

Zentralanstalt für Meteorologie und Geodynamik 

Status of the pre-operational ALADIN-LAEF (ALADIN *L*imited *A*rea  
*E*nsemble *F*orecasting) system

**A. Kann, Y. Wang, C. Wittmann, G. Pistotnik, F. Wimmer**

with  contributions from:

**S. Ivatek-Sahdan, M. Bellus, R. Mladek, S. Tascu, E. Hagel, etc.**

## LAEF configuration at ECMWF:

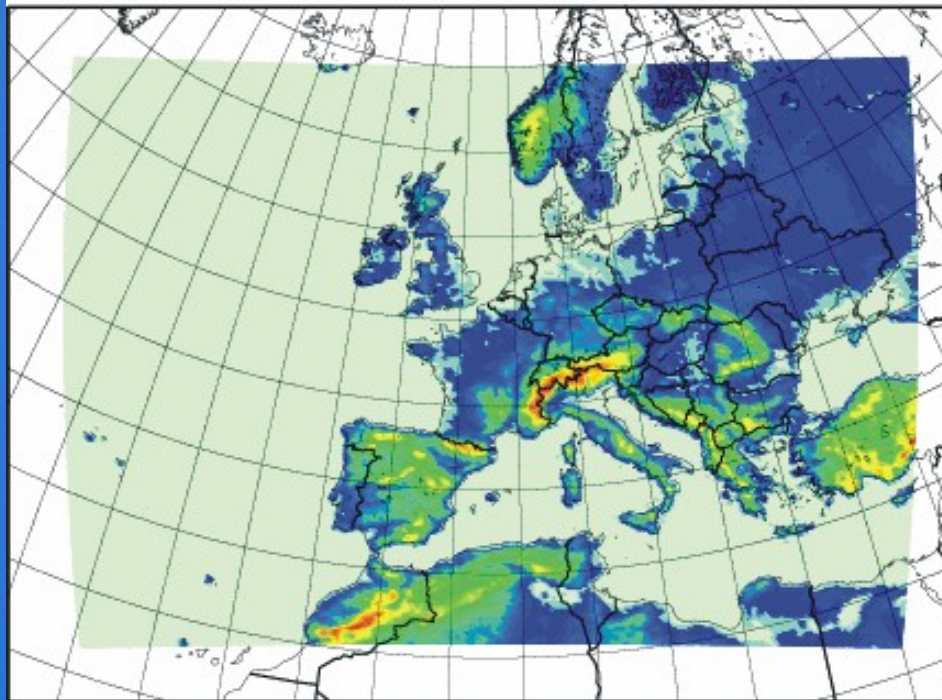
17. ALADIN Workshop, Oslo  
01/05/07

- Operational procedure: ECMWF – EPS Data from MARS → 901 → 927 → 001 → ftp to ZAMG → FA to GRIB1 conversion → products for visualization
- Dynamical Downscaling of the first 16 EPS - members + Control (T399) + Deterministic (T799)
- Aladin Cycle 31T1
- Hydrostatic, spectral,  $\eta$  levels in vertical
- 18km horizontal resolution, 37 vertical levels
- SLSI time integration scheme
- Forecast range: +54 hours, ini: 00 and 12 UTC.
- Parameterizations: Bougeault deep convection, Lopez microphysics, ISBA for surface and soil, RRTM radiation scheme, etc.....

# ALADIN-LAEF Domain & Orography

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## LAEF Domain & Topography



ALADIN LAEF integration domain and orography. The domain covers large parts of Europe, northern areas of Africa and the north Atlantic. The product and verification domain matches almost the LACE domain with  $dx, dy = 0.15\text{deg}$  resolution.

# Operational Products: Overview

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01/05/07

- EPSgrams for a variety of stations/towns in Europe, navigatable via Web-interface for forecasters

The screenshot displays a web browser window with the address <http://info4/public/mgruppe/index.php>. The page content features a map of Europe titled "LAEF - EPSGRAMME für diverse Städte:". The map is densely populated with red circular markers, each representing a meteorological station. These markers are distributed across various countries, including France, Germany, Poland, Czech Republic, Slovakia, Hungary, Italy, and others. A sidebar on the left side of the browser window contains a navigation menu with the following items:

- > ZAMG-Home
- > ECMWF-Home
- > ALADIN-Home
- > Internetportale
- > Meteogramme
- > ECMWF-Charts
- > FWM-2m-Temp.
- > PEPS-Charts
- > LAEF-EPSGRAM
- > LAEF-CHARTS
- > Monatsprognose
- > Saisonprognose
- > INCA-Gifs
- > Verifikation
- > PSEUDO-RASO
- > Warnungen
- > Über uns
- > Forschung
- > Wissenswertes
- > News

# Operational Products: Overview

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The screenshot shows a web browser window with the address bar containing 'http://info4/public/mgruppe/index.php'. The browser's menu bar includes 'Datei', 'Bearbeiten', 'Ansicht', 'Favoriten', and 'Extras'. The address bar also shows 'http://info4/public/mgruppe/index.php'. The main content area displays a map of Europe with numerous red dots indicating station locations. The map is titled 'LAEF - EPSGRAMME für diverse Städte:'. A red arrow points to a red dot on the map near Sofia, Bulgaria. The left sidebar contains a navigation menu with the following items:

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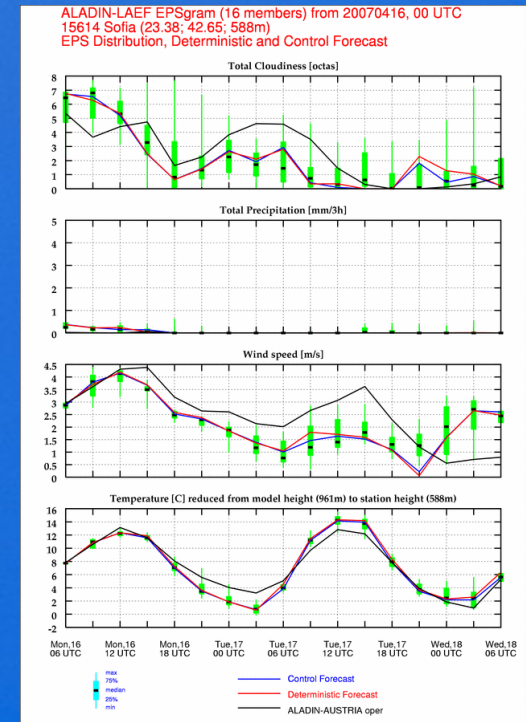
http://info4/public/mgruppe/index.php - Microsoft Internet Explorer

Dati Bearbeiten Ansicht Favoriten Extras ?

Adresse http://info4/public/mgruppe/index.php

LAEF - EPSGRAMME für diverse Städte:

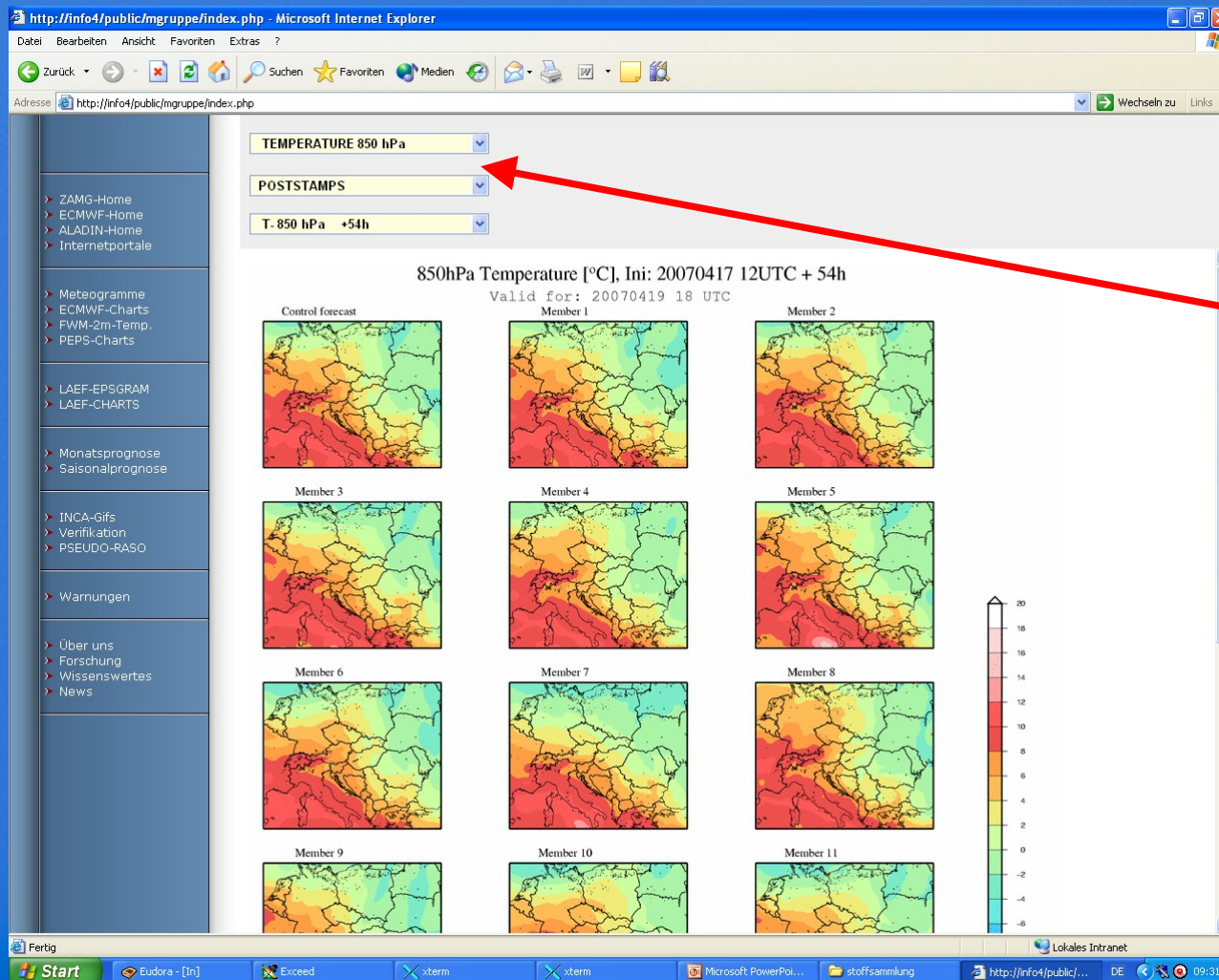
- > ZAMG-Home
- > ECMWF-Home
- > ALADIN-Home
- > Internetportale
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- **Poststamp charts** for: Precipitation, T850, H500, MSL-Pressure, 10m Wind Speed, RH2m.
- **Spaghetti plots** for: T850, H500, RH2m.
- **Ensemble Mean + Spread plots** for: T850, T2m, PHI500, MSL-Pressure, T2mMax, T2mMin, 10m Wind speed, RH2m.
- **Probability plots** for:
  - Precipitation (24-hourly accumulated sums exceeding pre-defined thresholds (5mm, 10mm, 25mm, 50mm, 75mm, 100mm/24h)).
  - 2m Temperature ( $T2m < -10^{\circ}\text{C}$ ,  $-10^{\circ}\text{C} < T2m < 0^{\circ}\text{C}$ ,  $0^{\circ}\text{C} < T2m < 10^{\circ}\text{C}$ ,  $10^{\circ}\text{C} < T2m < 20^{\circ}\text{C}$ ,  $20^{\circ}\text{C} < T2m < 30^{\circ}\text{C}$ ,  $T2m > 30^{\circ}\text{C}$ ).
  - Gusts (exceeding 60km/h, 80km/h, 100km/h, 120km/h)
  - CAPE (exceeding 200 J/kg, 500 J/kg, 1000 J/kg, 1500 J/kg, 2000 J/kg)

# Operational Products: Overview

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Web-interface  
(under construction): All products are navigatable via web-interface for forecasters on intranet.

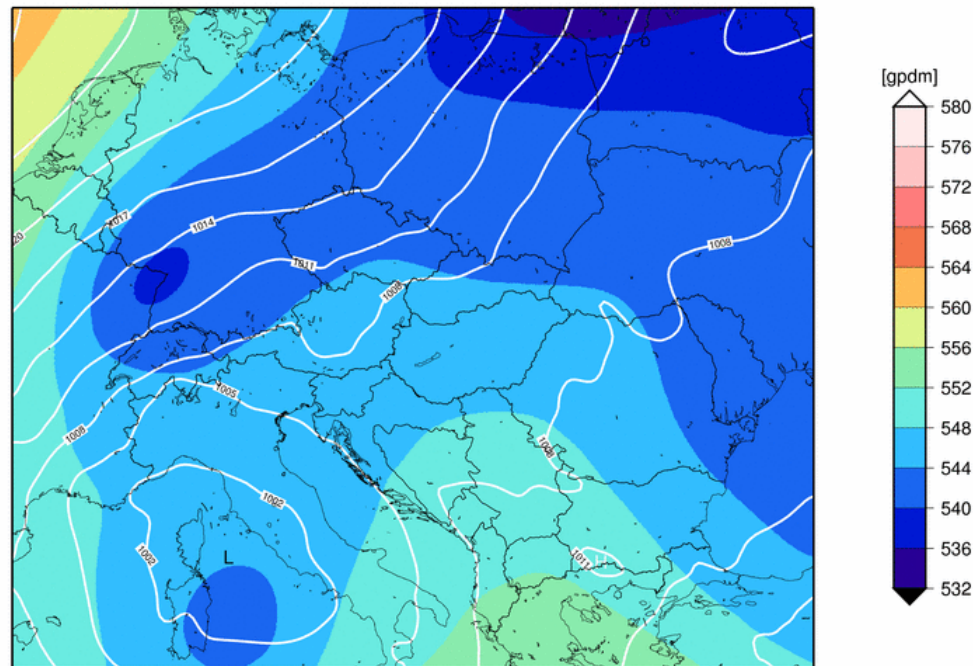


## Case study 03., 04.04.2007

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500hPa Geopotential [gpdm] + MSLPRESSURE [hPa]

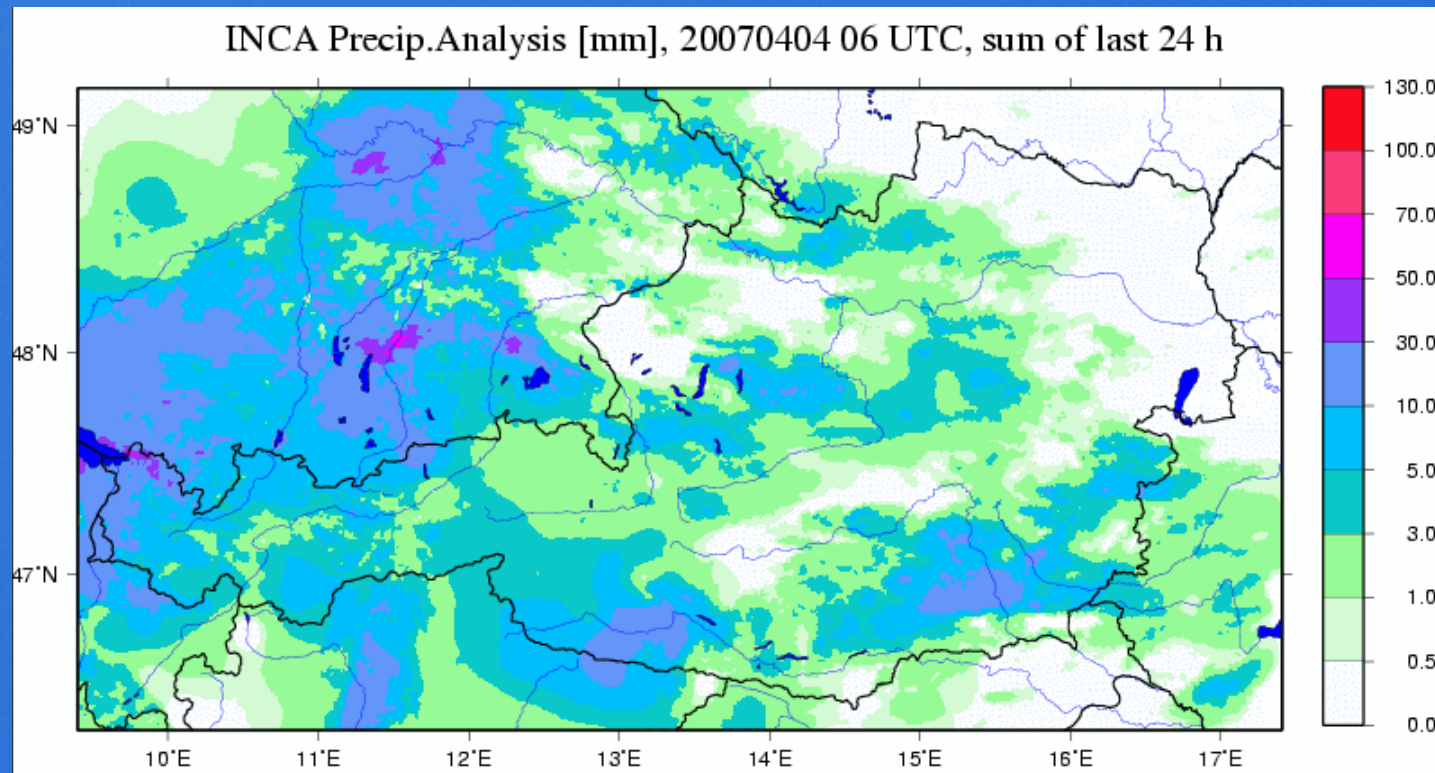
**Analysis for: 20070404 00UTC**



ECMWF Analyses at 20070404 00UTC: Geopotential at 500hPa and MSL-Pressure.

## Case study 03., 04.04.2007

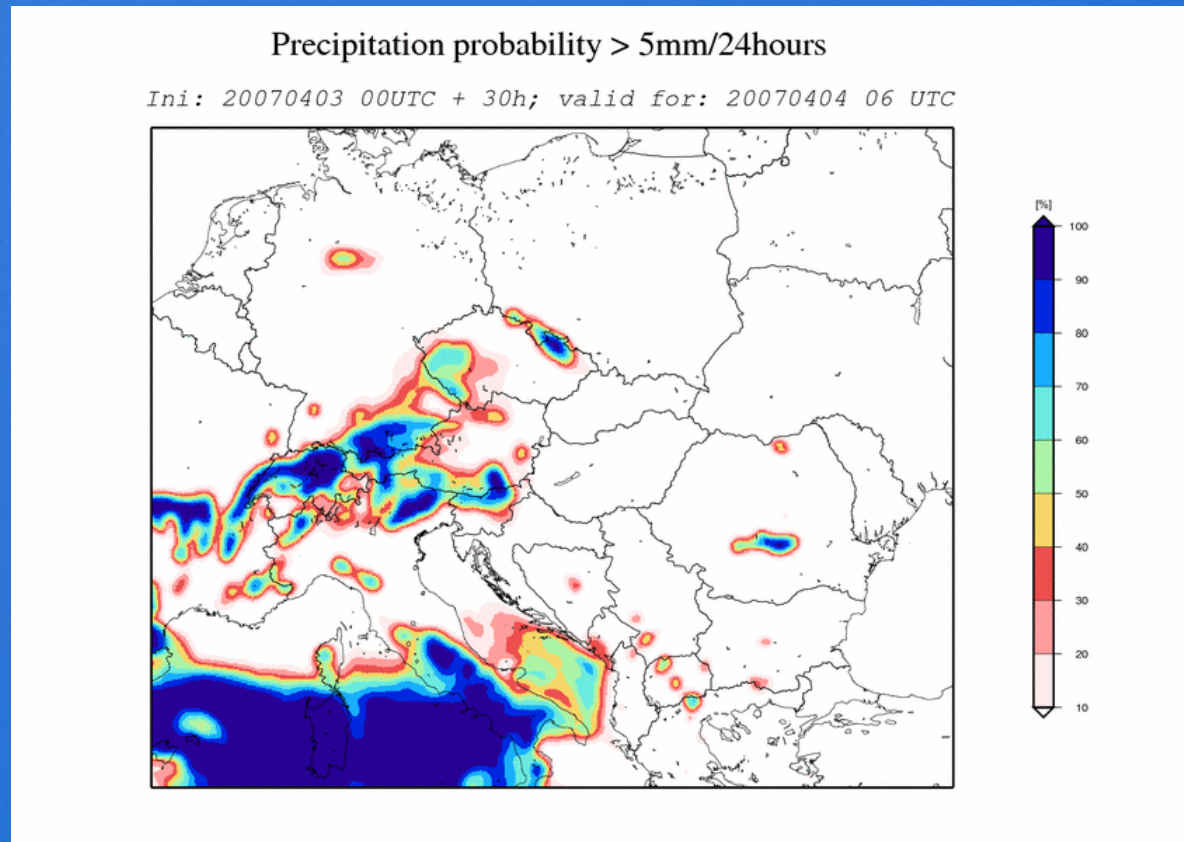
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INCA 24 hours accumulated precipitation analysis (from 20070403 06 UTC to 20070404 06 UTC).

## Case study 03., 04.04.2007

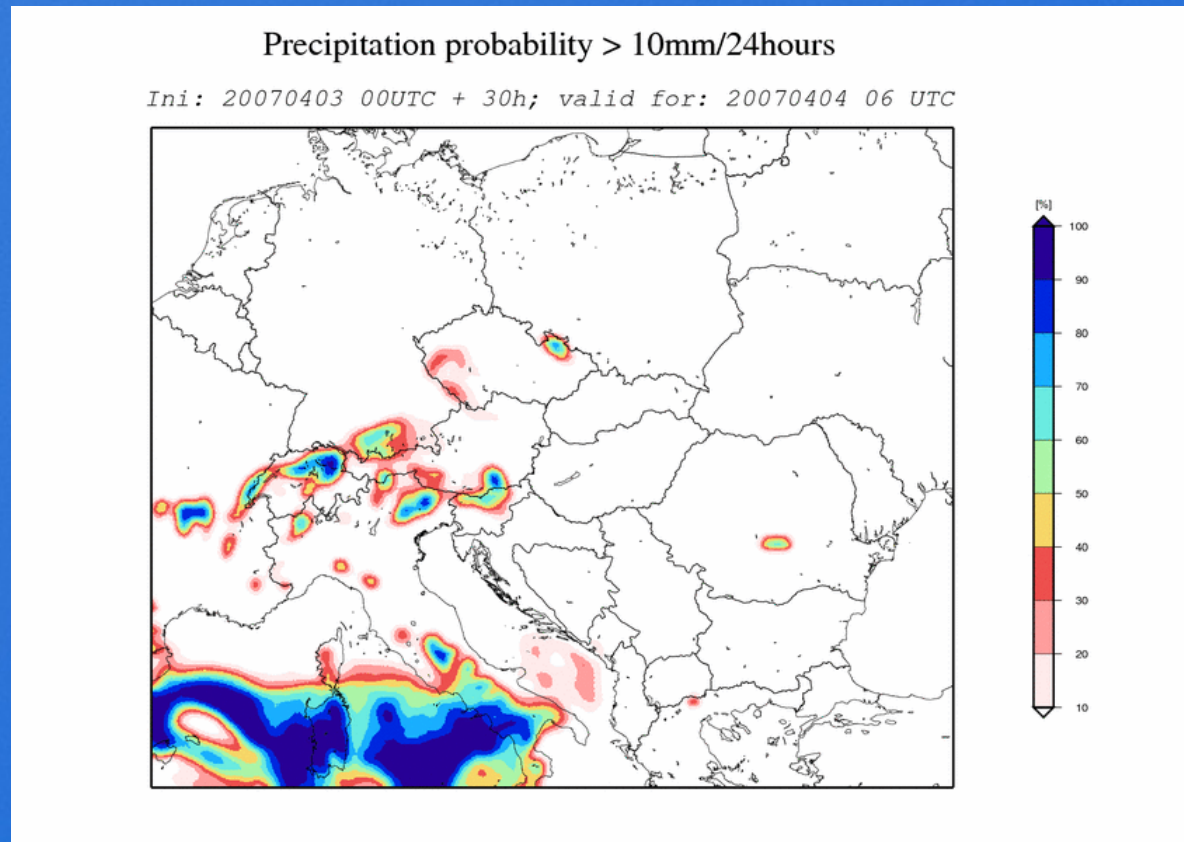
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Probability for  $RR > 5 \text{ mm/24h}$  (from 20070403 06 – 20070404 06 UTC).

## Case study 03., 04.04.2007

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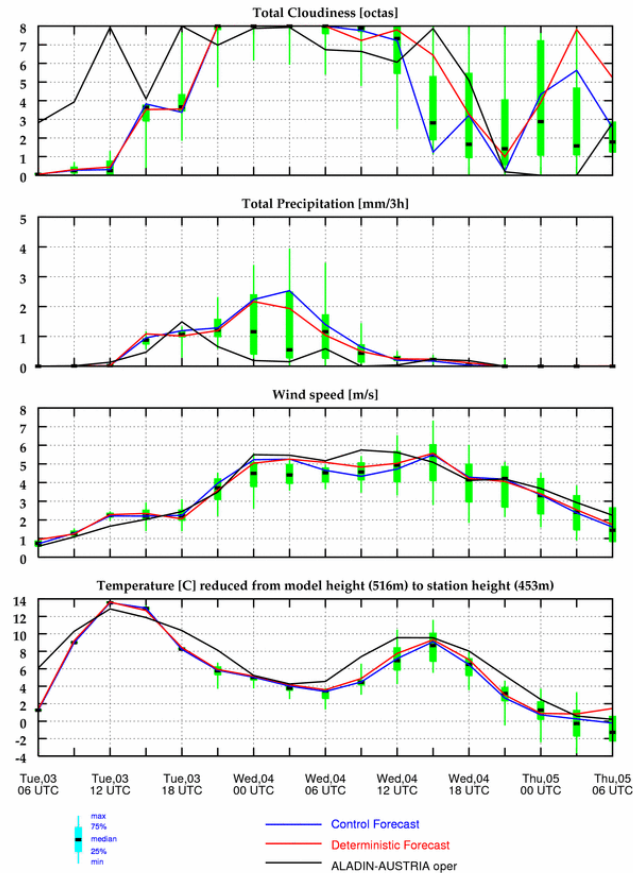


Probability for  $RR > 10 \text{ mm/24h}$  (from 20070403 06 – 20070404 06 UTC).

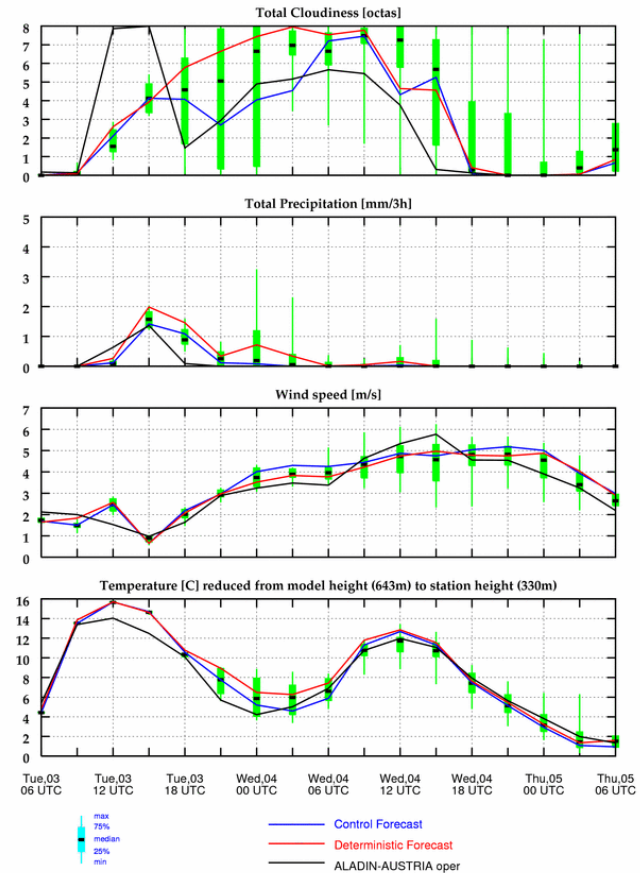
# Case study 03., 04.04.2007

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ALADIN-LAEF EPSgram (16 members) from 20070403, 00 UTC  
10870 Muenchen (11.82; 48.37; 453m)  
EPS Distribution, Deterministic and Control Forecast



ALADIN-LAEF EPSgram (16 members) from 20070403, 00 UTC  
11390 Hartberg (15.98; 47.28; 330m)  
EPS Distribution, Deterministic and Control Forecast

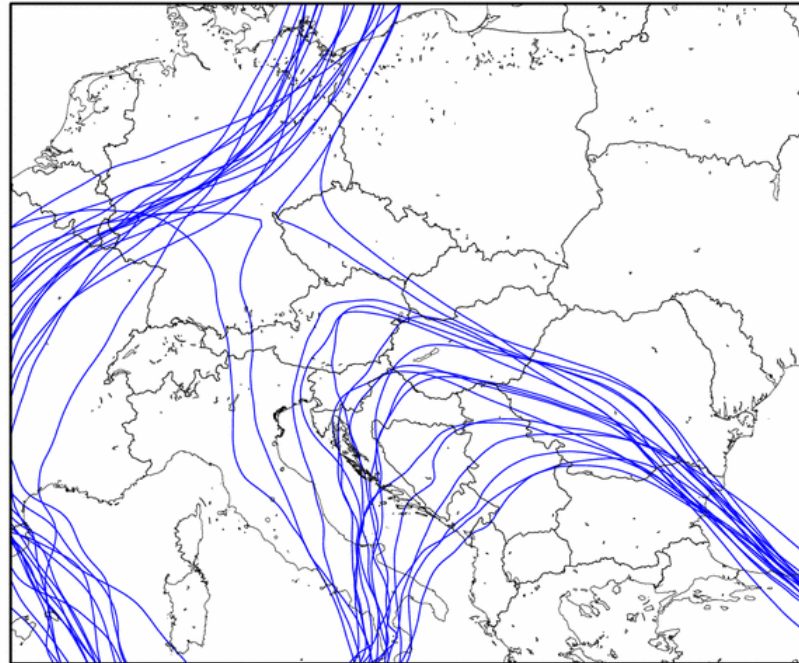


## EPSgrams for Munich and Hartberg (East of Styria)

## Case study 03., 04.04.2007

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Spaghetti: 500hPa Geopotential, 20070403 00 UTC + 30  
Valid for: 20070404 06 UTC  
***Isohypse: 548 gpm***

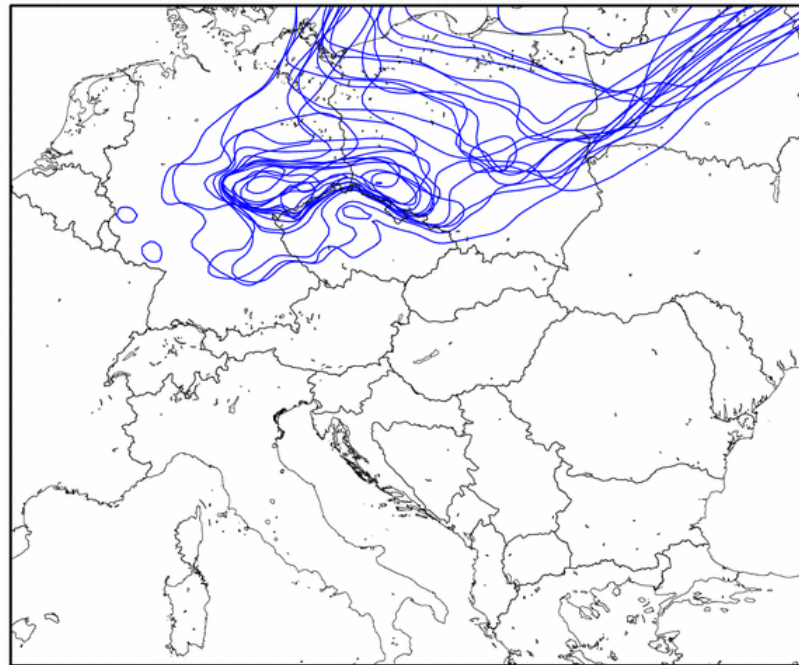


Spaghetti plot: Isohypse 548gpm, Ini: 20070403 00 UTC + 30h

## Case study 03., 04.04.2007

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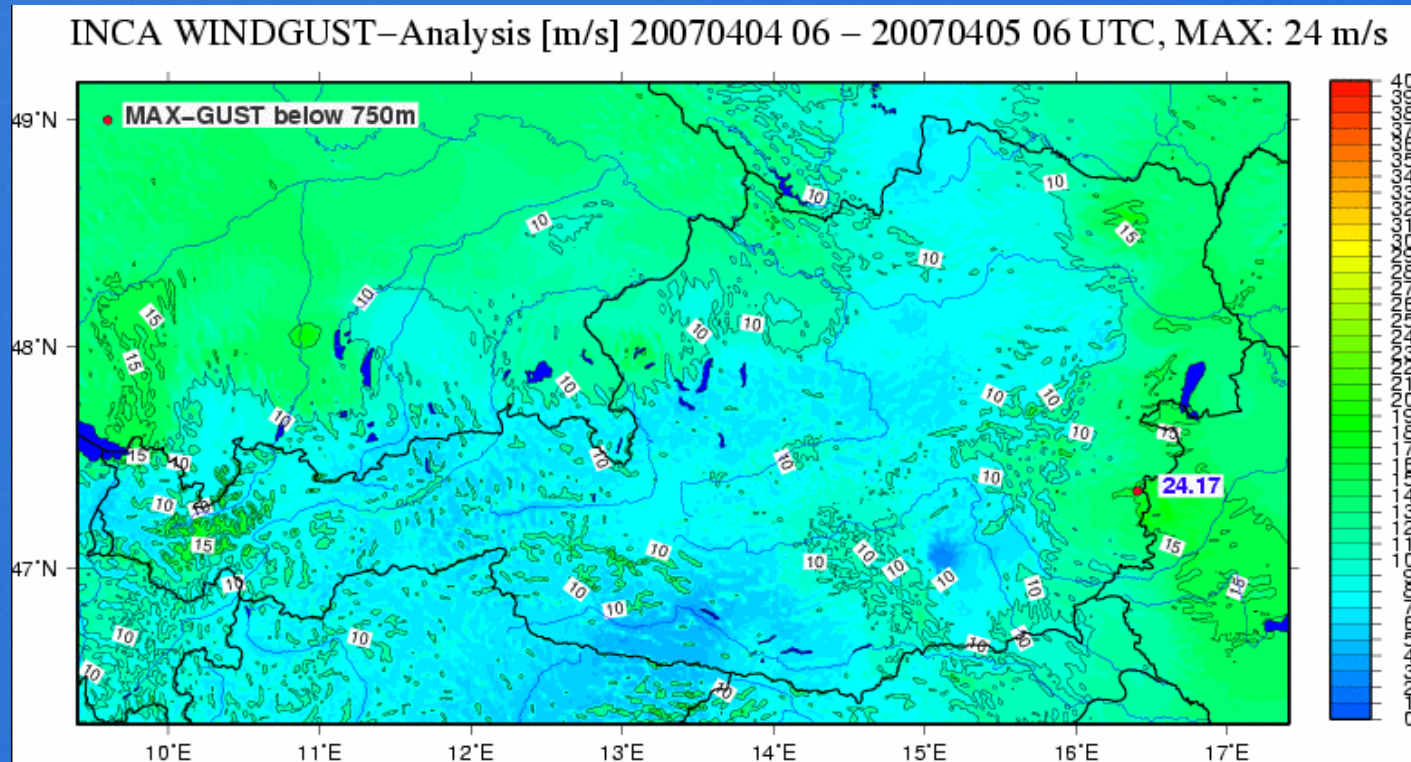
Spaghetti: 850hPa Temperature, 20070403 00 UTC + 30  
Valid for: 20070404 06 UTC  
**Isotherme: -5 °C**



Spaghetti plot: Isotherme -5°C, Ini: 20070403 00 UTC + 30h

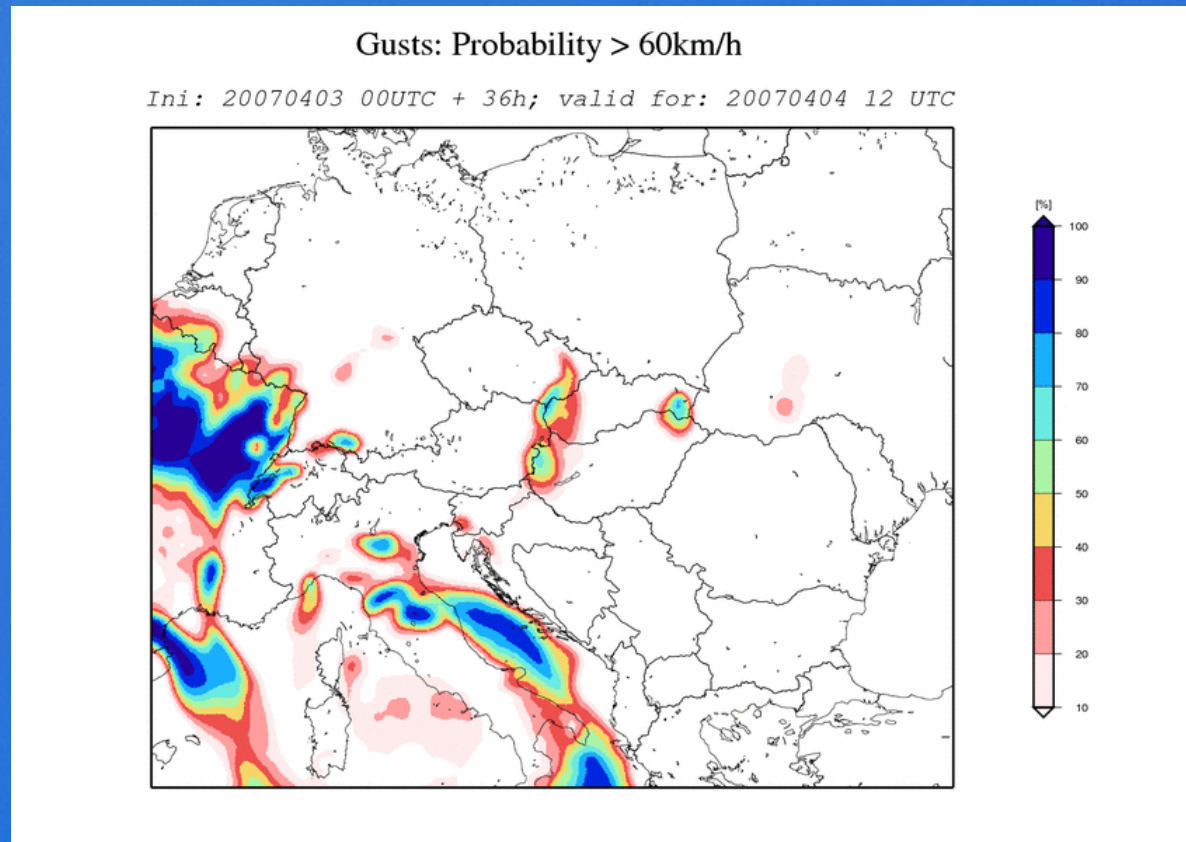
# Case study 03., 04.04.2007

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INCA Wind Gust analysis (covering time window from 20070403 06 UTC to 20070404 06 UTC).





Probability for Gusts > 60 km/h, Ini: 20070403 00 UTC + 36h

- ALADIN – LAEF products will be available for partners at <http://www.rclace.eu>
- Performing clustering and integrate only representative members
- Implementing multi-physics option
- Implementing blending ( + breeding/ET/ETKF) into LAEF
- Using different LBCs (eg. ECMWF 12 hours before, or NCEP, etc..)
- Introduction of bias correction
- Implementation of common verification package