



Highlights of recent and planned HIRLAM activities

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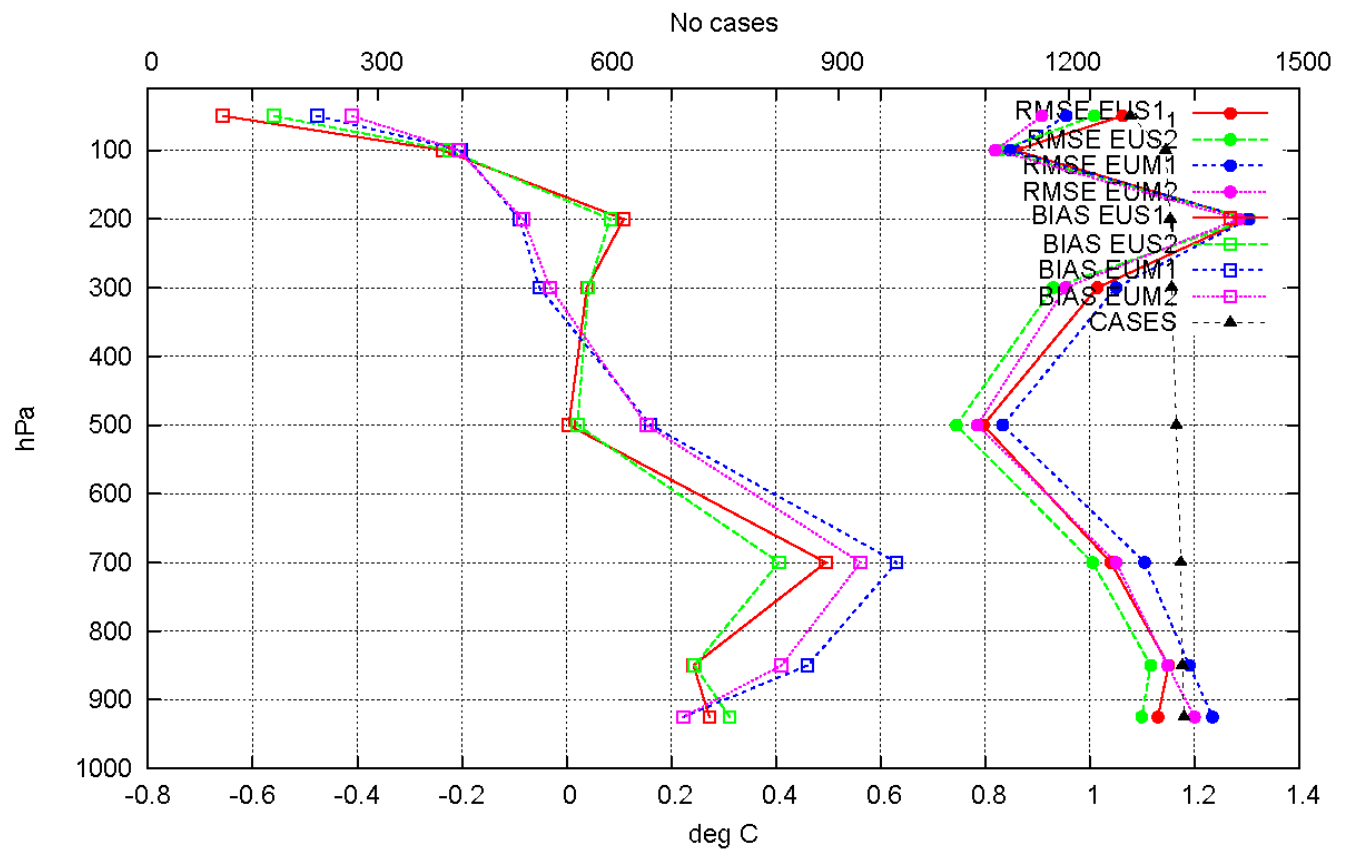
ASM/Workshop 2010

20100413

HARMONIE upper air data assimilation

- 3D-VAR:
 - tuning at 2km resolution
 - ensemble DA for more flow-dependent structure functions
- 4D-VAR setup made more sophisticated
- Radar assimilation working week:
 - Tools/plans to make radar input available for all member institutes' radars
 - Tests of radar wind/reflectivity QC and screening
 - Tests of radar wind/reflectivity assimilation at 2km scale: second half of 2010.
- Observation impact assessment:
 - Met.no HARMONIE-4km included in regional OSE for EUCOS

11 stations Area: ALL
Temperature Period: 20070607-20070715
At 00,12 + 12 24



HARMONIE forecast model

- Dynamics:
 - Experimentation with different treatment of extension zone in combination with Boyd's solution
 - NH-VFE, variable map factor testing
- Upper air physics:
 - Convective behaviour: experimentation with microphysics tuning, SLHD and warm bubble experiments
 - 3D-turbulence: setup made, under discussion
 - Experimentation with orographic roughness removal in mountains
 - Inclusion of ECMWF physics (request RCM community)
 - Brac workshop May: first step towards strategic plan for forecast model for next 5-10 years

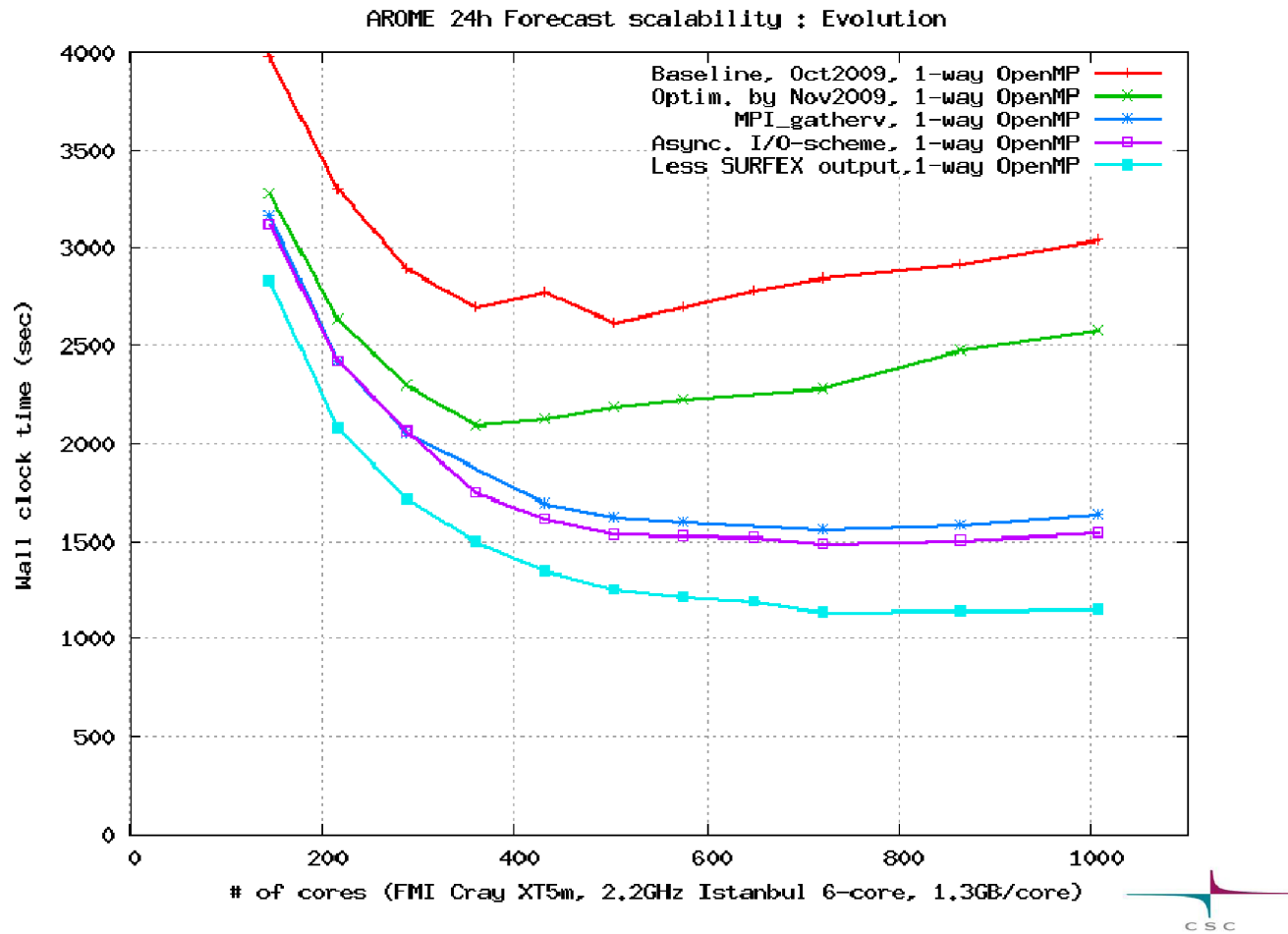
Surface and nesting

- OI/CANARI coupling to AROME/SURFEX (Cy36h1). To be followed up by:
 - Validation
 - Implementation of SEKF
 - Impact assessment of screen level temperatures assimilation
- Soil wetness index scaling
- Snow analysis
- Extended/improved lake database + documentation available
- Nesting experiments for Harmonie-2km
 - Double nest: within which model?
 - Single nest within ECMWF possible?
 - Impact of new ECMWF LBC strategy?
 - Impact of domain size?Outcome: recommendations for nesting strategy

Computational efficiency and portability

- Investigation of scalability and optimization of Harmonie-Arome on FMI Cray: significant speedup, better scalability. Used with >1700 processors.
- Further gain of factor ~5 estimated to be possible (mainly SURFEX)
- FMI experiences beneficial to met.no, AEMET benchmarking
- Arome works well with only few compilers -> deeper code problem?
- Portability: “Hunt” for uninitialized variables / arrays ongoing
- Gmake-based build facility MAKEUP useful for benchmarking by vendors, academic use. Tested successfully on many platforms
- “FMI-branch” scripts ported to Cy36h1, code changes under discussion with ALADIN partners

Ref.time : SGI Altix 72cores : 8820 sec



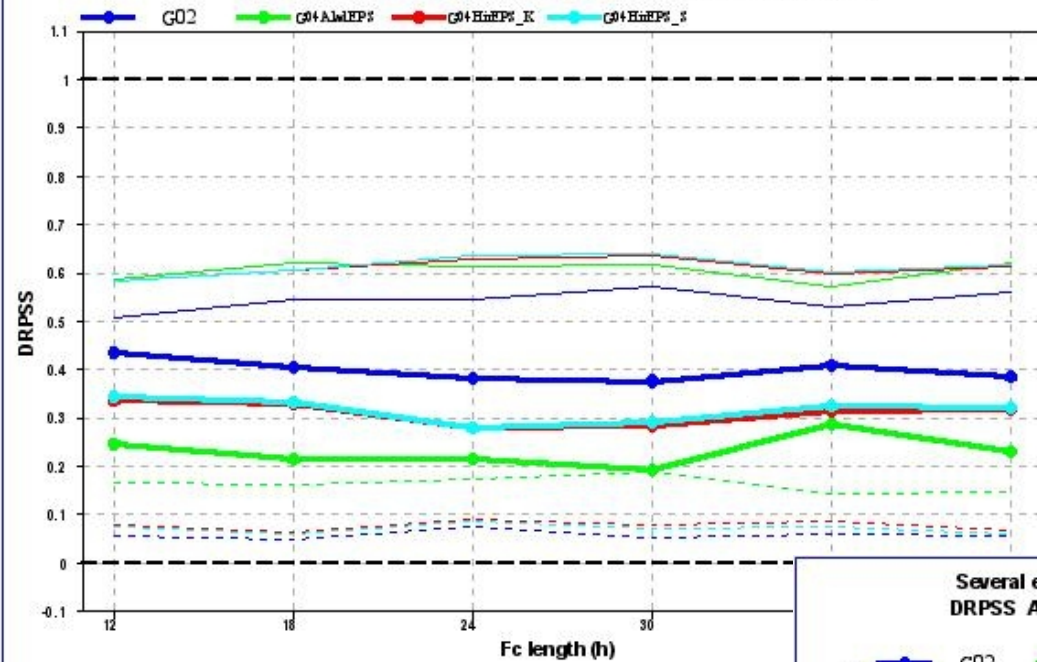
HIRLAM

- Data assimilation methods
 - 4D-VAR papers submitted.
 - Blending in of large scale structure via Jk: impact under study, needs further tuning. To be done later also for Harmonie.
- EUCOS regional OSE's
 - thinning of RS network beyond 100km density leading to noticable degradations
- Winter weather problems with snow, lake ice and soil ice
- Reference system:
 - V7.3 rc1 in April
 - Chemical branch code released
 - V7.4 release planned at end 2010.

GLAMEPS

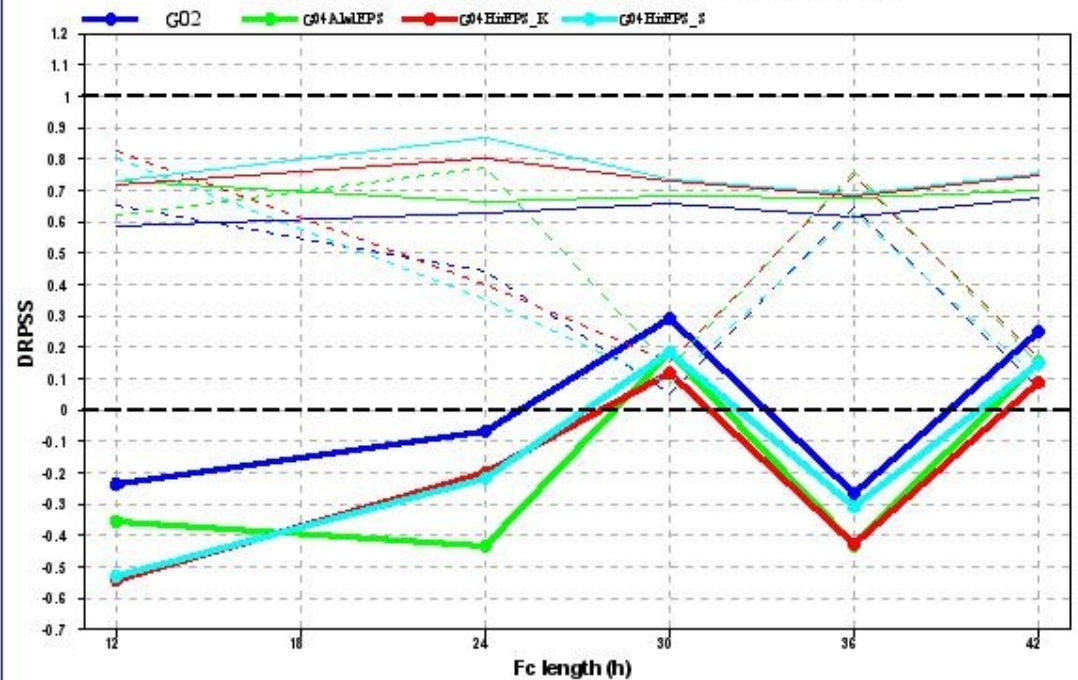
- Preparation for operation
 - Real-time runs with ECMWF EPS started February; technical problems to be solved
 - EuroTEPS adapted to “new” EPS (ensemble DA, diabatic SV)
 - Runs to be shifted to 6h, 18h to speed up delivery
 - Product visualization portal set up on Hirlam server (domain name GLAMEPS.org). To be filled in gradually
 - Finalize configuration in summer. RT production expected to start in the fall
- Configuration experiments
 - “old” EuroTEPS consistently slightly better than “old” EPS;
 - multi-model clearly better than single model LAMEPS;
 - impact of resolution increase yet to be assessed;
 - “new” EuroTEPS vs “new” EPS; to be done.
 - If EuroTEPS is not to be used, then use comp. resources to enhance resolution, forecast horizon, possibly domain.
- Ensemble generation methods
 - ETKF, HIRLAM SV’s: next phase

Several ensembles (G02,G04AladEPS,G04HirEPS_K,G04HirEPS_S 51.3/51.25 members)
 DRPSS 2mSurface Temperature [-10,-5,0,5,10,15,20,25,30]°C ag. SYNOP/TEMP obs Europe
 Period: 2008JFM Realiz: 111622 Analysis: 00UTC VT: H+012..H+042



Multi-model vs single model LAMEPS

Several ensembles (G02,G04AladEPS,G04HirEPS_K,G04HirEPS_S 51.3/51.25 members)
 DRPSS Accum Precipitation 12h [0.1,1,2,5,10,15,20,25]mm ag. SYNOP/TEMP obs Europe
 Period: 2008JFM Realiz: 35753 Analysis: 00UTC VT: H+012..H+042



External review

- External review carried out by Zwiefelhofer, Tibaldi, Dudhia
- Health check of ongoing programme positive:
 - Forecast quality improvement
 - Overall compliance to goals/deliverables satisfactory
 - Management performance good, organizational changes during Hirlam-A beneficial
- Recommendations for next phase:
 - Limit objectives and scope of programme
 - Operational cooperation: natural development, but resource allocation and management separately.
 - Enhance user focus
 - Independent evaluation of scientific plans to help reduce dependence of resources on individual/institute priorities
 - Continue and strengthen commitment to partnership with ALADIN

Road towards new MoU/programme

- Strategic objectives and structure of next programme: to be considered in extra Council meeting 15/16 April
- Draft MoU and programme setup: May/June
- Recruitment PM: ~September
- Draft updated scientific strategy: ~October
- Recruitment PL's: December
- Signature of MoU (+ updated agreement with ALADIN): December