# HIRLAM

## Use of the Hirlam NWP Model

## at Met Éireann (Irish Meteorological Service)

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# MAIN EVENTS SINCE LAST MEETING

# REPLACEMENT OF COMPUTER SYSTEM

- Collaboration agreement with ICHEC

- ICHEC : Irish Centre for High-End Computing

  ICHEC system operational ; IBM mainframe scrapped

# CHANGE FROM HIRLAM-5 to HIRLAM-7

- Better model and higher-resolution

# PRELIMINARY TESTS RUNNING HARMONIE

- Running Harmonie once per day in non-operational context

IRISH CENTRE FOR HIGH-END COMPUTING

HARDWARE

• Distributed memory system [IBM eServer cluster 1350 consisting of 476 IBM e326 compute nodes with 20TB of tightly integrated high-performance SAN based around an IBM DS4500]

• SuSe Linux 64-bit operating system

• Met Éireann uses 32 dual nodes for main run [out of an allocation of 48]

• Special execution queue

# COMPUTER SYSTEM and VERSIONS of HIRLAM

## ICHEC

- Operational Hirlam : 438x284 grid pts; 60-levels; 15Km

- Nested Hirlam : 438x395 grid pts; 60-level; 5Km

## LINUX PC

- Hourly Hirlam : 166x163; 40-levels; 15Km; 20-min cutoff

## LINUX Cluster : Nine Twin Xenon Processors [3.2GHz]

- Backup  Hirlam : 438x284 grid pts; 31-levels; 15Km

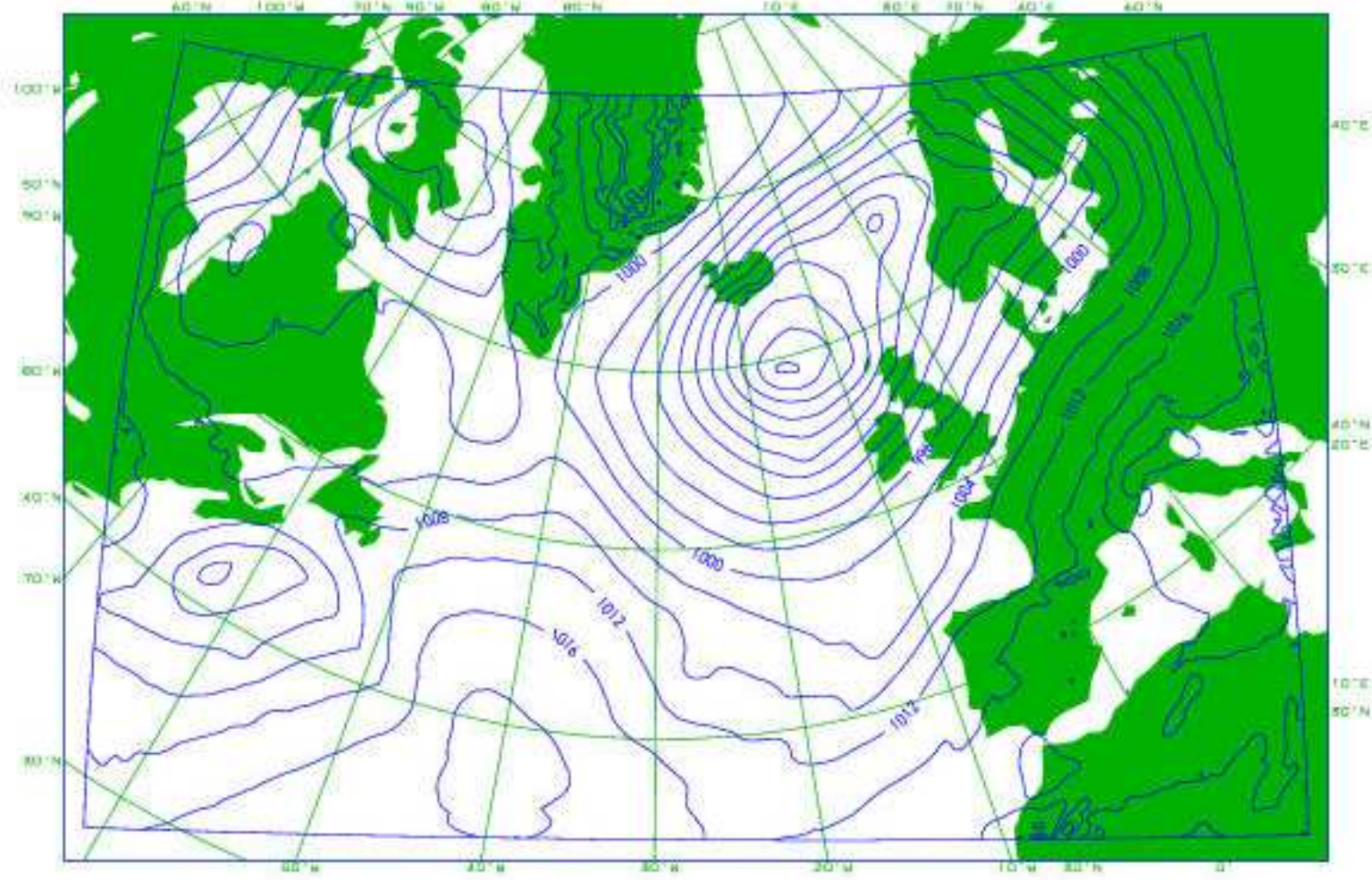## ALL MODELS are HIRLAM version 7

# OPERATIONAL HIRLAM … ICHEC

## HIRLAM 7 with 3DVAR

- 3-Hour assimilation cycle with 48-hour forecasts every 6-hours

- Rotated lat/long 0.15x0.15 grid with 438x284 grid points

- Hybrid [eta] coordinates with 60-levels [backup has 31 levels]

- CBR vertical diffusion scheme; Sundqvist condensation scheme

- STRACO cloud scheme; Savijarvi radiation scheme

- Digital filter initialisation

- Two time-level Semi-Lagrangian semi-implicit scheme

- Use of 'frame' boundaries from ECMWF

# NESTED HIRLAM … ICHEC

## HIRLAM 7 with 3DVAR

- Runs every 6-hours with 30-hour forecasts [6-hour cycle]

- Rotated lat/long 0.05x0.05 grid with 438x395 grid points

- Hybrid [eta] coordinates with 60-levels [no backup]

- CBR vertical diffusion scheme; Sundqvist condensation scheme

- STRACO cloud scheme; Savijarvi radiation scheme

- Digital filter initialisation

- Two time-level Semi-Lagrangian semi-implicit scheme

- Hourly boundaries from Hirlam operational model
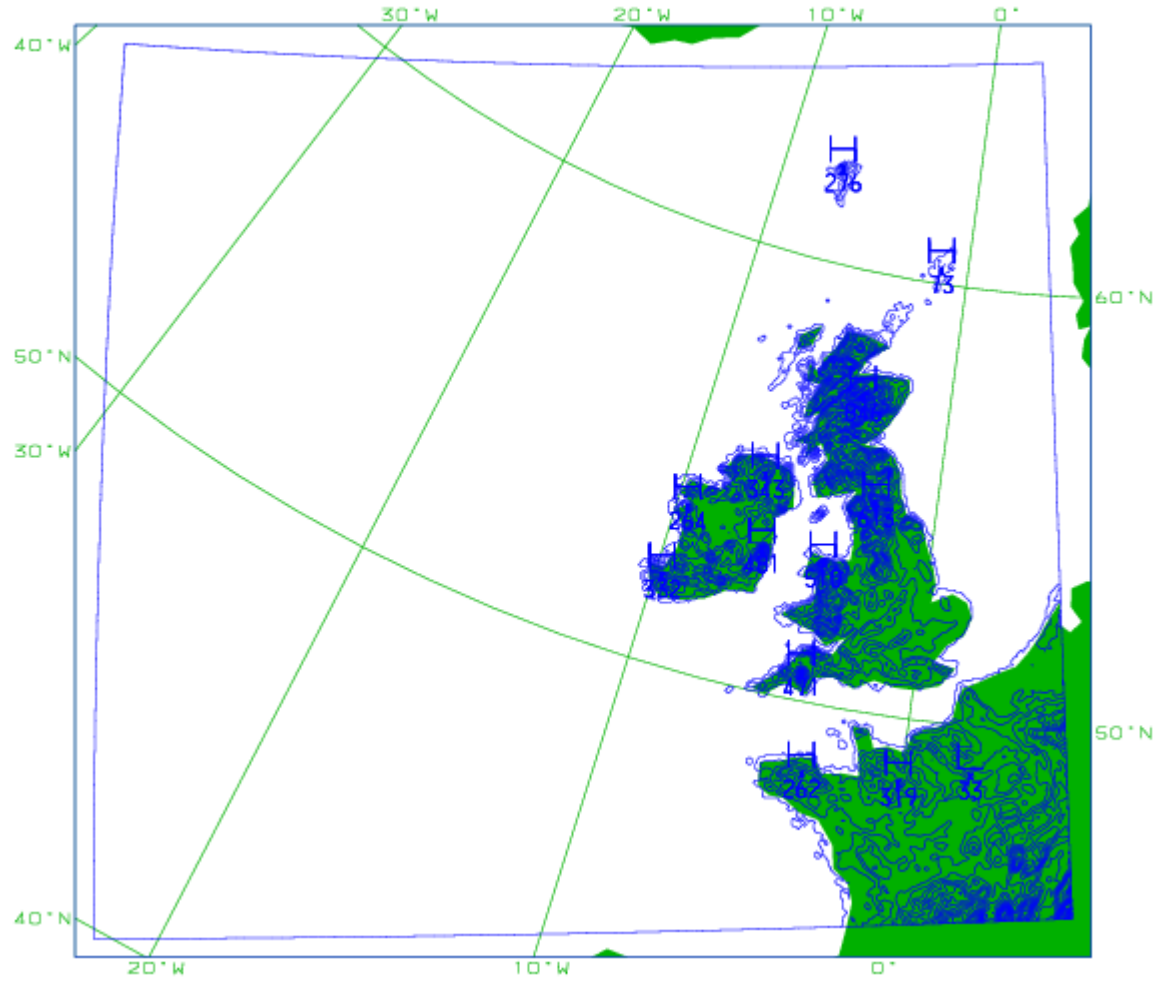
# HOURLY HIRLAM … LINUX PC

## HIRLAM 7 with 3DVAR

- Runs every hour with 20-minute cutoff

- Rotated lat/long 0.15x0.15 grid with 166x163 grid points

- Hybrid [eta] coordinates with 40-levels [no backup]

- Runs on one hour cycle : 6-hour forecast

- Provides hourly analysis and short-range forecast

- Used on Met Éireann public internet site [www.met.ie]
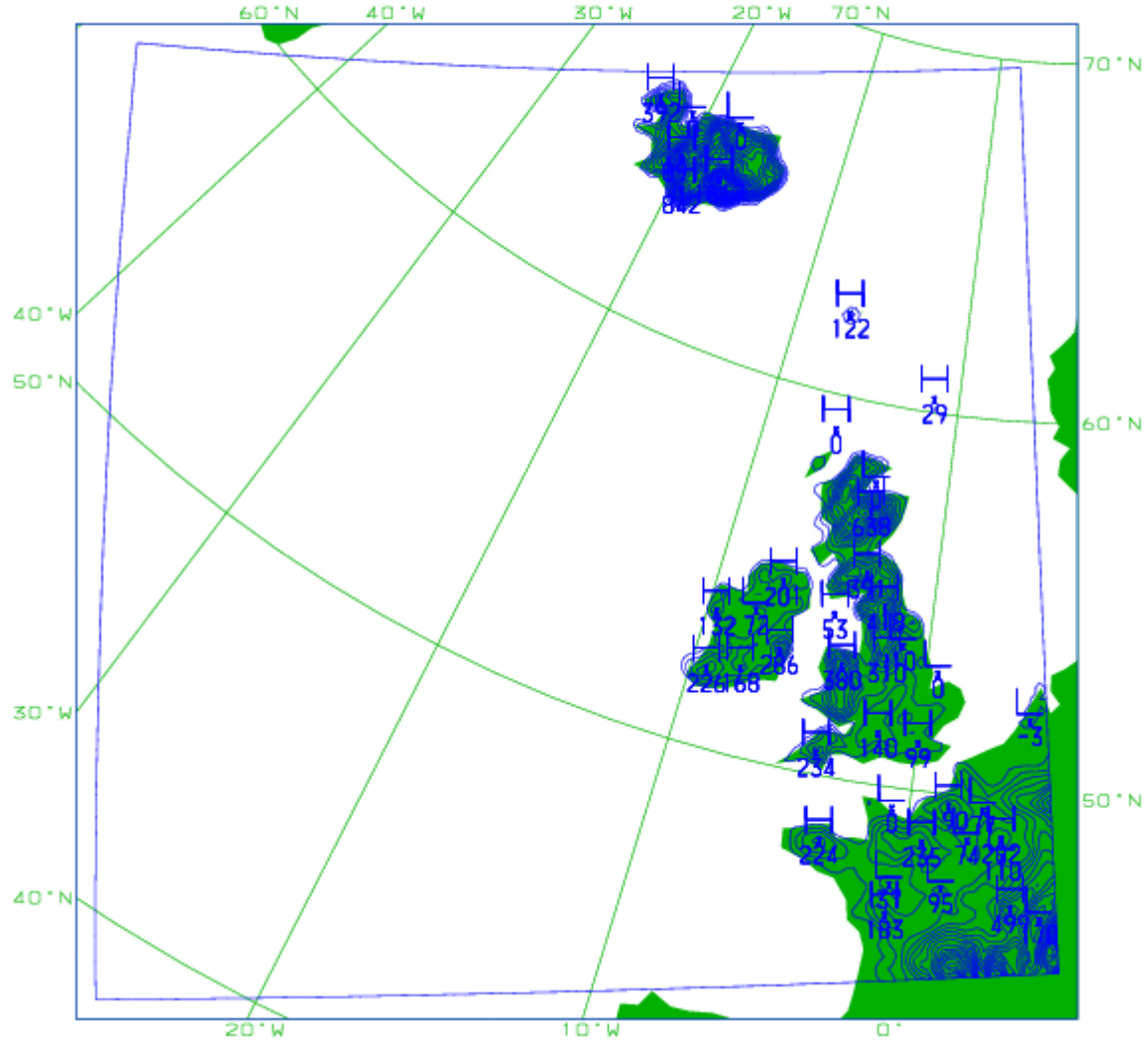
# OPERATIONAL USES of HIRLAM

## General Forecasting

• Forecast guidance out to 48-hours

## WAM wave model

• Forecast 10-metre winds drive model [ECWAM at ICHEC]

## Roadice Prediction System

• Forecast parameters are used as first guess for [human] forecaster

## SATREP

• Overlay on satellite plots [ZAMG SATREP analysis scheme]

MET éireann

## RESEARCH ACTIVITIES

Better Specification of B.C.'s for NWP models

Operational Implementation of Nested System

Preliminary test runs of Harmonie at ICHEC

# FUTURE PLANS ….

Expand area [to North of Greenland]

Look at use of higher resolution ECMWF boundary files

Investigate 4DVAR

Assimilation of satellite data [ATOVS]

Replace mogall [backup] cluster

Thank You