Steven CALUWAERTS, Lesley DE CRUZ, Alex DECKMYN, Idir DEHMOUS, Daan DEGRAUWE, François DUCHENE, Luc GERARD, Rafiq HAMDI, Denis HAUMONT, Geert SMET, Piet TERMONIA, Joris VAN DEN BERGH, Michiel VAN GINDERACHTER, Thomas VERGAUWEN

**Royal Meteorological Institute, Brussels, Belgium**

The operational ALADIN-Belgium model

1. Operational runs at ECMWF:

- ATOS tc2 application
- NodeRunner scripting

2. Model version: cy43t2

- 4 km resolution 432x432x87L to +60h hourly coupling to Arpège downscaling model
- 1.3 km resolution 600x600x87L to +48h hourly coupling to ECMWF Surface assimilation
  - **Alaro** (ISBA, NH)
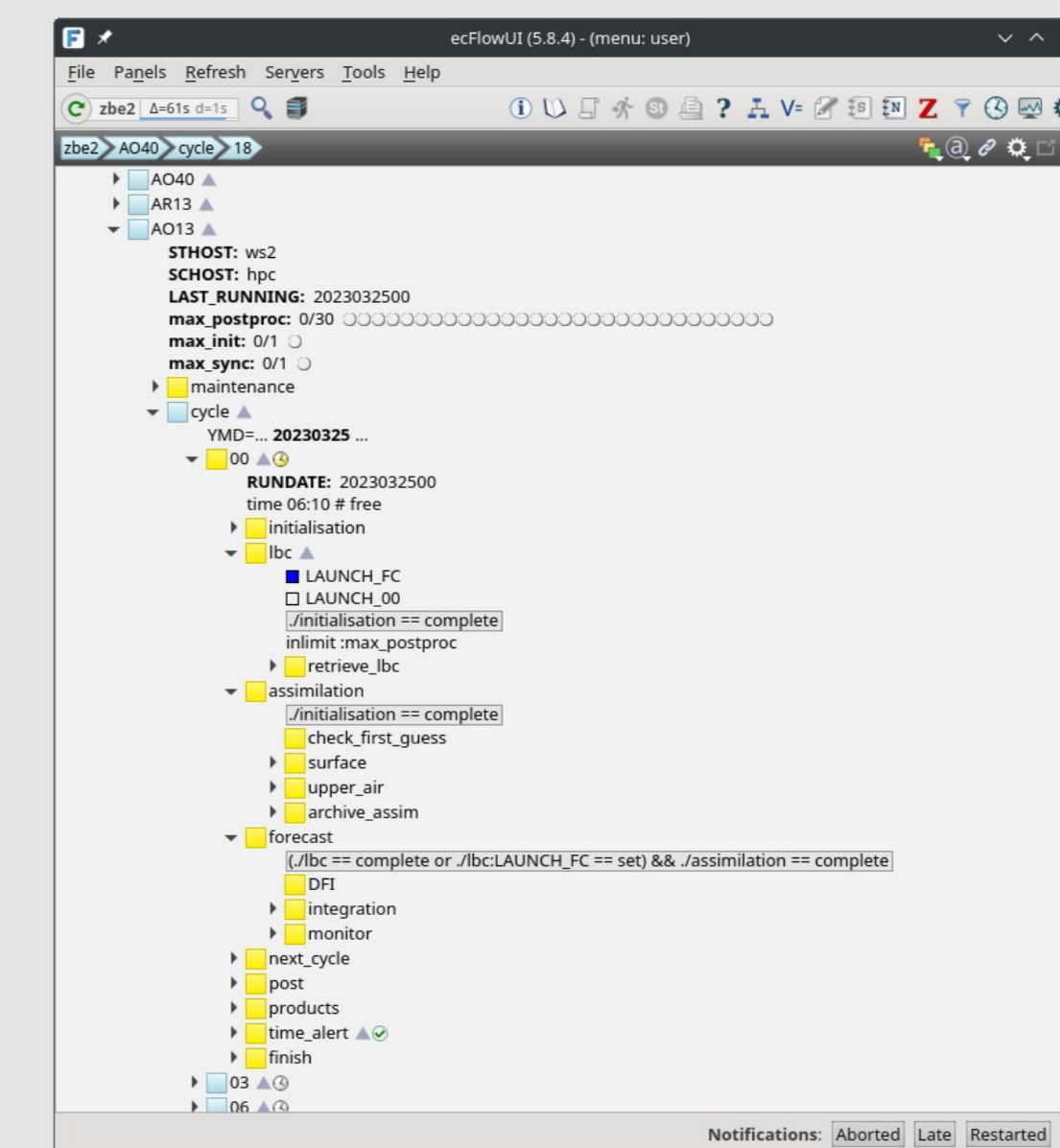 - **Arome**
- model runs use 30+1 nodes.
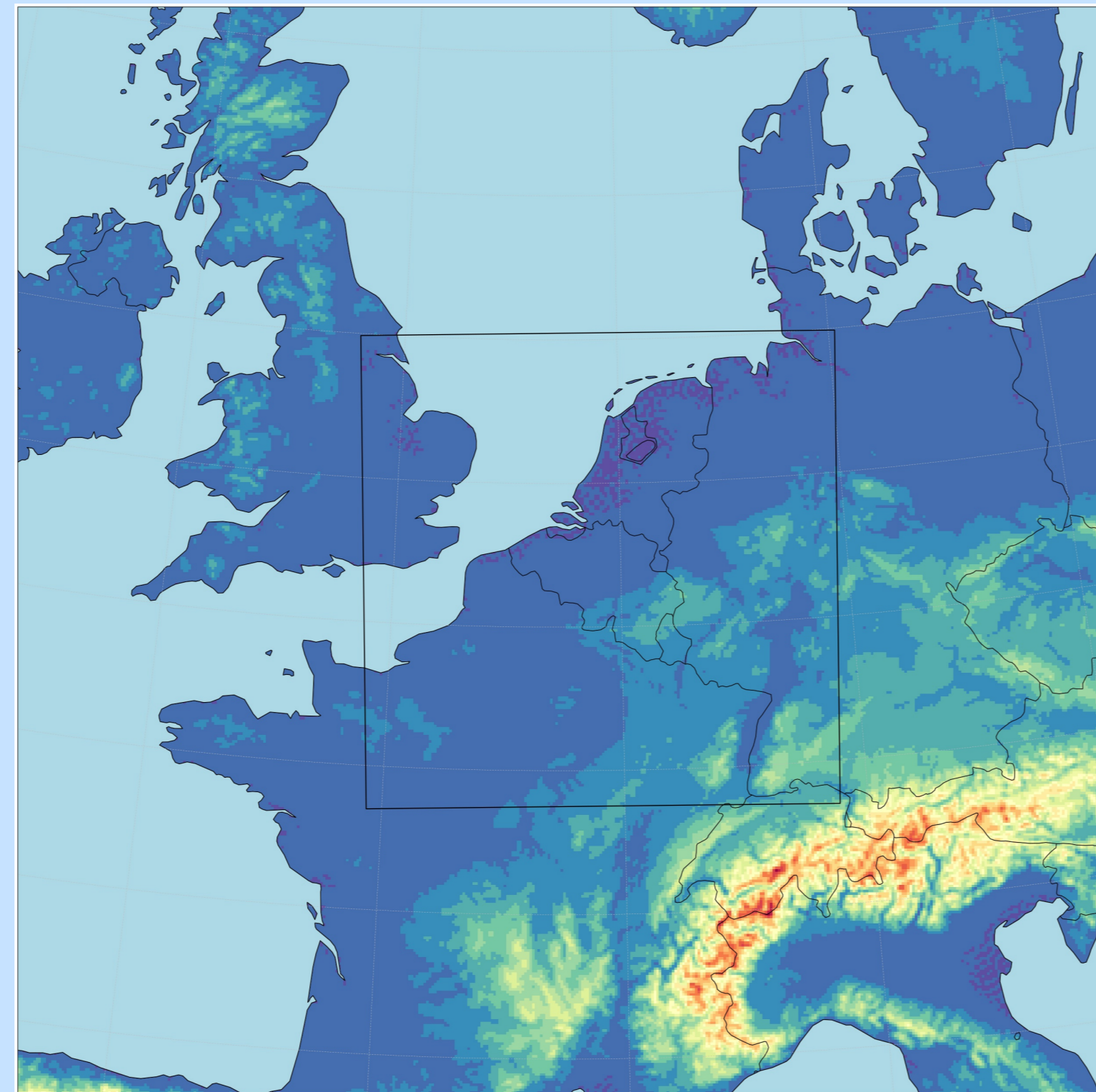
3. Local HPC runs

- The RMI SGI is now 9 years old and showing it.
- Problems with support
- Still running daily forecasts as backup, coupled to Arpège
- Possible "mini-EPS" with ECMWF runs (different coupling!)
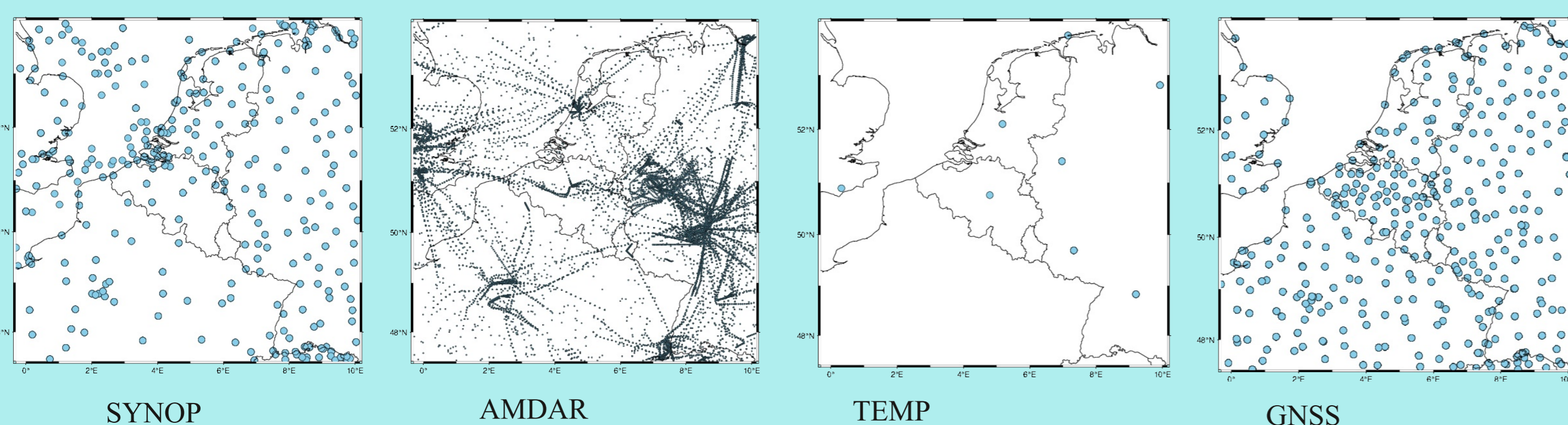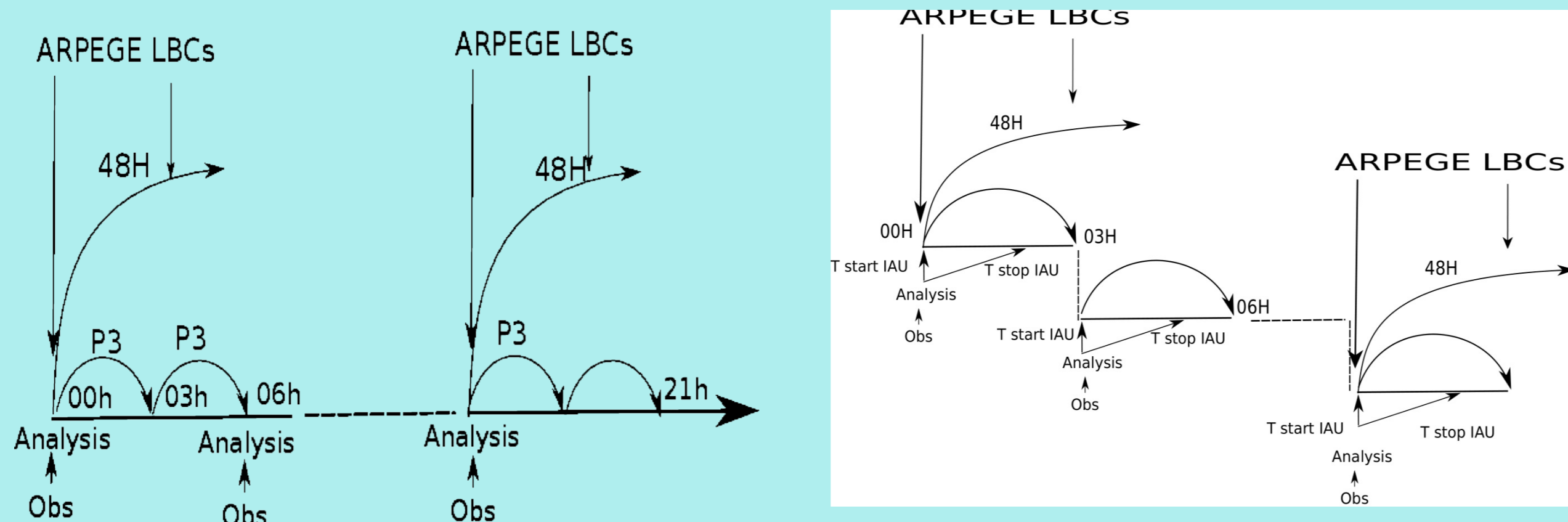
Data Assimilation activities at RMI

Idir Dehmous

Experimental AROME 3D-Var RUC including assimilation of GNSS data

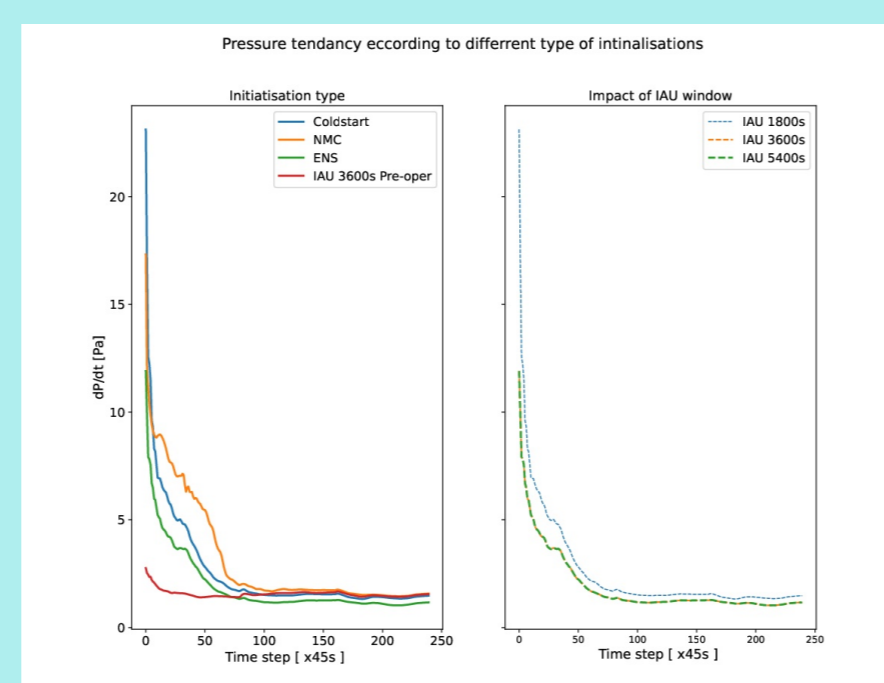- It uses 4 Observations types (SYNOP, AMDAR, TEMP and GNSS)

SYNOP   AMDAR   TEMP   GNSS

- The analysis is performed every 3 hours using CANARI in surface and 3DVar in upper air
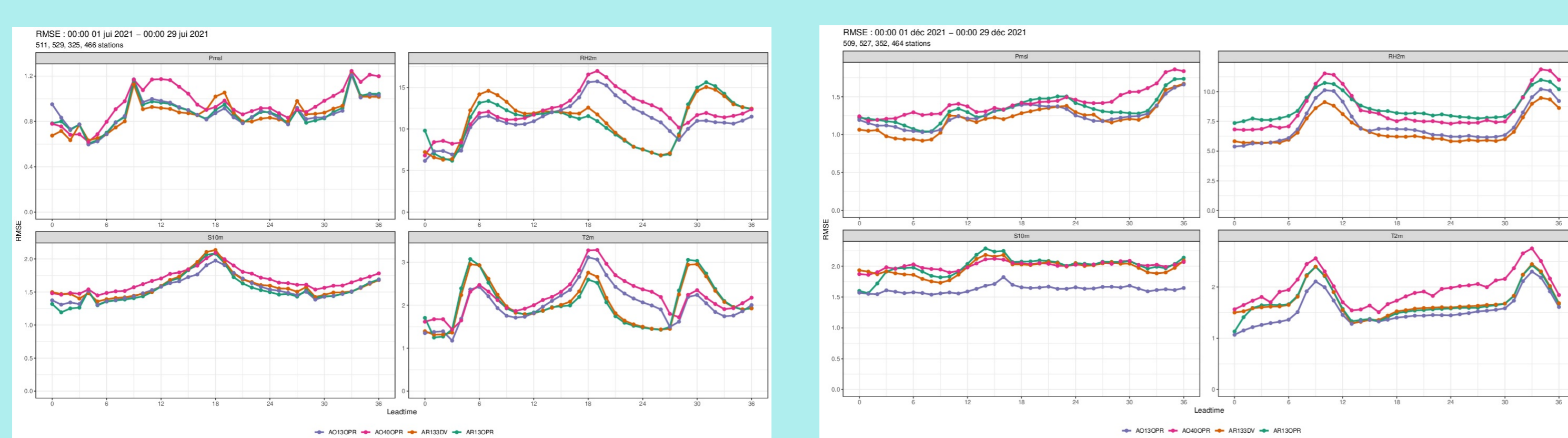

- On the top of 3DVar , an Incremental Analysis Update has been added for filtering pupose

ECHKEVO diagnostic comparing initialisation strategies

Some scores:

OUTLOOK:
- increase the assimilation to 1-hourly cycle
- add assimilation of RADAR: reflectivities and radial wind
- move to e-suite by this summer

Porting operational runs to ATOS

Alex Deckmyn

The three suites are implemented using the **NodeRunner** script system developed at RMI. This is a relatively simple and basic system based on ecFlow. The python code creates a suite based on a single configuration file. The task scripts themselves are bash.

PyODB: a python - ODB interface

Idir Dehmous

A new python package was developped using C/Python API containing functions to allow opening and a direct access to ODB1 tables (CCMA and ECMA).

- Avoid the IFS/ARPEGE code compilation
- Reduce the Input/Output processes and the file formats conversions
- Direct execution of the SQL queries directly from python (Embedding)
- Conversion from ODB1 to ODB2
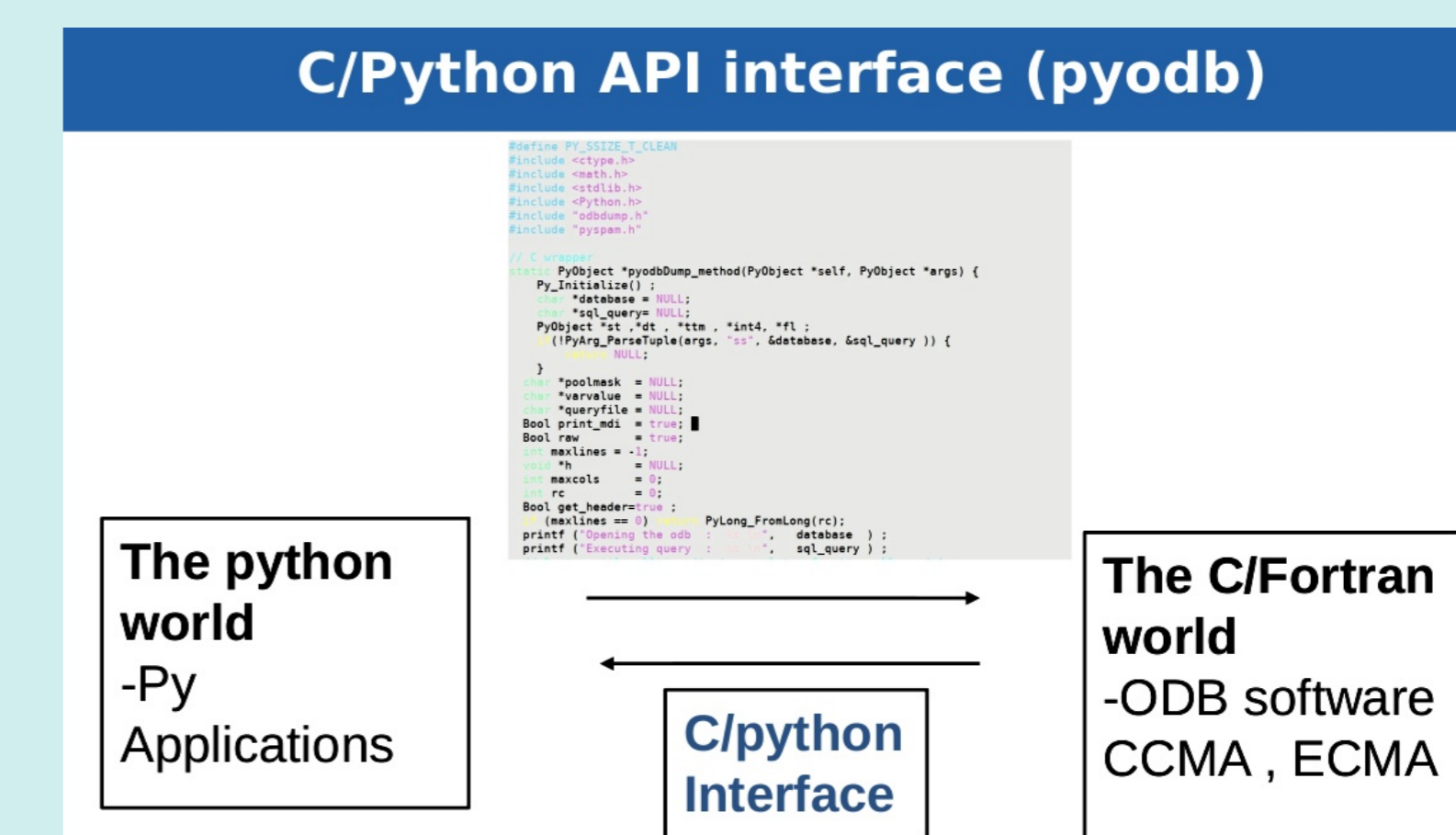
Current limitations:
- not completely stable yet.
- Not yet thread-safe.
- Rather slow for large ODB files (requires parallellisation).

Adaption of ACCORD codes to GPU's

Daan Degrauwe & Denis Haumont

- Collaboration with other ACCORD partners in DEODE project
- ACRANEB2 radiation scheme and spectral transforms have been ported to GPU's in standalone-mode
- Main challenge is to increase the flexibility of the code such that some parts can run on GPU's while other parts remain on CPU
- Concrete target during the first phase of DEODE: have an ALARO configuration with ACRANEB2 radiation and spectral transforms running on AMD GPU's on the LUMI HPC. LUMI is, thanks to the inclusion of GPU's, currently the most powerful HPC in Europe.