

A status update from the HIRLAM system side

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ALADIN 24th WS - HIRLAM ASM

Bucharest

7-11th April 2014

Harmonie developments since last year:

- Harmonie-38h1.1

https://hirlam.org/trac/wiki/Harmonie_38h1/

Speed

- SODA inline CANARI
- OpenMP support in boundary interpolation (gl)
- IO server and tools around it

Pre and Post processing

- Conversion of SURFEX FA files to GRIB
- GRIB encoding in minutes/15min, ...
- Corrected bitmap for missing data
- Bi-qubic interpolation in gl
- Different archiving strategies when running at ECMWF
- Multi namelist extraction in gl (see rcr example in Makegrib)

New diagnostics

- Lightning intensity
- Visibility

Verification

- 1,3,6,12,24h precipitation
- Dew point deficit
- Visibility
- Extended station lists

**And of course a few
bugcorrections...**

Harmonie-38h1.2

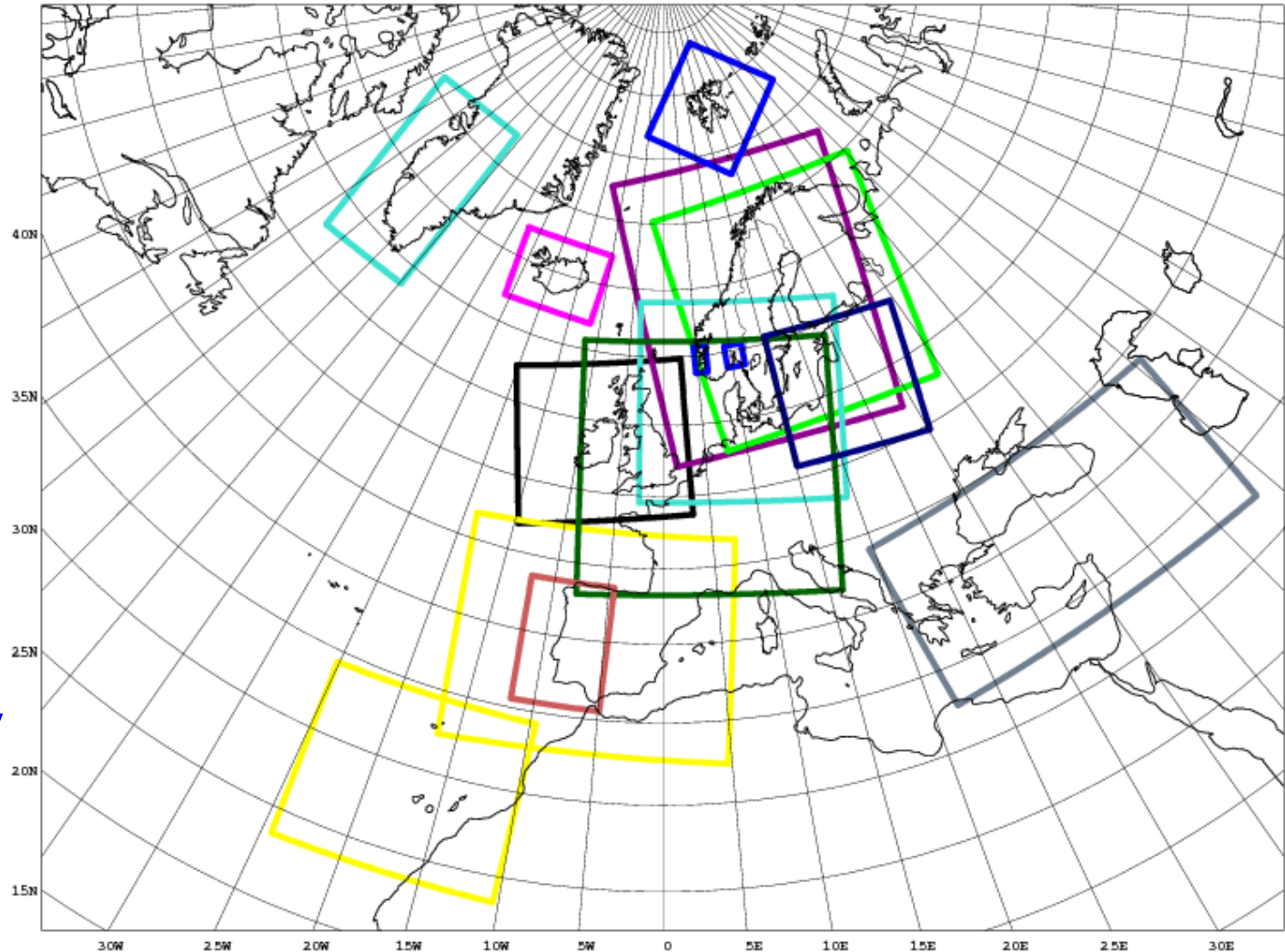
To be released after summer

- Radar/GPS assimilation updates
- Microphysics updates
- HarmonieEPS updates
- Harmonie running under ECFLOW at ECMWF (experimental)
- New observation monitoring interface
- gl -> gl_grib_api
- Anything yet unknown to me...

Deadline for contributions: June 2014

HARMONIE DOMAINS for operational usage

- AEMET
- DMI
- FMI
- IMO
- IPMA
- KNMI
- LHMS
- MetCoOp
- Met Eireann
- MET Norway
- MGM



<https://hirlam.org/trac/wiki/HarmonieInventory/Operational>

Operational HARMONIE DOMAINS

Domain	Cycle	Lev	DA	Observations	Cycling
AEMET	38h1.1	65	Blen + surf	CONV	6h +30
RCR-DKA38	38h1.1	65	3DVAR + surf	CONV, AMSUA, AMV, MODE-S	3h +58
FMI	38h1.beta.2	65	3DVAR + surf	CONV	3h +54
IMO	37h1.2	65	Blend + surf	CONV	6h +48
KNMI	36h1.4bf1	60	3DVAR + surf	CONV (MODE-S)	3h +48
LHMS	37h1.2	65	Blend + surf	CONV	6h +36
MetCoOp	38h1.1	65	3DVAR + surf	CONV, AMSUA, AMSUB/MHS	3h +66
MetEireann	37h1.1	65	Blend + surf	CONV	6h +54
MGM	38h1.beta.3	65	3DVAR + surf	CONV (ECMWF/OPLACE)	6h +24

Why is $38h1 \neq 38t1$

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At the time of the phasing we always try to minimize the difference according to a cost function:

$$J(h-t) = J_{fg} + J_{cut\ off} + J_{agreement} + J_{very\ local\ changes}$$

- Changes are based on a older version
- All developments may not be ready
- Further discussion needed about changes
- Changes are to specific to be of common interest

Why is 38h1 \neq 38t1

When the export version is released or when the h-version is released:

- Changes to make the version suitable for operations
- Meteorological tuning
- New developments
- Bug fixes

Why is 38h1 \neq 38t1

- **Satellite BUFR file decoding in Bator and treatment of empty pools**
- **ATOVS blacklisting and VARBC predictor treatment**
- **Corrections for handling of RADAR, GPS and VarBC, ATOVS and AMV data**
- **IO-server changes, IO optimization**
- **SURFEX FA format file manipulation tools.**
- **Ability to run SODA inline CANARI**
- **Use different cloud droplet number concentration depending on land/sea/town for cloud sedimentation**
- **Added OpenMP directives in SURFEX related parts**
- **Changed weights between land/sea for T2M diagnostics**
- **Snow analysis changes**
- **Update of SURFEX SST from the boundary files, for climate simulations**
- **Improved initialisation for the initial surfex state.**
- **Separate evaluation of liquid/sold microphysics, switched off, experimental**
- **ALARO0 interface changes to SURFEX**
- **Optional application of lateral boundary conditions in spectral space**
- **Correction for extraction of direct/diffuse SW radiation from the ECMWF radiation scheme**

ALADIN wishes for new HARMONIE options **Outcome of the Ankara installation exercise**

- Ensure to make it fully possible to run from ARPEGE coupling files
- Implement configuration 901 as an alternative to gl
- Include DFI blending
- Less aggressive post mortem job cleaning
(confusing for newcomers)
- Improve the documentation
- **Ensure that the export versions of ALADIN are properly included (i.e. the so-called “t” versions) in the HARMONIE system**

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Is there room for an “e” version? (or HRF if we follow Piet)

Coming cycles

cy40h1

- In technical preparation, currently dysfunctional in several aspects...
- Basis for the next RCR, to be formulated based on the content of cy40t1 and 38h1.2.

cy41

- Phasing started (more from Claude I assume)

cy41t1

- Due in late autumn
- **HIRLAM changes has to be in 38h1.2 to be in the list of contribution candidates**

HARMONIE@ECMWF

If we scan ecgb we find that we have:

15 countries running HARMONIE

~140 different HARMONIE users

~200 different HARMONIE domains

NETHERLANDS used ~2400 times

~6600 experiments found (guess which country is in top?)

Conclusion: The ECMWF resources is extremely important for our users.

We have to pay attention to a large and important user group

Available and currently maintained versions under ecgb:~hlam/harmonie_release

trunk

– harmonie

tag

– harmonie-37h1.2

– harmonie-38h1.1

branches

– harmonie-37h1

– harmonie-38h1.1.bugfix

– harmonEPS-38h1

– phasing/cy40

Candidates for migration to the new Cray@ECMWF

In addition there are a number of less updated/supported branches

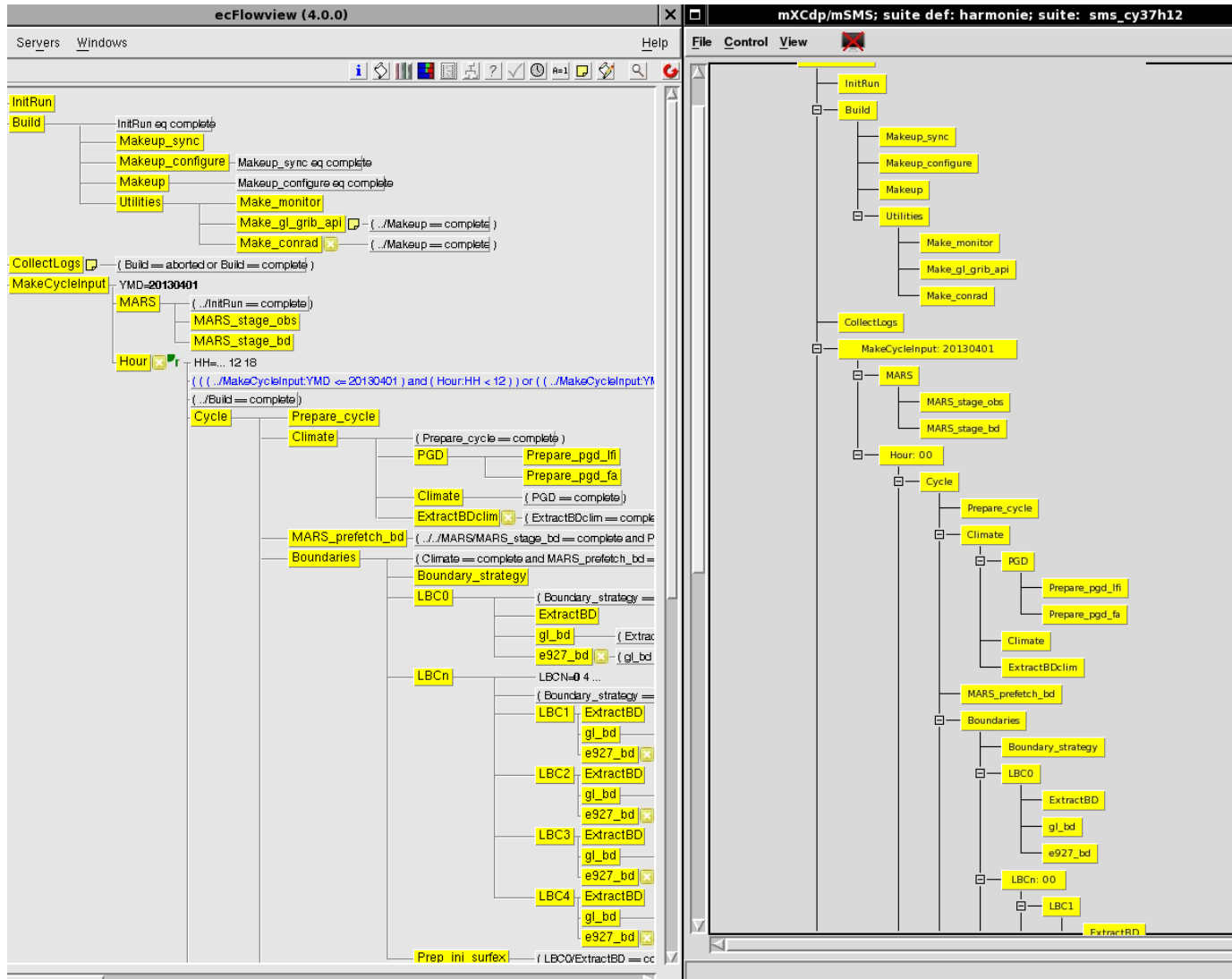
Harmonie under ECFLOW

(courtesy Daniel Santos AEMET)

- SMS the current/old ECMWF jobscheduler
 - Used for e.g. GLAMEPS
 - Used at several NMSs
- ECWFLOW, the new ECMWF jobscheduler
 - Will replace SMS eventually
- mSMS (HIRLAM/HARMONIE) scheduler
 - Portable
 - No separate installation
 - No dedicated server -> limited lifetime of a job
 - Less advanced functions compared to ECFLOW
- Increasing interest of running applications (HARMONIE) as Time Critical Facilities (TCF) at ECMWF
- ECFLOW is a requirement for TCFs
- Adapt HARMONIE to ECFLOW is one step forward
- MSMS functionality will be maintained
- Opens up for use of ECFLOW operationally locally

**Planned as an option in
harmonie-38h1.2**

ECFLOW (left) and HARMONIE (right)



Invitation to HARMONIE training

Harmonie training in Norrköping
15-18th of September 2014

- Overview and usage of HARMONIE
- Dynamics
- Physics
- Upper air and surface assimilation
- Diagnostics and verification

Mixture of lectures and exercises
Remote access to lectures by Eumetcal!

Register to: ulf.andrae@smhi.se

<https://hirlam.org/trac/wiki/HarmonieSystemTraining2014>



**We of course welcome all
HIRLAM-ALADIN-LACE partners**

For those who lost concentration

- **HARMONIE-38h1.1 is here to stay**
- **h \neq t (yet ...)**
- **HARMONIE + ECFLOW = true soon**
- **welcome to the HARMONIE training in Norrköping**

Thanks for the attention!