

SMHI operational HIRLAM and HARMONIE

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Lars Meuller

Swedish Meteorological and Hydrological Institute

Operational HIRLAM

- 4 forecasts a day. 00, 06, 12 and 18 UTC
- HIRLAM C11 – analysis +48 hours
2 hours data cutoff
- HIRLAM E05 – analysis +72 hours
1 hour 15 min data cutoff
- ECMWF preprocessing
SYNOP,SHIP,TEMP,PILOT,
BUOY,AIREP,AMDA
- BUFR AMDAR
- ATOVS AMSU-A radiances – EARS
- HIROMB oceanographic model for ice cover and SST

HIRLAM system

Based on HIRLAM version 7.1.2

- Large Scale Mixing (LSMIX)
- 4DVAR on C11-domain. 2 outer loops.
- 3D-VAR FGAT on E05-domain
- DFI (initialisation)
- ISBA (surface scheme)
- moist CBR (turbulence)
- Kain-Fritsch from CAM3 (convection)
- Rasch-Kristjansson (large scale)

4DVAR

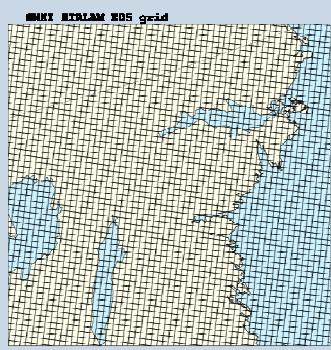
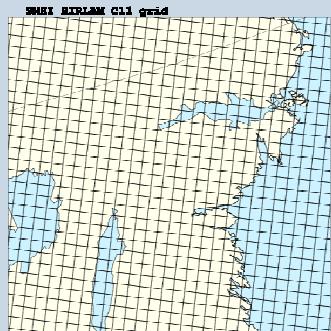
– operational since 2008013006

66 km linear grid
SL, SETTLS
vert. diff. + large scale cond. Linerised simplified physics
weak digital constraint
linear propagation off assimilation increments
statistical balance background constraints
2 outer loops
POOR SCALABILITY !



HIRLAM domain's

	C11	E05
Levels:	60	60
Hor. Res.	0.1° (11 km)	0.05° (5.5 km)
Gridpoints	606x606	506x574
Boundaries	ECMWF 3 hour	ECMWF 3 hour
Time step	300 sec	150 sec



PLANS

- new pre-processing for observations
- Hirlam-7.3 – new surface scheme, more satellite
- Harmonie

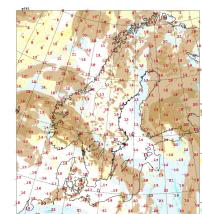
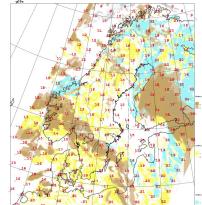
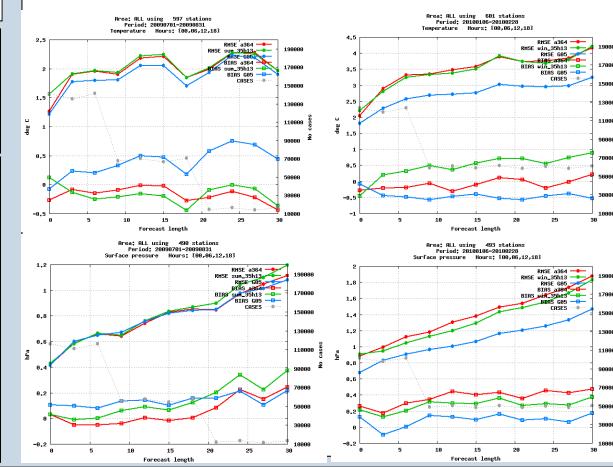
HARMONIE at SMHI

ALADIN and AROME have been run in research mode with daily forecasts.
Cy35h1.2

Preoperational HARMONIE

ALARO: Cy35h1.2
540x600x60, 5.5 km, +36 hours
domain as Hirlam E05
ECMWF boundaries, 3h
hydrostatic
3DVAR

ALARO – HIRLAM comparison



Computer system

at the National Supercomputing Centre at Linköpings University www.nsc.liu.se



BYVIND – dedicated to operational models NWP, oceanographic and dispersion models

- Linux
- 2 system nodes
- 140 computing nodes
1 nod – 2 INTEL X5550 processors
each with 4 cores. 2.66 GHz and 3GB memory
- 1120 cores
- InfiniBand QDR
- IntelMPI, OpenMPI, OpenMP
- Intel compilers

BORE for backup and research

- Linux
- 70 nodes
- Intel Harpertown 2.8 GHz, each with 8 cores
16 GB memory
- InfiniBand interconnect
- ScaMPI, OpenMPI
- Intel compilers
- CentOS 5
- 25 nodes available to MET.NO for backup

