
Koninklijk Nederlands
Meteorologisch Instituut
*Ministerie van Verkeer en Waterstaat*

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

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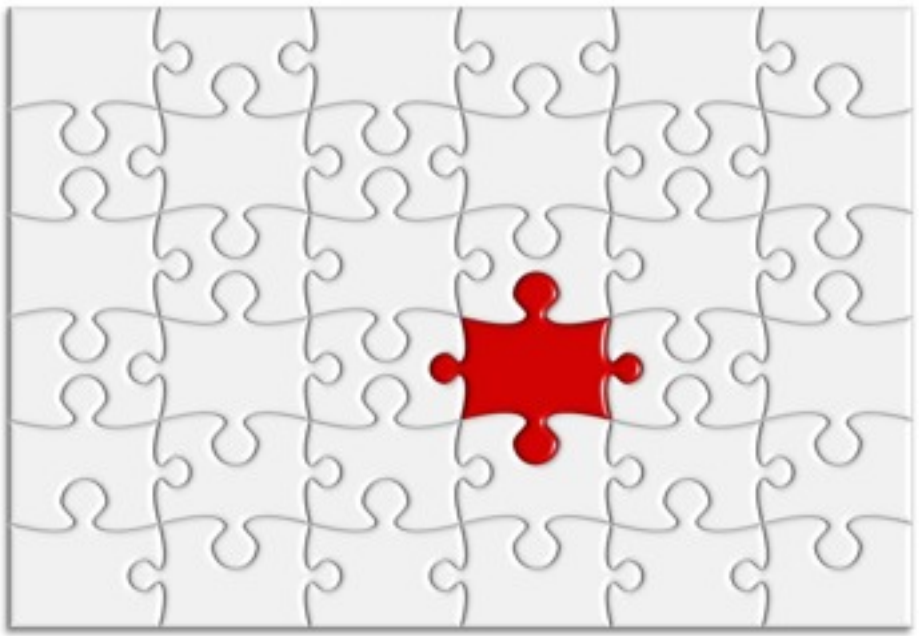
# Parts of the puzzle

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,

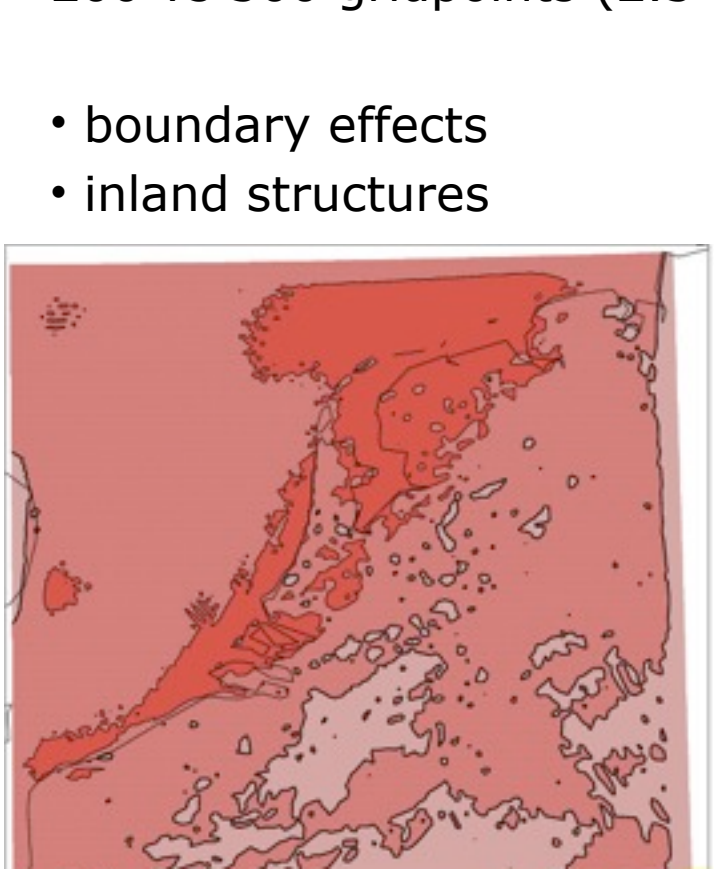
18 January 2007

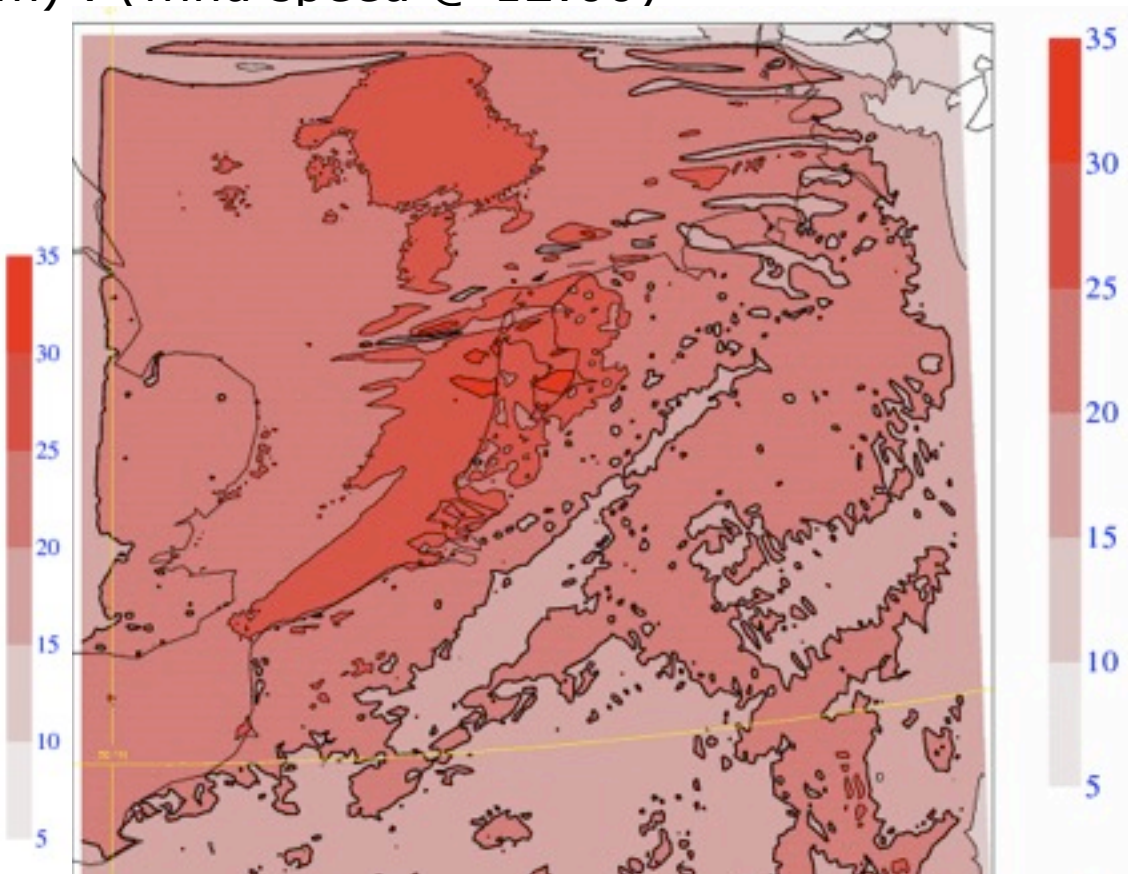
- Fast cyclogenesis
- Strong winds in Schiphol area

# Preliminary results

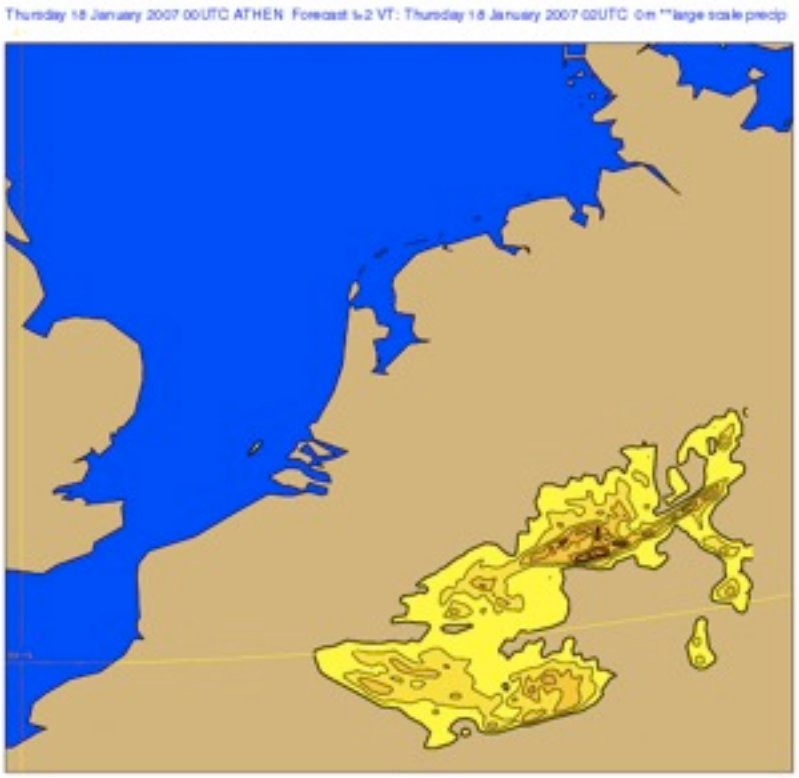
200 vs 300 gridpoints (2.5 km) : (wind speed @ 12:00)

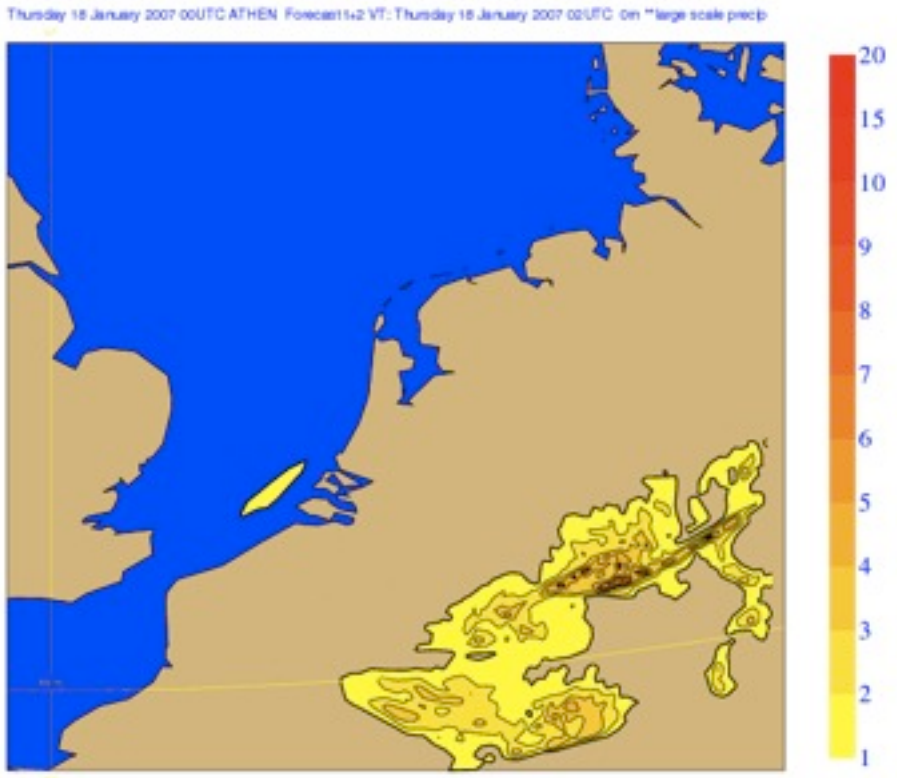
- boundary effects
- inland structures

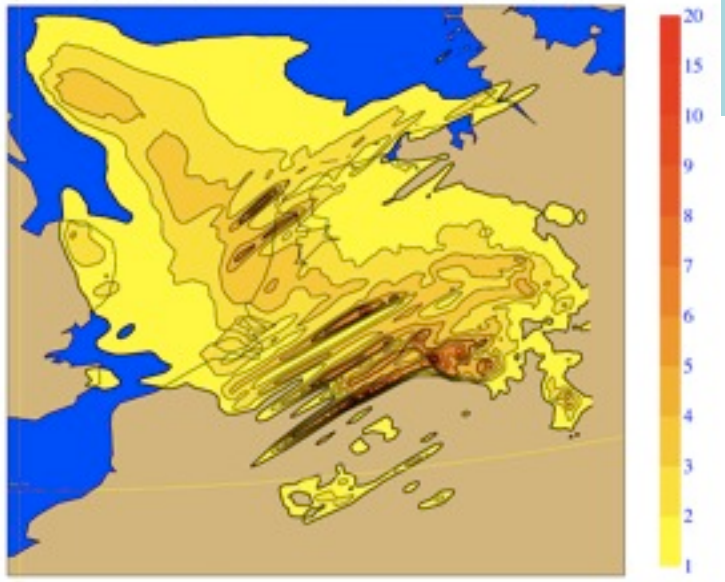


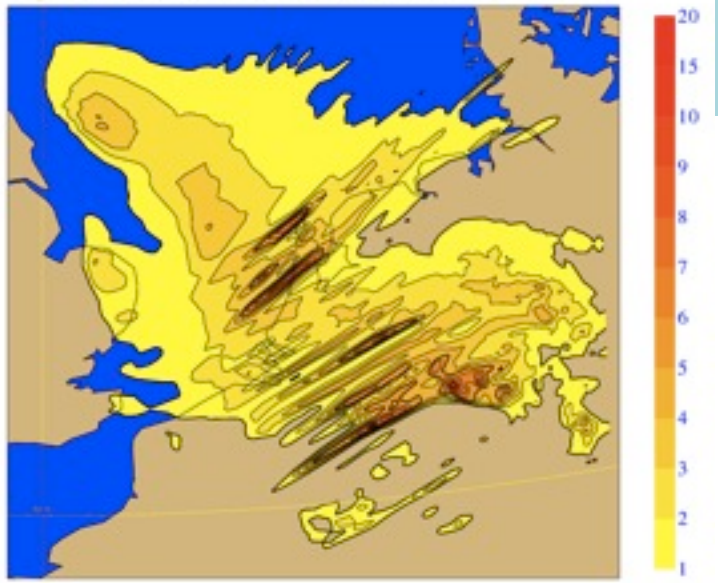


# Effect SST (normal or +2°) on precipitation





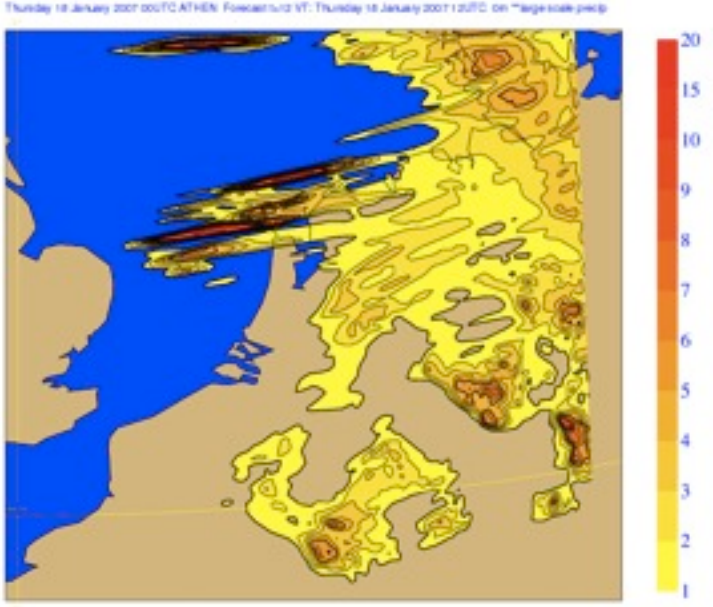


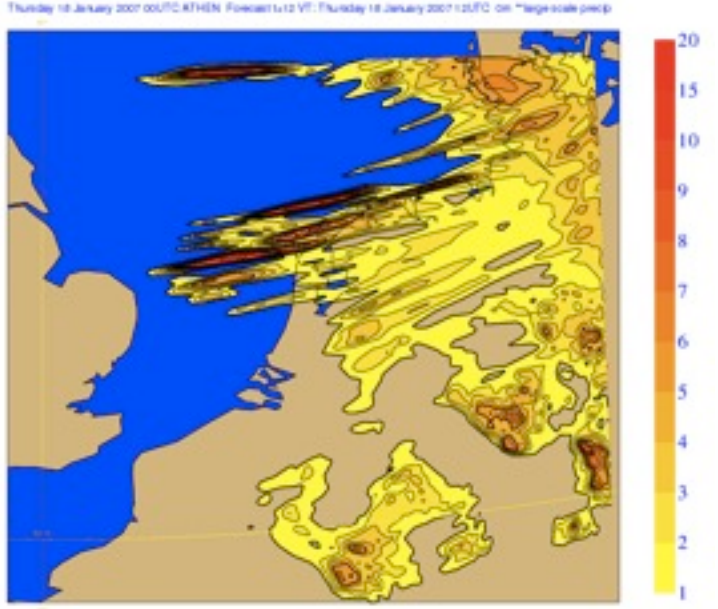


Left:
SST

Right:
SST+2

@
07:00
12:00





# 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"