



Koninklijk Nederlands
Meteorologisch Instituut
Ministerie van Verkeer en Waterstaat

CHAPEAU, the Common Hirlam
Aladin Package for Educational
and Academic Use

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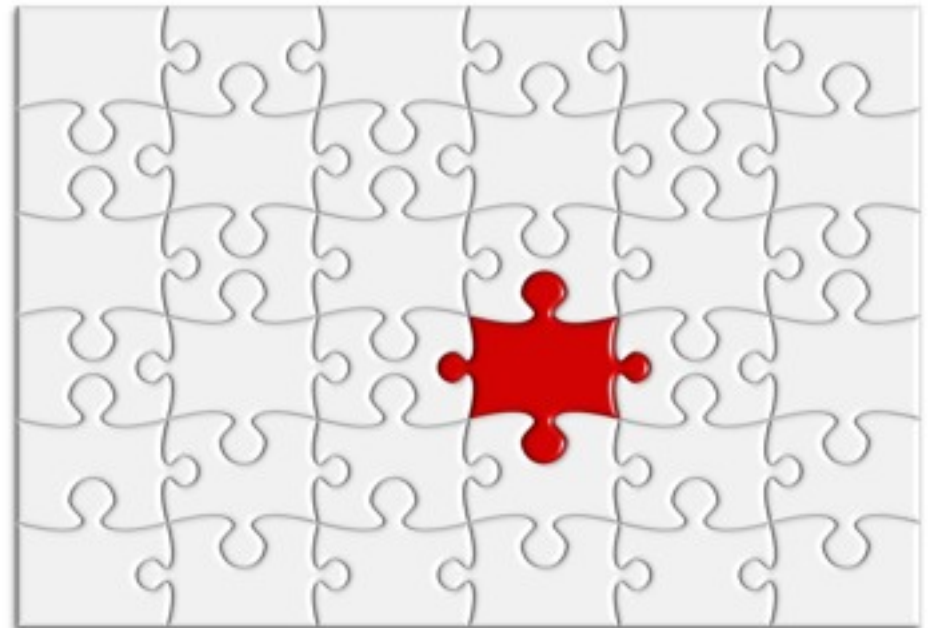
Parts of the puzzle

Emiel:

- Improved meteorological predictions for airport capacity tuning:
IMPACT and HARMONIE

Ben:

- CHAPEAU concept and progress





Emiel and the IMPACT project

- Who is this Emiel?
- IMPACT: improved meteorological prediction for airport capacity tuning
- Objective
 - » Studying predictability of extreme weather at Schiphol Airport area using high resolution **HARMONIE**
- Description
 - Schiphol: accurate prediction of critical weather parameters
 - » Safety, planning, etc
 - Cooperation of KNMI, Delft University of Technology and Wageningen UR



HARMONIE

More specifically:

- AROME physics
 - Non-hydrostatic
 - Resolution 2.5 km
 - Run on ECMWF environment
-
- Case study of recent severe weather conditions
 - Study influence of a.o.
 - › size modelled region
 - › variation of surface data (e.g. SST)
 - › Climate modifications
 - Comparison with e.g. Hirlam 11km



Case study

Storm Kyrill,
18 January 2007

- Fast cyclogenesis
- Strong winds in Schiphol area

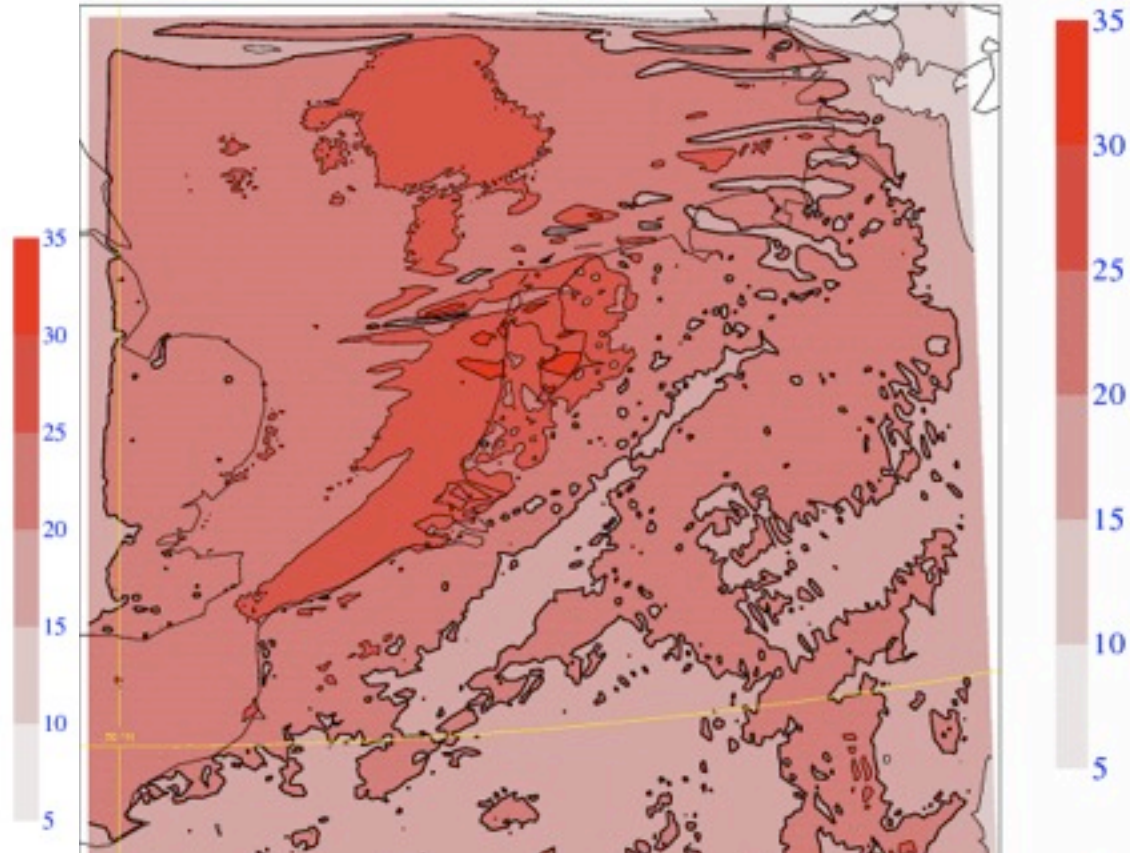
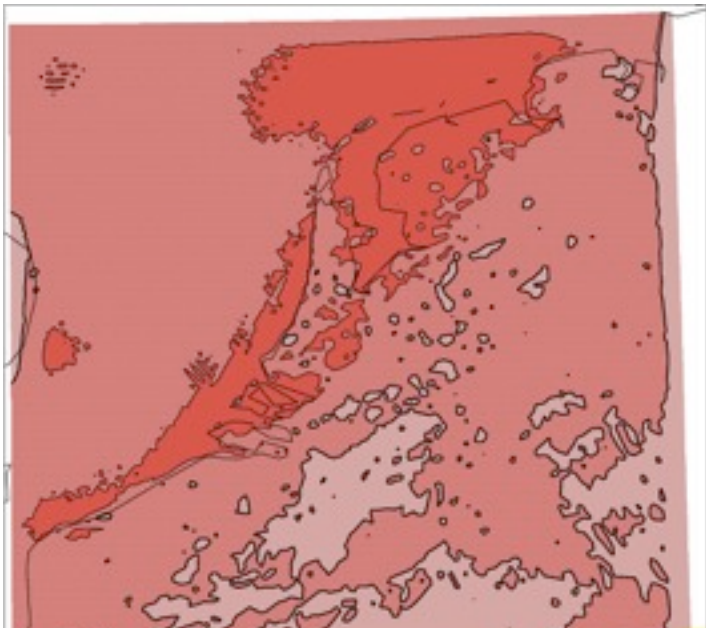




Preliminary results

200 vs 300 gridpoints (2.5 km) : (wind speed @ 12:00)

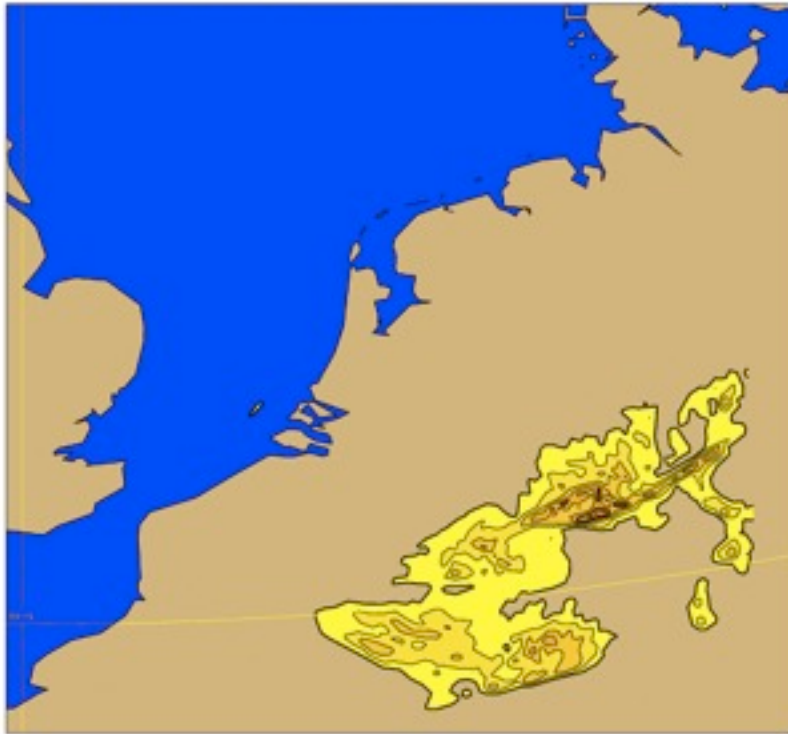
- boundary effects
- inland structures



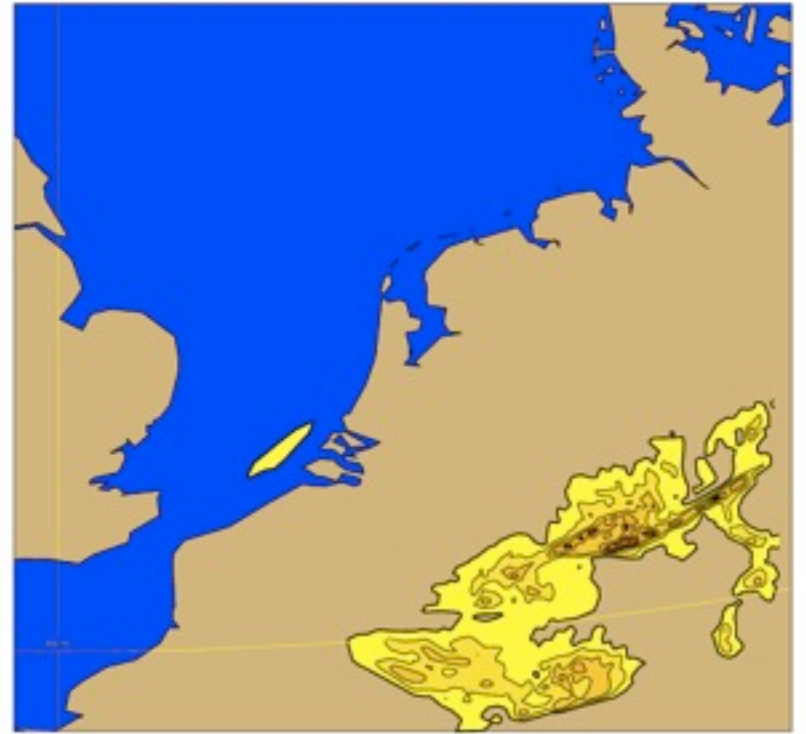


Effect SST (normal or $+2^\circ$) on precipitation

Thursday 18 January 2007 00UTC ATHEN Forecast 1+2 VT: Thursday 18 January 2007 02UTC On **large scale precip

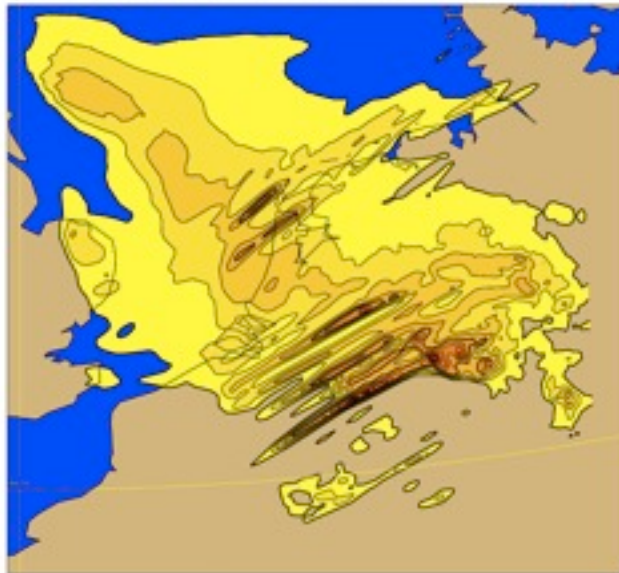


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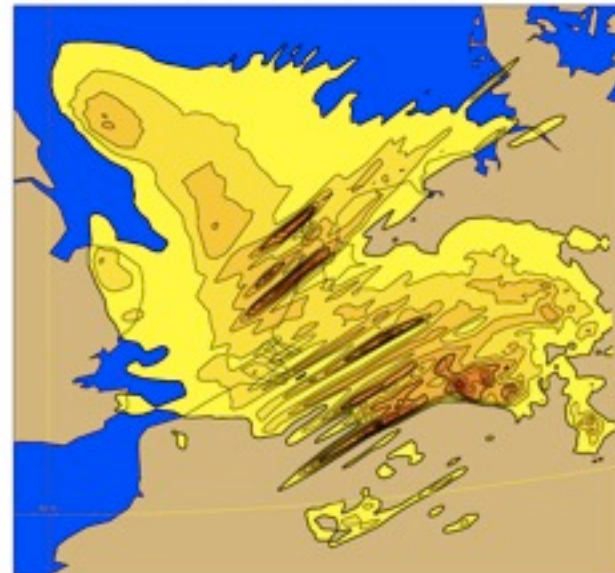


Thursday 18 January 2007 00:00 UTC ATHEN Forecast to 7 VT: Thursday 18 January 2007 07:00 UTC on "large scale precip



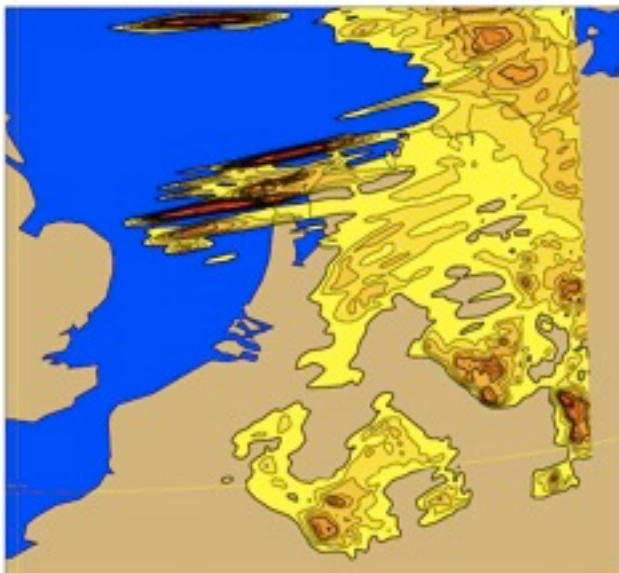
Left:
SST

Thursday 18 January 2007 00:00 UTC ATHEN Forecast to 7 VT: Thursday 18 January 2007 07:00 UTC on "large scale precip



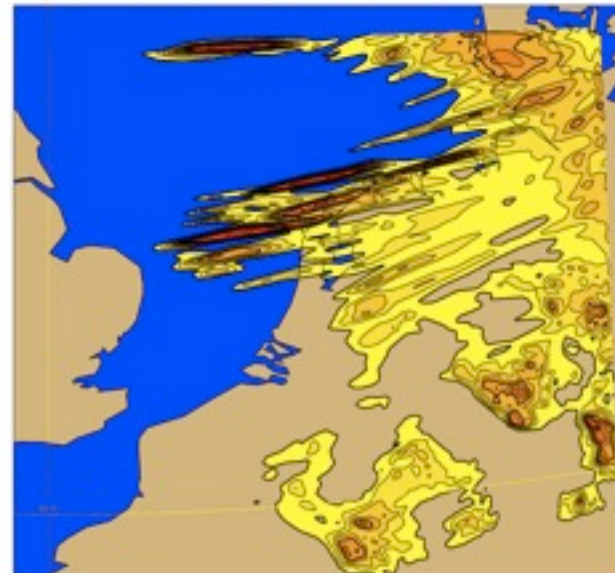
Right:
SST+2

Thursday 18 January 2007 00:00 UTC ATHEN Forecast to 12 VT: Thursday 18 January 2007 12:00 UTC on "large scale precip



@
07:00
12:00

Thursday 18 January 2007 00:00 UTC ATHEN Forecast to 12 VT: Thursday 18 January 2007 12:00 UTC on "large scale precip





Goals CHAPEAU

- internet distribution of Harmonie
- for education and academic research
- on local computer
- support most common types of experiments
 - scenarios
 - modification of inputs
 - parameterization studies
 - sensitivity (namelists)
 - source code modification
 - chemistry
 - urban scale
- simplification



Conclusion

- Progress is disappointing
 - time spent
 - moving target
- Daan Degrauwe and Alex Deckmyn, KMI
 - Linux implementation
 - > mSMS
 - > fixed inputs (Belgian area)
 - > single processor (no MPI)
 - postprocessing and visualization in R
- KNMI
 - set up academic users at ECMWF
 - “helpdesk”
- WRF implementation using ECMWF boundaries



Concept

- reduce complexity and maintenance, increase flexibility
- use WRF infrastructure
 - climate fields
 - boundaries
 - initial conditions
 - postprocessing and visualization, verification
- netCDF interface to forecast model
- plug in forecast model
- direct and fair comparison to WRF



Disadvantage

- twice the amount of documentation





Advantage of our lack of progress

- use most recent developments, e.g.
 - MAKEUP by Sami Saarinen
 - precompiled packages by Ryad El Khatib
 - FA-API by Tomas Kral
 - 36h1 by system group
- but we could use your help while we perform our

“Surgery with a pizza cutter”

