



ILMATIETEEN LAITOS  
METEOROLOGISKA INSTITUTET  
FINNISH METEOROLOGICAL INSTITUTE

# Real-time forecast charts from different Hirlams: concept and examples

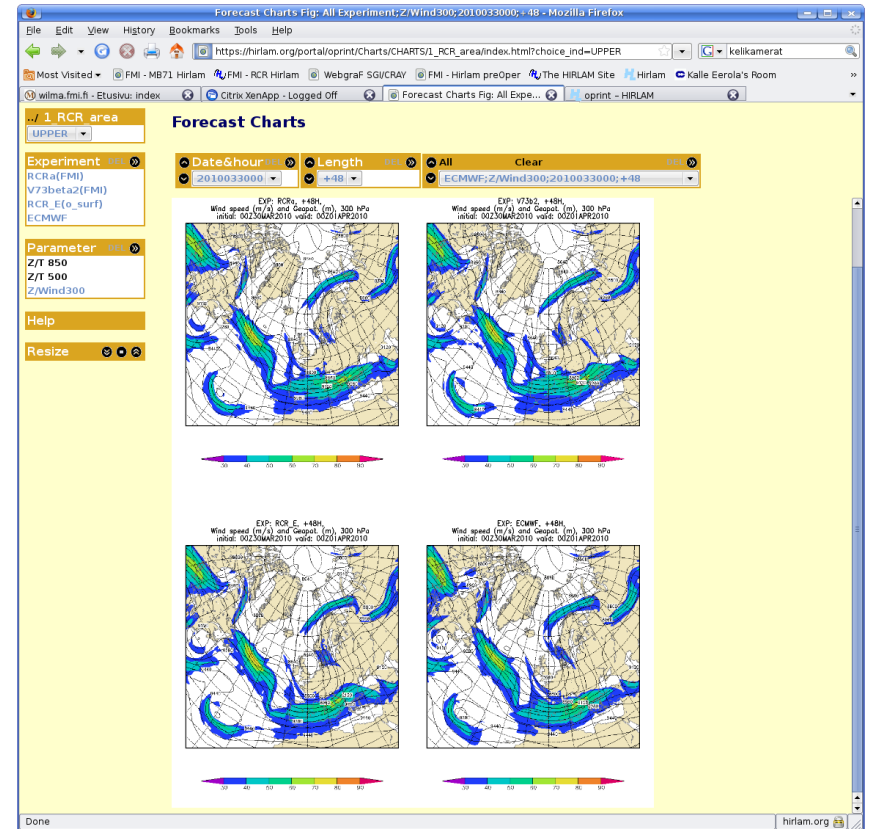
**Kalle Eerola**

**Finnish Meteorological Institute**



# Motivation and background

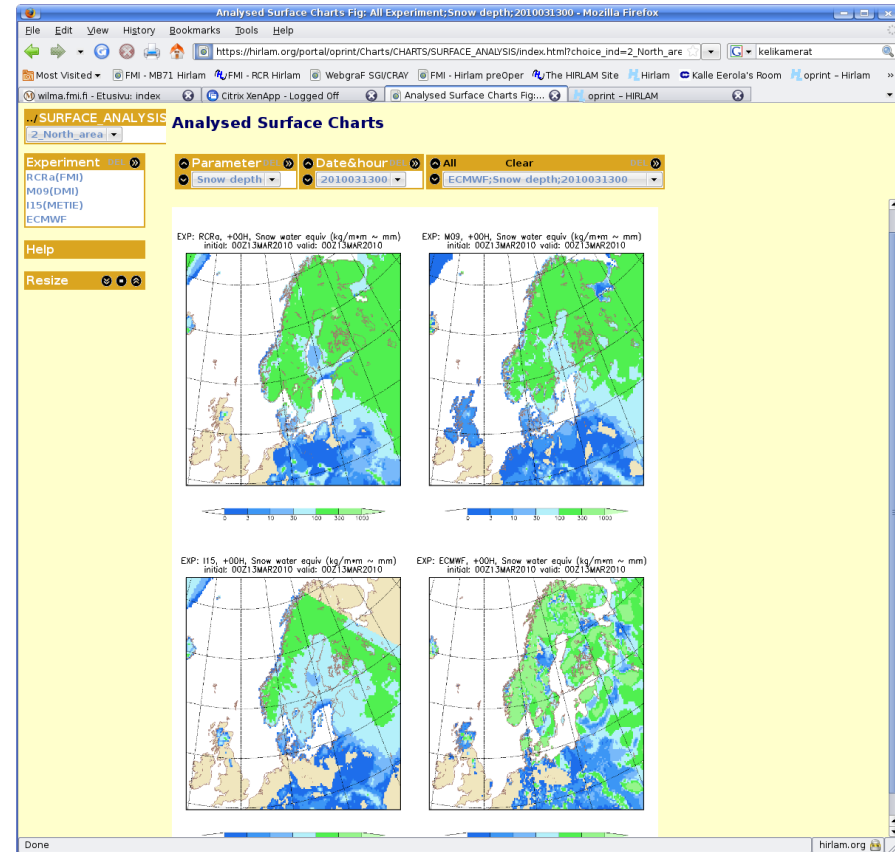
- **During Hirlam-A systematic work has been done to collect in real-time products from different operation Hirlam implementations to be shown on hirlam.org**
  - Observation Verification Inter-comparison
  - Monitoring and statistics of the data assimilation system
  - Diagnosis and statistics of daily operational runs
  - Mast data verification
  - ...
- **Latest development is the forecast charts**





# Basic ideas

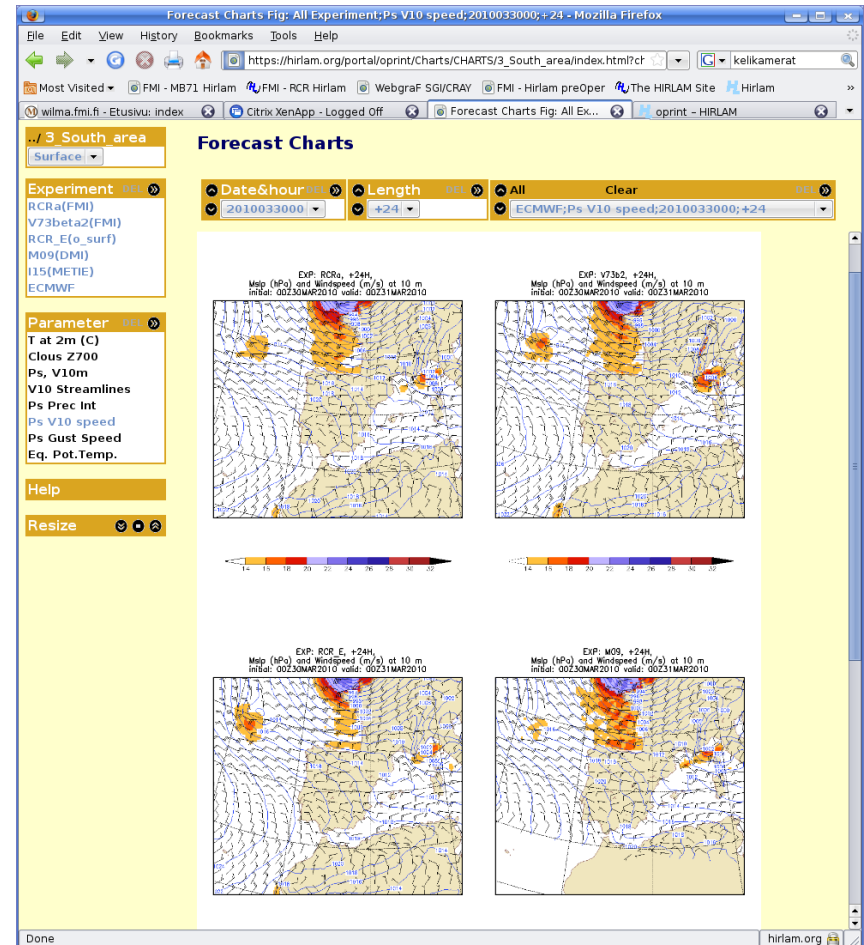
- **Different models: different areas**
- **Different graphics systems and different layout**
- **Not easy to compare**
- **For easy comparison**
  - Same projection
  - Uniform layout
  - Several sub-areas according to the needs
- **Near real-time**
- **Operational products**
  - Is useful also in experimentation
- **<https://hirlam.org/portal/oprint/Charts/CHARTS/>**





# Implementation now

- **Collect products at ECMWF**
  - Interpolation to same projection
  - Plotting using **Grads**
- **Transfer to hirlam.org**
- **FMI products produced at FMI**
- **Show using Webgraf**
- **But**
  - Fields are big
  - Plotted figures area small
- **How to proceed**
  - Centrally: one person responsible
  - Locally: smaller amount of data to be transferred
- **This tool will be put on hirlam/harmonie repository**
  - Useful on experimentation





# What do we have now?

- **Forecasts**
  - Large area
    - RCR-area
  - Five smaller areas
  - Upper-air fields every 6 hours
  - Surface fields every 3 hours
- **Surface analysis**
  - Same areas



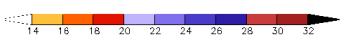
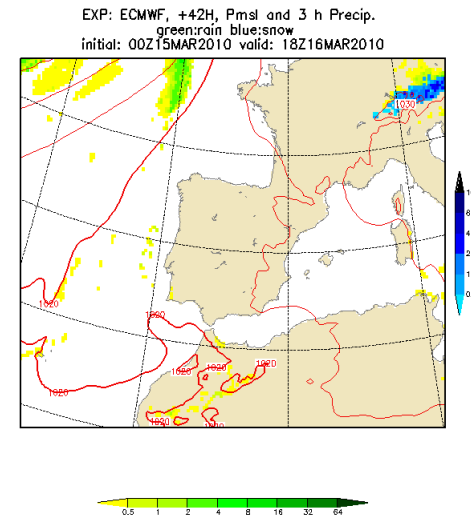
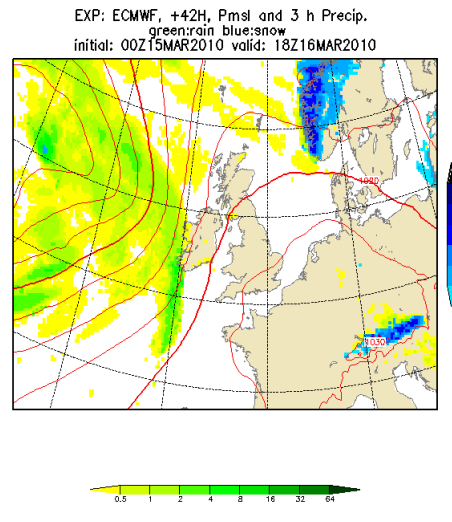
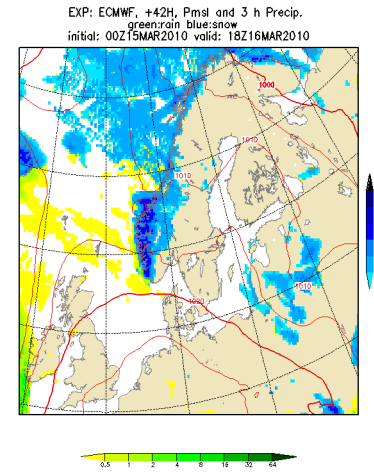
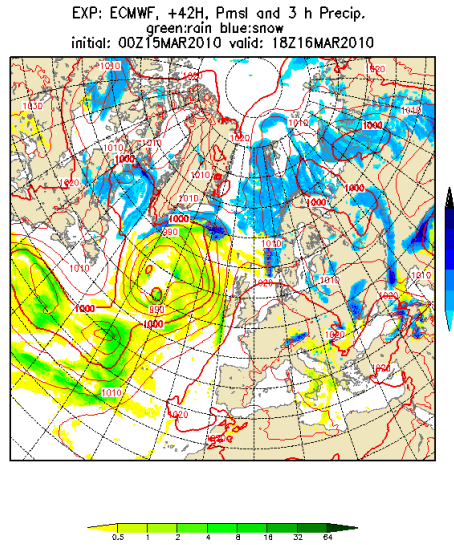
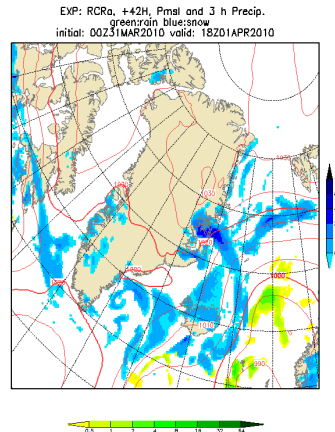
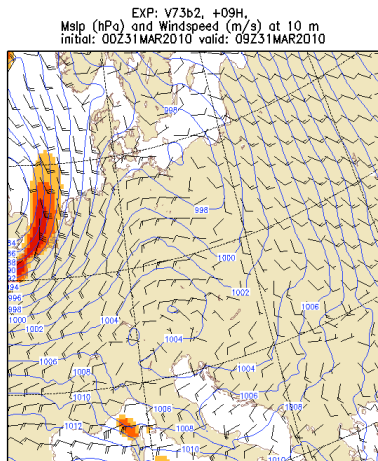


# Areas

## • At the moment

- Large RCR-area
- Five smaller area
  - Nordic (Scandinavia)
  - Southern (around Spain)
  - Western (around Ireland)
  - Greenland area
  - Central European area

## • New areas according to the need or wishes



US





## Parameters now: forecasts

- Upper-air fields
- Surface parameters
- Developing stage
  - Missing fields in some cases
  - Style to be fixed

Forecast Cha - [ ] x

File Edit View History E

← → [G] [X] [P]

Most Visited FMI - MB71

wilma.fmi... Citrix Xen...

../ 1 RCR area

Surface ▾

Experiment DEL »

RCRa(FMI)  
V73beta2(FMI)  
RCR\_TP(trunk)  
RCR\_E(o\_surf)  
M09(DMI)  
I15(METIE)  
ECMWF

Parameter DEL »

T at 2m (C)  
Clous Z700  
Ps, V10m  
V10 Streamlines  
Ps Prec Int  
Ps V10 speed  
Ps Gust Speed  
Eq. Pot.Temp.

Help

Resize [ ] [ ] [ ]

Done

Forecast Cha - [ ] x

File Edit View History E

← → [G] [X] [P]

Most Visited FMI - MB71

wilma.fmi... Citrix Xen...

../ 1 RCR area

UPPER ▾

Experiment DEL »

RCRa(FMI)  
V73beta2(FMI)  
RCR\_TP(trunk)  
RCR\_E(o\_surf)  
M09(DMI)  
I15(METIE)  
ECMWF

Parameter DEL »

Z/T 850  
Z/T 500  
Z/Wind300

Help

Resize [ ] [ ] [ ]

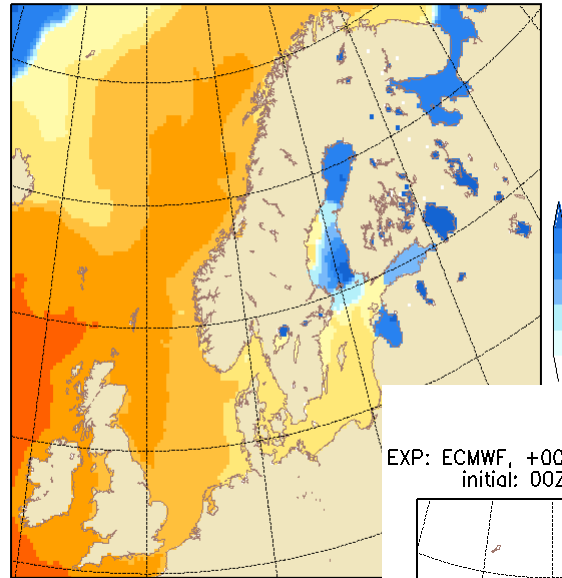
Done



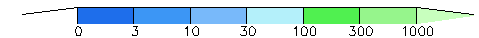
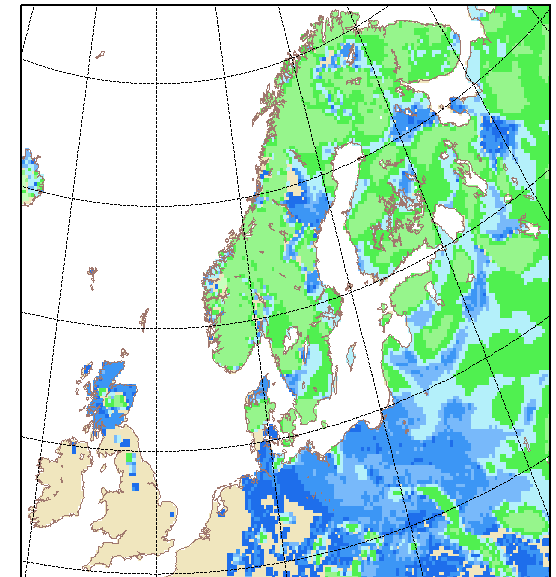
## Parameters now: analysis

- Sea (lake) surface temperature and ice coverage
- Snow water equivalent

EXP: ECMWF, +00H, SST and Ice cov.  
initial: 00Z15MAR2010 valid: 00Z15MAR2010



EXP: ECMWF, +00H, Snow water equiv (kg/m<sup>2</sup>m ~ mm)  
initial: 00Z15MAR2010 valid: 00Z15MAR2010







# Examples of usage so far

- **Snow analysis**
- **Sea surface/lake temperature**



Analysed Surface Charts Fig: All Experiment; Snow depth; 2010031200 - Mozilla Firefox

File Edit View History Bookmarks Tools Help

file:///home/eeerolak/HANKKEET/TODO/My\_WEBGRAF/Webgraf/SURFACE\_ANALYSIS/index.html?choice\_ind=2\_North\_ar kelikamerat

Most Visited FMI - MB71 Hirlam FMI - RCR Hirlam Webgraf SGI/CRAY FMI - Hirlam preOper The HIRLAM Site Hirlam Kalle Eerola's Room oprint - Hirlam

wilma.fmi.fi - Uutiset: Tutkav... Citrix XenApp - Logged Off Analysed Surface Charts Fig... oprint - HIRLAM

### .../SURFACE\_ANALYSIS Analysed Surface Charts

2\_North\_area

**Experiment** DEL

- RCRa(FMI)
- V73beta2(FMI)
- RCR\_TP(trunk)
- M09(DMI)
- I15(METIE)
- ECMWF

**Help**

**Resize**

**Parameter** DEL

Snow depth

**Date&hour** DEL

2010031200

**All** Clear DEL

ECMWF; Snow depth; 2010031200

EXP: RCRa, +00H, Snow water equiv (kg/m<sup>2</sup>m ~ mm)  
initiat: 00Z12MAR2010 valid: 00Z12MAR2010

EXP: V73b2, +00H, Snow water equiv (kg/m<sup>2</sup>m ~ mm)  
initiat: 00Z12MAR2010 valid: 00Z12MAR2010

EXP: RCR\_TP, +00H, Snow water equiv (kg/m<sup>2</sup>m ~ mm)  
initiat: 00Z12MAR2010 valid: 00Z12MAR2010

EXP: M09, +00H, Snow water equiv (kg/m<sup>2</sup>m ~ mm)  
initiat: 00Z12MAR2010 valid: 00Z12MAR2010

EXP: I15, +00H, Snow water equiv (kg/m<sup>2</sup>m ~ mm)  
initiat: 00Z12MAR2010 valid: 00Z12MAR2010

EXP: ECMWF, +00H, Snow water equiv (kg/m<sup>2</sup>m ~ mm)  
initiat: 00Z12MAR2010 valid: 00Z12MAR2010

0 3 10 30 100 300 1000



Analysed Surface Charts Fig: All Experiment;Snow depth;2010041000 - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://hirlam.org/portal/oprint/Charts/CHARTS/SURFACE\_ANALYSIS/index.html? Google

Most Visited FMI - MB71 Hirlam FMI - RCR Hirlam WebgraF SGI/CRAY FMI - Hirlam pre0... The HIRLAM Site Hirlam

### .. SURFACE\_ANALYSIS

1\_RCR\_area

**Experiment** DEL

- RCRa(FMI)
- V73beta2(FMI)
- M09(DMI)
- ECMWF

**Help**

**Resize**

**Parameter** DEL

Snow depth

**Date&hour** DEL

2010041000

**All** Clear DEL

ECMWF;Snow depth;2010041000

EXP: RCRa, +00H, Snow water equiv (kg/m<sup>2</sup>m ~ mm)  
initial: 00Z10APR2010 valid: 00Z10APR2010

EXP: V73b2, +00H, Snow water equiv (kg/m<sup>2</sup>m ~ mm)  
initial: 00Z10APR2010 valid: 00Z10APR2010

EXP: M09(DMI);Snow depth;2010041000 ~ mm  
initial: 00Z10APR2010 valid: 00Z10APR2010

EXP: ECMWF, +00H, Snow water equiv (kg/m<sup>2</sup>m ~ mm)  
initial: 00Z10APR2010 valid: 00Z10APR2010

0 3 10 30 100 300 1000

0 3 10 30 100 300 1000

0 3 10 30 100 300 1000

0 3 10 30 100 300 1000

javascript:parent.pre\_getFig([0,2,0,4,0])

20.04.10

11  
hirlam.org



ILM  
ME  
FIN

Analysed Surface Charts Fig: All Experiment; SST and Ice; 2010031100 - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://hirlam.org/portal/oprint/Charts/CHARTS/SURFACE\_ANALYSIS/index.html?choice\_ind=2\_North\_area

Most Visited FMI - MB71 Hirlam FMI - RCR Hirlam WebgraF SGI/CRAY FMI - Hirlam preOper The HIRLAM Site Hirlam Kalle Eerola's Room oprint - Hirlam

../SURFACE\_ANALYSIS

2\_North\_area

Experiment DEL

- MB71(FMI)
- RCRa(FMI)
- V73beta2(FMI)
- RCR\_TP(trunk)
- ECMWF

Help

Resize

Parameter DEL

SST and Ice

Date&hour DEL

2010031100

All Clear DEL

ECMWF;SST and Ice;2010031100

EXP: MB71, +00H, SST and Ice cov.  
initial: 00Z11MAR2010 valid: 00Z11MAR2010

EXP: RCRa, +00H, SST and Ice cov.  
initial: 00Z11MAR2010 valid: 00Z11MAR2010

EXP: V73b2, +00H, SST and Ice cov.  
initial: 00Z11MAR2010 valid: 00Z11MAR2010

EXP: RCR TP, +00H, SST and Ice cov.  
initial: 00Z11MAR2010 valid: 00Z11MAR2010

EXP: ECMWF, +00H, SST and Ice cov.  
initial: 00Z11MAR2010 valid: 00Z11MAR2010



# Developments and conclusions

- **Cleaning and corrections**
- **New products**
  - Forecasts based on valid time
  - Analysis increment maps
  - Including Harmonie fields
- **Develop a general tool to be added to the hirlam.org repository**
- **WEB address:**  
<https://hirlam.org/portal/oprint/Charts/CHARTS/>
- **Comments and suggestions welcome**



# Conclusions