Common (LACE, ALADIN) MAP downscaling project

MAP-SOP reminder

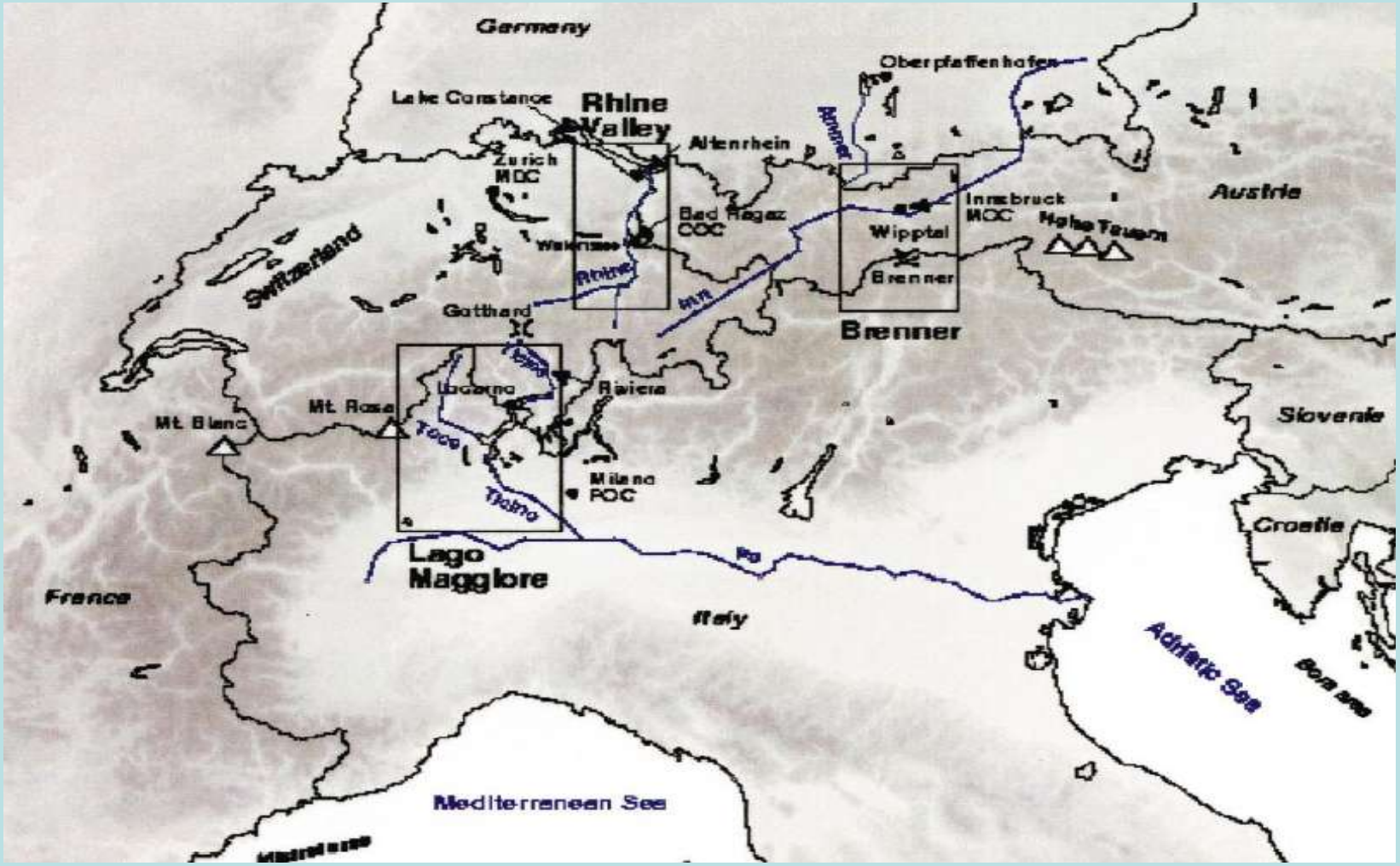
- **Mesoscale Alpine Programme**

- **Special Observation Period**
7 September -15 November 1999

The largest field experiment in Europe

11K Synops, 5K Temps (20 stations), Radars wind profilers, instrumented flights

MAP-SOP domain



17 MAP-SOP Intensive Observation Periods

Ideal test-bed for meso-scale models

2A	17 Sep	P1	Squall line, LMTA	Radars, Electricity		***
	18 Sep	P1	Liguria	Radars, Fokker	Upstream flow sampling	**
2B	19 Sep	P6	Waves, Jungfrau	Electra	Weak case, one track over Rhine Valley	*
		P5	Foehn, Rhine Valley	Merlin, soundings in RV, CVB	Strong case	***
	20 Sep	P1	Heavy rainfall, LMTA	Radars, Electra	Max precip 300mm	***
		P1	Heavy rainfall, Veneto	Teolo and Fossalon radars	Max precip 280mm	***
		P2	PV streamer, France	Wind profilers		
		P3	Flood, LMTA	Dense raingauge network	368mm/36h	***
		P4	Gap Flow, Brenner Pass	Surface Stations		
		P5	Foehn, Rhine valley			
		P6	Waves, Hohe Tauern	Electra	Strong w (8m/s), weak turbulence	***

ALADIN activities
status 2004

- Common (LACE, ALADIN) action for
  MAP ECMWF Re-analysis downscaling
  (LACE Data Manager Ivatek-Šahdan)

  ECMWF RE-analysis of SOP (2003)
  1999 -2003 **(5.5 times more data in analysis)**
  - from 60 to 40 km (T319/50L -T511/60L)
  - no envelope orog. and new subgrid orog. fields
  - new cloud and convection scheme
  - 4D-Var window extended from 6 to 12-hour
  - new shortwave radiation transfer model
  - assimilation of more sat. data, Eur. wind profiler ...

Proper downscaling of ECMWF ECMWF-ARPEGE Analysis

Common action:

Retrievals from MARS DB

Decoding GRIB $\rightarrow$ ARPEGE FA-file format

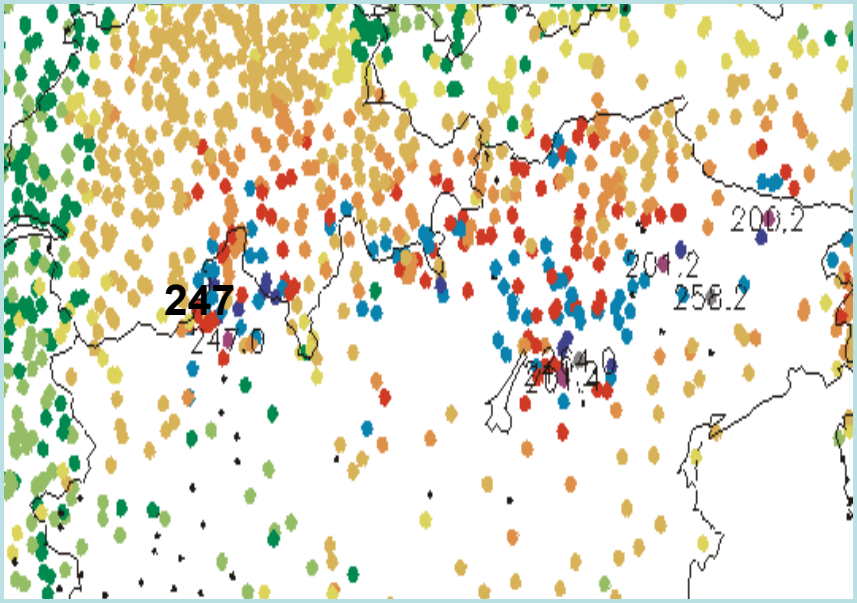
Surface – different surface parametization

Solution for ALADIN Initial fields:

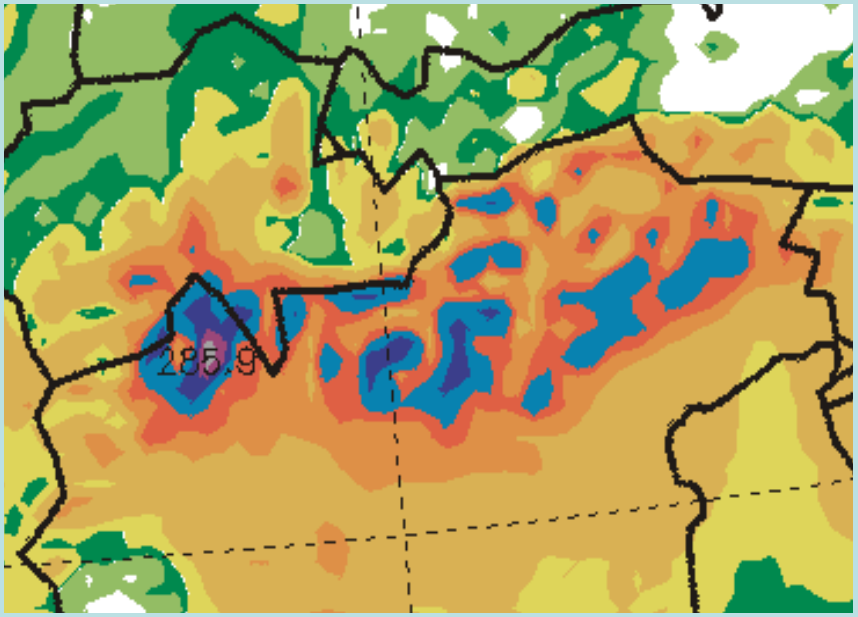
to mix ECMWF upper-air from Re-Analysis and surface fields from ARPEGE long cut-off Analysis done in 1999

Forecast of precipitation 20-21.09.1999 06 UTC

measurements



ALADIN



Outcome

- 70 days of MAP SOP test-bed is ready

- Comparisons of recent ALADIN-2 results

- Objective verification

- Comparison with the different NWP models (LM,UKMO MC2,MM5)

Future actions

- ICAM/MAP 2005 Conference
  23-27 May 2005
- Forecast Demonstration Project (FDP)

Forecast of weather of international relevance
→ high-impact weather

High-impact weather in the Alps is most prominently:
Heavy precipitation
Storms

Schedule

3/2004 Formation of a working group
→ feasibility (all the following: if yes…)
→ <u>selection of models</u>

Future FDP actions

- 12/2005 Funding decision
  - Contacting potential end-users,
  - Establishing procedures
  - Setting up of multi-model LEPS, protocols and procedures
- 6/2006 Start of validation activities (based on MAP cases), hindcast mode
- 10/2006 Start demonstration phase, forecast mode
- 1/2007 evaluation etc