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

## LATVIAN ENVIRONMENT, GEOLOGY AND METEOROLOGY AGENCY

Country: **LATVIA** Centre: **UMRR** Riga

## 1. Summary of highlights

"[Major changes in the data processing and forecasting system during the last year]"

**LEGMA has became cooperative participant to the Nordic Weather Radar Network. Data and products of Latvian Weather Radar has including in the NORDRAD Network.**

**We have made the successful migration of RMDCN in new technology from a Frame Relay to an IPVPN MPLS.**

## 2. Equipment in use

"[information on the major data processing units]"

**Weather Radar System** - Rainbow 5.0 Product Generation Server. 2 servers HP XW 8200 XEON 3.4 GHz.
**TRANSMET** - Messages Switch System for GTS. 2 servers HP ML 370 G4 XEON 3.2GHz and supervision PC.
**IMS** - Integrate Meteorological System for national observations. 2 servers Acer Altos G520 XEON 2.8GHz.
**PSS** - Product Support System for the SMHI/HIRLAM data products. VMS MicroVAX 3400 workstation.
**DWDSAT**- Satellite Receiving System for DWD data and products. P4 2.6GHz.
Weather Radar System - Rainbow 5.0 Product Generation Server. 2 servers HP XW 8200
**RETIM 2000** - Satellite Receiving System for the raw data and aviation products with the WEDIS workstation for visualization. P4 2.3 GHz.
**MEOS MSG - XRUS** - Satellite Receiving System for MSG data and products.
2 servers HP P4 3.2GHz.
**Alice-SC™** - station for reception and processing of the imagery transmitted from NOAA satellites in HRPT. P4 3.2GHz.

## 3. Data and Products from GTS in use

- SYNOP-500 (please modify according to your situation)
- ……
- ……..……

**The daily statistic raw information:**

| | | | |
|---|---|---|---|
| **SYNOP:** | **00/06/12/18** | **UTC** | **2200** |
| | **03/09/15/21** | **UTC** | **1100** |
| **TEMP:** | **00/12** | **UTC** | **75** |
| **06/18** | **UTC** | **30** | |

**The daily statistic of products:**

| | | | |
|---|---|---|---|
| **GRIB (EGRR):** | **00** | **UTC** | **750** |
| | **12** | **UTC** | **500** |

# 4. Forecasting system

## 4.1 System run schedule and forecast ranges

"[general structure of a prognostic system, models in operational use, run schedule, forecast ranges]"

**This is no national NWP model in Latvia. From April 2007 LEGMA has Memorandum of Understanding with the Norwegian Meteorological Institute in order to receive assistance In taking the HIRLAM model into operational use in Latvia as well as the technical implementation of visualization software. From January 2008 LEGMA will become acceding member into the HIRLAM-A programme.**

## 4.2 Medium range forecasting system (4-10 days)

**DWD GME model products (from up to 168h twice per day and up to 48h once per day) in accordance with the Product-Catalogue DWDSAT.**

**Exeter NWP GRIB products from Global atmospheric model (twice per day up to 144 h ahead) in accordance with the Exeter NWP GRIB Products Guide.**

**Limited number of products from ECMWF (up to 240h ahead twice per day).**

### 4.2.1 Data assimilation, objective analysis and initialization

4.2.1.1 In operation
"[information on Data assimilation, objective analysis and initialization]"

4.2.1.2 Research performed in this field
"[Summary of research and development efforts in the area]"

### 4.2.2 Model

4.2.2.1 In operation
"[Model in operational use, *(resolution, number of levels, time range, hydrostatic?, physics used)*] "

4.2.2.2 Research performed in this field
"[Summary of research and development efforts in the area]"

### 4.2.3 Operationally available Numerical Weather Prediction Products

"[brief description of variables which are outputs from the model integration]"

### 4.2.4 Operational techniques for application of NWP products *(MOS, PPM, KF, Expert Systems, etc..)*

4.2.4.1 In operation
"[brief description of automated (formalized) procedures in use for interpretation of NWP ouput]"

4.2.4.2 Research performed in this field
"[Summary of research and development efforts in the area]"

### 4.2.5 Ensemble Prediction System (EPS)

4.2.5.1 In operation
"[Number of runs, initial state perturbation method, perturbation of physics?]" *(Describe also: time range, number of members and number of models used: their resolution, number of levels, main physics used )*

4.2.5.2 Research performed in this field
"[Summary of research and development efforts in the area]"

4.2.5.3 Operationally available EPS Products

"[brief description of variables which are outputs from the EPS"

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

**DWD LME model products (up 72h ahead twice per day) in accordance with the Product-Catalogue DWDSAT.**

**Exeter NWP GRIB products from Regional model (four times per day up to 36h ahead) in accordance with the Exeter NWP GRIB Products Guide.**

**NWP model T85L31 products from Hydrometeorological Centre of Russia (twice per day up to 48h ahead) in accordance with the agreement between Latvian Environment, Geology and Meteorology Agency (LEGMA) and Russian Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet).**

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

4.3.1.1 In operation

"[information on Data assimilation (*if any)*, objective analysis and initialization,]" *(Indicate boundary conditions used)*

4.3.1.2 Research performed in this field

"[Summary of research and development efforts in the area]"

#### 4.3.2 Model

4.3.2.1 In operation

"[Model in operational use, *(domain, resolution, number levels, range, hydrostatic?, physics used)*] "

4.3.2.2 Research performed in this field

"[Summary of research and development efforts in the area]"

#### 4.3.3 Operationally available NWP products

"[brief description of variables which are outputs from the model integration]"

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

4.3.4.1 In operation

"[brief description of automated (formalized) procedures in use for interpretation of NWP ouput]"
*(MOS, PPM, KF, Expert Systems, etc..)*

4.3.4.2 Research performed in this field

"[Summary of research and development efforts in the area]"

#### 4.3.5 Ensemble Prediction System

4.3.5.1 In operation

"[Number of runs, initial state perturbation method, perturbation of physics?]" *(Describe also: time range, number of members and number of models used: their domain, resolution, number of levels, main physics used)*

4.3.5.2 Research performed in this field

"[Summary of research and development efforts in the area]"

4.3.5.3 Operationally available EPS Products

"[brief description of variables which are outputs from the EPS"

4.4 Nowcasting and Very Short-range Forecasting Systems (0-6 hrs)

4.4.1 Nowcasting system
4.4.1.1 In operation
"[information on processes in operational use, as appropriate related to 4.4]"

4.4.1.2 Research performed in this field
"[Summary of research and development efforts in the area]"

4.4.2 Models for Very Short-range Forecasting Systems
4.4.2.1 In operation
"[information on models in operational use, as appropriate related to 4.4]"

4.4.2.2 Research performed in this field
"[Summary of research and development efforts in the area]"

## 4.5 Specialized numerical predictions

[Specialized NP on sea waves, sea ice, tropical cyclones, pollution transport and dispersion, solar ultraviolet (UV) radiation and air quality forecasting etc.]

**Specialized forecasts (on sea waves, sea temperature, and sea ice (for the Central Baltic and Gulf of Riga)) are based on the information listed above.**

### 4.5.1 Assimilation of specific data, analysis and initialization (where applicable)

4.5.1.1 In operation
"[information on the major data processing steps, where applicable]"

4.5.1.2 Research performed in this field
"[Summary of research and development efforts in the area]"

### 4.5.2 Specific Models

4.5.2.1 In operation
"[information on models in operational use, as appropriate related to 4.5]"

4.5.2.2 Research performed in this field
"[Summary of research and development efforts in the area]"

### 4.5.3 Specific products operationally available

"[brief description of variables which are outputs from the model integration]"

## 4.6 Extended range forecasts (ERF) *(10 days to 30 days)*

### 4.6.1 Models

4.6.1.1 In operation
"[information on Models and Ensemble System in operational use, as appropriate related to 4.6]"

4.6.1.2 Research performed in this field
"[Summary of research and development efforts in the area]"

### 4.6.2 Operationally available NWP model and EPS ERF **products**

"[brief description of variables which are outputs from the model integration]"

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

4.7.1 In operation
"[Describe: Models, Coupled? (1 tier, 2 tiers), Ensemble Systems, Methodology and Products]"

4.7.2 Research performed in this field
"[Summary of research and development efforts in the area]"

**4.7.2** Operationally available EPS LRF products
"[brief description of variables which are outputs from the model integration]"

## 5. Verification of prognostic products

**N/A**

5.1 "[annual verification summary to be inserted here]"

5.2 Research performed in this field
"[Summary of research and development efforts in the area]"

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

**Implement software DIANA in forecasters' daily work.**
**Set up computer system for HIRLAM model.**
**Install, configure and run HIRLAM system for daily prognostic calculations for Latvia.**
**Become a member in HIROMB.**
**To join ECMWF in 2008.**

**6.1.1** "[major changes in the Operational DPFS which are expected in the next year]"

**6.1.2** "[major changes in the Operational DPFS which are envisaged within the next 4 years]"

### 6.2 Planned research Activities in NWP, Nowcasting and Long-range Forecasting
"[Summary of planned research and development efforts in NWP, Nowcasting and LRF for the next 4 years]"

**6.2.1** Planned Research Activities in NWP

**6.2.2** Planned Research Activities in Nowcasting

**6.2.3** Planned Research Activities in Long-range Forecasting

## 7. References
"[information on where more detailed descriptions of different components of the DPFS can be found]"
*(Indicate related Internet Web sites also)*