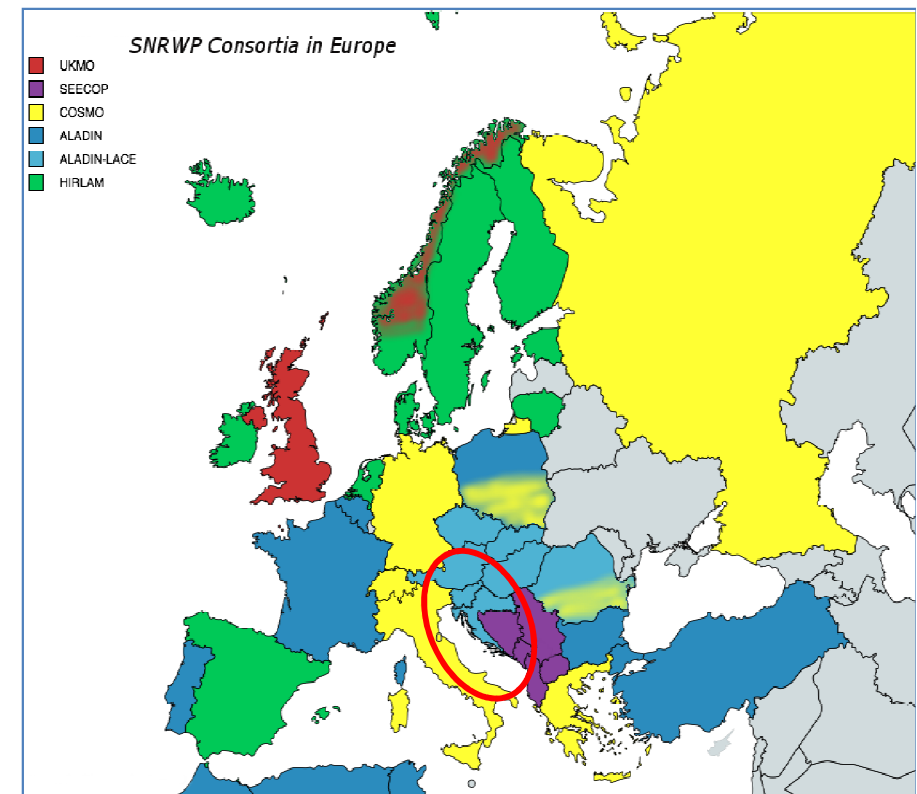


# The South East European Consortium for Operational weather Prediction (SEECOP)

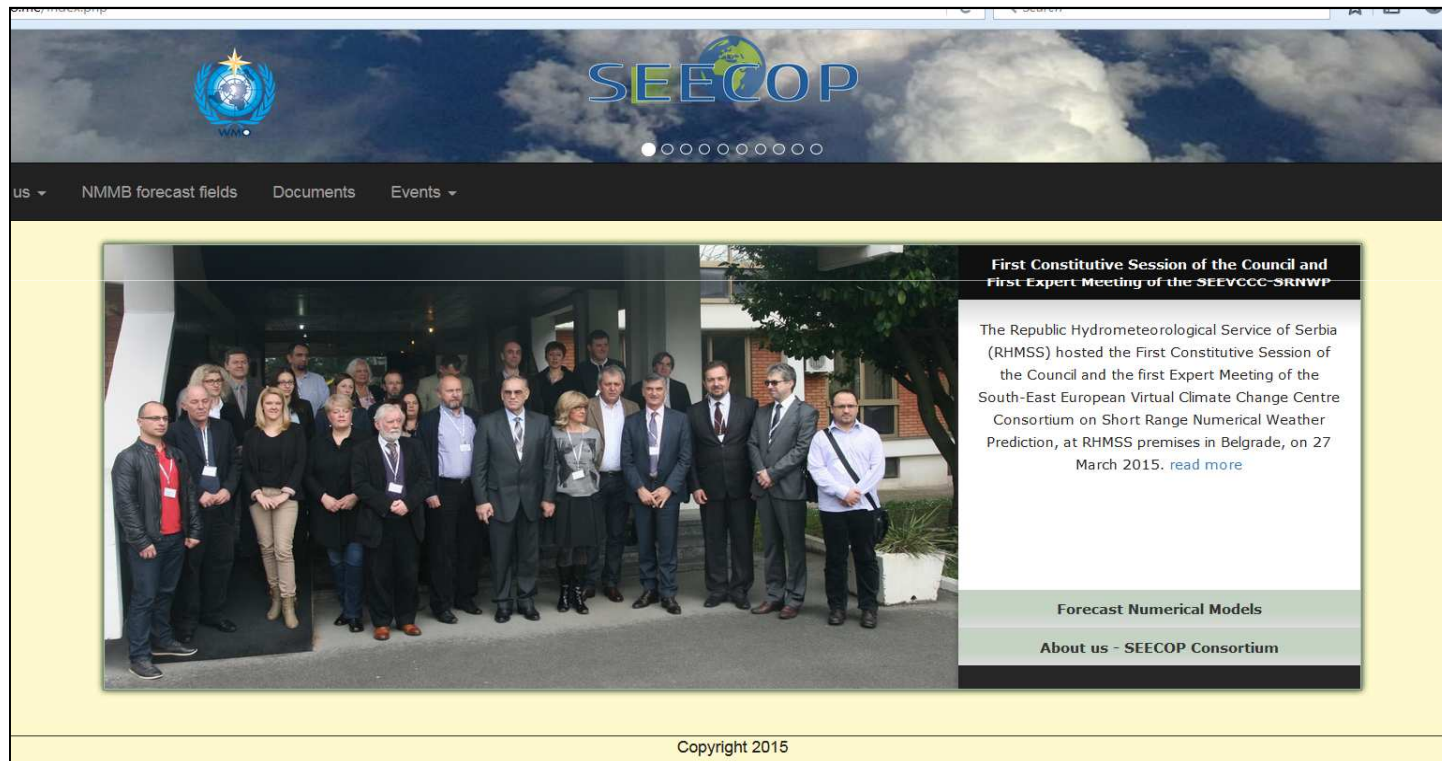
**S. Ničković, Lj. Dekić**

*Republic Hydrometeorological Service of Serbia (RHMSS), Belgrade, Serbia  
(host of the South East Euro Virtual Climate Change Centre - SEEVCCC)*

- SEECOP Consortium consists of the following Members:
  - the Republic of Albania
  - the Federation of Bosnia and Herzegovina (Bosnia and Herzegovina)
  - the Republic of Srpska (Bosnia and Herzegovina)
  - the Former Yugoslav Republic of Macedonia
  - Montenegro
  - Serbia
  - Belarus (new Member since 2016)
- All members with a certain (basic or advanced) experience in NWP
- Observing country in the 2<sup>nd</sup> SEECOP meeting: Greece
- The consortium model: NMMB



- Held in Bar (Montenegro), June 2016
- The Consortium Agreement formally put in force after all Members' signatures collected
- Established Consortium web site:  
<http://seecop.meteo.co.me/index.php>



- Discussed and considered/accepted '***Recommendations of the C-SRNWP Advisory Expert Team***'
- Approved '***SEECOP Modelling Concepts and Plan of Activities for 2016-2021***'
  - Seamless concept for weather prediction/assimilation (spanning from local to global scales)
  - Earth modelling system - interactive coupling of different environmental models (atmospheric, hydrology, aerosol, ocean, etc.)
- Agreed on organizing '***The first Workshop on use and implementation of NMMB***'
  - expected to be co-funded by WMO
  - planned in 2017

# Principles of Consortium cooperation

- sharing available expertise, data, modelling and technical resources
- reducing overlapping with other Members in NWP
- performing research and developments focused on operational applications
- training in NWP
- being open for cooperation with other consortia and for new memberships
- self-funding, based on available Members' resources
- model code repository with the basic and developed programs

# Consortium management

- **Consortium Council (CC)**
  - composed of the Members' Directors
  - CC meets annually to discuss and approve research/work plans
  - Rotation principle for the CC Chair
- **Coordination Experts Team (CET)**
  - CET prepares the research/work plans in detail, and periodically meets to discuss current activities and plans
- **Working Groups (WGs)**
  - Established and supervised by CET
  - Current WGs:
    - Data assimilation and use of observations
    - Applications
    - System aspects (code management)
    - Diagnostic, validation and verification



# SEECOP NWP data repository

Set of fields, products of  
NMMB global model running  
in RHMSS, are available on  
the server from July 2015

HMS Montenegro is handling  
a server

GRIB files for other SEECOP  
members

For use in forecast service or  
as LBC for regional model.

## Index of /srbija/test/nmmb/2015070600

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
<a href="#">Parent Directory</a>	-	-	-
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<a href="#">BGDEUR.GrbF057</a>	2015-07-06 15:03	9.2M	



# **Graphical presentation of NMMB GRIB files on SEECOP web site**

Public available, no registration needed

<http://seecop.meteo.co.me/nwp/nmmbg/scripts/z500.php>





# SEECOP web site

<http://seecop.meteo.co.me/forecast.php>

The South-East European Consortium for Operational weather Prediction - Mozilla Firefox

The South-East Europea... x

seecop.meteo.co.me/forecast.php

Google PXM3 - Публички X... ECPDS: Product Distri... \*\* Internet homeb@n... Home - Metview - EC... Home - Magics++ - EC... AEGIS AGRI4CAST MARS Cr... Meteorological data ...

SEECOP

Home About us NMMB forecast fields Documents Events

Home > Forecast > Log in

**Log in:**

Username:

Password:

**Not registered? Send request via email:**

Email:

Username:

Password:

Copyright 2015

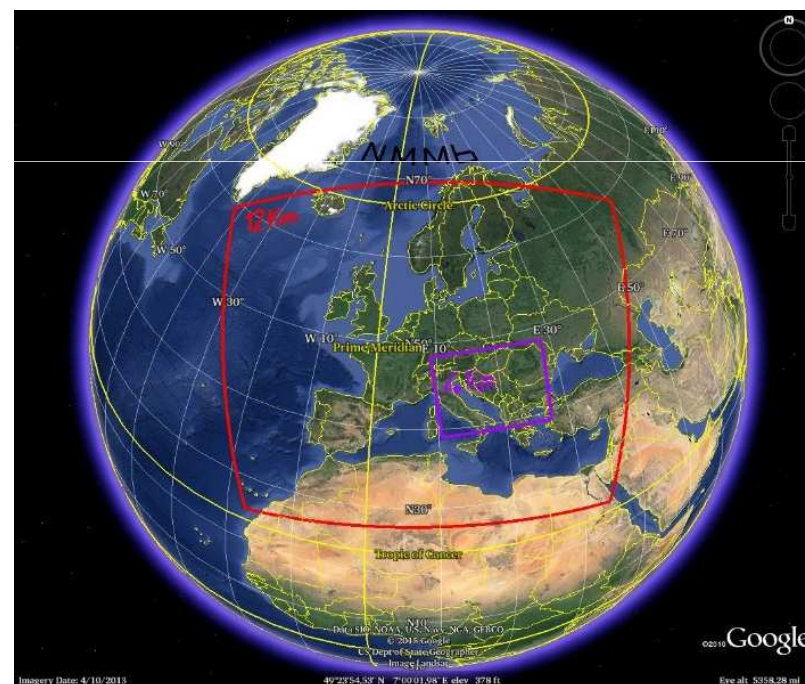
# **Members' activities in NWP (examples)**

# Republic Hydrometeorological Service of Serbia

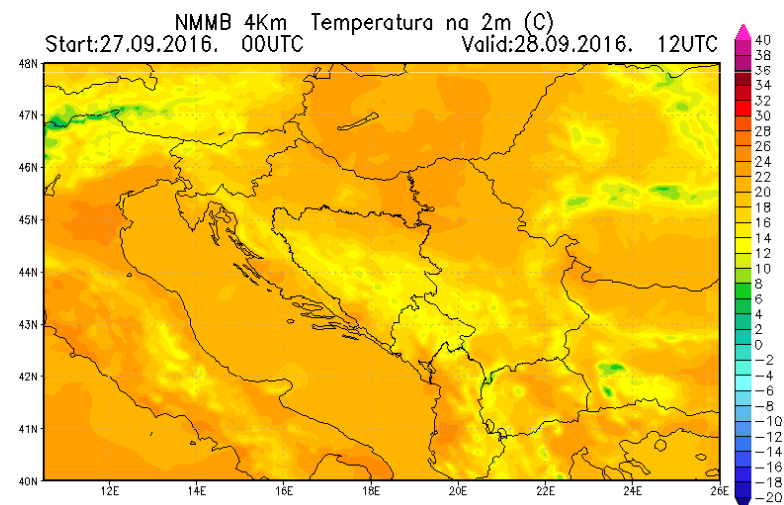
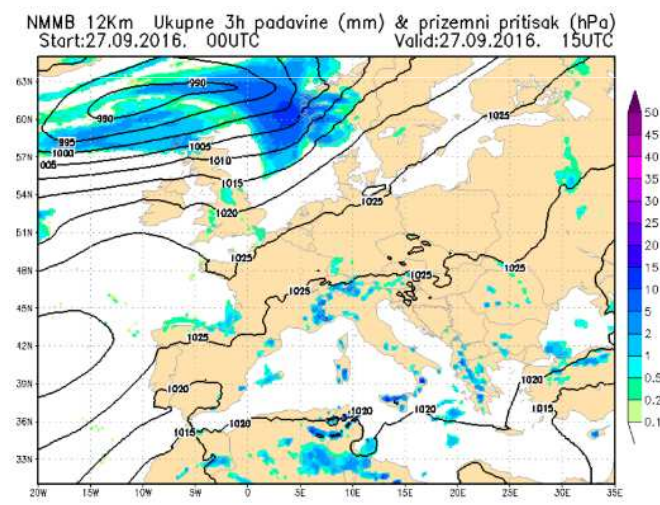
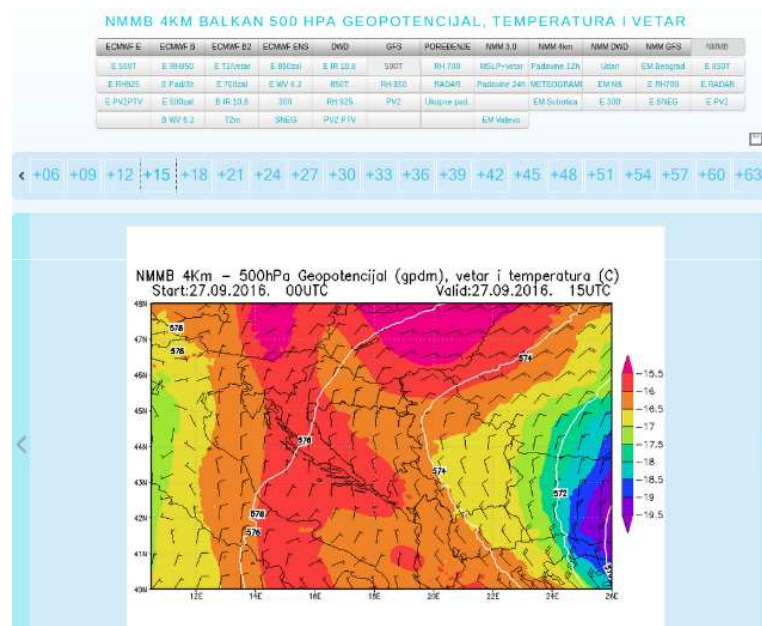


## NMMB at RHMSS

- Operational since:
  - 2011 Global
  - 2013 Regional 12 km
  - 2015 Regional 4 km
- What has been implemented and tested so far in RHMSS:
  - Global NMMB on GFS analysis and IFS analysis
  - Regional model on GFS, IFS, NMMB boundary conditions.
  - Nesting, 2-domains and 3-domains; resolutions from 12km to 1km
  - Different physical options:
    - Radiation: RRTM, GFDL
    - Convection: BMJ, None (< 4km)
    - Microphysics: Ferrier and Thomson
    - Land-sfc: NOAH, LISS



# Republic Hydrometeorological Service of Serbia

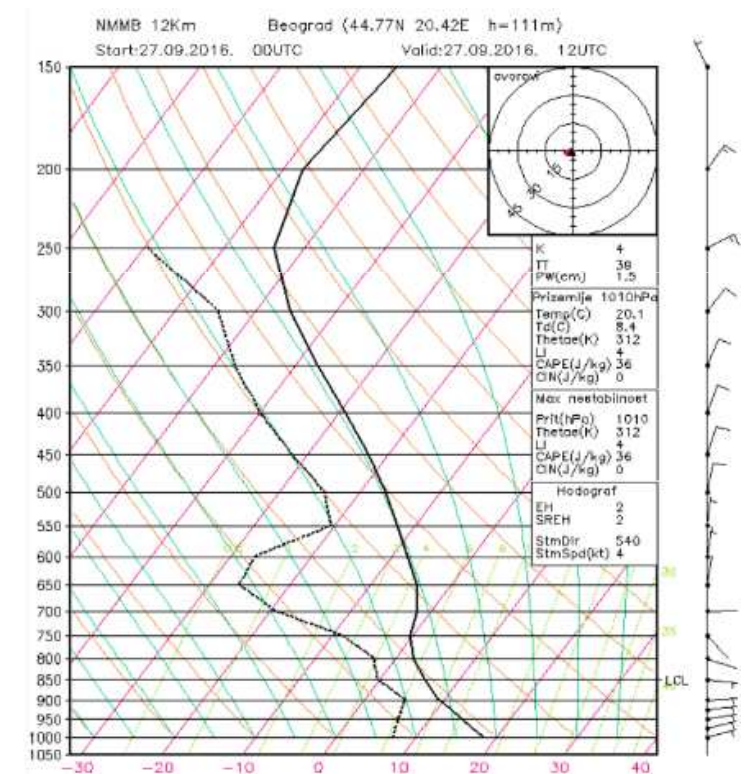


# Republic Hydrometeorological Service of Serbia



## Future plans:

- Further optimization
- NMMB regional running on ECMWF Cray as time critical application
- Development of LETKF-NMMB system and including in operational use

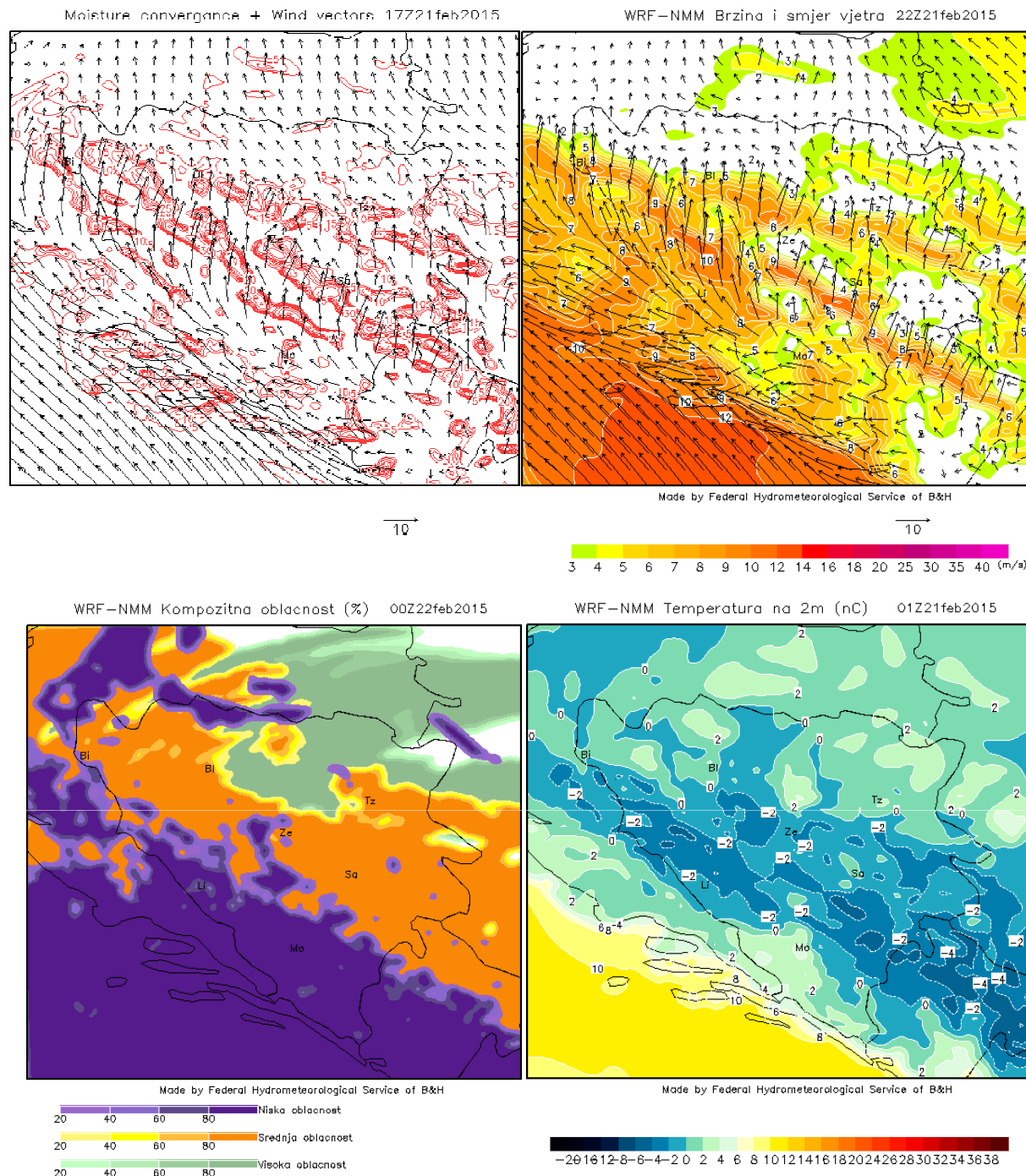




# Federal Hydrometeorological Institute, the Federation of Bosnia and Herzegovina

## WRF-NMM

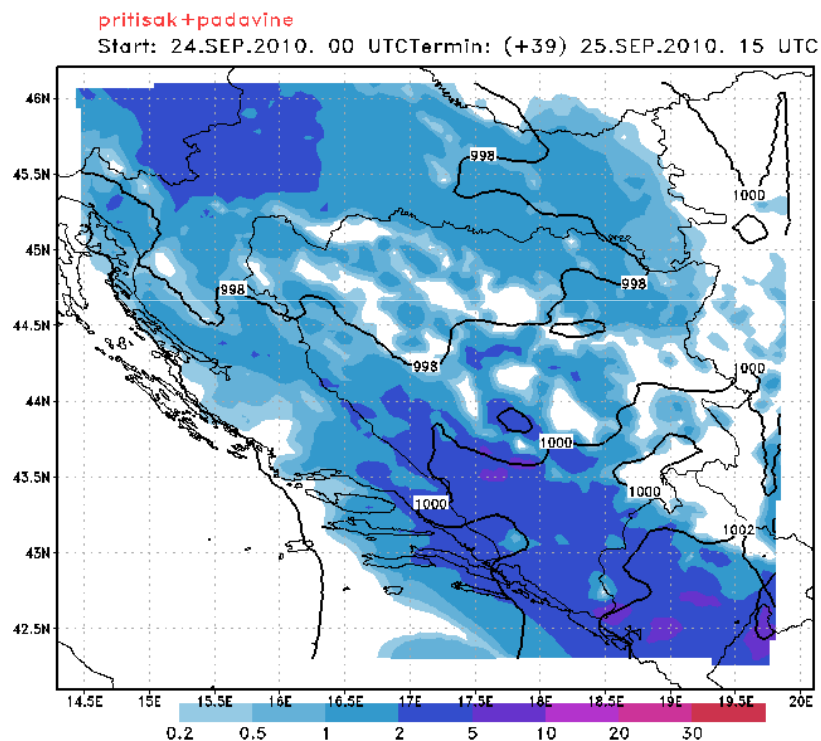
- Input data from NCEP (GFS 0.5 deg)
- 2 and 4 km resolution,
- 45 vertical levels,
- Forecast for the next 96 h
- 1 run daily.



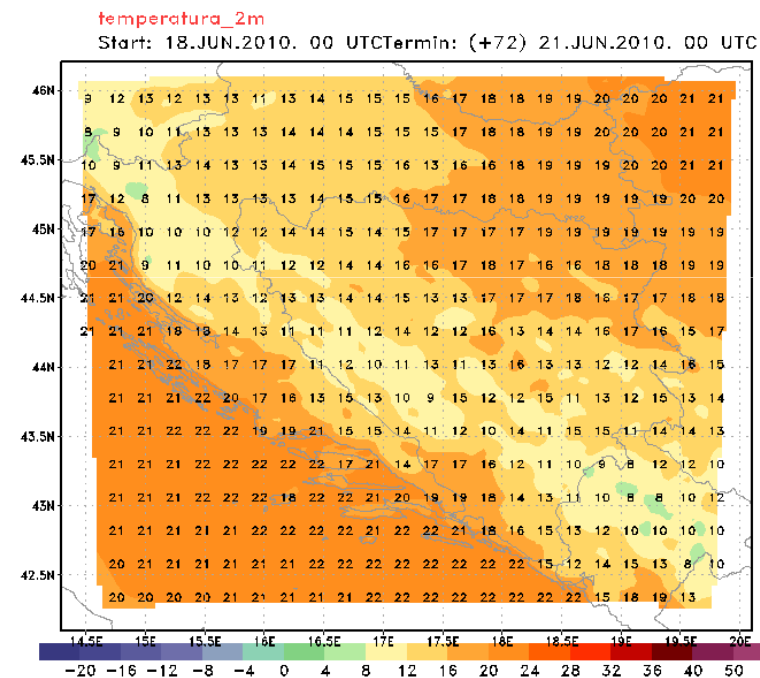
# Republic Hydro Meteorological Service of Republic of Srpska, the Federation of Bosnia and Herzegovina



- short range weather forecast (0-122h), numerical models used for weather prediction :
- WRF-NMM on 12 km and 5 km resolution and ETA model, with 32 km resolution in operational mode



WRF-NMM 5km





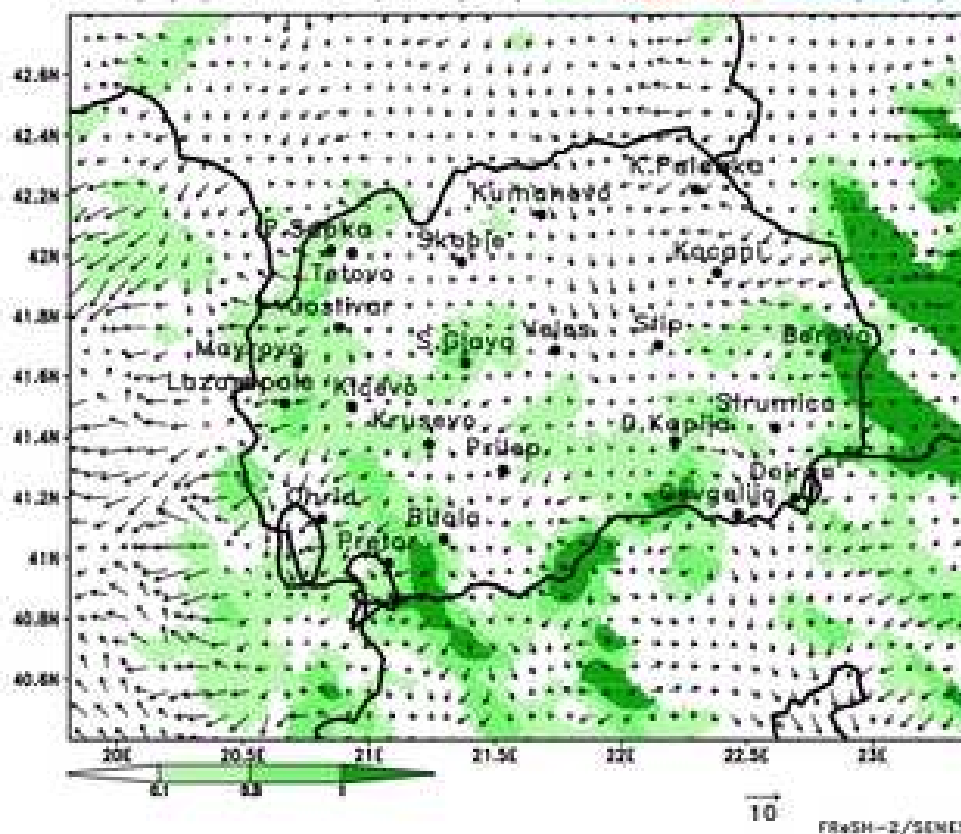
ХИДРОЛОШКИ МОНИТОРИНГ  
HYDROLOGICAL MONITORING  
УПРАВА ЗА ХИДРОМЕТЕОРОЛОШКИ РАБОТИ  
HYDROMETEOROLOGICAL SERVICE-MACEDONIA

ПРОЕКТ: СИСТЕМ ЗА РАНА НАЈАВА НА ПОПЛАВИ ВО СЛИВОТ НА ДРИМ  
PROJECT: FLOOD EARLY WARNING SYSTEM IN THE DRIM CATCHMENT  
ОНЛАЈН ПРЕЗЕНТАЦИЈА НА ПОДАТОЦИ - УХМР&giz  
ONLINE DATA PRESENTATION - HMSM&giz



# Hydrometeorological Service of Macedonia, The Former Yugoslav Republic of Macedonia

NMM fast for Macedonia RUN:22SEP:00Z VALID:22-SEP-15 03:00 UTC  
Wind (m/s) & 1h acc. prec. (mm): Rain, Freez. rain, Snow (cm/h)



NMM forecast with 4km resolution over the country region

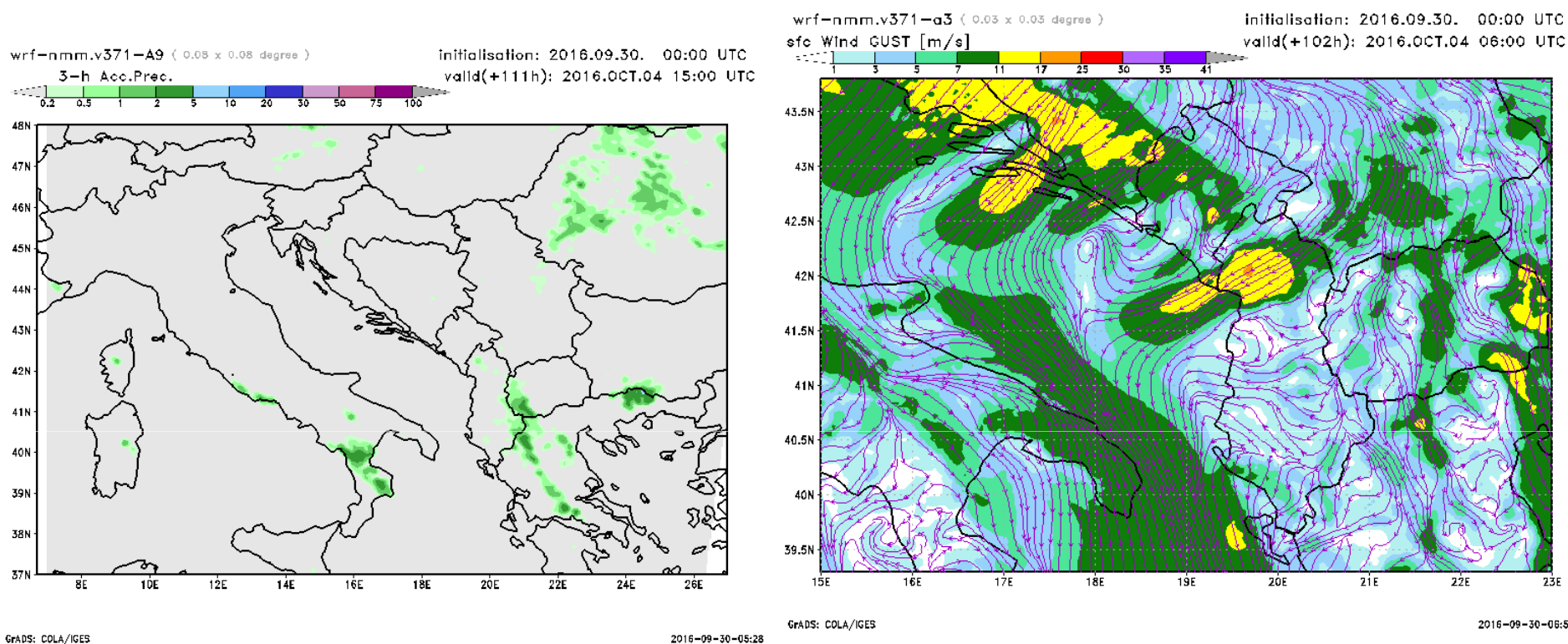


# Montenegro Institute of Hydrometeorology and Seismology

## WRF-NMM with input data from NCEP/Washington

WRFNMM-9.0km:  $dx=dy=0.0833$  degree,  $dt=30s$ ,  $100 \times 170$  grid, 40 vert.levels, 120h forecast

WRFNMM-3.0km:  $dx=dy=0.03$  degree,  $dt=10s$ ,  $110 \times 170$  grid, 40 vert.levels, 120h forecasts



# Montenegro Institute of Hydrometeorology and Seismology

**WRF-NMM v3.8.1 downscale, from WRFNMM 3km with ECMWF input data.**

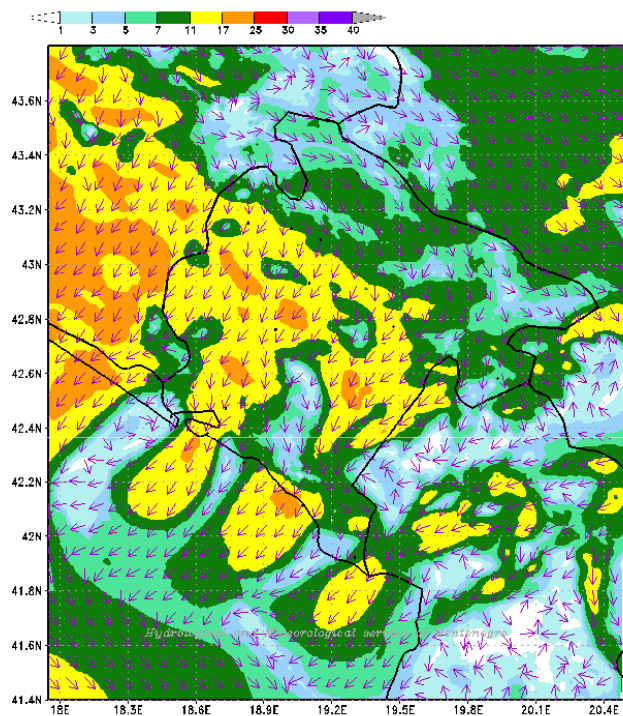
WRFNMM-3.0km:  $dx=dy=0.03$  degree,  $dt=10s$ , 110x170 grid, 40 vert.levels, 144h forecast

WRFNMM-1.0km:  $dx=dy=0.01$  degree,  $dt=3s$ , 100x250 grid, 60 vert.levels, 144h forecast

WRFNMM-0.5km:  $dx=dy=0.005$  degree,  $dt=1s$ , 70x140 grid, 60 vert.levels, 144h forecasts

WRF-NMM\_v3.7.1\_E1  
sfc Wind Gust (m/s)

initialisation: 2016.09.29. 12:00 utc  
valid(+114h): 2016.OCT.04 06:00 utc



GrADS: COLA/IGES

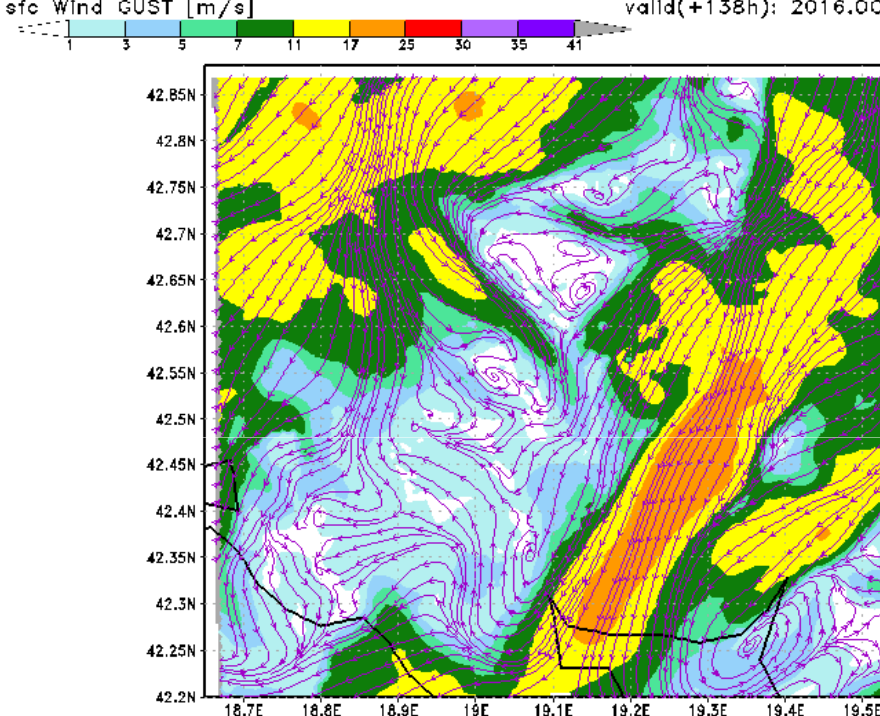
2016-09-30-05:38

WRF-NMM\_v381-e0.5 ( . x . degree )

sfc Wind GUST [m/s]

initialisation: 2016.09.28. 12:00 UTC

valid(+138h): 2016.OCT.04 06:00 UTC



GrADS: COLA/IGES

2016-09-29-09:38