Report on Operations

C. Fischer

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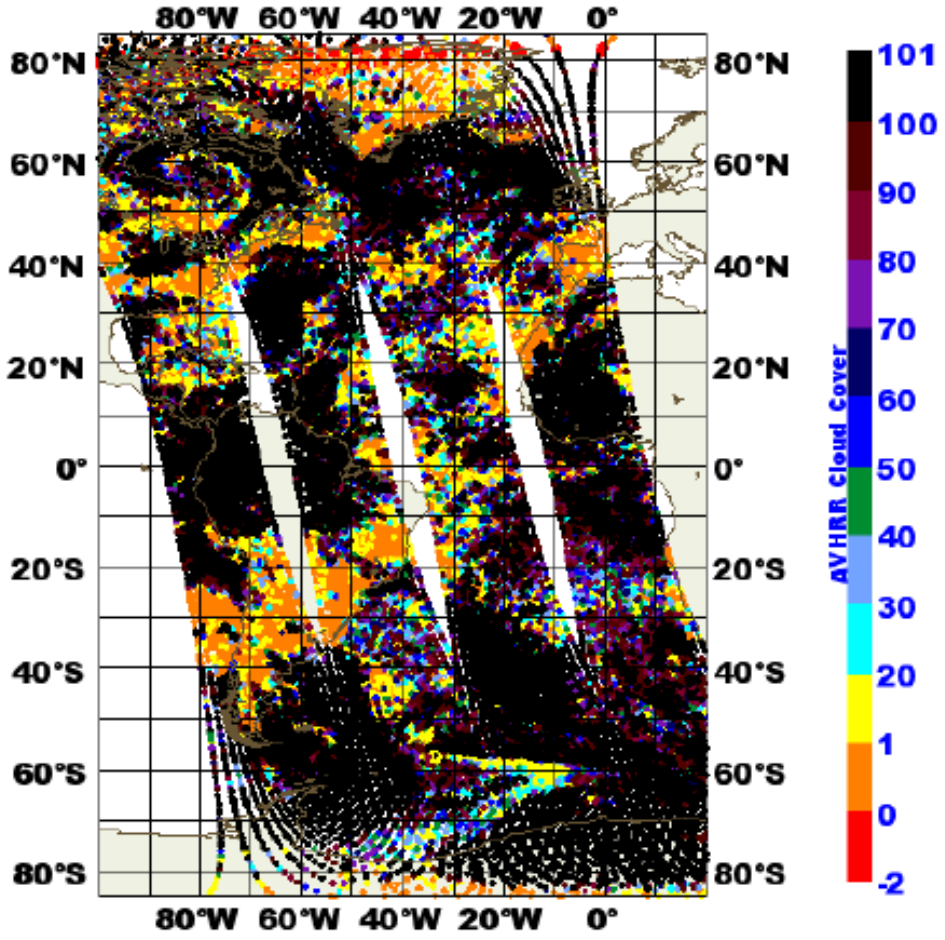
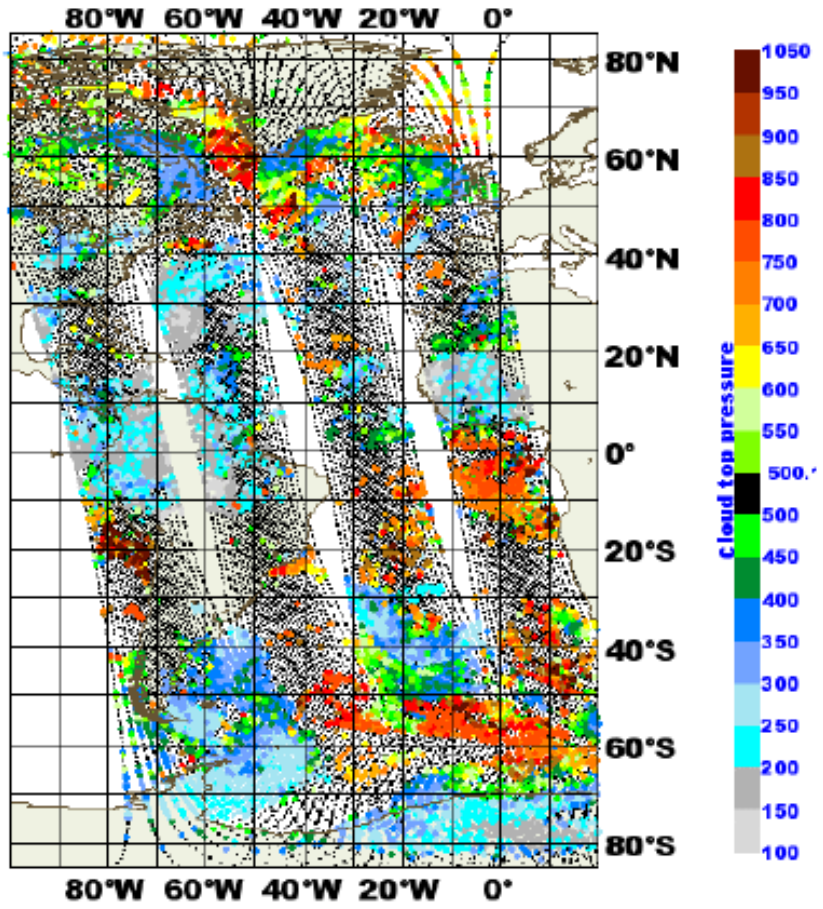
Highlights of changes introduced in MF's operations on September 25th, 2012

- new version of code: CY37T1 op1





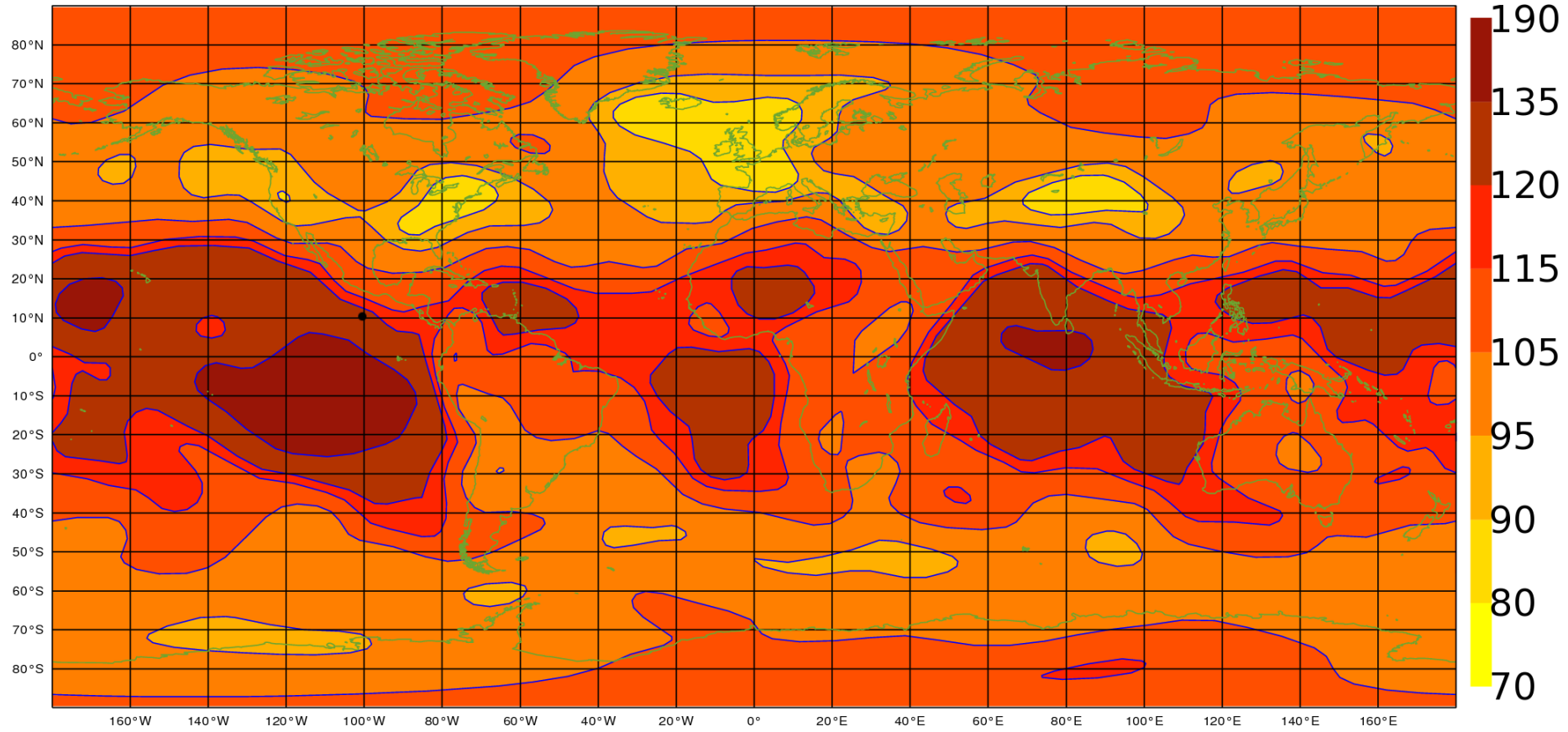
Highlights of changes introduced in MF's operations on September 25th, 2012

- new version of code: CY37T1_op1
- retuned σo's
- increase of number of observations: IASI, GPS/E-GVAP, RARS/ASCAT winds, …
- assimilation of cloud-affected IASI (using CO2-slicing for cloud detection)
- adaptations of convection scheme of Arpège (triggering mechanism)
- Arome-FR:
  - impact of changes in Arpège's assimilation (obs & σo's, …)
  - assimilation of Doppler radial winds from the Plabennec radar, monitoring of Doppler winds from the Grèzes radar and the X-band radar from St-Maurel
  - improvements in EDKF (treatment of ice/snow/graupel) and in the cloud scheme (minimum threshold for condensed water)
  - use of 1km resolution HSWB soil physiographic characteristics

Plans at MF (2013-2014):

- CY38T1_op1
- Implement daily cross-correlation structure functions in wavelet space
- Observations: RTTOV-10; Monitoring and/or Assimilation of NPP/ATMS, NPP/CRIS; Metop-B (IASI, AMSU-A, MHS, HIRS, ASCAT, GRAS); more GPS ZTD by selection inside screening + tuning of σo; *and more* …
- Several changes in Arpège/Aladin physics
- Arome-FR: ECOCLIMAP-2 database; SURFEX V7.2; remove the reversing of vertical loops in Méso-NH physics code (optimization issue)
- Porting to new HPC: early summer 2013 – Feb. 2014
- Preparations towards the next change of resolution:
  - Arpège: T1200C2.2L105; Arome-FR: 1.3 km and 87 levels => summer 2014
  - new applications: Arome-nowcasting & Arome-EPS (end of 2014)
  - other R&D: new convection scheme PCMT

Background error correlations using EnDA and wavelets



Wavelet-implied horizontal length-scales (in km),
for wind near 500 hPa, averaged over a 4-day period.

(Varella et al 2012, and also Fisher 2003, Deckmyn and Berre 2005, Pannekoucke et al 2007)

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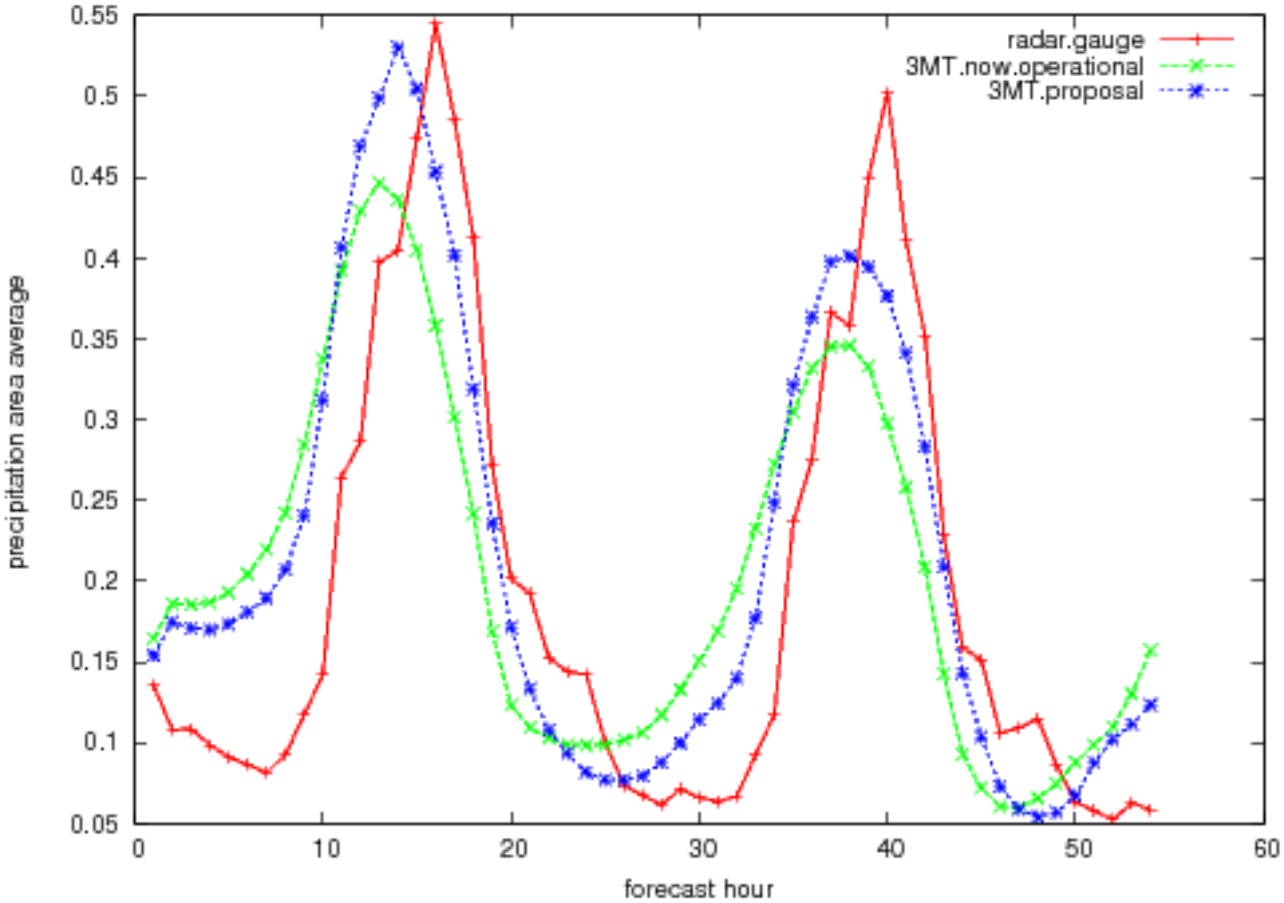
Most recent Alaro updates

CY38T1:

- Improved version of TOUCANS scheme
- radiation, microphysics, cloud scheme and convection
- 3MT in Arpège



Report on maintenance activities

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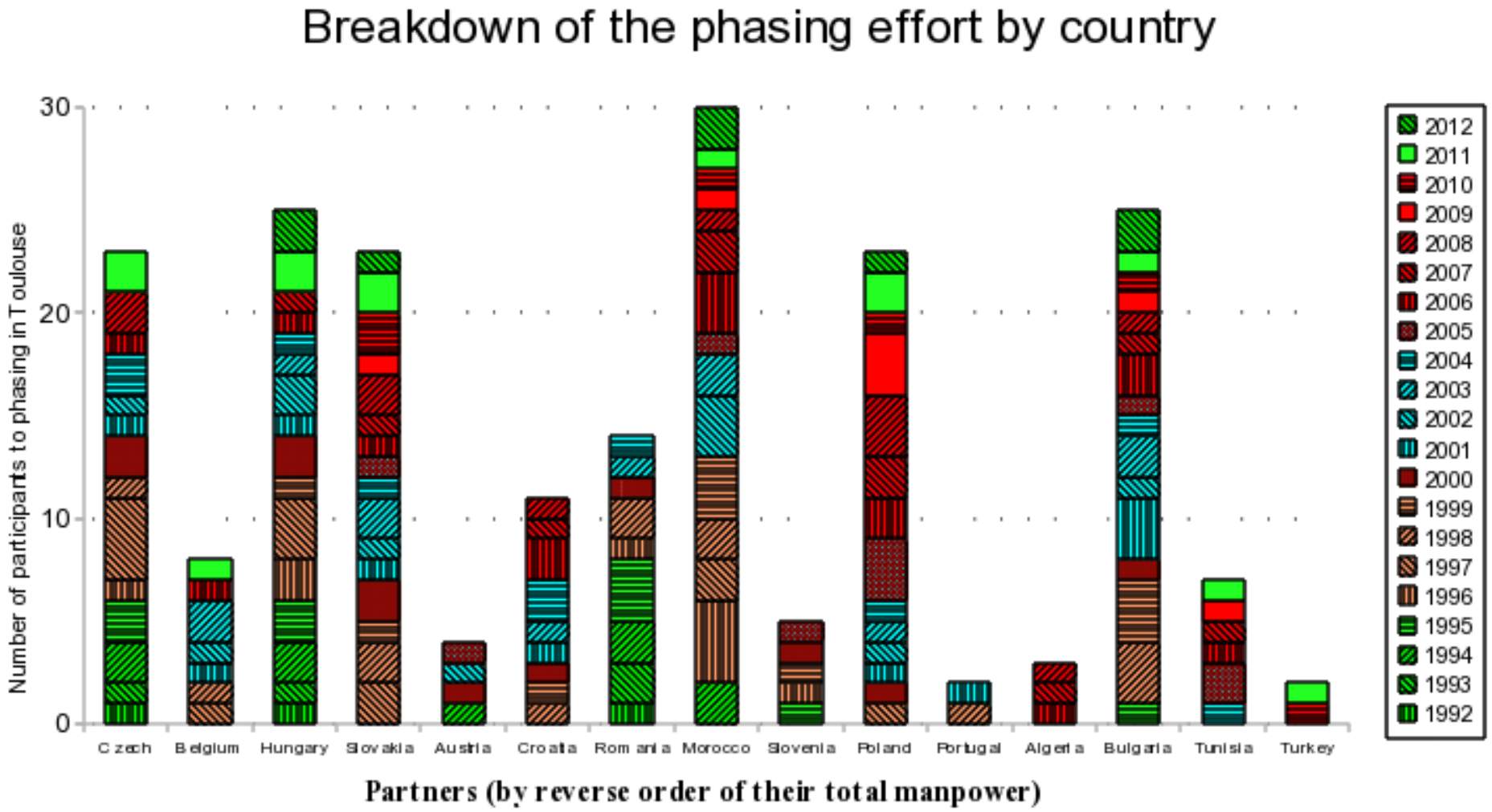
Calendar of IFS and interim cycles

Maintenance = Phasing (centralized) + code cleaning and validation (somewhat split) + scientific developments (as decentralized as possible)

- CY38T1: declared early August'12, but bugfixes until late October !
- CY39: common with IFS; [late August – mid-Nov]'12
- CY39T1: January – February'13
- CY40: common with IFS; March-May'13

Phasers & manpower



Management considerations:

- Phasing will continue, including invitations to Toulouse ! => 6 week stays for IFS/Arpège phasing; ***possibility to pair 2*3 weeks for interim cycles***
- Continue strengthening cooperation with HIRLAM on maintenance
- Code maintenance will help you:
  - Local expertise on system installation (& local knowledge transfer)
  - Porting, optimization => numerical costs
  - Lifetime of the whole system !
- Even if difficult w/r to local needs: promote work on maintenance at home (porting, optimization, design)

OOPS

- Specifications & coding started in 2011
- Present status:
  - Object oriented coding & C++
  - Comments made by the Technical Review team have been implemented in the OOPS code (winter 2011-2012)
  - Scientific review over June-Sept 2012 => debrief on Nov 22 at ECMWF
  - Training to C++ & OOPS has started: 2 basic C++ sessions at MF, one at ECMWF, one OOPS-oriented at AEMET (Hirlam & Aladin)
  - Fortran source code modularization & cleaning:
    - Significant impact in parts of the code since CY38
    - More to come !, regularly discussed in video-conferences involving Hirlam and Aladin representatives (***Daan***, …)
- OOPS Steering Committee with Aladin & Hirlam participation

COP(E)

- Deep re-organization of observation pre-treatment and throughput towards the assimilation system:
  - Perform continuous pre-processing of observations
  - And take this pre-proc. out of the critical path of the DA sequence
  - Provide more flexible conversion tool for obs formats
- Technically speaking:
  - New BUFR2ODB (as common as possible to EC, MF & partners)
  - Split so-called screening from IFS
  - Recode in C++ several pieces of code