

# JOINT WMO TECHNICAL PROGRESS REPORT ON THE GLOBAL DATA PROCESSING AND FORECASTING SYSTEM AND NUMERICAL WEATHER PREDICTION RESEARCH ACTIVITIES FOR 2007

## Bosnia and Herzegovina/ Federal Hydrometeorological Institute

### 1. Summary of highlights

Started work with numerical models

### 2. Equipment in use

Intel Pentium 3.0GHz, 2GB RAM, 80GB HD, OS LINUX Fedora-Core 5

### 3. Data and Products from GTS in use

- GRIB files (download from NCEP for MM5 and WRF-NMM)
- GRIB files (from DVD for HRM)

### 4. Forecasting system

#### 4.1 System run schedule and forecast ranges

HRM: horizontal resolution 14km, 97X97 grid points, 40 hybrid (pressure- $\sigma$ ) vertical levels, run one time per day.

MM5: horizontal resolution 21km and 7km, 73X73 and 55X55 grid points respectively, 36  $\sigma$  vertical levels, run one time per day.

WRF (NMM core): horizontal resolution 21km and 7km, 74X98 and 50X70 grid points respectively, 26  $\eta$  vertical levels, run one time per day.

#### 4.3 Short-range forecasting system (0-72 hrs)

##### 4.3.1 Data assimilation, objective analysis and initialization

###### 4.3.1.1 In operation

Indicate and boundary conditions retrieved from DVD (for HRM) and downloaded from NCEP (for MM5 and WRF-NMM), no assimilation, no objective analysis

##### 4.3.2 Model

###### 4. In operation

HRM: horizontal resolution 14km, 97X97 grid points, 40 hybrid (pressure-  $\sigma$ ) vertical levels, hydrostatic, model prognostic variable in use: clouds (three levels), precipitation (rain and snow), wind (10m), temperature (2m). All in 2D and three hour output.

MM5: horizontal resolution 21km and 7km, 73X73 and 55X55 grid points respectively, 36  $\sigma$  vertical levels, non-hydrostatic, model prognostic variables in use: clouds (three levels), precipitation (rain), wind (10m), temperature (2m). All in 2D and three hour output.

WRF-NMM: horizontal resolution 21km and 7km, 74X98 and 50X70 grid points respectively, 26  $\eta$  vertical levels, model prognostic variables in use: clouds (three levels), precipitation (rain and snow), wind (10m), temperature (2m, dew point). All in 2D and three hour output.

#### **4.3.4 Operational techniques for application of NWP products**

##### **4.3.4.1 In operation**

*For draw products of integration use grads and RIP. Processes like downloads, start integrations, draw products are automated.*

#### **4. Long range forecasts (LRF) (30 days up to two years)**

##### **4.7.1 In operation**

Monthly climatologists produce prognosis using method of analogously years. This method using data in last two month and comparing with corresponding data in last 120 years. Products of this method are: min and max temperature, days with rain and snow precipitation.

Also climatologists produce three-month prognosis using same method described in the last section. This prognosis is used for description of weather in next three month.

#### **6. Plans for the future (next 4 years)**

##### **6.2 Planned research Activities in NWP, Now-casting and Long-range Forecasting**

###### **6.2.1 Planned Research Activities in NWP**

Enlarging horizontal and vertical resolution, proceed time of forecast