Slovenia
Status of ALADIN operational activities
(September 2019)

Computer system SGI ICE-X

Technical characteristics:
- 61 compute nodes installed in two racks, every compute node has 64 GB of memory and 2 eight core Sandy Bridge processors (E5-2670 @ 2.6 GHz) (976 cores)
- 11 Intel Broadwell compute nodes (308 cores)
- two infiniband FDR networks
- 500 TB of disk space (HA NFS)
- Robot tape library

Software:
- queueing system: Altair PBS Pro 13.4
- intel compiler 16.2, SGI mpt 2.13

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)
- 3DVAR 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, TEMP, ASCAT, AMSU, MHS, SEVIRI, Mode-S EHS, Mode-S MRAR si and cz, HRWIND AMU, IASI 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

- OBSmon (replacement for LACE observational monitoring system) is installed

- 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 during winter period
  - snow cover analysis with the inputs (precipitation, radiation) from ALADIN and INCA

- 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

- Operational applications linked to ALADIN output
  - BOBER 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/4.14.0).

MILESTONES

2 March 2018
      additional observations used in assimilation:
           - Mode-S EHS, ASCAT Coastal, HRWIND AMU, IASI

4 June 2019
      upgrade of the operational suites
           - cy43t2bf10
           - few updates in physics package ALARO-1vB (modifications in shallow convection, exponential random cloud overlaps in radiation and cloud diagnostics)
           - intel_fc/16.2 ecCodes/2.7.0_intel mpt/2.13 hdf5/1.8.15-patch1-intel
           - combination openMP and MPI used in the 001 configuration

5 September 2019
      Mode-S MRAR from CZ are used