

# SEEMET

## South-Eastern Europe Meteorological Training

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# Initiative

- initiative of the Directors of the South-East European NMSs (ICSEED)
- series of courses planned in order to regularly train operational staff of the Eastern European Meteorological and Hydrological Services.
- 5-year training programme approved, sponsored by EUMETSAT and supported by EUMETCAL

# Challenges

- Lack of in-house training, lack of training in general
- LANGUAGE barrier
- Different levels of skills and expertize
- Training in many topics needed

# SEEMET Training Courses

- courses addressed to **weather forecasters** and **hydrological forecasters**
- **2 levels**
  - Basic course** ~ covering basics of satellite meteorology, satellite image interpretation and satellite data/products applications in operational weather forecasting
  - Advanced course** ~ dealing with certain meteorological /hydrological topic of interest.
- The courses alternate and are organized in different country every year in a form of 3-5 days classroom training courses

# Learning objectives

- improvement of the skills of operational meteorologists in interpretation and application of satellite images and products
- improvement of the competencies in short-term weather forecasting
- improvement of the capabilities of the NHMSs of South Eastern Europe in providing weather and warning services to national stakeholders and public.

# Lecturers

- Experts from participating NMSs
- Invited experts from EUMETSAT, EUMeTrain, ECMWF, ESSL, ....

# Participants

- Forecasters from Slovenia, Croatia, Hungary, Bosnia and Herzegovina, Serbia, Montenegro, Kosovo, Macedonia, Bulgaria, Romania, Albania, Greece

# Previous Courses

SEEMET initiative started in 2016, 4 courses organized until today:

- **Ljubljana, Slovenia (2016)** – Advanced course on floods and flash flood forecasting (hydrological forecasts and warnings)
- **Bar, Montenegro (2017)** – Basic satellite meteorology course – translated into Serbian/Croatian/Montenegrin language
- **Primošten, Croatia (2018)** – Advanced course on convection forecasting and warnings
- **Sarajevo, Bosnia and Herzegovina (2019)** – Basic satellite meteorology course in English



# Previous Courses



**Ljubljana, Slovenia (2016) –  
Advanced course on floods and flash flood forecasting  
(hydrological forecasts and warnings)**



# Topics

NWP MODELS: PRECIPITATION UNCERTAINTIES , ALADIN

MOISTURE RIVERS BASED ON SATELLITE DATA

EUROPEAN FLOOD AWARENESS SYSTEM (EFAS)

EUMETSAT SATELLITE APPLICATION FACILITY ON SUPPORT TO OPERATIONAL  
HYDROLOGY AND WATER MANAGEMENT (H-SAF)

INGREDIENTS FOR EFFECTIVE SATELLITE SEVERE WEATHER TRAINING

USE OF RADAR DATA FOR FLASH FLOODS

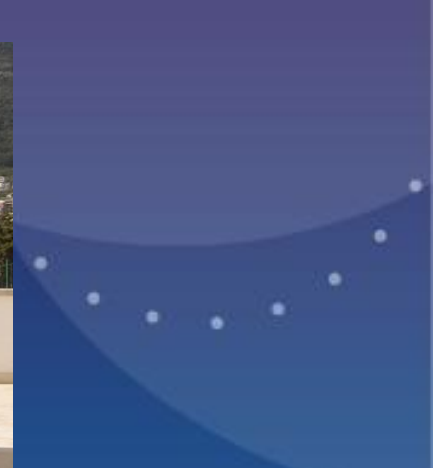
FORECASTING AND NOWCASTING PROCESS: A FLOOD CASE STUDY-GREECE

SEE FLASH FLOOD GUIDANCE

EUMETRAIN TRAINING RESOURCES –FOCUS ON FLASH FLOODS AND FLOODS

METEOROLOGICAL AND HYDROLOGICAL WARNING SYSTEMS IN SE EUROPE –  
EXAMPLES: SLOVENIA, HUNGARY, SERBIA

INTERACTION WITH MEDIA - COMMUNICATING FORECASTS OF HIGH IMPACT  
WEATHER



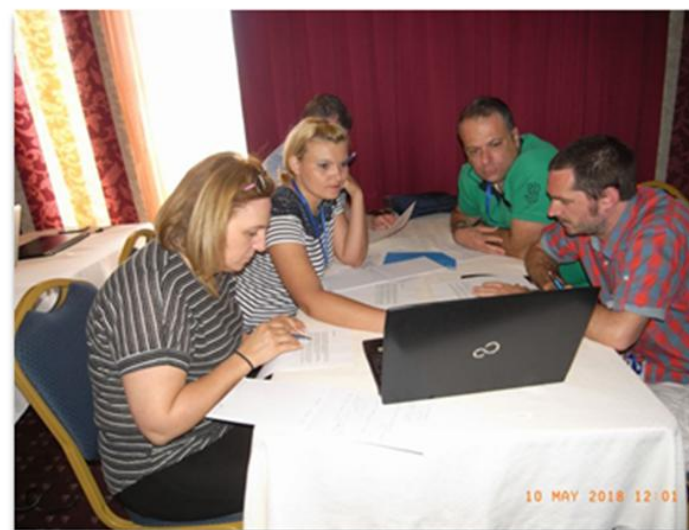
## Bar, Montenegro (2017)

### Basic satellite meteorology course – translated into Serbian/ Croatian/Montenegrin language



Time\Day	Monday, 8 May	Tuesday, 9 May	Wednesday, 10 May	Thursday, 11 May	Friday, 12 May
<b>9.00-10.30</b>		IR channels +IR3.9	Overview RGB products	Introduction to satellite analysis (SatRep) + thunderstorm forecast process	Practical work: archive, visualisation tools, ePort, other web pages / resources
<b>11.00-12.30</b>		Solar channels + IR3.9	Satellite products overview (no algorithms), , RGBs combined with derived products	Introduction to synoptic frontal analysis, including sub structures and (pre) frontal convection (AW)	Final quiz / Discussion / Closing
<b>14.00-15.30</b>	Basics of remote sensing, EM spectrum,channels, orbits and instruments, image enhancements	Practical work: single channels (conceptual models)	Practical work: RGB interpretation, feature identification (fog, fire, convection, pollution, dust, cloud properties)	Practical work: Frontal analysis, including sub structures, cross sections and soundings	
<b>16:00-17.30</b>	WV Channels: Analysis of WV images: Jets, Deformation Zones, Vorticity Centres,Cyclogenesis	Practical work: continued	Practical work: continued	Practical work: continued	





## Primošten, Croatia (2018) – Advanced course on convection forecasting and warnings

# Topics

Ingredients-based storm forecasting

Sounding-derived parameters and their application in convection forecast

NWP in convection forecast

Low level moisture seen in VIS and IR channels and related RGB products

Use of WV imagery in forecasting severe convection over South-Eastern Europe.

Convergence lines in satellite images

Cloud microphysical properties seen in satellite images (NIR channels and RGBs)

NWCSAF products – important for convection

Stability information from satellite data

ECMWF Extreme Forecast Index (EFI) for forecasting outbreaks of severe convection

Radar analysis of convective storms - tracking, precipitation type, wind signatures

Satellite characteristics of mature storms

Lightning - theory and benefits in nowcasting

Case studies of various types of storms using remote sensing (satellite, radar, lightning) data

e-port introduction, Practical work

Communications and warnings

Quiz, feedback, validation



# SARAJEVO, Bosnia and Herzegovina, 2019 – Basic Satellite Meteorology Course In English



	<u>Tuesday</u>	Wednesday	Thursday	Friday
9:00-10:30	<u>Basics – cloud identification, basic analysis of satellite data</u>	Severe weather, severe precipitation, orographic convection, thunderstorms, hail	Large scale analysis: Fronts and frontal systems	New channels on MTG
		Hail suppression		New channels and RGBs from MTG
11:00-11:45	<u>Fog /low cloud identification - RGBs, NWC SAF</u>	SIMULATOR Exercise on convection	Inside Rapid Cyclogenesis	Exercise, Quiz, Final assesment, evaluation of the course  Course CLOSURE
11:45-12:30	<u>Detection and forecast of fog: Model analysis, soundings – profiles, cross-sections</u>		Exercise - Frontal analysis, conceptual models	
13:30-14:15	<u>Excercise – satellite image analysis, RGB analysis (in groups, different areas)– which RGB is best for different features</u>	Surface features from RGBs – snow, fires	Presentation of participants work	
14:15-15:00		Land SAF + Hydro SAF drought monitoring		
15:30-17:00	<u>Presentations of participants work</u>	Socrative Exercise on Surface features		



# Evaluation

- On the final day the Course Evaluation is submitted by participants to provide organizers with a systematic understanding of the **participants' satisfaction** about the course content, organization, **effectiveness** in achieving the learning objectives and **overall value** for their professional development

# Future of SEEMET

- 2020 Advanced course – in Romania
- New 5-years cycle expected to be approved by ICSEED and supported by EUMETSAT
- Focus on applications of MTG and EPS-SG data and products in operational forecast

# Questions, comments, suggestions??

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DRŽAVNI HIDROMETEOROLOŠKI ZAVOD  
CROATIAN METEOROLOGICAL AND HYDROLOGICAL SERVICE

[www.meteo.hr](http://www.meteo.hr)

10th European Conference on Severe Storms  
Kraków, Poland, 4 – 8 November 2019

