TECHNICAL PROGRESS REPORT
ON THE GLOBAL DATA PROCESSING SYSTEM 2002

Environmental Agency of the Republic of Slovenia

1. SUMMARY OF HIGHLIGHTS

Slovenia is a partner in the international projects ALADIN and RC LACE.
Work on operational implementation of numerical forecast model system started in 1997. ALADIN spectral limited area model has been in use operationally since then, first computed on a workstation and from November 1999 on a cluster of workstations.
Procurement for a new computer system started in May 2002. The system was delivered and installed in October 2002.

2. EQUIPMENT IN USE AT THE CENTER

The operational ALADIN NWP system is running on a 5 node cluster.
The details: Processors: 533 MHz EV5 Alpha, Memory: 128MB each node +128M master node, Network: FastEthernet, Operational system: Linux, MPI message passing library: MPICH.

A new system for NWP was installed at the end of 2002. It is a cluster system based on 14 dual processor nodes.
The details: 28 Intel Xeon 2.4 Ghz processors, 28 GB of memory and 0.5 TB of disk space. Network: gigabit fiber Ethernet. Operational system: Linux + SCore global OS.

3. DATA AND PRODUCTS FROM GTS IN USE

Just a part of observational data available from GTS is used.
> SYNOP, SHIP: around 15000 per day
> TEMP: around 600 per day
> METAR

GRIB data from ECMWF are is received via RMDCN: around 9000 fields per day.
GRIB data from DWD is received via FAX-E satellite dissemination system.

4.DATA INPUT SYSTEM

Fully automated system. Incoming SYNOP, SHIP and TEMP reports are converted into BUFR.

5. QUALITY CONTROL SYSTEM

Syntax coherence and logical controls are performed before sending data to GTS.

6. MONITORING OF THE OBSERVING SYSTEM

Surface and upper air observations are monitored on the national level.

7.FORECASTING SYSTEM

7.1 SYSTEM RUN SCHEDULE

ALADIN limited area model is operationally launched twice a day providing 48 hour forecasts (00 and 12 UTC).

7.2 MEDIUM RANGE FORECASTING SYSTEM (4-10days)

The products from ECMWF and DWD are used.

7.2.4 OPERATIONAL TECHNIQUES FOR APPLICATION OF NWP PRODUCTS

10 days forecasts of deterministic, ensemble prediction and multi-analysis system of ECMWF as well the products from the wave model are in operationally use. The Kalman filter procedure is applied to 2m temperature.
DWD products from Global model are used.

7.3 SHORT-RANGE FORECASTING SYSTEM (0-72)

The ALADIN numerical forecast model is implemented, named ALADIN/SI.
Products of ALADIN/LACE model computed in Prague are also available.

7.3.1 DATA ASSIMILATION, OBJECTIVE ANALYSIS AND INITIALIZATION

ALADIN/SI model is run in dynamical adaptation mode, i.e. without own data assimilation.

7.3.2 MODEL

Characteristics of operational model configuration:
-       72*72 points, with extension zone 80*80 points (elliptic truncation E26x26) on Lambert projection domain (42.3°N/49.6°N- 8.7°E/19.0°E) 11.2 km horizontal resolution,
-       37 vertical model levels,
-       450 s timestep, forecast range 48 hours,
-       initial dynamical adaptation, coupled with ALADIN/LACE every 6 hours.

7.3.3 NUMERICAL WEATHER PREDICTION PRODUCTS

2D-fields: mean sea level pressure, 2m temperature, 2m relative humidity, 10m wind, cloudiness (low, medium, high level, total), precipitation (stratiform / convective, rain / snow), short and long wave radiation at the surface.

3D-fields: geopotential, temperature, relative humidity, wind, vertical velocity, potential temperature, vorticity and divergence on 1000, 975, 950, 925, 900, 850, 800, 700, 600 and 500hPa pressure levels.
Additionally, vertical cross-sections, meteograms, pseudosatelite movie, dynamical adaptation of wind and precipitation to resolution around 2.5 km are computed operationally.

7.3.4 OPERATIONAL TECHNIQUES FOR APPLICATION OF NWP PRODUCTS

Automatic generation of some specific forecasts based on ALADIN/SI outputs for specific users. Kalman filter for 2 m temperature is implemented.

7.4 SPECIALIZED FORECASTS

The model of air pollutant dispersion MEDIA, developed in Meteo-France, is used. A web user interface is used to launch the dispersion model on demand and for the visualization of results.

8.VERIFICATION OF PROGNOSTIC PRODUCTS

ECMWF and ALADIN products are verified and compared operationally. Basic statistical measurements (ME,MAE,RMSE) are computed using SYNOP and TEMP observations leading to objective verification at the synoptic scale.

9.PLANS FOR THE FUTURE

-        transfer of the operational ALADIN system to the new computer system,
-        increase of the model computation domain,
-        use of ARPEGE model as a coupling model,
-        modernization of the GTS receiving system .