

**Country: Russian Federation**

**Centre: RSMC Novosibirsk**

### **1. Summary of highlights**

1.1. An operational exploitation of the regional atmosphere model for the Western Siberia region (developed by the Siberian Scientific and Research Hydrometeorological Institute) is continued (Sib-SRHMI\*).

1.2. Receiving of the forecasts (in graphical format) using a new version of the regional atmosphere model (50 km resolution developed by the Hydrometcentre of Russia\*\*) adapted to the Western and Central Siberian region has been started. The work on assessment of precipitation forecasts quality using the giving technology was started. **The monitoring of the quality of the sea-level pressure and precipitation forecasts using this model is performed.**

1.3. **The automated forecast technology for frosts and for fire hazard classification has been introduced for the administrative areas of Novosibirsk district. The lead time is up to 5 days (MOS-method, the author – Zdereva M.Ya.).**

1.4. **The new complex for receiving and processing satellite data “UNISCAN-24” has been put into operation.**

1.5. **The work for the implementation of the model WRF for the West-Siberian region has begun.**

### **2. Equipment in use**

2.1. Basic operative technologies remain unchanged since 2005.

2.2. **The new complex for the receiving and processing of satellite data “UNISCAN-24” has been put into operation. Its certification and integration into the global network RADARSAT have been fulfilled.**

### **3. Data and products from GTS in use.**

Observation information (approximate number of reports for 24 h.)

Code	Number
SYNOP	5100
TEMP	1920
PILOT	0
SATEM	5400

Products of:

ECMWF, Reading (GRIB 2.5x2.5°, digital facsimile), Exeter (GRIB 2.5x2.5°), WMC Washington (GRID 5°x5°), WMC Moscow (GRIB 2.5x2.5°, text telegraphic messages, digital facsimile).

### **4. Forecasting system**

Prognostic system consists of the following blocks:

A – initial control, information dissemination, regional objective analysis

B – regional model of the atmosphere

C – system for interpretation of hydrodynamic forecasts (MOS).

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\* – Siberian Scientific-Research Hydrometeorological Institute

\*\* - Hydrometeorological Centre of Russia (Moscow)

#### **4.1. System run schedule and forecast ranges**

Basic initial times of the forecasting system are 00 and 12 UTC. The maximum **period of forecast** is 48 h (regional model output products) and 120 h (statistical interpretation system products (MOS)).

#### **4.2. Medium range forecasting system**

A system of statistical interpretation of the modeling results with the range of forecast **up to** 120 h is in the operational practice.

##### **4.2.3. Operationally available Numerical Weather Prediction (NWP) Products**

Forecast range up to 120 h for points of the region on the basis of the statistical interpretation system (MOS).

##### **4.2.4. Operational techniques for application of NWP products (MOS, PPM, KF, Expert Systems, etc.): medium-range forecast (72 – 240 h.)**

###### **4.2.4.1. In operation**

The system of statistical interpretation of the results of medium range hydrodynamic modeling (MOS) for points of the Western and Central Siberia region.

#### **4.3. Short-range forecasting system**

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

###### **4.3.1.1. In operation**

Objective analysis for the Northern hemisphere using RSMC Exeter's forecast as the first guess fields.

Data assimilation system using 6 h forecasts on hemispheric version of the spectral atmosphere model (HMC of Russia) as the first guess fields.

###### **4.3.1.2. Research performed in this field**

Implementation of a new version of the objective analysis for the Northern Hemisphere on the basis of the algorithms and the software of the Hydrometcentre of Russia.

##### **4.3.2. Model**

###### **4.3.2.1. In operation**

Regional atmosphere model (Sib-SRHMI) for the region of the Western and Central Siberia.

###### **4.3.2.2. Research performed in this field**

Testing of precipitation quality forecasts using the Hydrometcentre of Russia regional atmosphere model is continued (a development of the Hydrometcentre of Russia).

##### **4.3.3. Operationally available NWP products**

Field forecasts with the forecast period up to 48 hours based on the regional model: geopotential heights, horizontal components of wind velocity, temperature and humidity on standard isobaric surfaces, sea level pressure, precipitation.

Levels: 100,150,200,250,300,400,500,700,850,925,1000 hPa.

#### **4.6. Extended range forecasts (10 days to 30 days) (Models, Ensemble, Methodology)**

##### **4.6.1. In operation**

Forecasts with 1-month lead time for the Western and Central Siberian region are developed jointly with the Hydrometcentre of Russia.

An improved method of the long-range forecast of the mean monthly air temperature anomaly for the cold period for the territory of the Western Siberia has been introduced. The method is based on the optimized local-climatic model by Zavalishin N.N.

## **5. Verification of prognostic products**

### **5.1. Annual verification summary**

#### **5.1.1. 500 hPa height**

Forecast range	RMSE (m)
24	<b>23</b>
36	<b>27</b>
48	<b>35</b>
60	<b>45</b>

Abbreviation:

RMSE – root-mean-square error of forecast

## **6. Plans for the future (2008-2011)**

### **6.1. Development of the GDPFS**

#### **6.1.1. Major changes in the operational DPFS which are expected in 2008**

- Mastering central frame computer with performance 0.6 TFLOPS.
- Putting into practice of a new version of the objective analysis.

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

- Development of a new version of the regional model for the Siberian region with range of forecasts up to 72 hours.
- Realization and assessment of forecast quality using semi-Lagrangian regional atmosphere model (of the Hydrometcentre of Russia and the Institute of the Computational Mathematics of the Russian Academy of Science) combined with the Data assimilation system (development of the Hydrometcentre of Russia).