

Slovenia
Status of ALADIN operational activities
(March 2021)

Computer system SGI ICE-X

Technical characteristics:

- 61 Intel Sandy Bridge compute nodes (976 cores, E5-2670 @ 2.6 GHz) – each 64 GB of memory,
- 11 Intel Broadwell compute nodes (308 cores)
- 144 Intel Sandy Bridge compute nodes (2304 cores, E5-2670 @ 2.6 GHz) – each 64 GB of memory
- two Infiniband FDR networks
- 500 TB of disk space (HA NFS)
- Robot tape library
- 80 TB beegfs file system

Software:

- OS: SGI ProPack on top of Suse Enterprise Server (12 SP1),
- Open PBS job queuing system (pbspro 19.1.3),
- Intel Fortran compiler v16, openMPI,
- EcFlow suite management.

OPERATIONAL SUITES

SIS4: 4.4 km RUC data assimilation suite:

- cy43t1bf10, ALARO-1vB
- 4.4 km, 87 vertical levels
- 421 x 421 points, (432 x 432 with extension zone), E224x224
- 180 s time step,
- four production runs per day: 00, 06, 12, 18, forecast up to 72 hours, additionally four production runs 03, 09, 15, 21 up to 36 hours
- space consistent coupling, no digital filter initialization,
- lateral boundary conditions from IFS model (time lagged coupling)
- coupling at every 3 hours

- 3 hour assimilation cycle
- B matrix produced by downscaling IFS ensembles – created at ECMWF with Harmonie scripting system
- CANARI surface analysis using surface observations (T and RH at 2 m)
- 3D-Var upper air assimilation
- lateral boundary conditions from IFS (time lagged coupling for 03, 09, 15, 21)
- coupling every hour
- observations: OPLACE data (SYNOP, AMDAR, AMV, HR-AMV, TEMP, AMSU, MHS, SEVIRI, IASI, ASCAT, OSCAT, MUAC EHS, Mode-S MRAR SI/CZ) and local observations (SYNOP)

SIS4ar: 4.4 km coupling with ARPEGE

- analysis from SIS4
 - lateral boundary conditions from ARPEGE model
 - four production runs per day: 00, 06, 12, 18, forecast up to 72 (60) hours
 - the rest is the same as in SIS4 production run
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- OBSmon (replacement for LACE observational monitoring system) is installed and working

- INCA analysis and nowcasting system is operational under ecFlow
 - temperature, humidity, wind and several convective indices are updated hourly
 - precipitation type, rain and snow rate, cloudiness products are updated every half an hour
 - INCA2 precipitation analysis updated every 10 minutes
 - INCA2 shortwave radiation analysis updated hourly
- CROCUS model (from SURFEX)
 - daily runs on 3 domains (one hourly analysis, forecast once per day)
 - snow cover analysis with the inputs (precipitation, radiation) from ALADIN and INCA
- LAEF, A-LAEF
 - daily transfer of grib files from ECMWF
 - visualization in Visual Weather (EPSgram, each member)
 - precipitation and temperature data from each member are used as input data for running the flood forecasting system simulations on river basins (not yet for A-LAEF)
- Operational applications linked to ALADIN output
 - hydrological forecast for 241 river catchments in Slovenia
 - Ocean circulation model (NEMO), Wave model (WAM)
 - CAMx photochemical dispersion model

The computer system and operational suite is controlled by NAGIOS supervision system. All operational suites are running inside ecFlow workload manager (ecFlow/5.3.1).

Verification tools:

- Obsmon - installed and working, but executed on 1 cpu and slow
- HARP - under preparation for operational use
- HIRLAM Monitor - observation data set extended with local automatic surface stations from Austria, NE Italy and Slovenia

PRE-OPERATIONAL SUITES

SEE25 : 2.5 km SEE-MHEWS suite:

- @ECMWF (cca/ccb)
- regular daily production since November 2020
- cy43t1bf10, ALARO-1vB, non-hydrostatic
- 2.5 km, 87 vertical levels
- 1429 x 1141 points, (1440 x 1152 with extension zone), E719x575
- 90 s time step,
- two production runs per day: 00, 12 forecast up to 72 hours
- space consistent coupling, no digital filter initialization,
- lateral boundary conditions from IFS model
- coupling at every 3 hours
- 3 hour assimilation cycle
- B matrix produced by downscaling IFS ensembles – created at ECMWF with Harmonie scripting system
- CANARI surface analysis using surface observations (T and RH at 2 m)
- 3D-Var upper air assimilation
- lateral boundary conditions from IFS (00 an 12 run)
- coupling every hour
- observations: OPLACE preprocessing system (same as in aosruc04ec)

NWCRUC : 1.3 km RUC data assimilation suite:

- cy43t1bf10, ALARO-1vB, non-hydrostatic
- 1.3 km, 87 vertical levels
- 589 x 589 points, (600 x 600 with extension zone), E299x299
- 60 s time step,

- space consistent coupling, no digital filter initialization,
- lateral boundary conditions from IFS model
- coupling at every hour
- production run every hour up to 36 hours (plan)

- 1 hour assimilation cycle
- B matrix produced by downscaling IFS ensembles – created at ECMWF with Harmonie scripting system
- CANARI surface analysis using surface observations (T and RH at 2 m)
- 3D-Var upper air assimilation
- observations: same as in aosruc04ec, radar reflectivity data

MILESTONES

February, May 2020

installation and testing the new server (144 nodes)

May, June 2020

migration of operational suites to the new server with upgraded software

- intel_fc/16.2, ecCodes/2.16.0_intel, mpt/2.13, hdf5/1.10.6-intel, openmpi/4.0.3-intel, ecFlow/5.3.1
- only MPI (before openMP and MPI combination) used in the 001 configuration

10 September 2020

updates in the analysis

- use of OSCAT data

15 February 2021

updates in the analysis

- reorganization of steps in assimilation (surface analysis as input to 3D-Var)
- use of ODB_IO_METHOD 4 throughout the assimilation step
- passive assimilation of E-GVAP ZTD data