Status of a HARMONIC(A) system
Ulf Andræ
(with input from the system group)

joint ASM 2010 and 20th ALADIN Wk, 13-16 April 2010, Cracow, Poland

Four things to remember

- Why a common system
- What's in the current HARMONIE
- What's in the future HARMONIE
- How do I handle problems

Why a common transparent and open system?

- Science (as love) is not restricted to one language (fortran)
- NWP is very much about logistics. Assimilation with SURFEX and 3DVAR:
  - Fg -> Addsurf -> Canari -> OI_MAIN -> Minimization -> Blending -> Forecast

- Distributed research and developement
- The open repository allows the same information for
  - Everyone
  - Everywhere
  - Anytime.
- Should serve as an operational system as well.

What has happened since Utrecht Highlights of cy35h3

- Stable

  - Aladin 3DVAR

  - AROME

  - ALARO (assimilation with some tweaking)

- Less stable

  - SURFEX assimilation

  - 4DVAR

  - EKF SURFEX

  - HIRALD

- ECMWF SST in CANARI

- Incremental DFI

- VARBC bookkeeping

- Spectral smoothing of orography

- Various satellite observation enabled and tested

- Configurations for TL/AD test

- No intermediate interpolation (BD_METHOD=gl_only, BDNLON/ BDNLAT obsolete)

What has happened since Utrecht Highlights of cy35h3

- Separation of the graphical interface, mXCdp and the mSMS server

- Postprocessing during forecast (HarmonieListener)

- Variable forecast length for 00/12 and 06/18 cycle:LLMAIN

- Locking of an experiment by the "experiment_is_locked" file. Prohibits the experiment to change under your feets.

What is in cy36h1
(which actually doesn't exist yet)

- 3DVAR and CANARI (+ SURFEX) for

  - ALADIN

  - AROME

  - ALARO (not with SURFEX yet)

- Gmkpack is updated

- Namelist cleaning especially for assimilation namelists. 4DVAR remains to be cleaned

- Gl

  - Rotated mercator

  - Bitmap GRIB

  - More postprocessing

- Harmonie setup -r REVISION -h HOST -c CONFIG

- Verification

  - Skill scores in the verification package

  - More variables in the verification

Things in the pipeline
(contributions from everyone)

- More stable and developed 4DVAR

- ECMWF physics

- 901 interpolations

- Spectral blending

- Arpege boundaries

- FMI speedup updates

- Field verification using xtool. End of experiment/month diagnostics

- Perturbation of observations

- Makeup

- LSM treatment, SWI interpolation for LBC

- Significance test in the verification

Outstanding problems

- B-level parallelisation
- Loads of unitialized variables
- Performance issues in SURFEX

- Harmonie troublesome to use for benchmarking

- FA -> GRIB and LFI -> GRIB conversions is becoming a nightmare.

Adaptation to new cycles

- CY35T1 was introduced in autumn 2008. Harmonie-35h1.2 was tagged in May 2009

- CY35T2 was introduced in the trunk in may 2009 but the adaptation never finished. The trunk was broken until...

- More aggressive strategy for cy36.

- Harmonie certainly benefits of a closer connection to the phasing.

- Phasing or adaptation?

- **Most grateful for all help and patience of Meteo France!**

Towards a continuous integration

- New rootpack is build on demand every night at ECMWF and SMHI.

- Testbed runs nightly on demand at SMHI since start of cy36.

- Norway is following. Time to have daily runs at ECMWF!

- Frequent testing is crucial for the way we are managing our repository.

Local adaptation

- Local adaptation necessary for compilation and for computational efficiency,

- Including adjustment of namelist things such as mailbox size, resource requests

- Local branches are encouraged. Good way to document local solutions.

- We shall seek general solutions when possible.

Support and user friendliness

- Offering a system adds some responsibilities, offering a system with options even more...

- Lately we have failed to respond quick enough and to solve simple problems quick enough. But the system group is not a helpdesk...

- Some hints when things goes wrong...

  - Read the log file!

  - Ask you neighbour

  - Ask the community

At last

Rember to have fun and stay in HARMONIE