
- apply theoretical knowledge in practice
3rd Dimension – Student’s Perspective

First week

Day 1
An introduction in Aeronautical Meteorology services and products

Day 2
Satellite meteorology Spectral channels and RGB’s

Revise theory
First week

Day 3
Used forecaster’s workstations to display and process meteorological data including radars and satellites

Day 4
Made our first products using forecasters’ workstations
Understood and applied the algorithm for making a proper forecast

Learn about modern forecasting methods
An Algorithm for a Proper Forecast:

• Check the real data (MET reports, radar and satellite imagery)
• Choose the proper model to work with
• Check the models and see if any parameter is going to change
• Analyze the change (time & location) and find out its REASONS
• Make a GOOD forecast
Our First Products

Learn how to make good forecasts for aviation
3rd Dimension – Student’s Perspective

First week

Day 5

The most spectacular day of the week! 😊

An excursion to the main airports of Bucharest: Baneasa and Otopeni. Visiting the tower of Baneasa (aerodrome control) and Otopeni observation site

See how MET products are made and used
Baneasa and Otopeni
3rd Dimension – Student’s Perspective

Results of the First Week

• Gained a lot of new theoretical knowledge to be applied in further practice;

• Became acquainted with the facilities of the forecasters’ workstation;

• Made our first forecast applying logical thinking (i.e. “step by step” + the algorithm)
During the weekend we...

... saw cloud formation over the mountains

... measured wind direction using soap bubbles
We also...

...measured the temperature of the sea (while swimming)

...learned the basics of agricultural meteorology

And, of course... Thought about new approaches in forecasting
Second week

Day 6 – 9

We started to make forecasts under supervision (not issuing of course) and compare with the official ones

- Guidance for Romania & diagnosis for Europe
- TAFs for different airports
- Low Level SIGWX Charts

On Day 8 we witnessed how forecasted warnings are issued in real time
3rd Dimension – Student’s Perspective

Second week

Day 10 (the last day of the course)

Final assessment. We visited the Area Control Centre and learned how the air traffic controllers provide en-route flight services and how they use meteorological information
Getting the Certificates
Overall results

• We were actually included in real work while practicing at the Central Forecasting Office;

• We were developing our skills each day, making better forecasts;

• We understood the level of responsibility of such a profession, especially when dangerous weather conditions occurred.

• The course over-exceeded our expectations – we felt the difference between learning in class and on-the-job training

• The course made an impact on the graduation work (BSc thesis) – accent on practical application
### 3rd Dimension – Student’s Perspective

#### Pluses VS Minuses

<table>
<thead>
<tr>
<th><strong>Pluses</strong> 😊</th>
<th><strong>Minuses</strong> 😞</th>
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</thead>
<tbody>
<tr>
<td>Very useful information in a simple form</td>
<td>The program maybe should be more structural</td>
</tr>
<tr>
<td>Theory is applied in practice</td>
<td>A “mess” in students’ heads at the beginning</td>
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<tr>
<td>All the material is supplied by handouts</td>
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<tr>
<td>Students’ “handmade” forecast</td>
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<tr>
<td>Involving into real work</td>
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<td>Contacting with many people: different approaches VS working in a team</td>
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**A WISH:** to attend this training course after the 4th year
Conclusions

Taking part in such trainings allows maximal quick development of the new modern curricula based on fundamental theoretical approach and practical skills from real life and experience.

Intention letter between RSHU and ROMATSA for further cooperation.

Who else?
Thank you for attention!