

Operational status at the AEMET (Spain)

Jose A. Garcia-Moya. (AEMET, Spain)

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SYSTEM

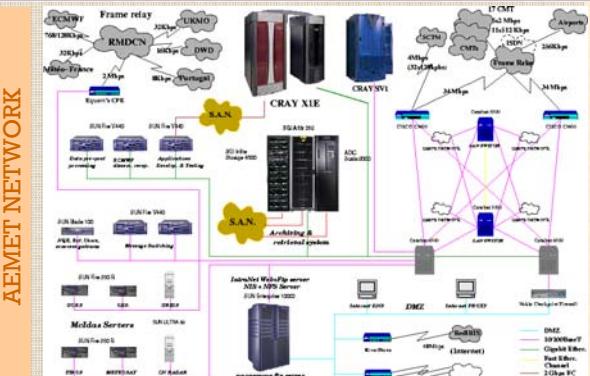
Cray X1E Configuration

16 physical nodes X1E
8 MSP each
• 1.2 GHz, 19.2 Gflops -64 bits- by MSP
• 32 logical nodes
31 application nodes + 1 support node

128 MSP / 512 SSP
512 GB memory
2,304 Tflops theoretical peak performance for applications.
Cross-compiler based on a linux cluster



Archive Capacity
1 TB directly attached disk
20 TB SAN
24 TB cartridge Library



Operational runs on CrayX1

3 HIRLAM v7.2 experiments (from Oct 2009):

- ONR (0.16deg), HNR (0.05deg)
- Over Canary Islands 0.05 deg

Four runs at 00, 06, 12 & 18 UTC

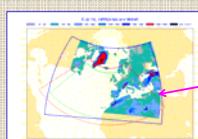
40 levels in the vertical (more resolution in the PBL)

SL Dynamics

3DVAR assimilation with Statistical Jb

STRACO Convection Scheme

Integration area



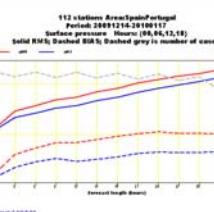
ONR (0.16 deg)
latlon (582x424)
72 hour forecasts
Dynamics time step = 240 sec



Sea level pressure
(cm/bias) Pa → ONR – SK3



Sea level pressure
(cm/bias) Pa → HNR – HK3



Sea level pressure
(cm/bias) Pa → ONR – HK3

Parallel tests with KF convection scheme and new time steps

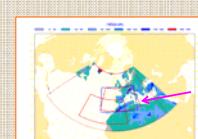
SK3 → ONR – time step = 600 secs.

HK3 & CK3 → HNR and CNN – time step = 180 secs.

Kain-Fritsch convection scheme.

The total wall-clock time it's five minutes more than the operational one.

Expected operational at the end of April 2010



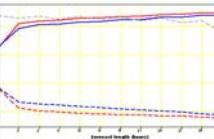
HNR (0.05 deg)
latlon (606x430)
36 hour forecasts
Dynamics time step = 120 sec



T2m → ONR – SK3
(cm/bias) c



T2m → HNR – HK3
(cm/bias) c



T2m → ONR – HK3 (cm/bias) c

Parallel Tests - OBSERVATION/VERIFICATION

Scatterplot for 1528 stations Area: ALL

Period: 20091214-20100117

Temperature - Hours: (64, 64, 12, 18)

Solid RMS; Dashed RMS; Dashed grey is number of cases

Obs = 429039

Precipitation HK3

Scatterplot for 1528 stations Area: Spain/Portugal

Period: 20091214-20100117

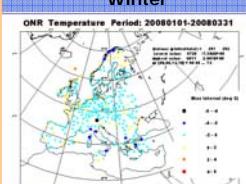
Temperature - Hours: (64, 64, 12, 18)

Solid RMS; Dashed RMS; Dashed grey is number of cases

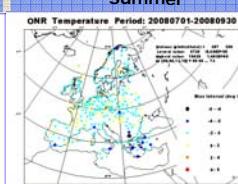
Obs = 14982

2m temperature - Bias - EWGLAM

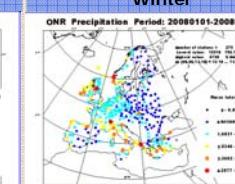
Winter



Summer



Winter

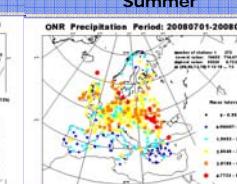


Precipitation - RMSE - EWGLAM

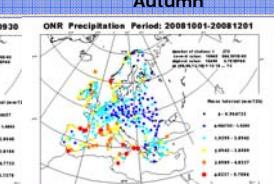
Spring



Summer



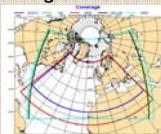
Autumn



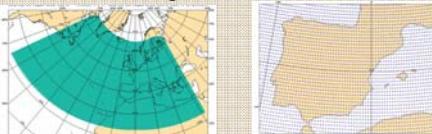
2008 – One year of ONR verification

Multi-Model	Multi-boundaries	Num. EPS Members	Forecast length (daily runs)	Horizontal resolution
Hirlam	ECMWF	5 models		
HRM (DWD)	GME	X		
MM5	GFS			
UM (UKMO)	UKMO			
Lokal Model	CMC	5 boundaries = 20	72 (twice)	0,25°

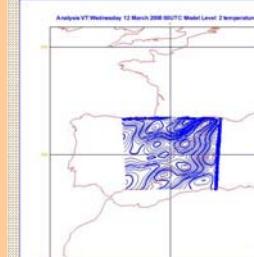
Integration areas



Common grid for calibration



HARMONIE



HIRLAM ONR (0.16 deg)

latlon → 384x400x40
36 hours forecast twice a day
Horizontal resolution 11 km
Dynamics time step = 300 sec
Hydrostatic Dynamics
ALADIN Physics

HARMONIE cy35h1.2 (ongoing work)

latlon → 300x300x40
Horizontal resolution 2.5 km
12 hours forecasts
Dynamics time step = 60 sec
Non-hydrostatic Dynamics
AROME Physics

New Computer's ITT

- Hirlam v7.2 operational suite

HIRLAM 7.3 version:

- Parallel HIRLAM v7.3 suite
- 0.05 deg resolution nested in ECMWF run

SREPS

- ALADIN model in SREPS
- New global model JMA (Japan Met Agency)

HARMONIE

- 2 run per day 00 & 12 UTC
- 24 hours forecasts
- Harmonie cy35h1.2
- AROME Physics

FUTURE

José A. Garcia-Moya

jgarciamoyaz@aemet.es

AAPL - AEMET

Operational team:

Estrella Gutierrez-Marco (mgutierrezm@aemet.es)

Gema Morales Martin (gmorales@inm.es)

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