A status update from system side

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ALADIN 23nd WS - HIRLAM ASM
Reykjavik
15-19th April 2013

Content

- **HIRLAM**
  - Short update

- **HARMONIE**
  - Different real time setups
  - Changes since last year
  - Present and future cycles

- **RCR**

- **TRAINING**

HIRLAM 7.4, released on 9th of March 2012
The very last HIRLAM release! (?)

Post 7.4 updates
- Hybrid assimilation (Nils & Jelena)
- Flake updates
- ATOVS decoding corrections
- Radiation flux output
- C2a porting
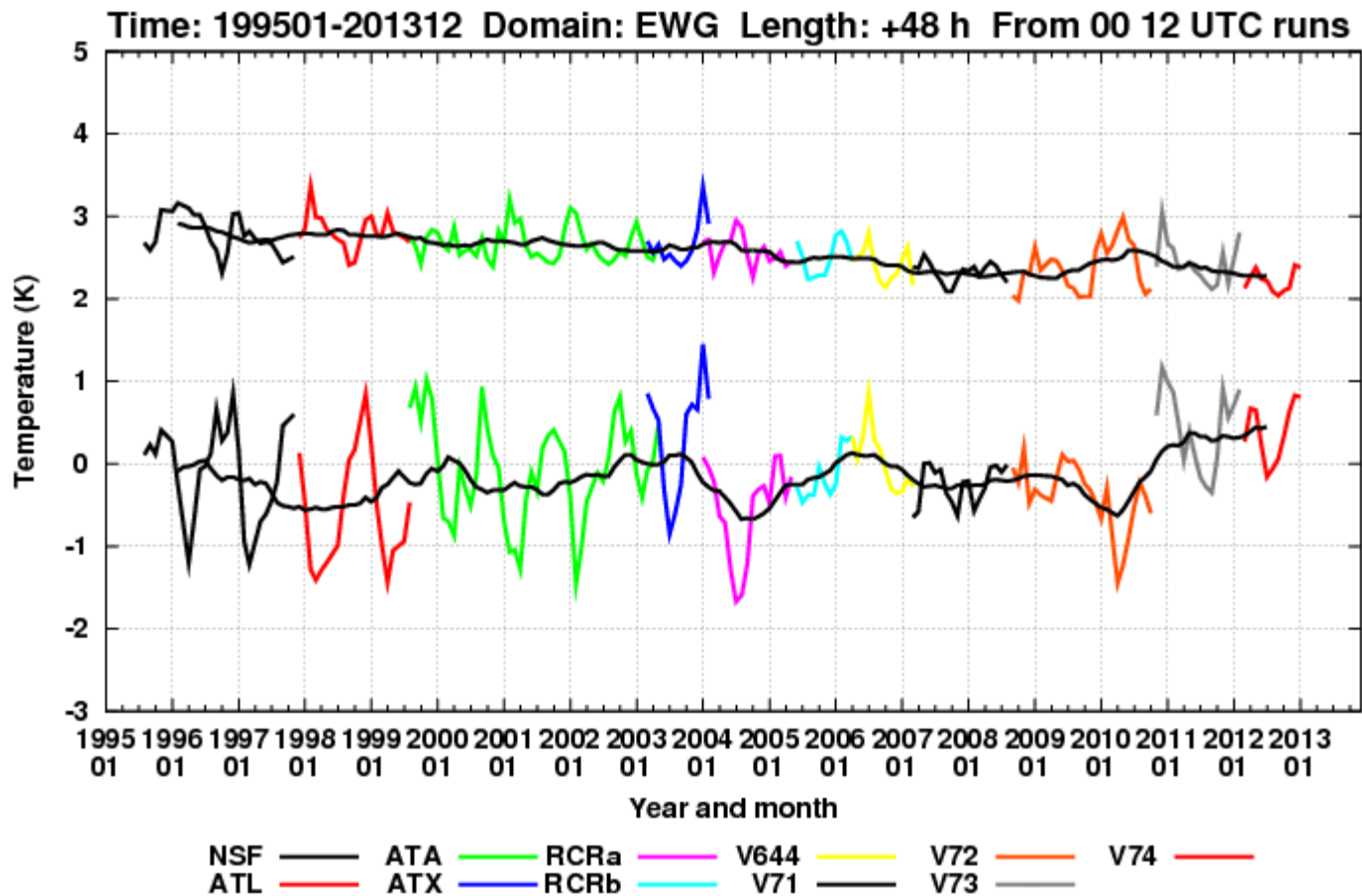 - Problems with hdf5/netcdf libraries
- ECMWF 137 level adaptation

https://hirlam.org/trac/wiki/ECMWF-137lvl

Operational changes

- **HIRLAM still maintained at all services as the main model and/or the large scale alternative**
  https://hirlam.org/trac/wiki/HirlamInventory/Operational
    - Version from 7.1 – 7.4
    - Still some changes planned but no version updates
- **The general opinion is that HIRLAM is performing very well on T2M. Especially during wintertime.**

RCR statistics T2M
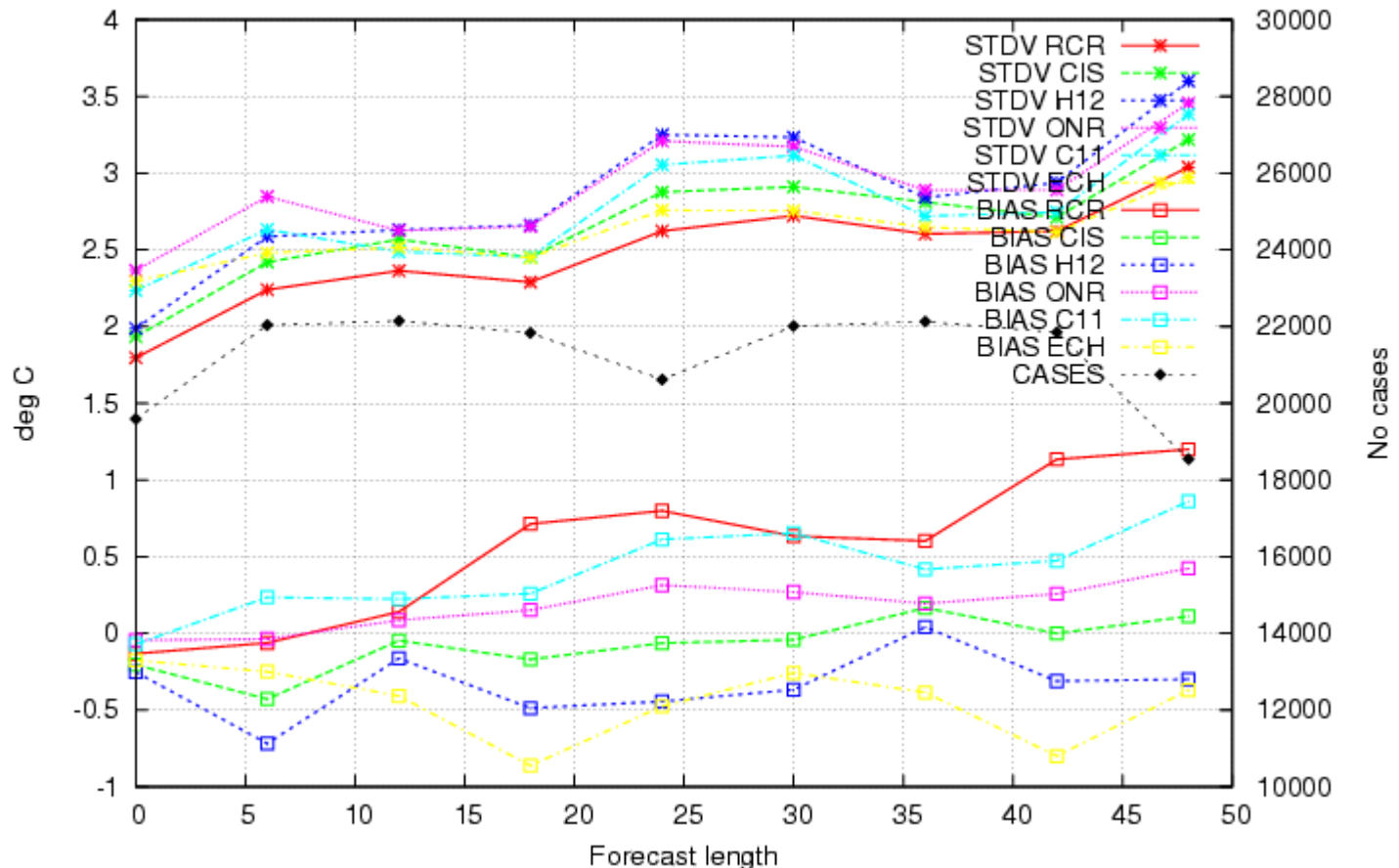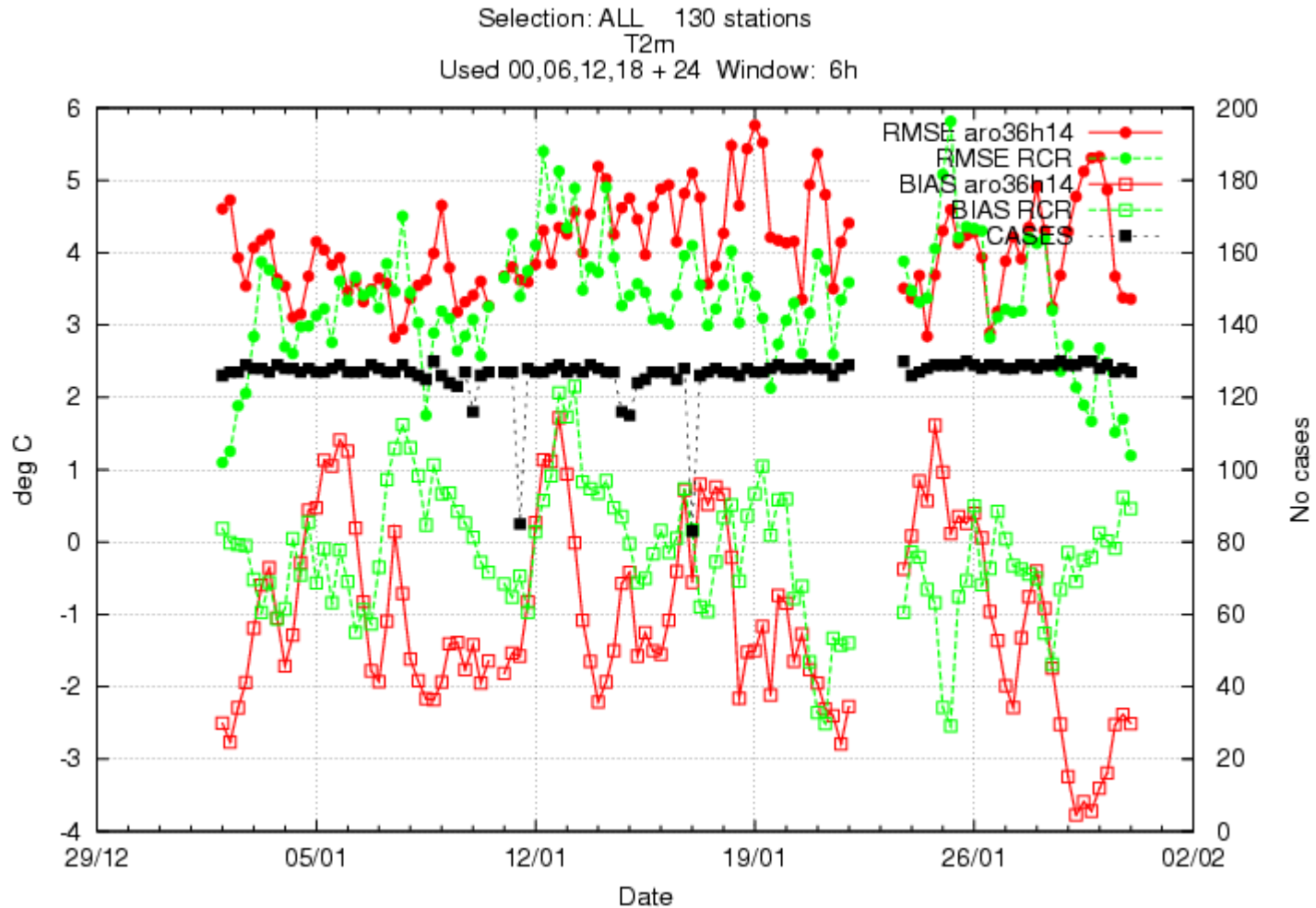

Monthly bias and rms of 2 metre temperature

Time: 199501-201312 Domain: EWG Length: +48 h From 00 12 UTC runs

RCR statistics T2M

RCR

ECMWF

HIRLAM RCR (green) HARMONIE 36h1.4 (red)

Selection: ALL   130 stations
T2m
Used 00,06,12,18 + 24 Window: 6h

Harmonie developments since last year:

- Harmonie-37h1.1 and Harmonie-37h1.2
  released
  https://hirlam.org/trac/wiki/Harmonie_37h1

- Work on Harmonie-38h1 started
  https://hirlam.org/trac/wiki/Harmonie_38h1/

(Semi)-operational HARMONIE 2013

AROME 2.5km, Surface assimilation CANARI+OIMAIN,
ECMWF LBC, 6h cycling

Domain	Cycle	Size	DA	Misc
AEMET	37h1.2	600x576x65	Blending	
DMI-DKA37	37h1.2	800x600x65	3DVAR	3h cy
FMI-Finland	36h1.4.bf1	300x600x65	3DVAR	
KNMI-36h14	36h1.4.bf1	800x800xMF60	3DVAR	3h cy
LHMS-Lithuania	37h1.2	384x400x65	Blending	
MetEi-Ireland25	37h1.1	540x500x65	Blending	
Met.no-Norway	37h1.1	750x950x65	Blending	
SMHI-MetCoOp	37h1.1	750x950x65	3DVAR	
IMO-ICeland	37h1.2	300x240x65	Blending	

Operational HARMONIE (AROME) DOMAINS
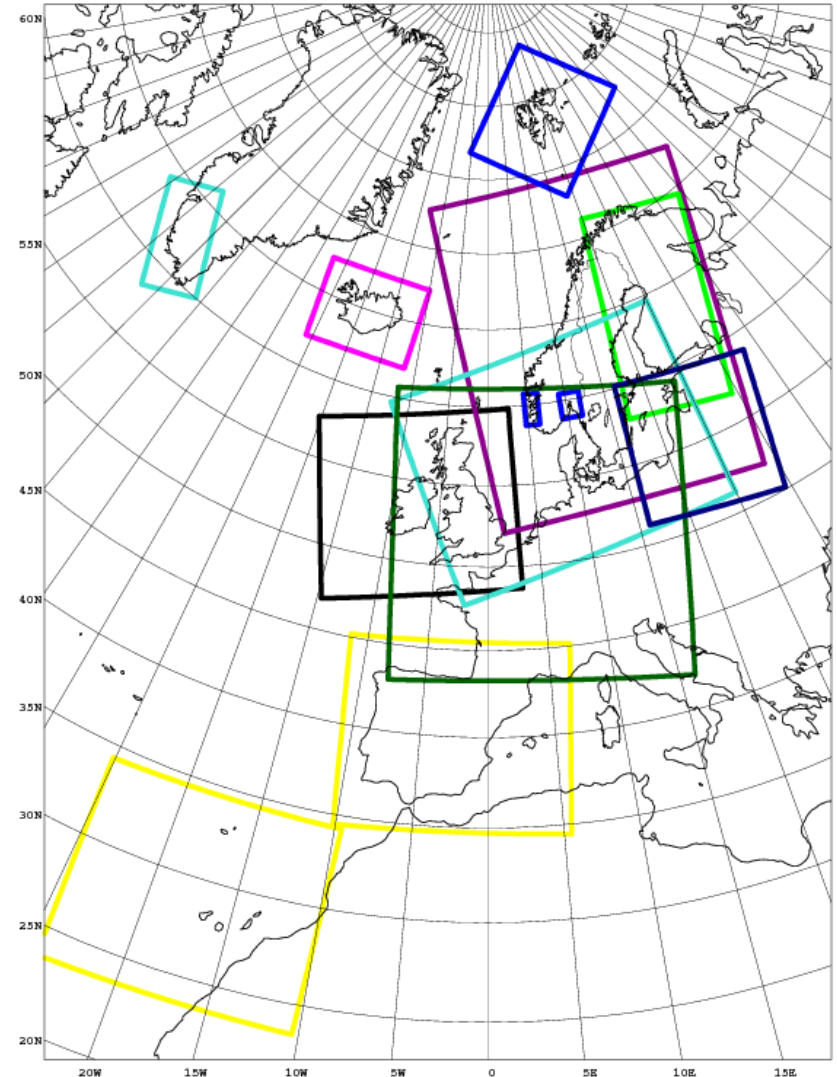
AEMET
DMI
FMI
Met Eirann
met.no
MetCoOp
IMO
LHMS
SMHI
KNMI

Expected features of HARMONIE cy38h1.1

Based on cy38t1main + the 2 bugfix versions +
HIRLAM local developments

Upper air physics

○ Improved statistical cloud scheme

○ Use different cloud droplet number concentration depending on

land/sea/town

○ ALARO physics updates

Surface physics

○ SURFEX V7.2

○ ECOCLIMAP II physiography

○ New sand and clay climatologies

Assimilation

○ 3h cycling

○ Assimilation of ATOVS

○ RTTOV V10

Dynamics, coupling

○ Application of boundary conditions in spectral space

**Diagnostics, postprocessing, misc**

○ Extended list of postprocessing variables

○ More monitoring plots

○ New SURFEX grib1 tables

Technical

○ Optional output of SURFEX files in FA format.

○ Optional IO-server.

○ Optimizations of CANARI

Example of new diagnostics plots
Produced on the fly with a generated WebgraF interface

Spinup properties

Surface assimilation increments

CPU usage
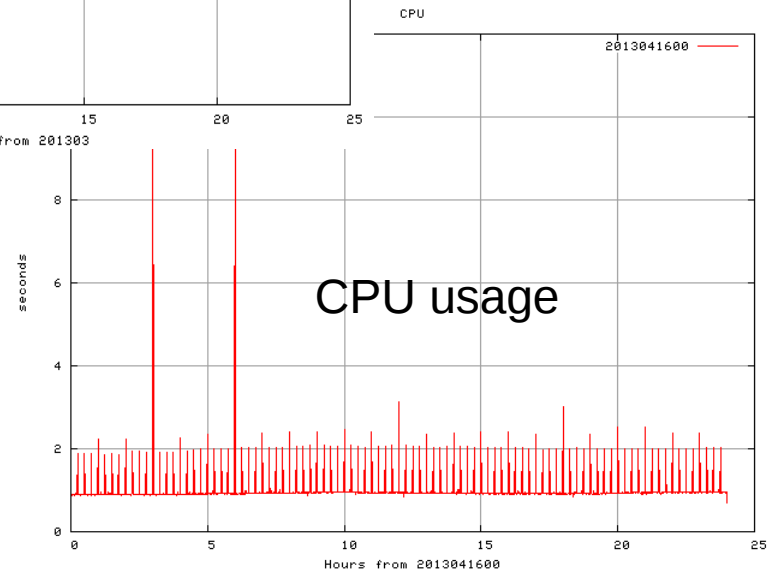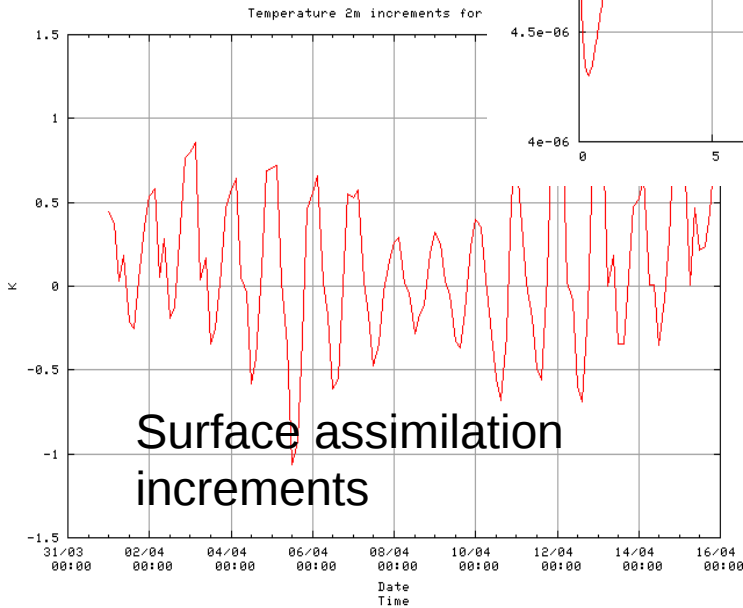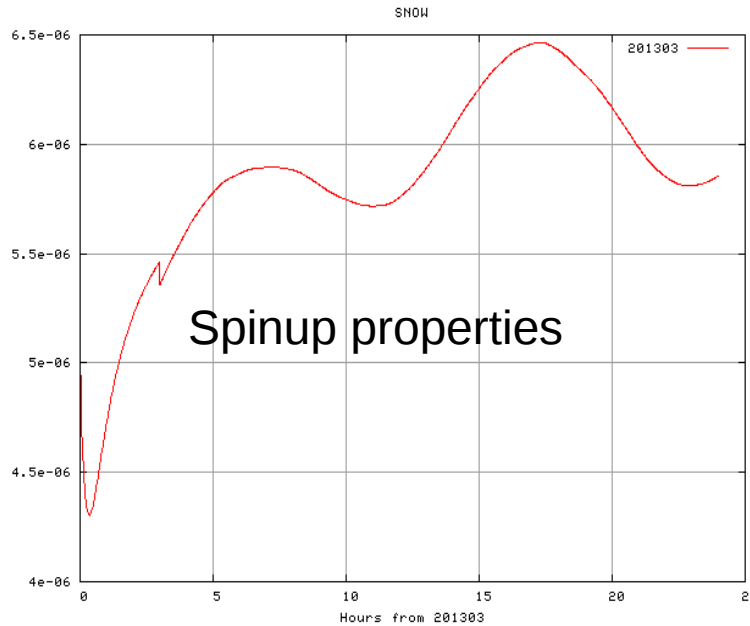
Status of HARMONIE cy38h1

Running technically on several platforms. Evaluation ongoing at ECMWF

Outstanding (known) problems

- Assimilation works but we have spurious occasions of negative q (solved in MF e-suite!)
- Cold winter time bias in T2M in some areas
- Inline fullpos leaks memory (at least on c2a)
- EDMFM not reproducible on large domains

TODO's

- ALARO0+SURFEX not tested yet (the solution is probably in this room)
- Radar changes from cy37 not included yet
- ATOVS (varbc,bator) changes from cy37h1 not included
- ...

HARMONIE-38h1.1 is targeted for September 2013 and will be the first HARMONIE-RCR cycle

HIRLAM RCR
(Regular Cycle with the Reference)

- Large variety of version in different countries
=> Create a reference used operationally
- FMI became RCR centre in 2004
    - More well tested version
    - Better meteorological quality
    - Version convergence
- Some drawbacks
    - Limitations on what FMI could change themselves
    - Limitations on system configuration

HARMONIE RCR
(Regular Cycle with the Reference)

- **How to translate this to HARMONIE?**
  - – No reference domain
  - – How long comittment?
  - – One or more centres?
  - – What constraints?
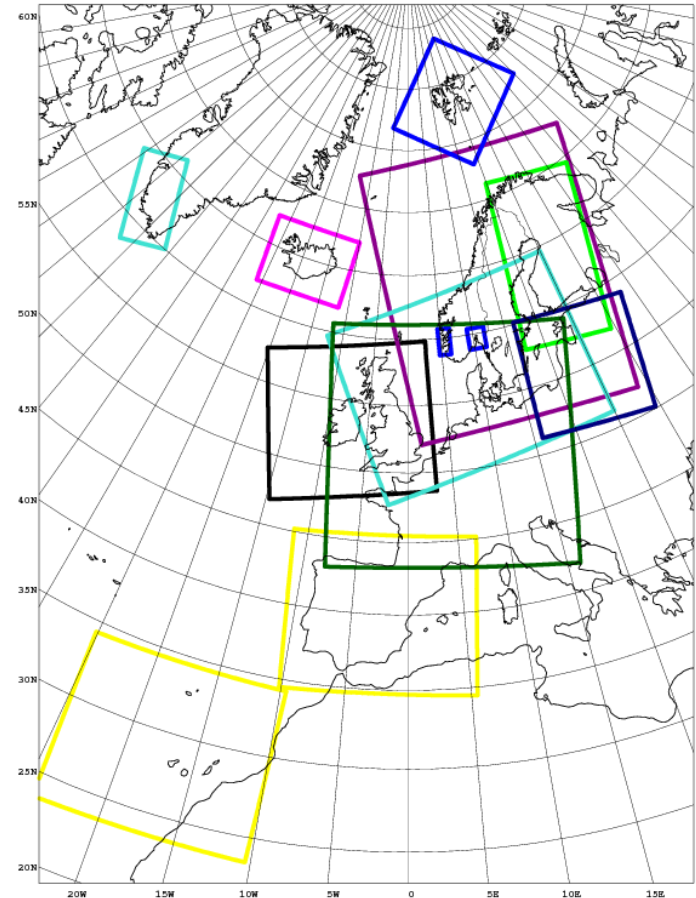
HARMONIE RCR
(Regular Cycle with the Reference)

- Call for new RCR centres for every QA cycle.
  - Shorten the way between research and operations
- First call for cy38h1
  - AROME, 2.5km 65lvl on a reasonable domain, 3h cy, 3DVAR, SURFASS, conv obs, ATOVS
- We know that the model is not perfect
  - Smaller deviations allowed
- DMI and MetCoOp applied, to be decided

MUSC@38h1

CLIMATE@38h1

MUSC – The single column model

- A branch exists in the repository

- A simple example for extracting initial/forcing data from a 3D run

- No standard cases yet (GABLSX ...)

- Same code base as the 3D version but with a slightly slower update frequency

Several institutes use HARMONIE as a climate prediction tool

- SMHI (Rossby Centre) will use cy38h1 as their next version.

Coming cycles

cy39t1

- Already history...
- Will not be a fully evaluated HARMONIE cycle

cy40

- Current phasing in Toulouse

cy40t1

- Late autumn/early winter
- Will be a HARMONIE cycle

Local changes has to be in cy38h1 well before the phasing starts

Cycle thoughts

- Phasing gets harder because the number of HIRLAM contributions increase! Positive
- No common DA tests prior to phasing => Inevitably leads to problems
- HIRLAM/ALADIN countries have very different strategy for new cycles. Problem or not? Could we do better? (Topic for system WG discussion?)

Training exercises

Harmonie training

- Call for interest sent out earlier this year. ~5 interested to few to arrange a training
- Schedule for next year! Indicate your interest!

ODB training

- Urgent need identified!
- Preparations started, to be announced

OOPS training

28-31 of May **at** ECMWF **with** ECMWF

- C++ basics
- OOPS design, OOPS-IFS, OOPS-LAM
- **Sign up NOW!**

We of course welcome all HIRLAM-ALADIN-LACE partners

Thanks for your attention
Questions?