

Radarové odhady srážek a jejich užití v meteorologii a hydrologii

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Green Bay, WI Homepage through 08:16 AM CDT Tue Aug 12th 2003

GRB

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Radar Image from National Weather Service: KGRB 09:47 UTC 08/12/2003

Ashland Ironwood Marquette
Park Falls Iron Mountain Escanaba
Rhinelanders Menominee
Wausau Sturgeon Bay
Marshfield Green Bay
Stevens Point Appleton
Oshkosh
Sheboygan
Portage Beaver Dam
Madison Milwaukee
Janesville Kenosha
South Haven

Manistee
Ludington
Muskegon

Radar Image from National Weather Service: KGRB 09:47 UTC 08/12/2003

Srážkoměry:

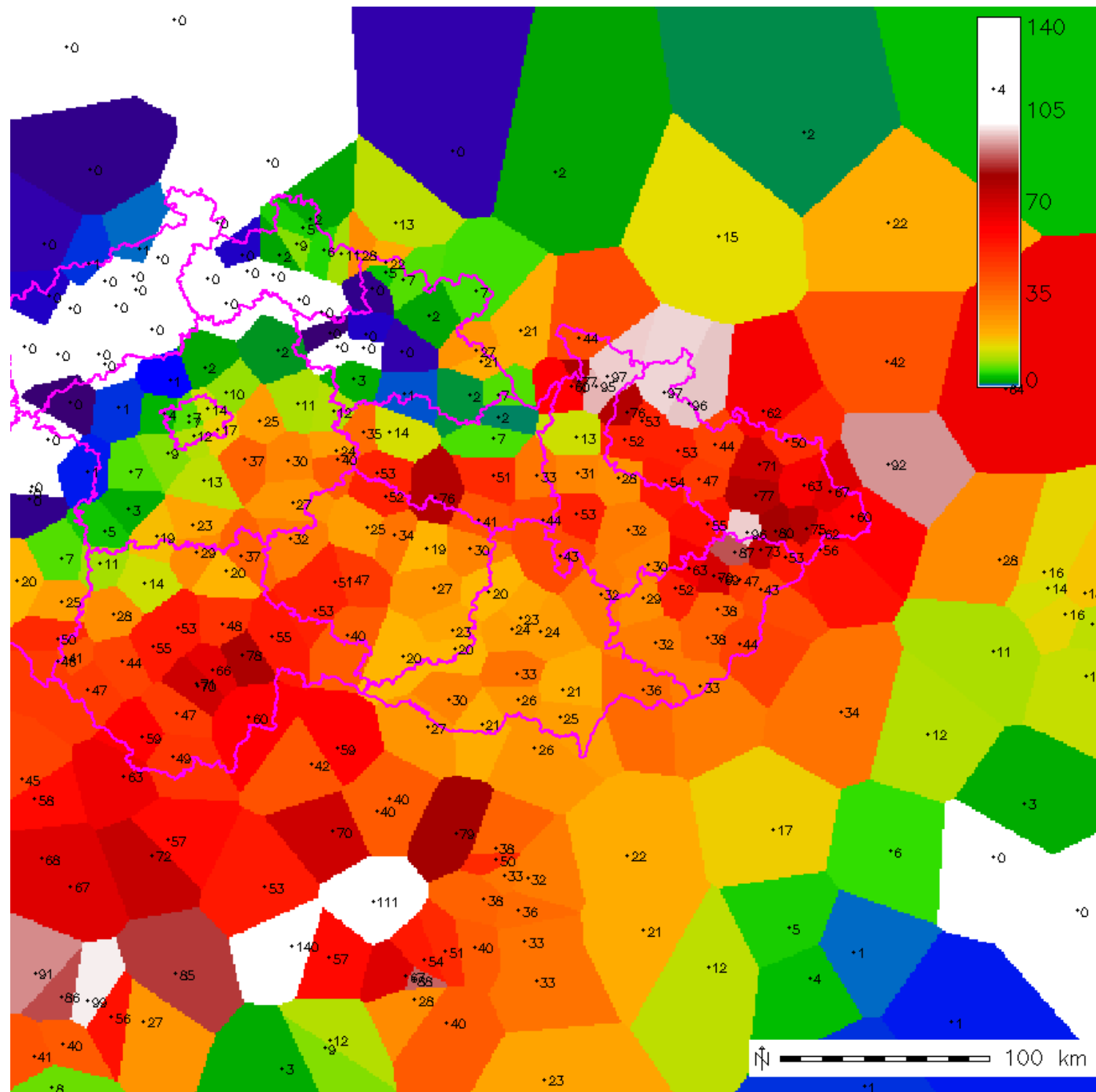
- Výhody: přijatelná přesnost pro dané místo
- Nevýhody: omezení pouze na danou lokalitu, jistá komplikovanost přenosu aktuálních dat.
- Metody odhadu plošných srážek: Thiessenovy (*Hortonovy*) polygony, metoda izohyet, geostatistické metody





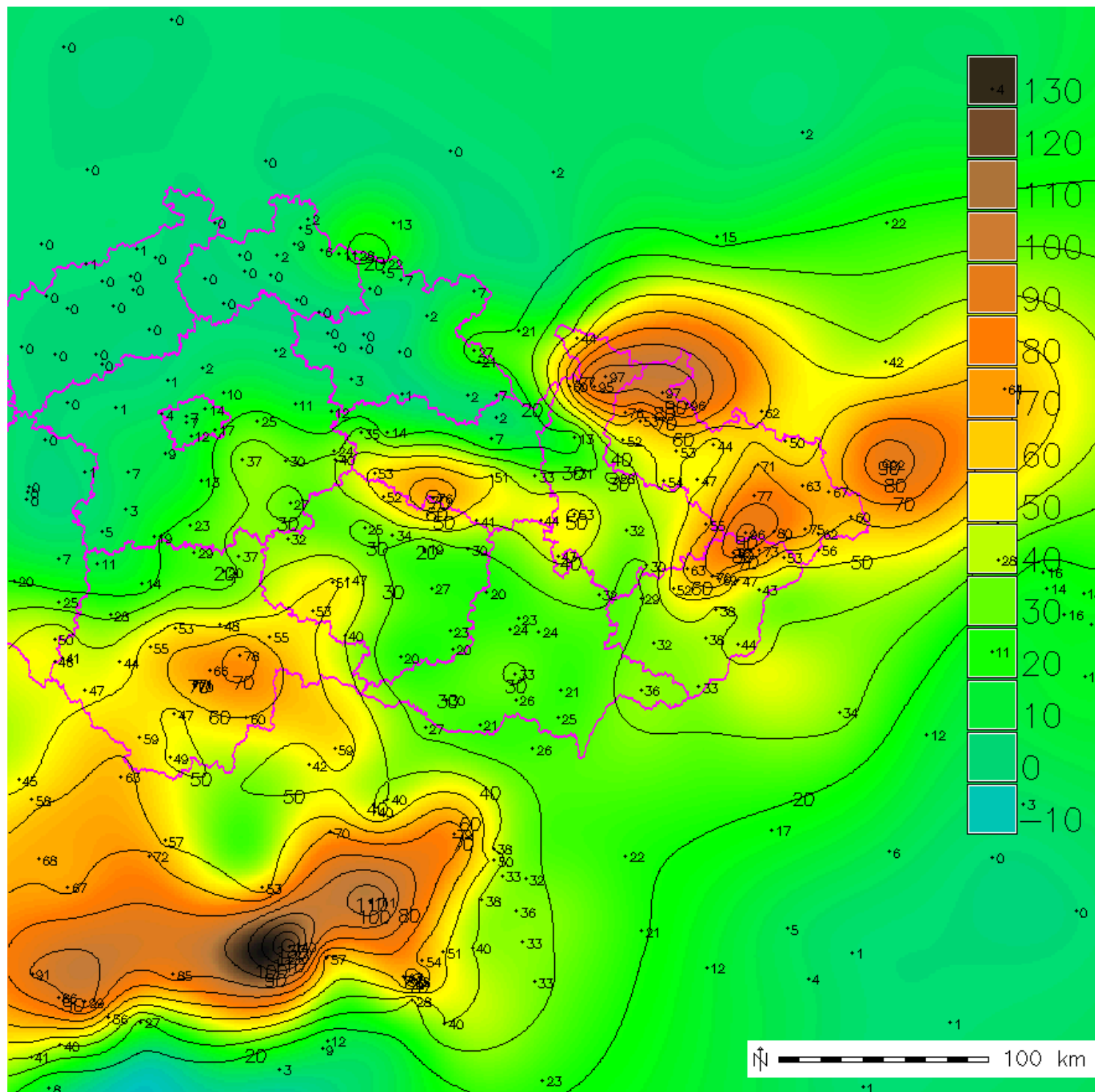
Thiessenovy polygony

GIS GRASS



Regularizovaný
splajn s tenzí
(barva) vs.
obyčejné
krigování
(izolinie)

GIS GRASS



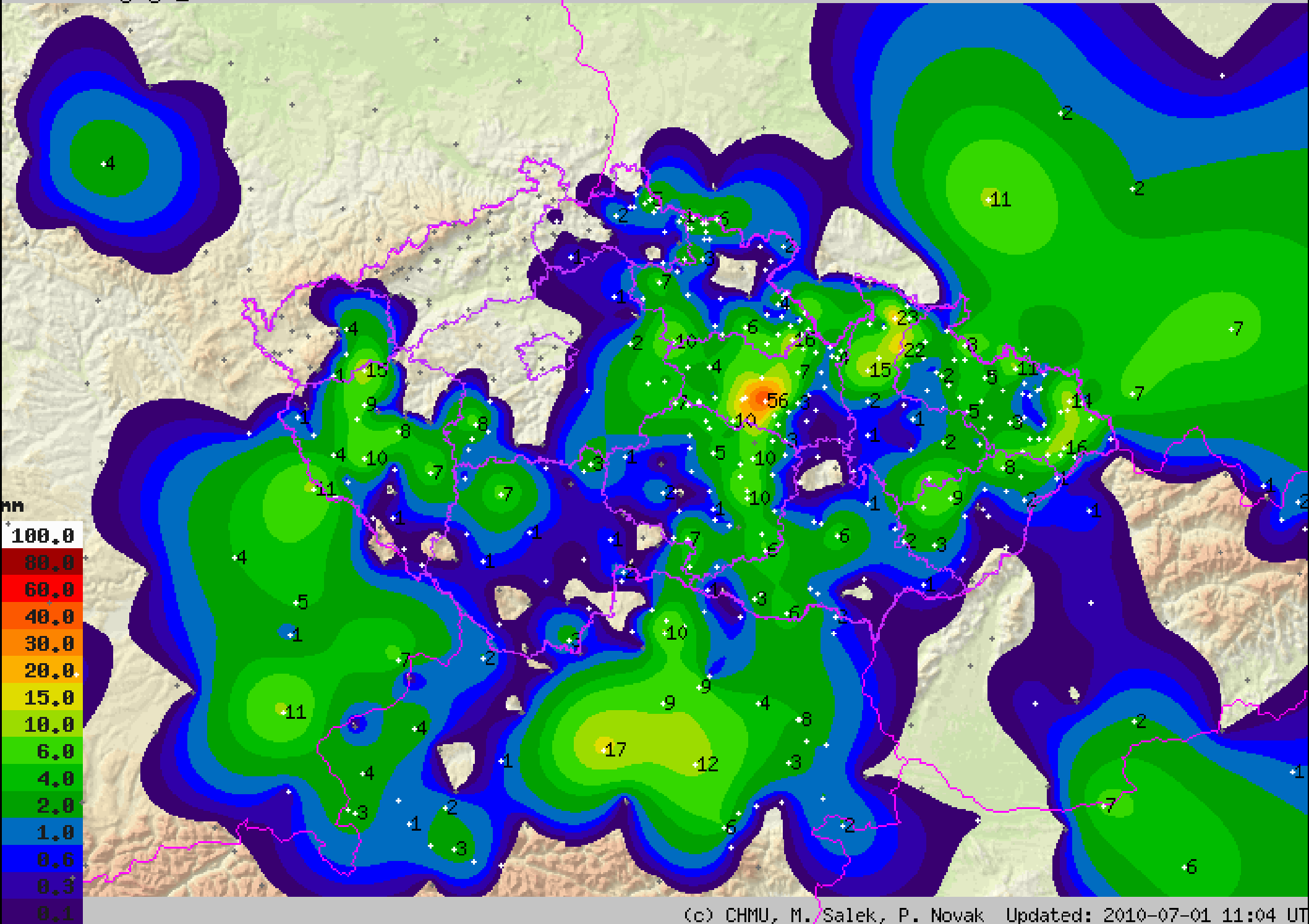
Kombinovaná informace radar-srážkoměr

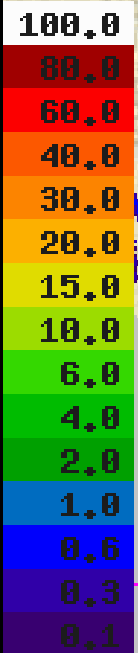
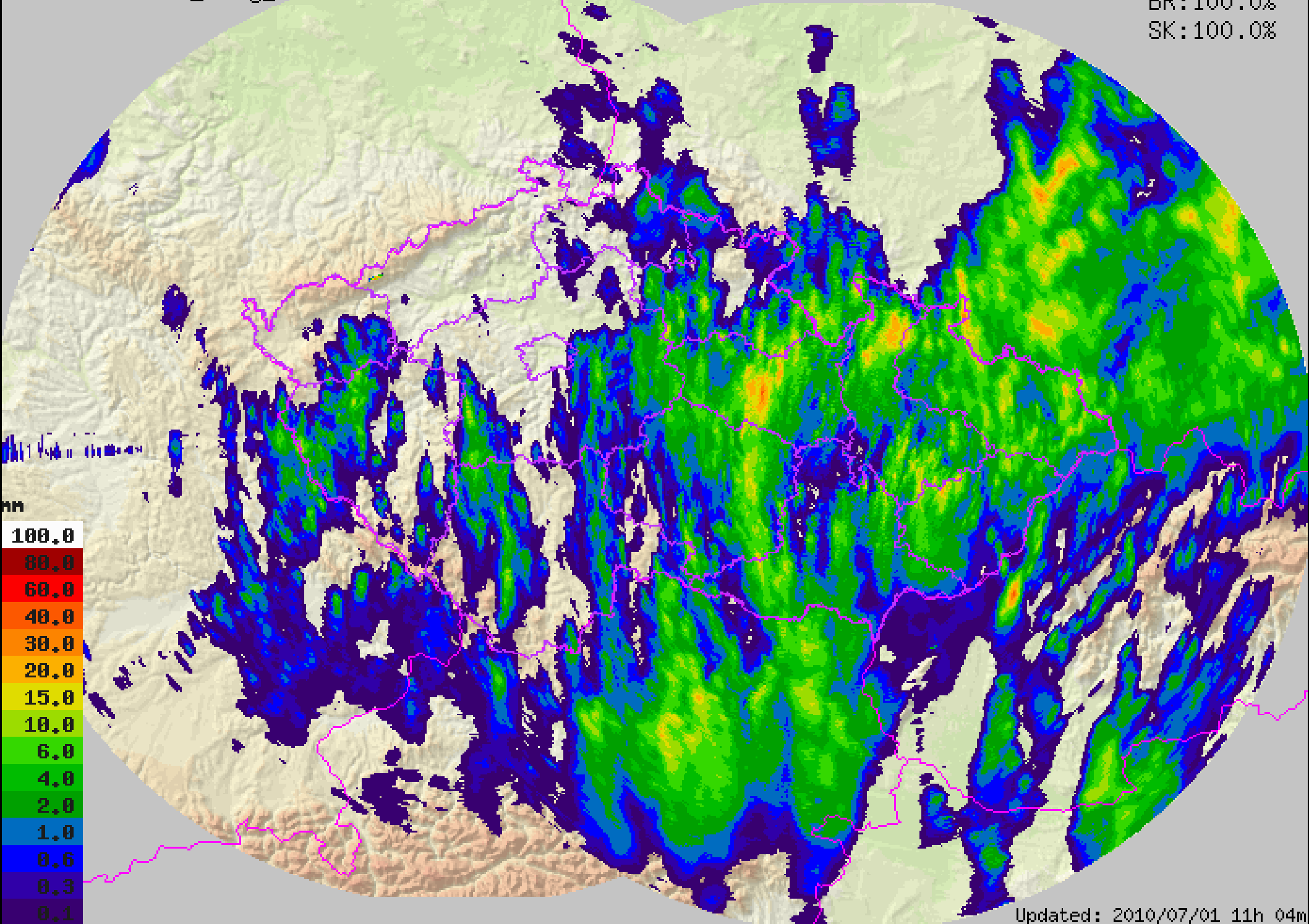
- Kombinace obou typů měření a odhadu srážek za předpokladu minimalizace chyb
- Do roku 2009 byla v ČHMÚ v provozu procedura podle koncepce autora D.-J. Seo
 - Adjustace pomocí jednoho koeficientu pro celou radarovou doménu
 - Kombinace metodou Double optimum estimation

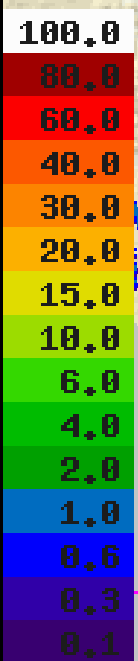
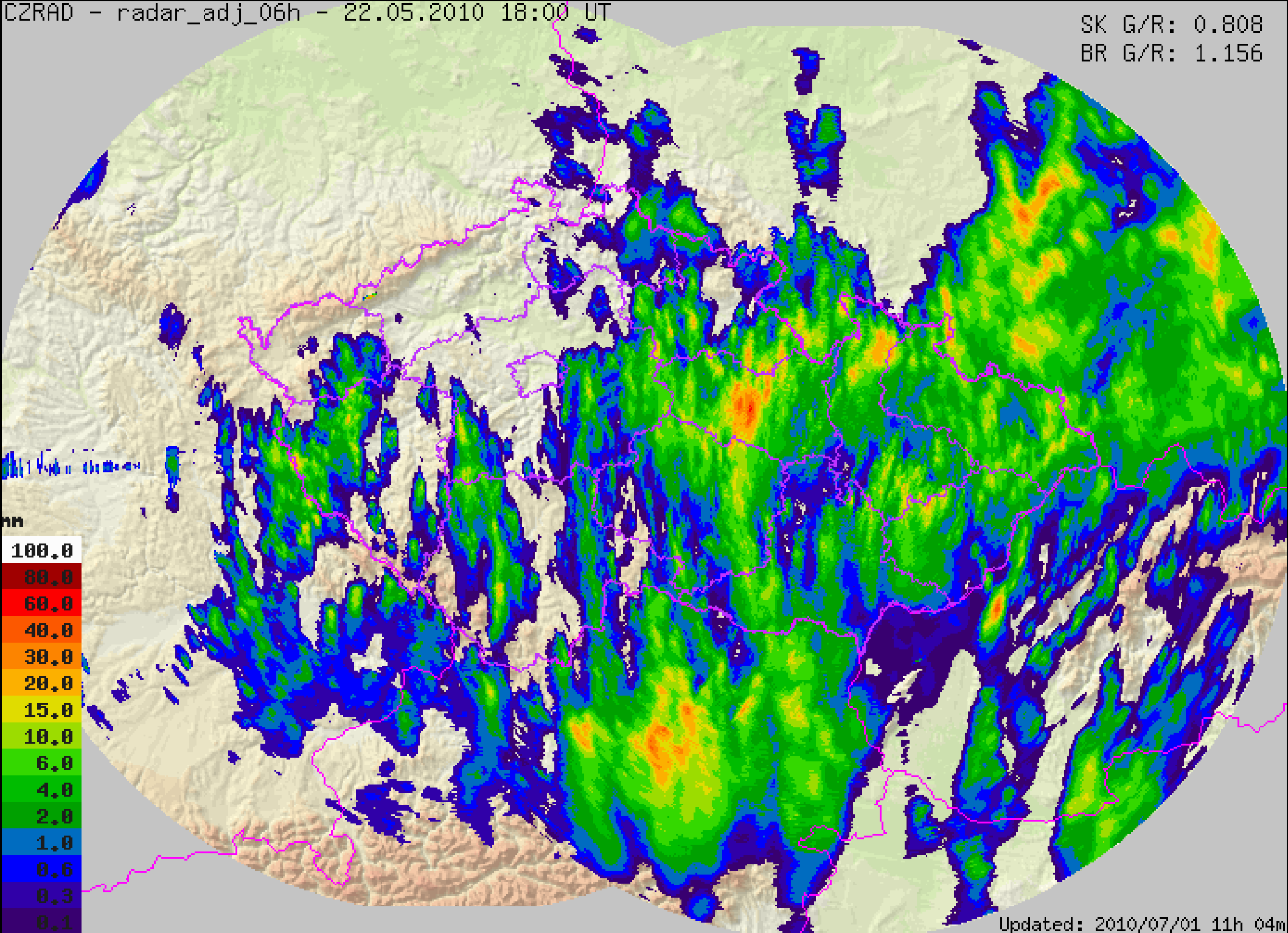


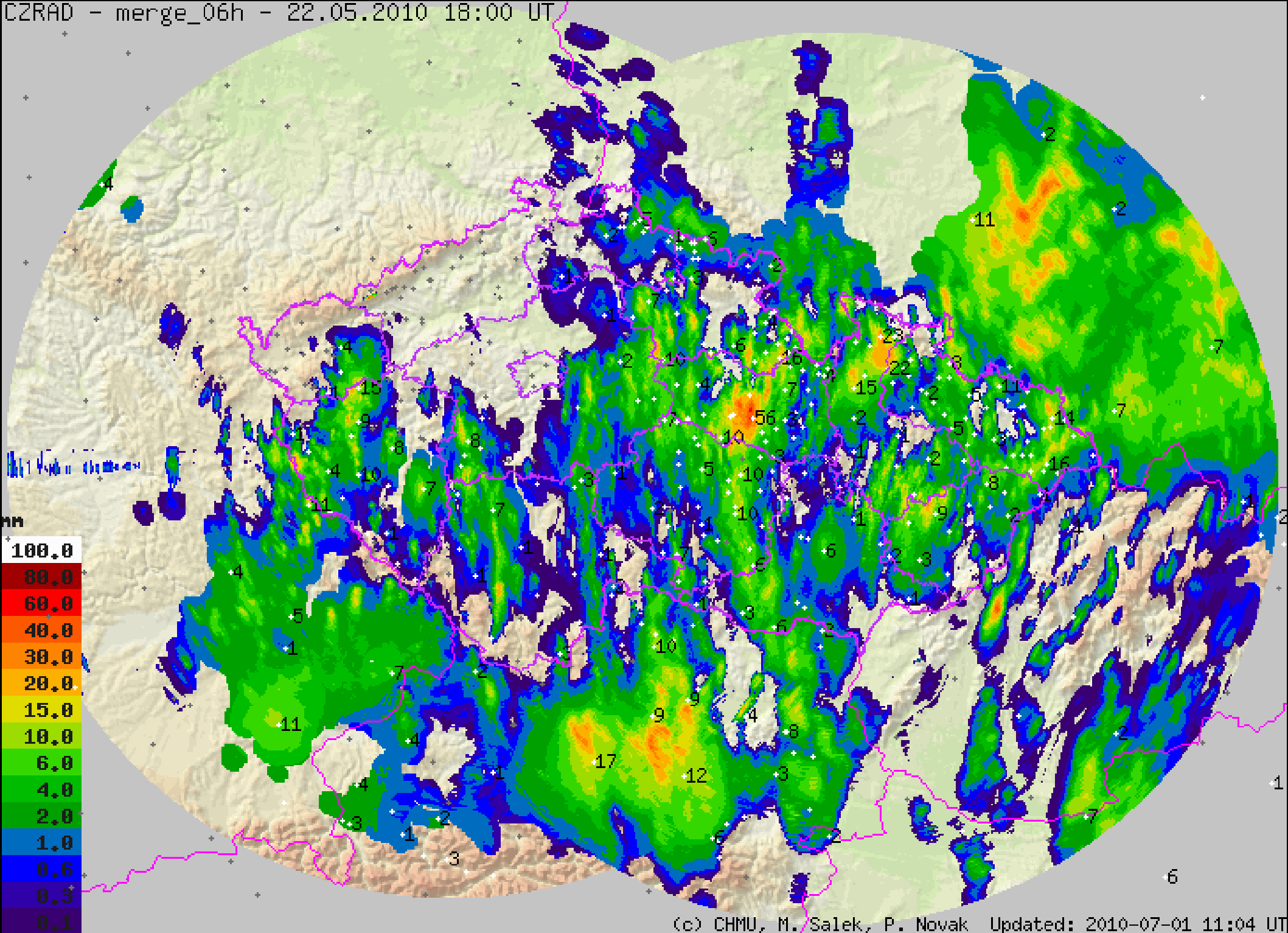
Kombinovaná informace radar-srážkoměr (pokr.)

- Od roku 2009 je v ČHMÚ v provozu nový algoritmus kombinovaného odhadu srážek
 - Adjustace pomocí územně proměnlivého (zhlazeného) adjustačního koeficientu
 - Kombinace metodou regresního krigování
 - (příspěvek na Výročním semináři ve Křtinách)

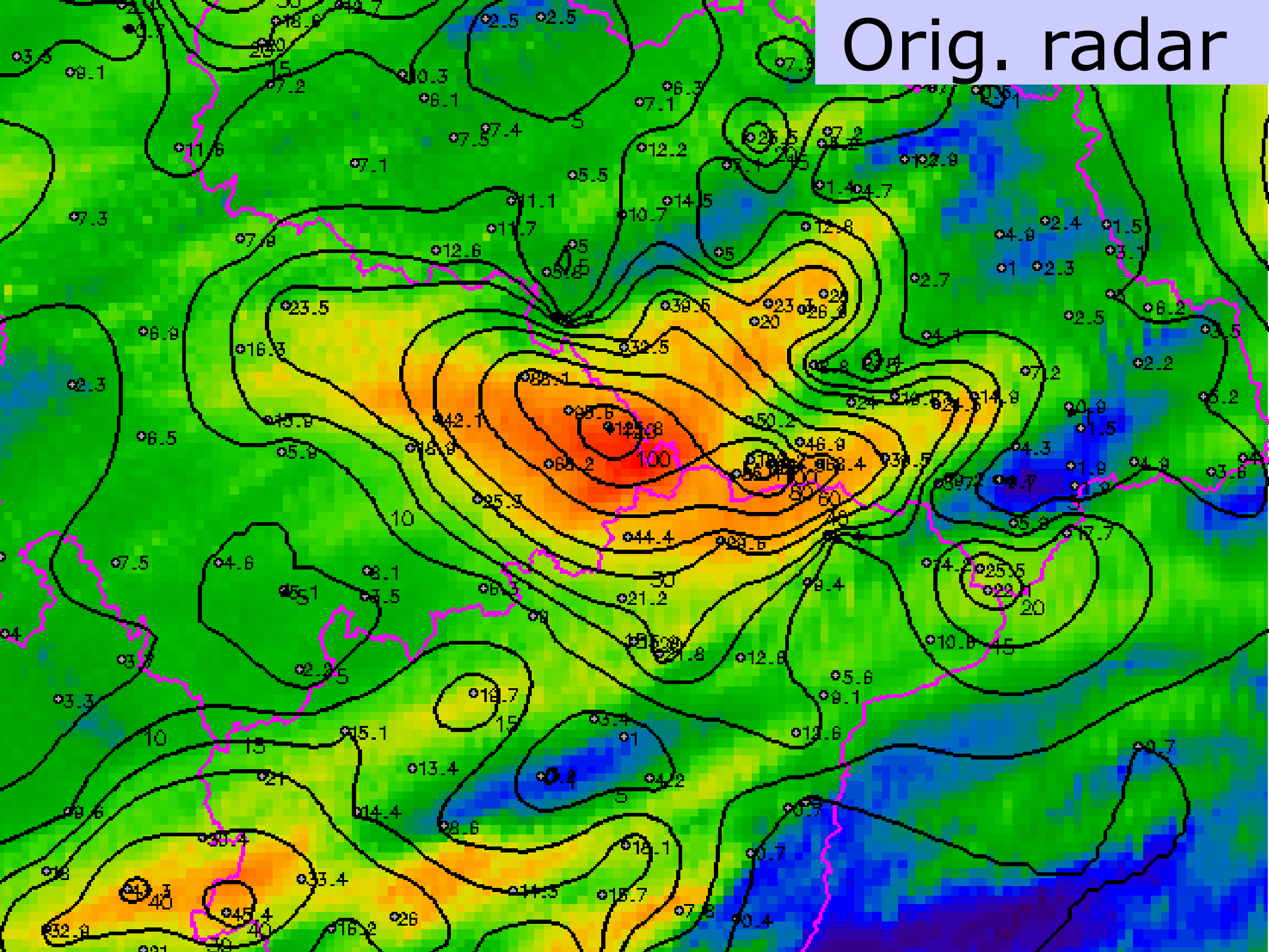




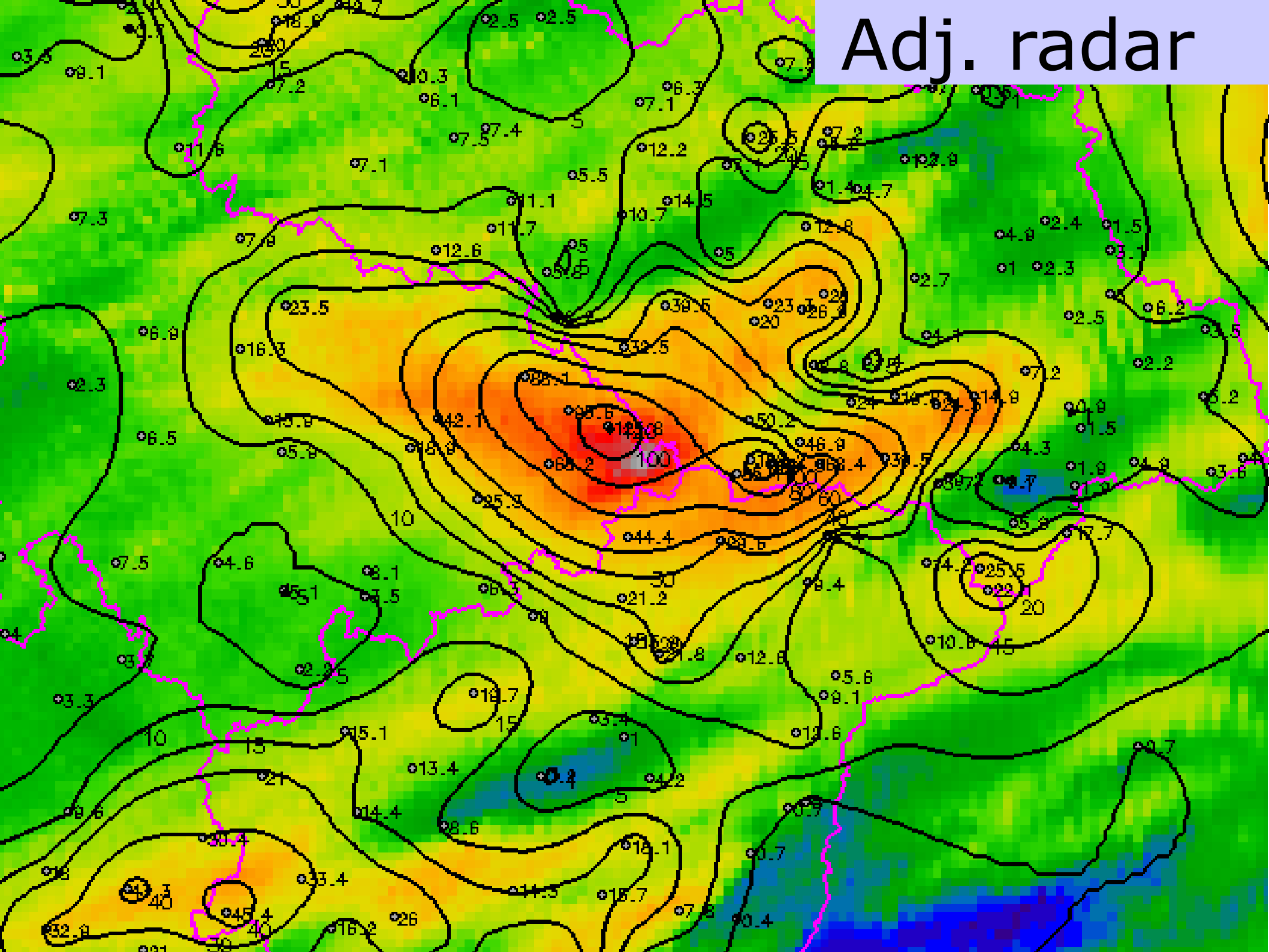




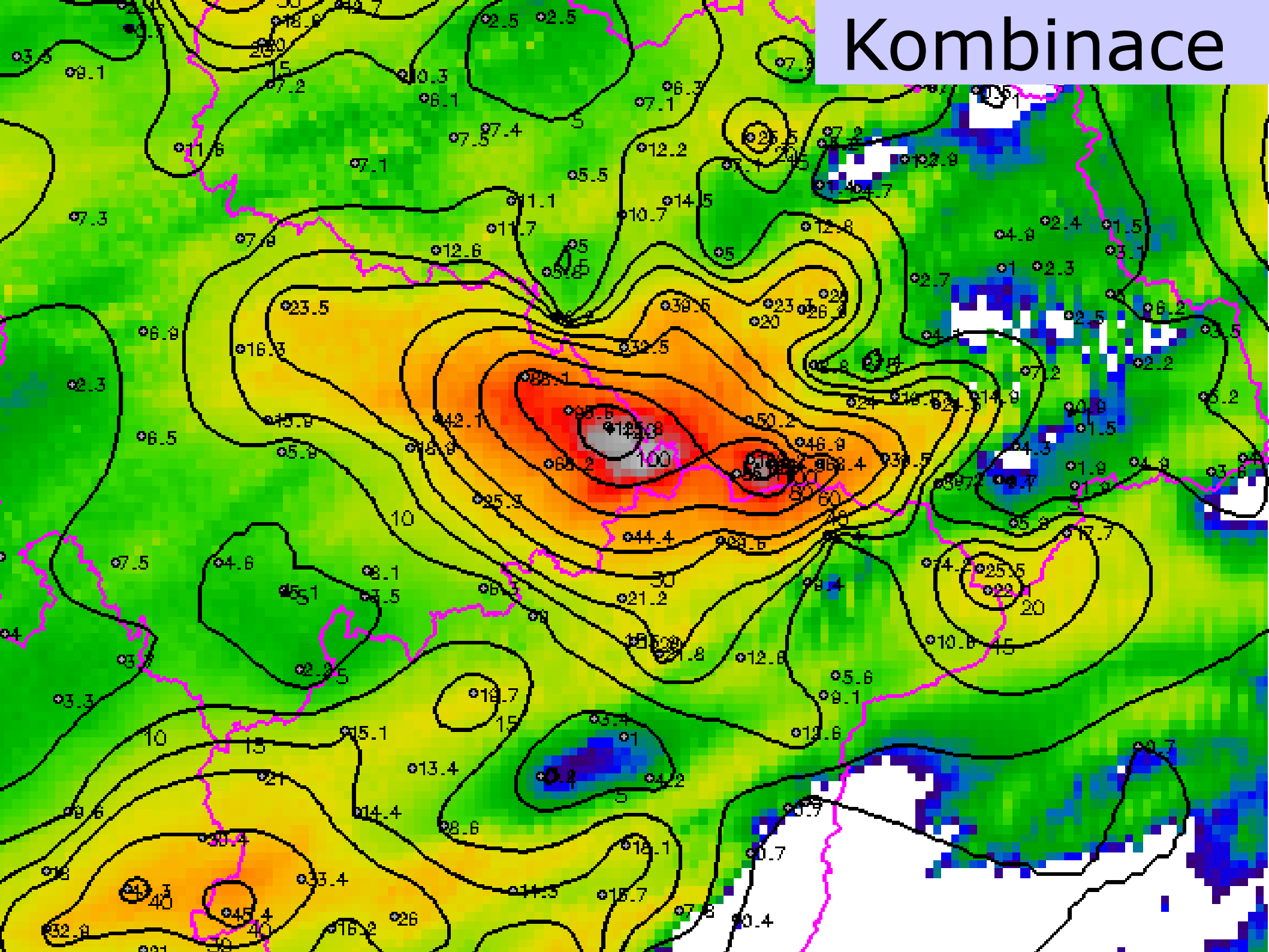
Orig. radar

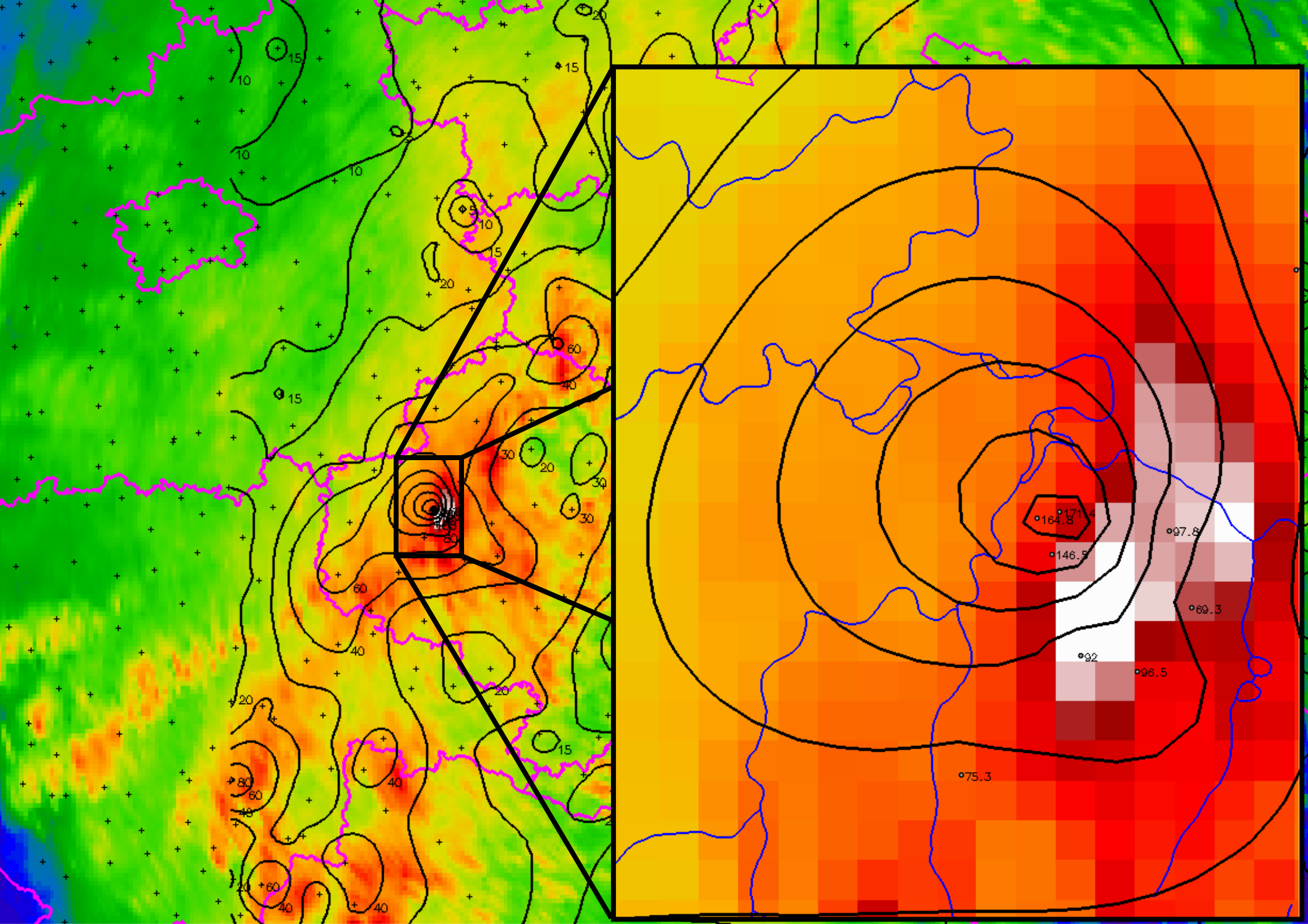


Adj. radar

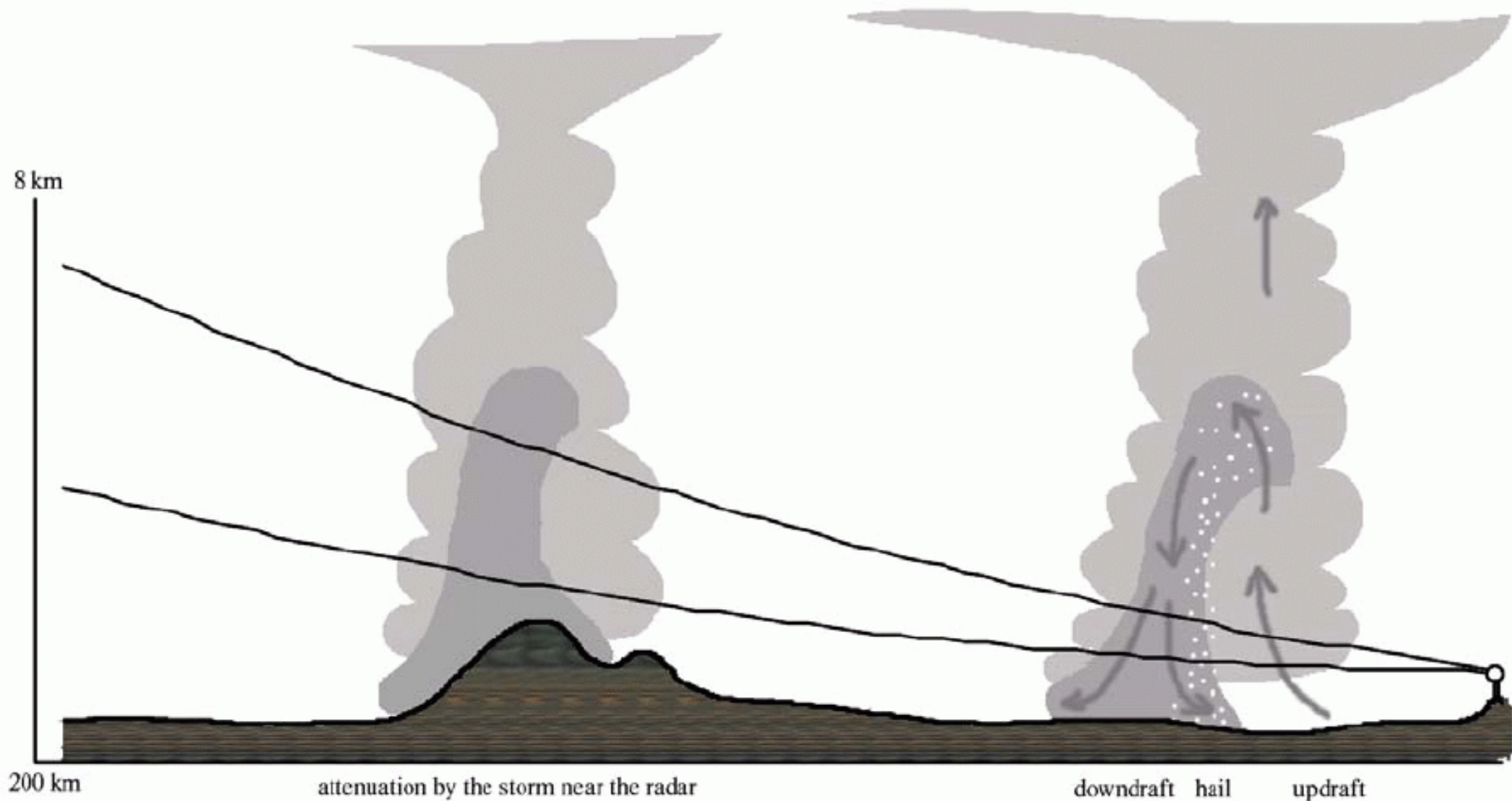


Kombinace

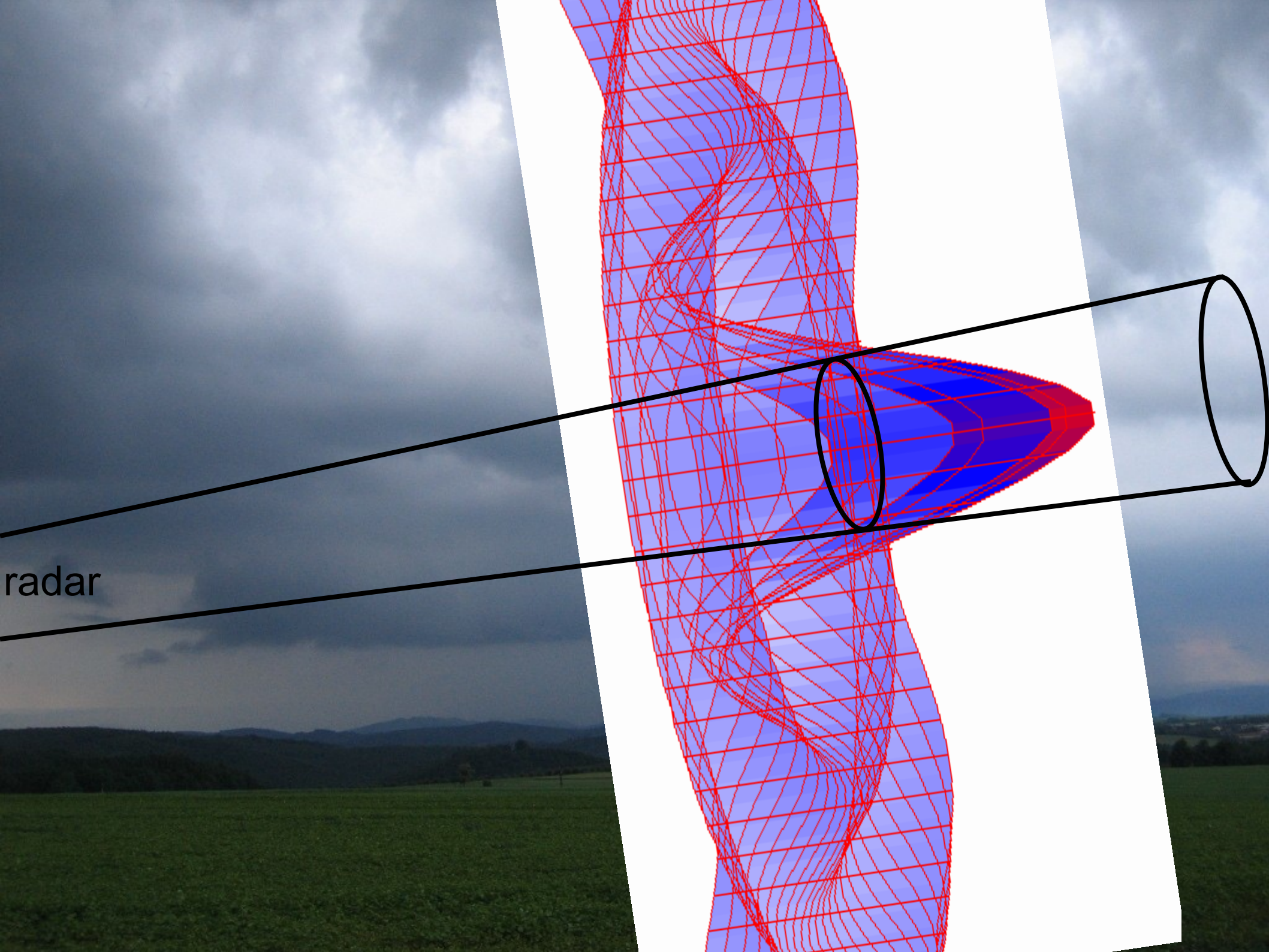


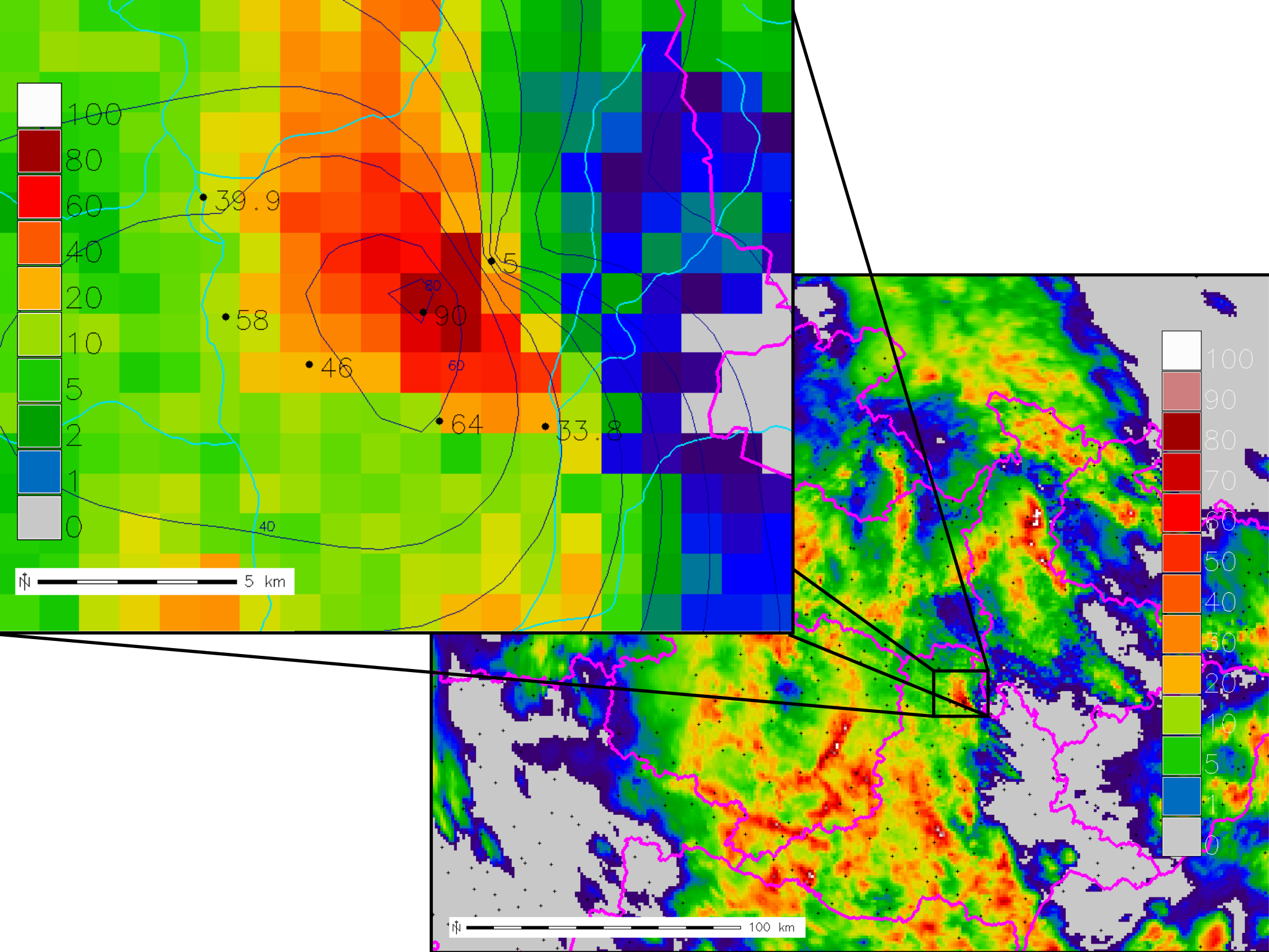


Chyby radarových odhadů při silné konvekci



radar





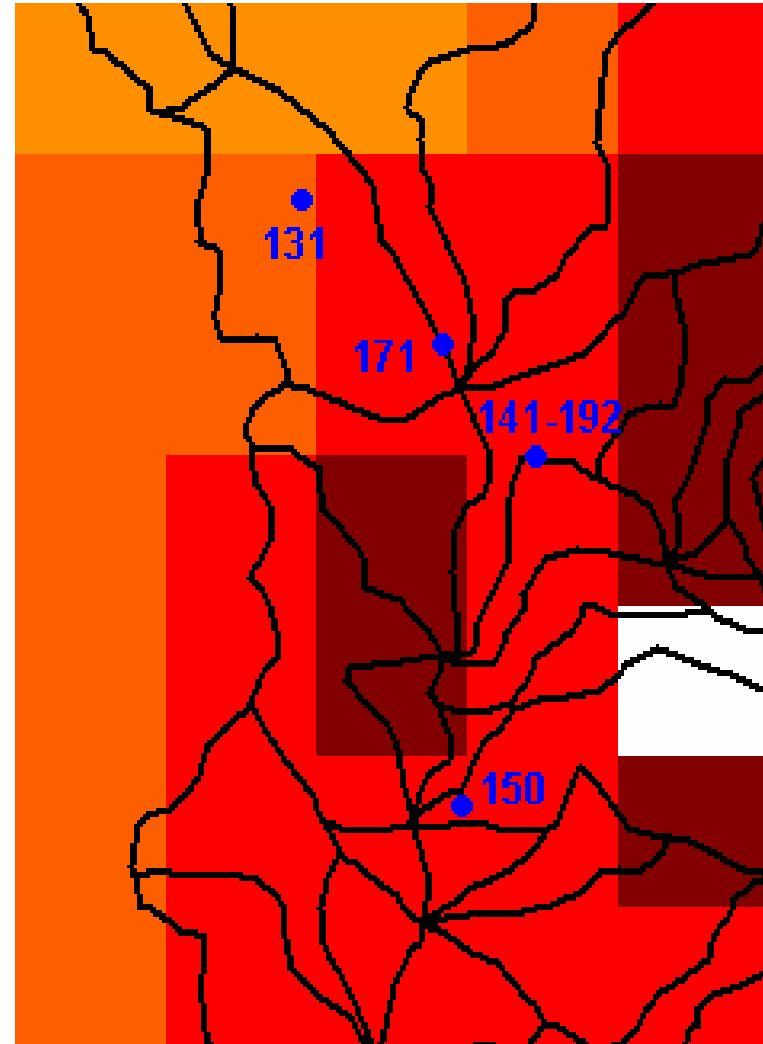
Verifikace odhadů

- Provedena pro denní srážky pro období 19.6.-23.7.2009 (silné srážky, převážně konvektivní)
- Ve výpočtech využity pouze telemetrické srážkoměry
- Pro verifikaci použity manuální srážkoměry (kritériem byla též rozdílność lokality)
- Spočtená střední absolutní chyba a systematická odchylka

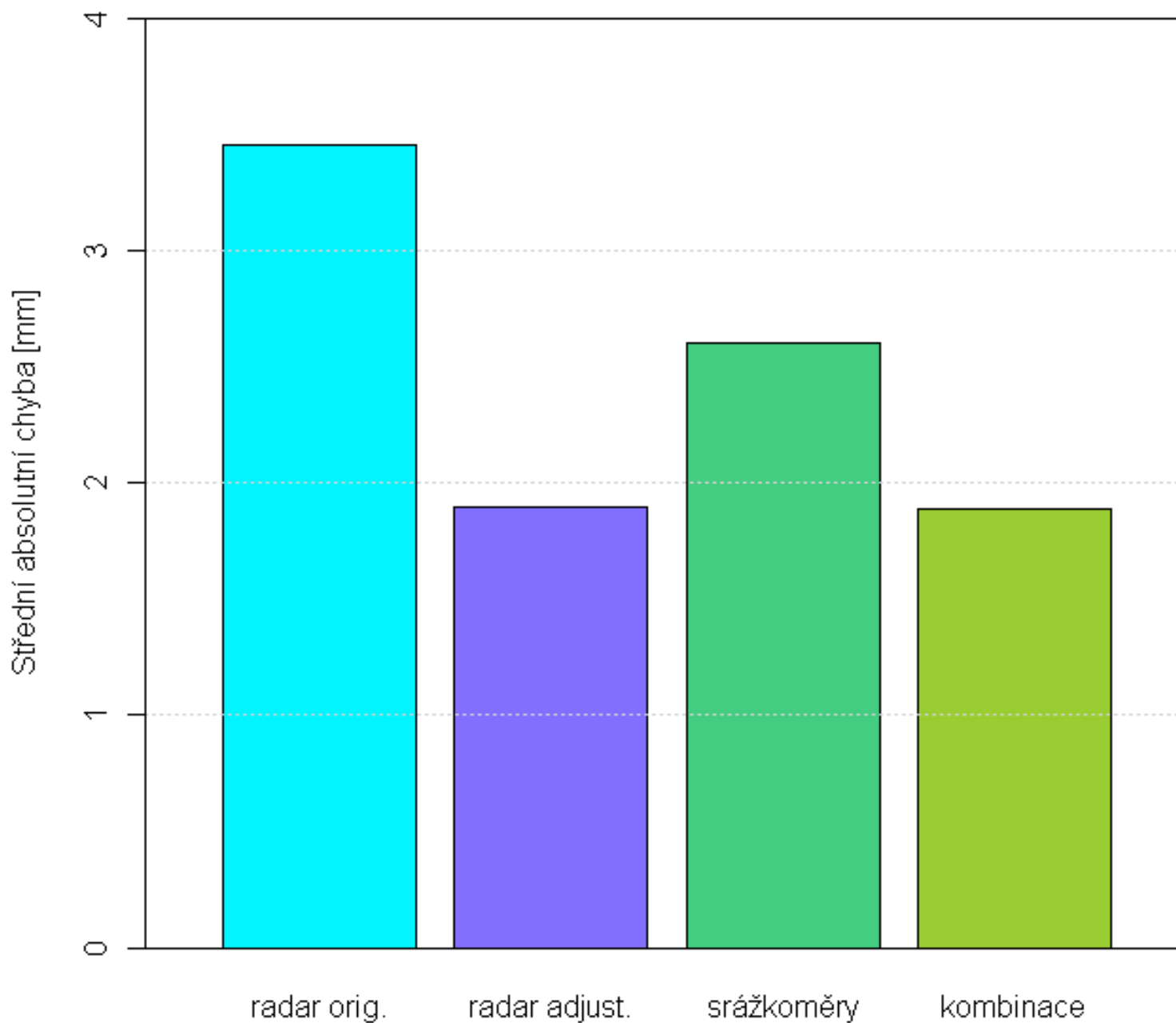


Reprezentativnost stanic

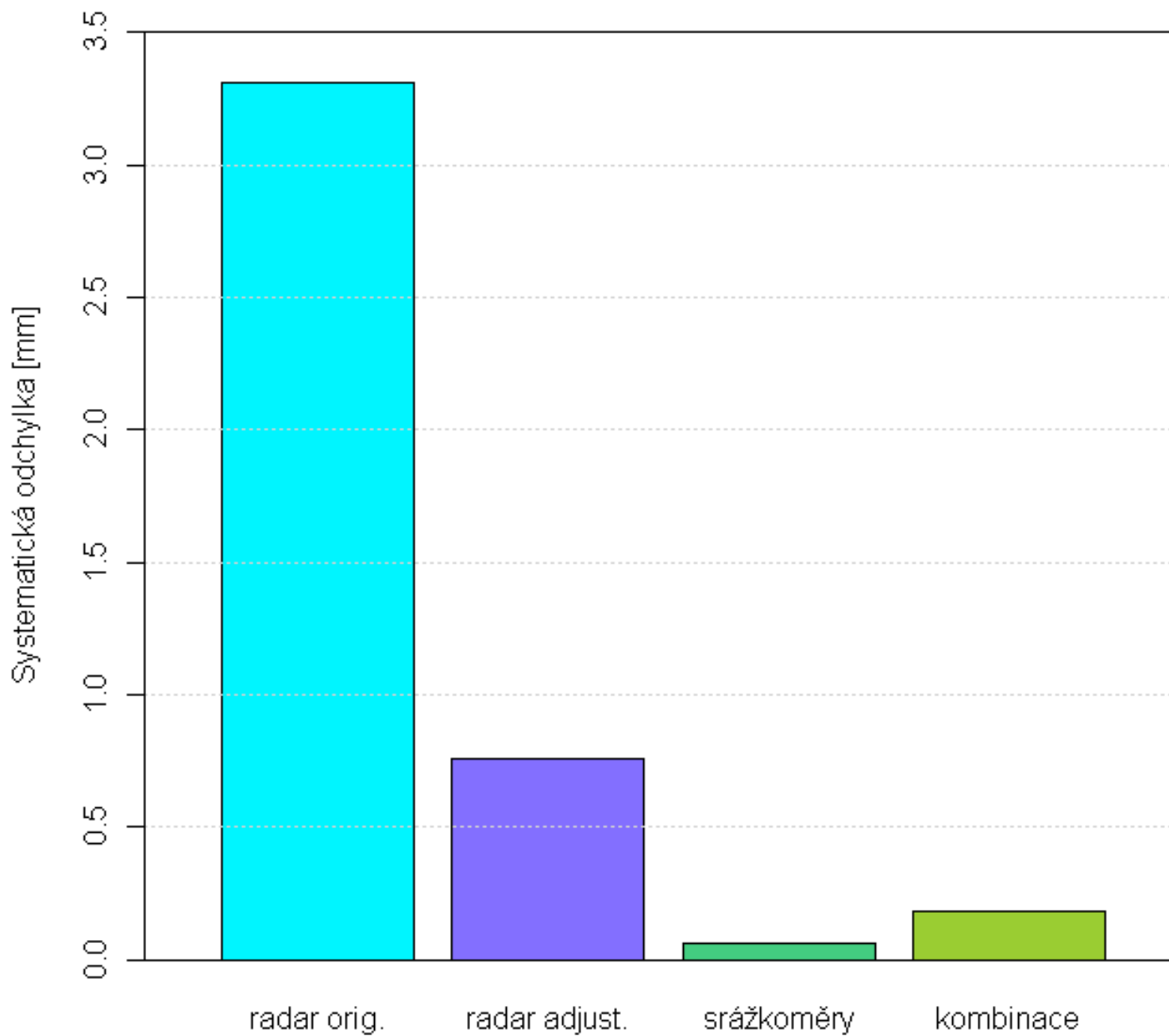
- Přijímán předpoklad reprezentativnosti srážkoměrné stanice pro územní element (pixel) 1 km².
- Možné, ale nepoužité řešení: Na každý pixel rozmístit 8 stanic podle optimálního schématu (Project HYREXn HESS, No 4, 2000)



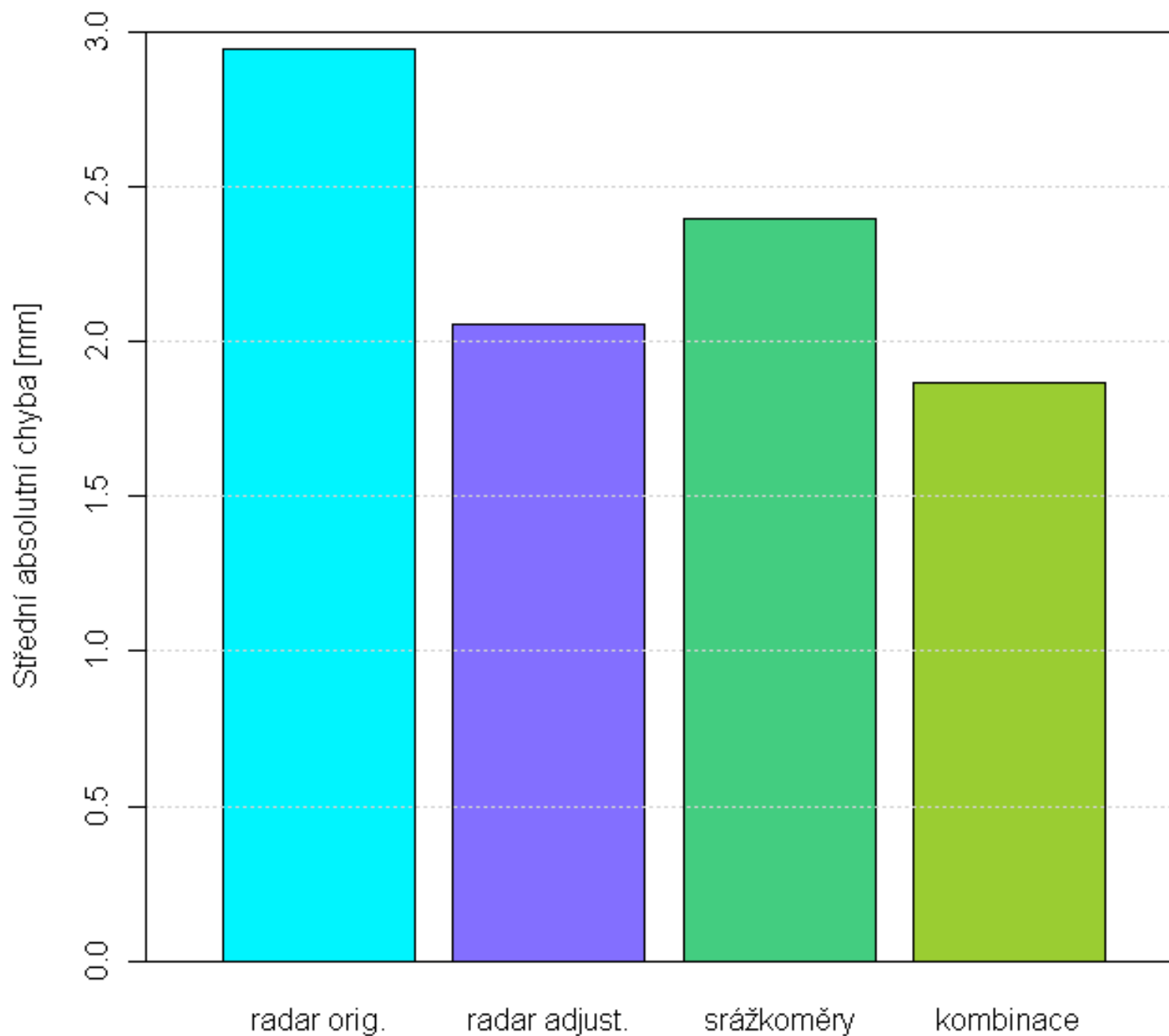
Střední absolutní chyba - radar Brdy



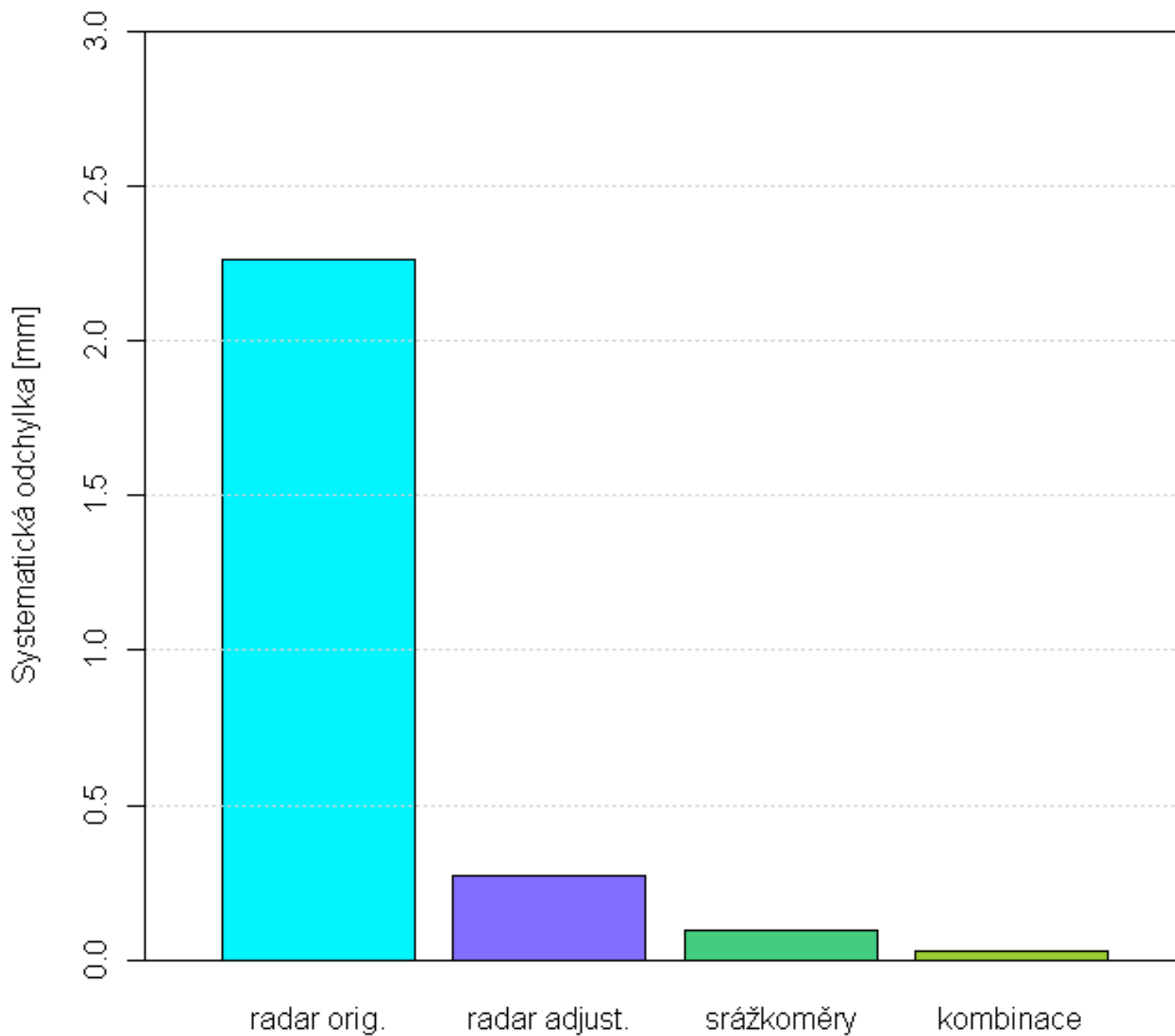
Systematická odchylka - radar Brdy



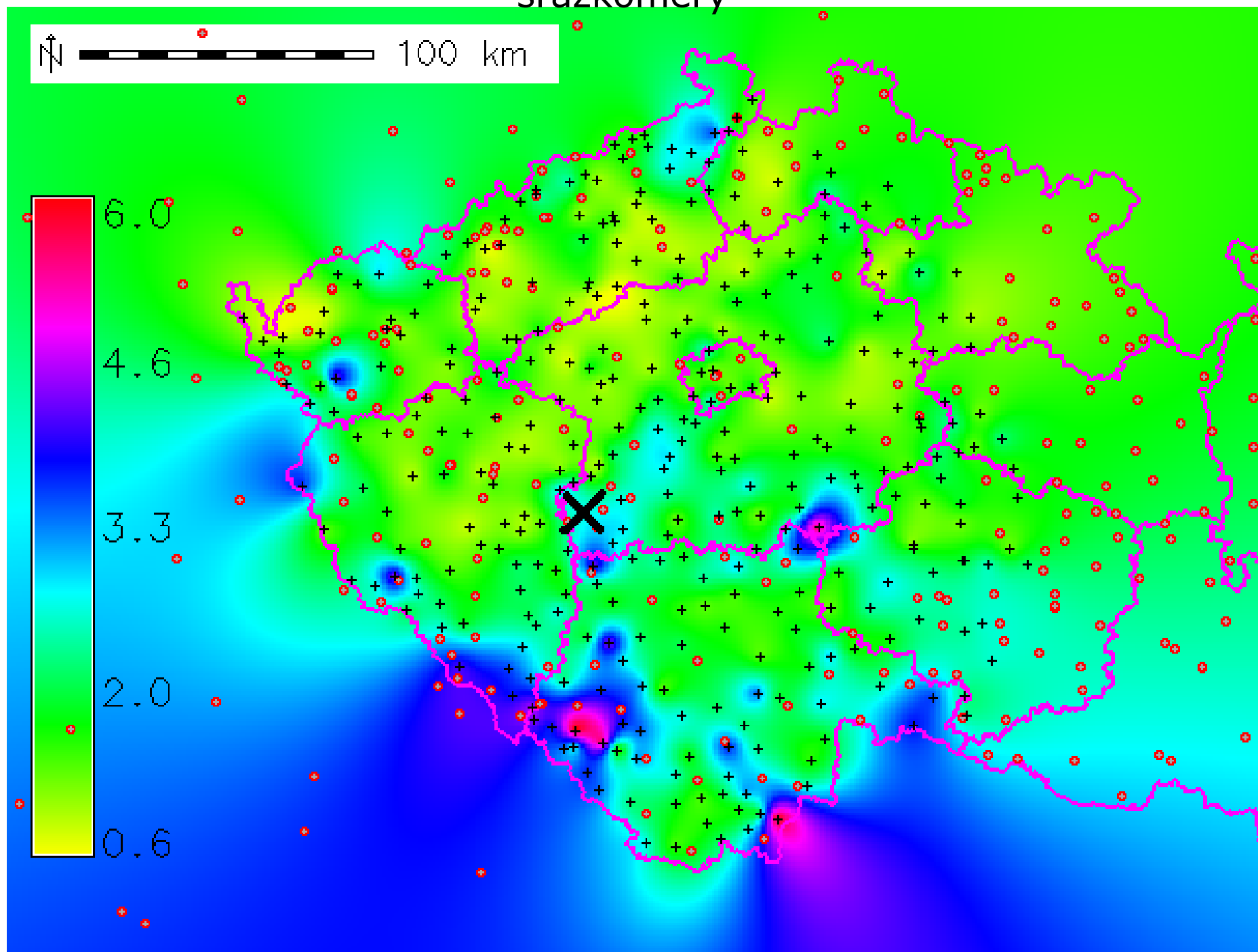
Střední absolutní chyba - radar Skalky



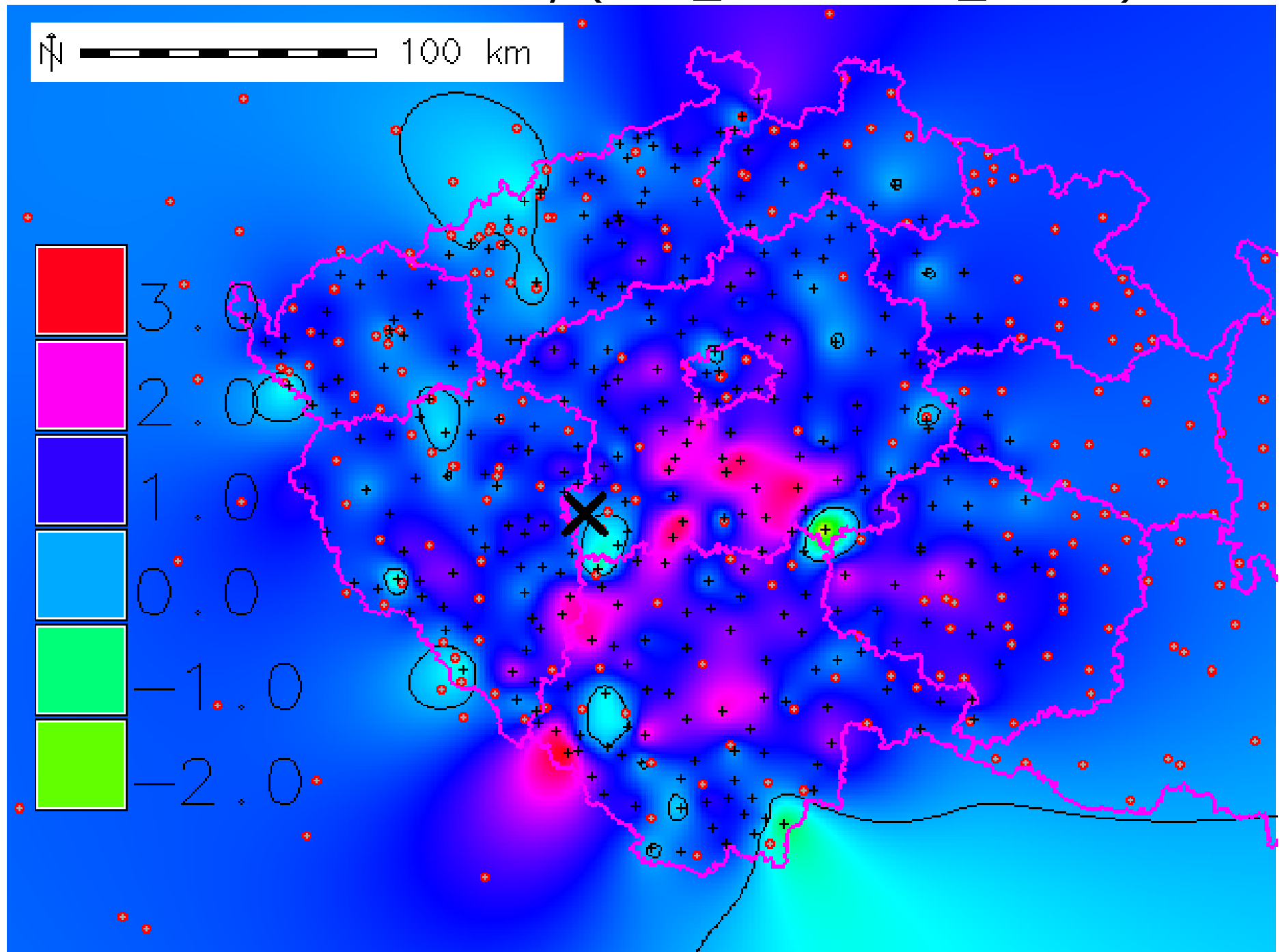
Systematická odchyłka - radar Skalky



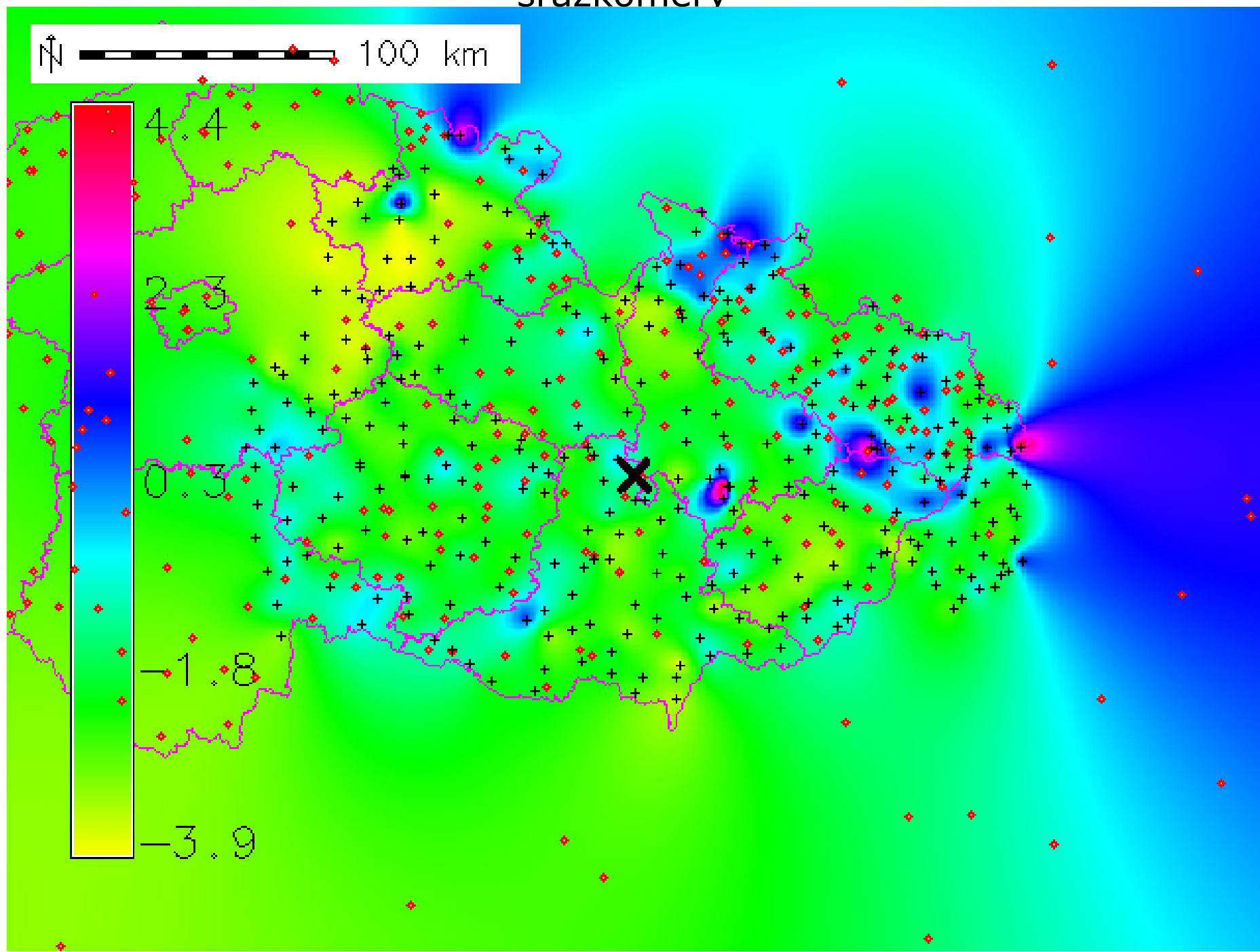
Chyby denních odhadů srážek v doméně radaru Brdy. Červeně - stanice použité v operativních výpočtech, malými černými křížky verifikační srážkoměry



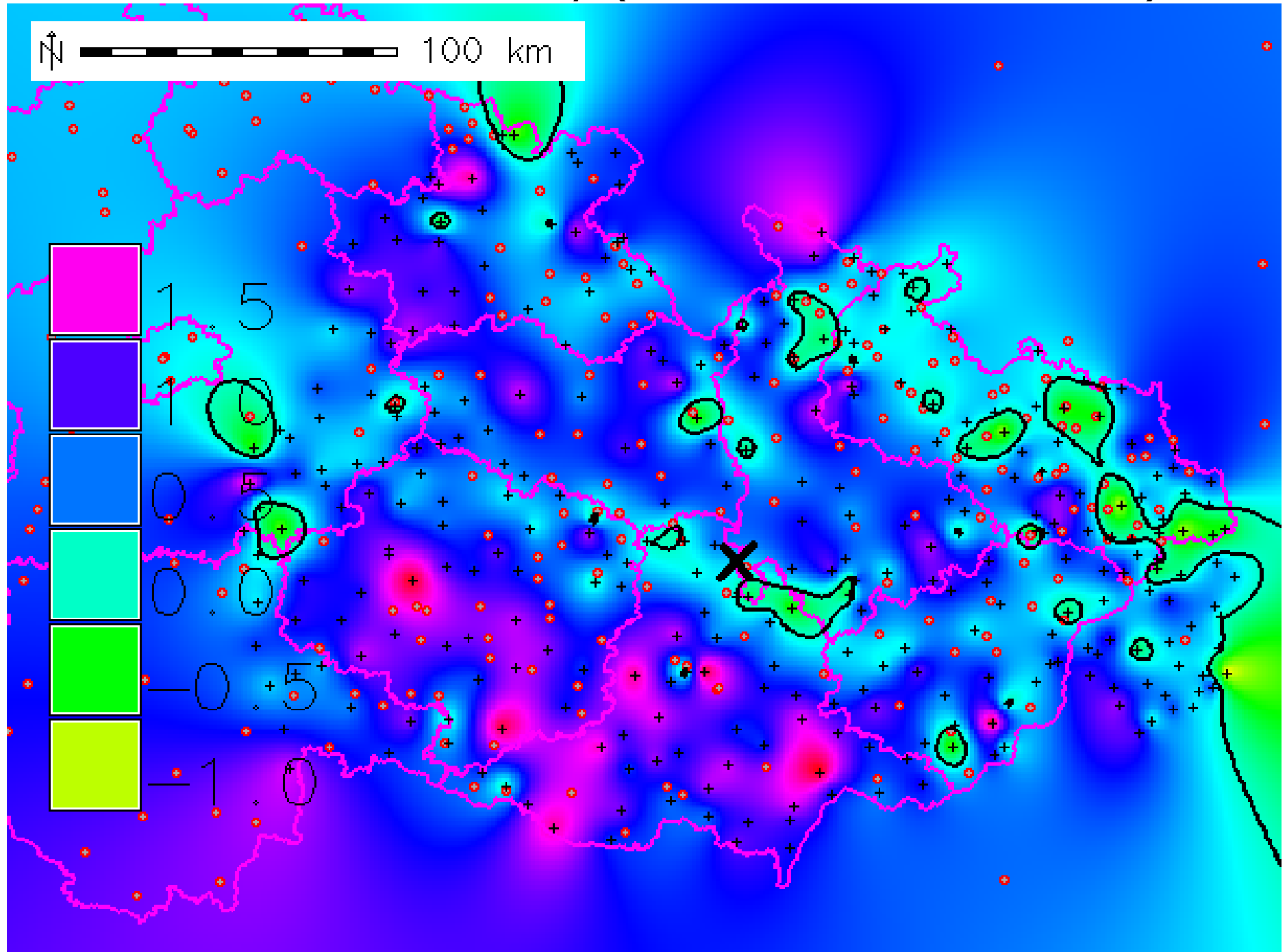
Rozdíl chyby srážkoměrných a kombinovaných odhadů v doméně radaru Brdy (ERR_SRA - ERR_KOMB)



Chyby denních odhadů srážek v doméně radaru Skalky. Červeně - stanice použité v operativních výpočtech, malými černými křížky verifikační srážkoměry



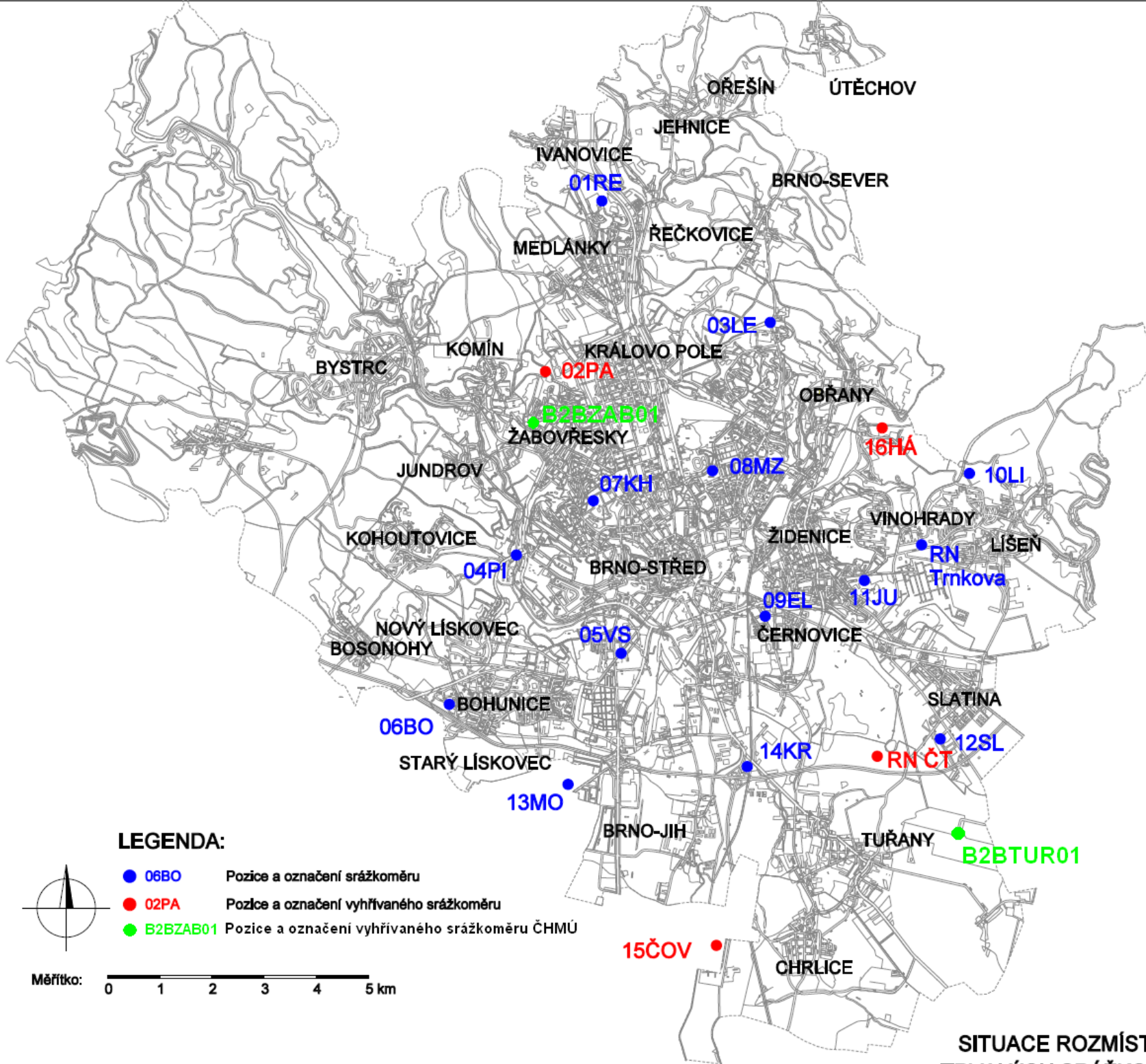
Rozdíl chyby srážkoměrných a kombinovaných odhadů v doméně radaru Skalky (ERR_SRA - ERR_KOMB)





Verifikace na hodinových srážkoměrných úhrnech v městě Brně

- Stanice Brněnských vodovodů a kanalizací (BVaK)
- 18 srážkoměrných stanic (bez operativního přenosu) + 2 stanice ČHMÚ (použité ve výpočtech)
- Hustota stanic v městě **Brně: 1 stanice na 8 km²**
- Hustota srážkoměrů v ČR:
 - **1 stanice na 70km²**
 - **s přenosem: 1 stanice na 200-240 km²**



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Trnkova

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BRNO-SEVER

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08MZ

BRNO-JIH

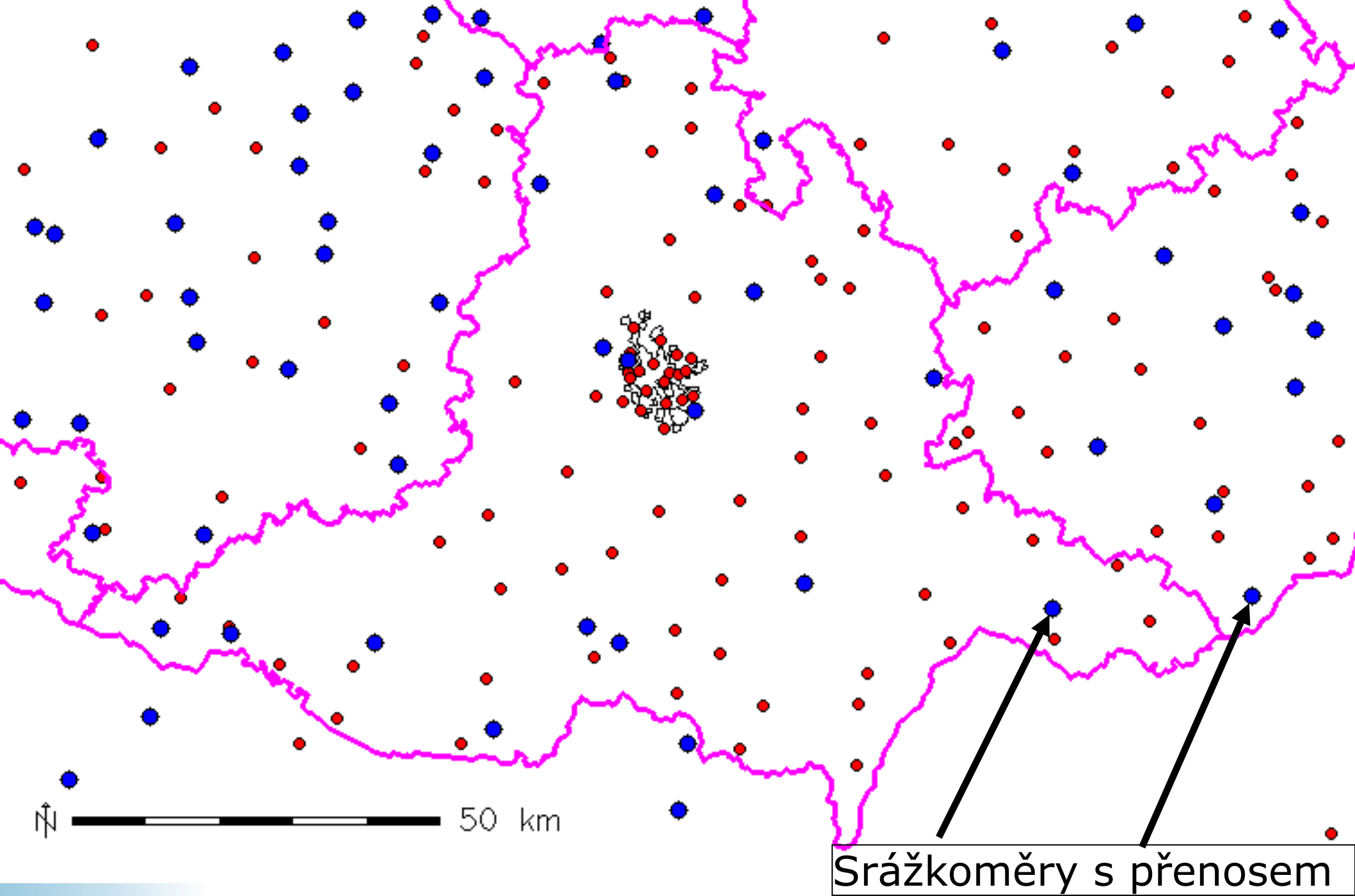
TUŘANY

CHRLICE

STARÝ LÍSKOVEC

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STARÝ LÍSKOVEC

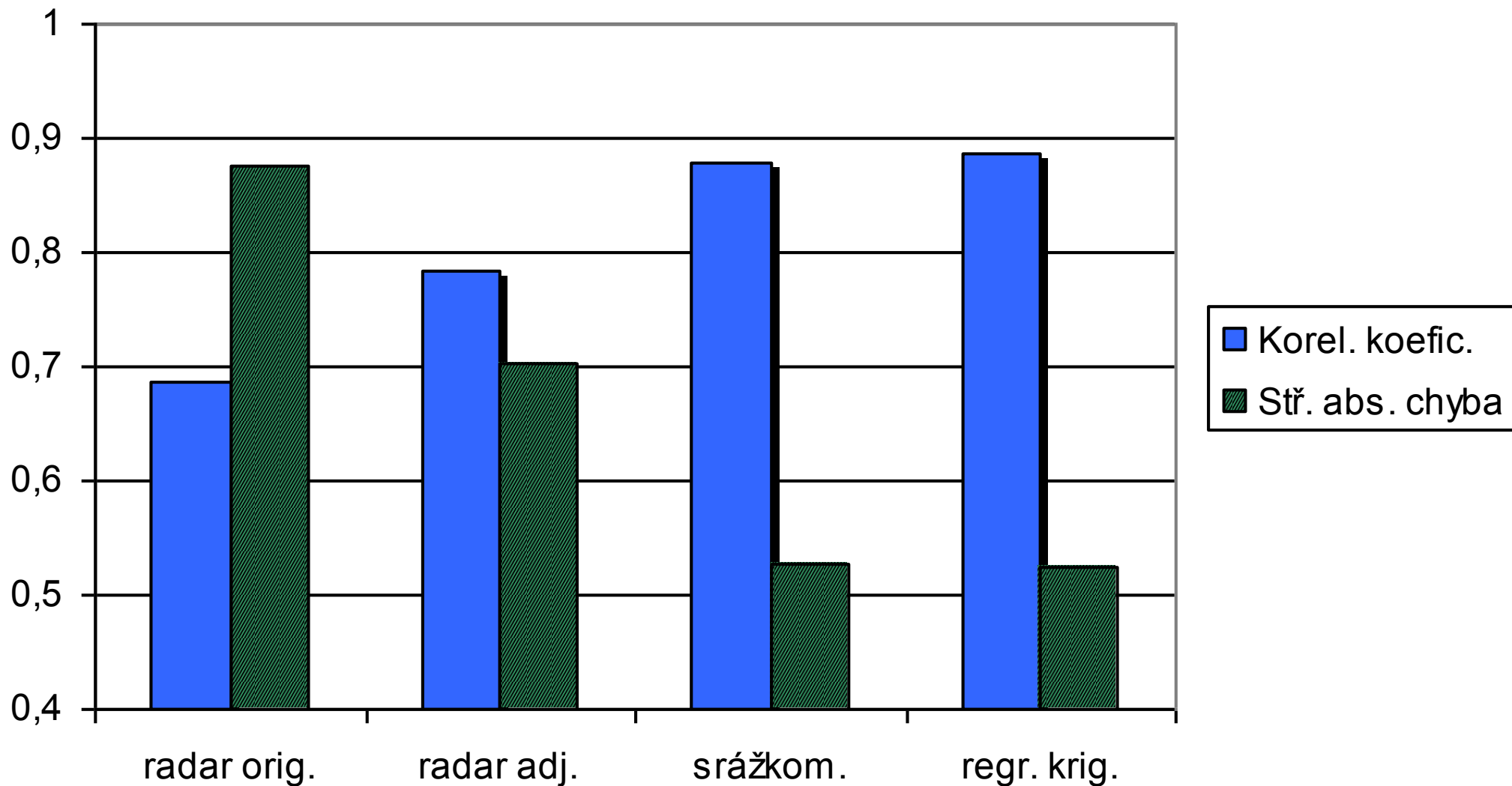


Srážkoměry s přenosem

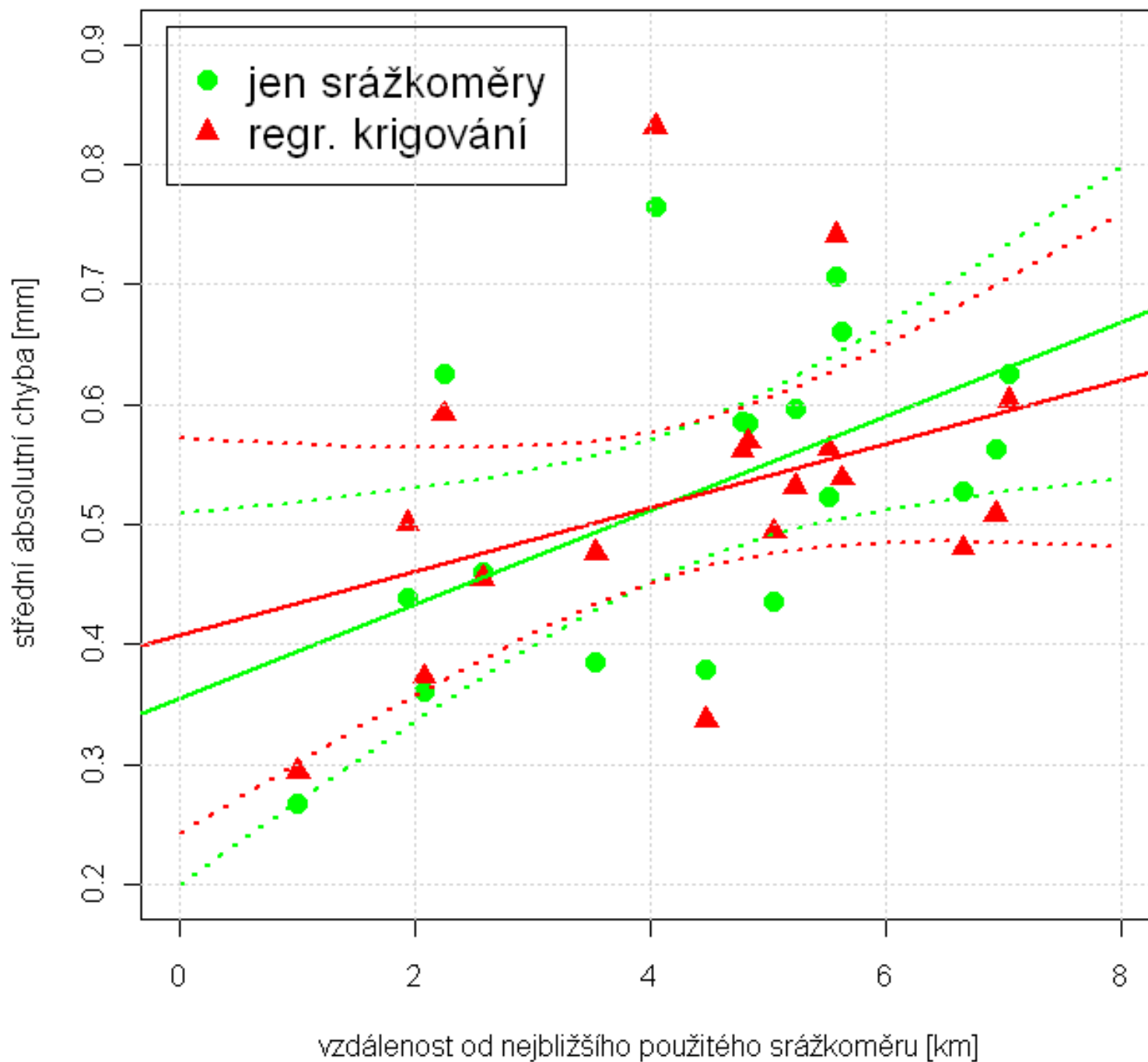
Verifikační soubor

- 208 srážkově významných epizod (hodinových akumulací)
 - kritérium byla přítomnost srážek na všech stanicích v městě Brně
- Pro všechny stanice vypočteny korelační koeficienty a střední absolutní chyba

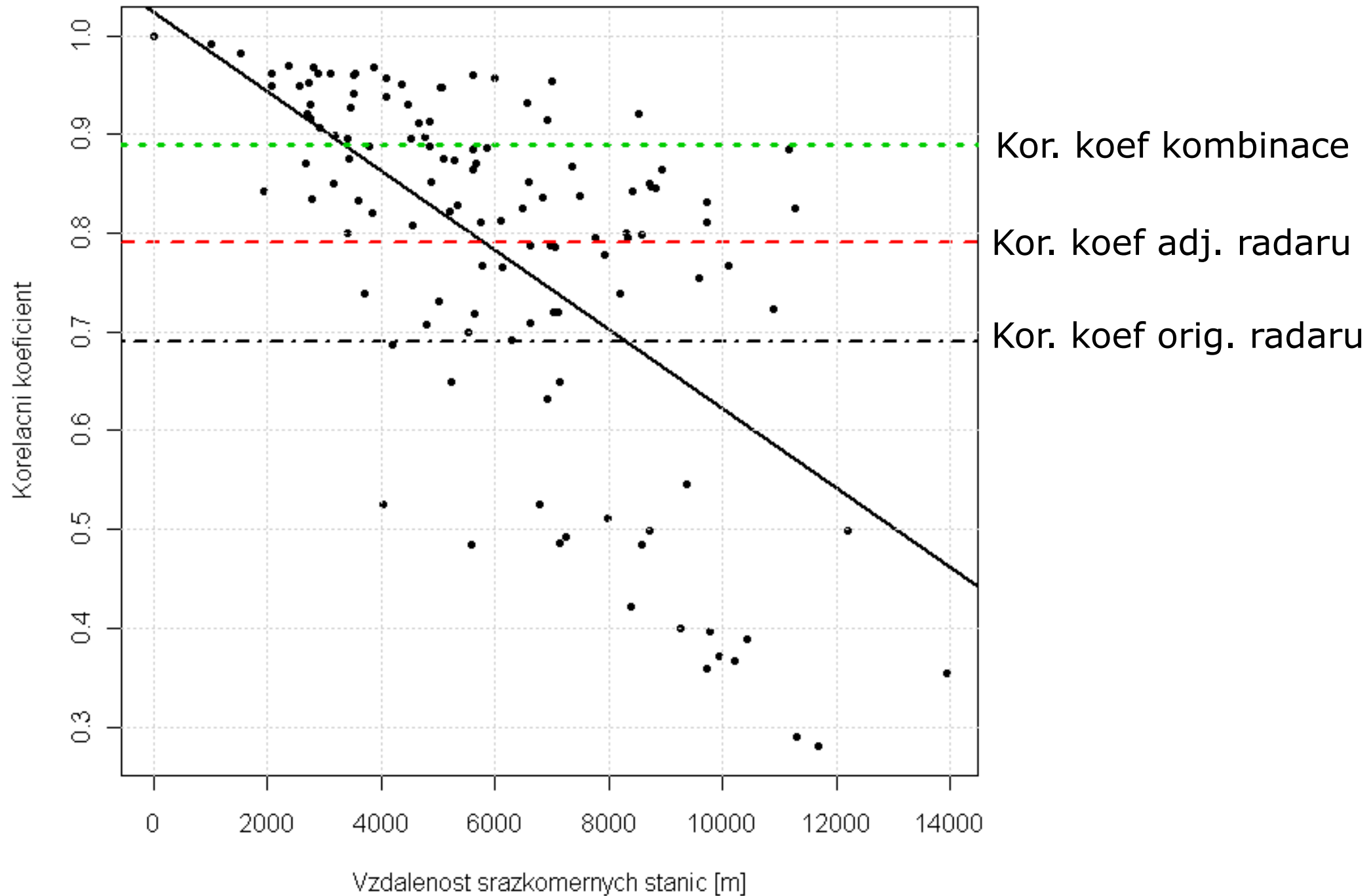
Výsledky



Závislost abs. chyby srážkoměrných a kombinovaných odhadů na vzdálenosti od nejbližšího použitého srážkoměru



Korelogram hodinových srážkových úhrnů



Praktické využití operativního radaro-srážkoměrného odhadu

- Rychlý přehled dat o srážkách (kolik spadlo srážek)
- Varovná protipovodňová služba
- Verifikace meteorologických předpovědních modelů
- Srážkový vstup do hydrologických modelů

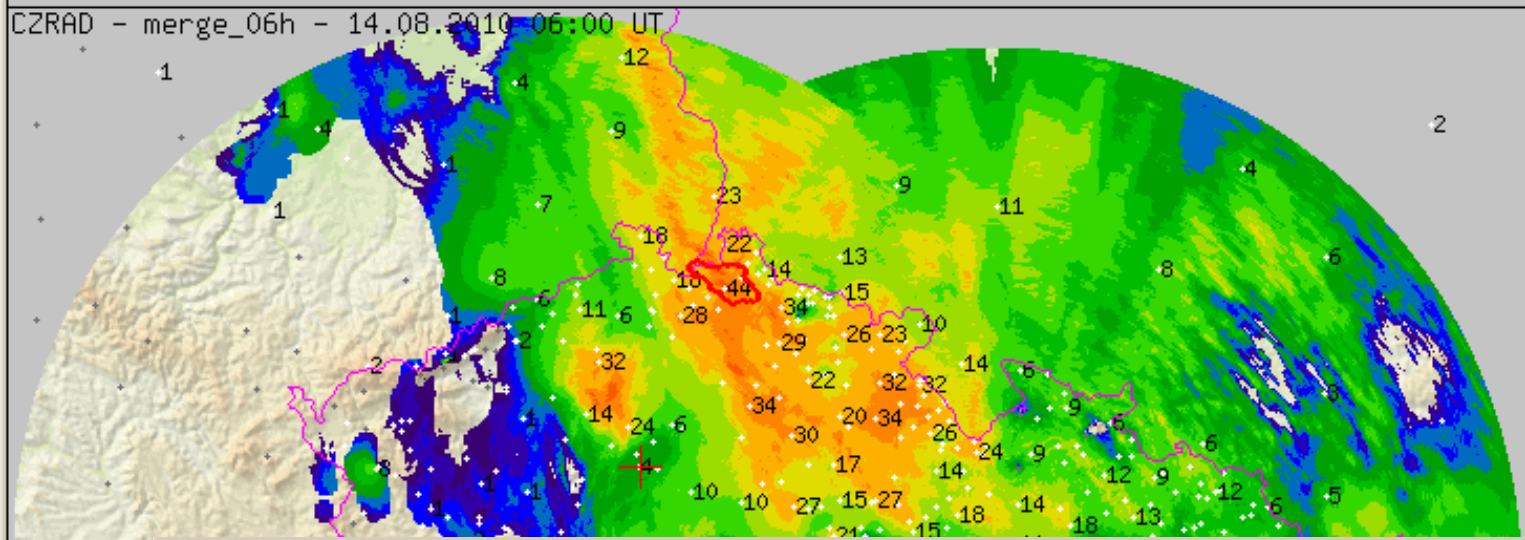


6h Precipitation Estimates:

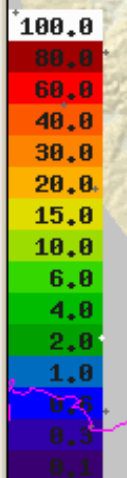
- RADAR original
- RADAR adjusted
- GAGE only
- RADAR+GAGE**

- 14.08.2010 06:00**
- 14.08.2010 00:00
- 13.08.2010 18:00
- 13.08.2010 12:00
- 13.08.2010 06:00
- 13.08.2010 00:00
- 12.08.2010 18:00
- 12.08.2010 12:00
- 12.08.2010 06:00
- 12.08.2010 00:00
- 11.08.2010 18:00
- 11.08.2010 12:00

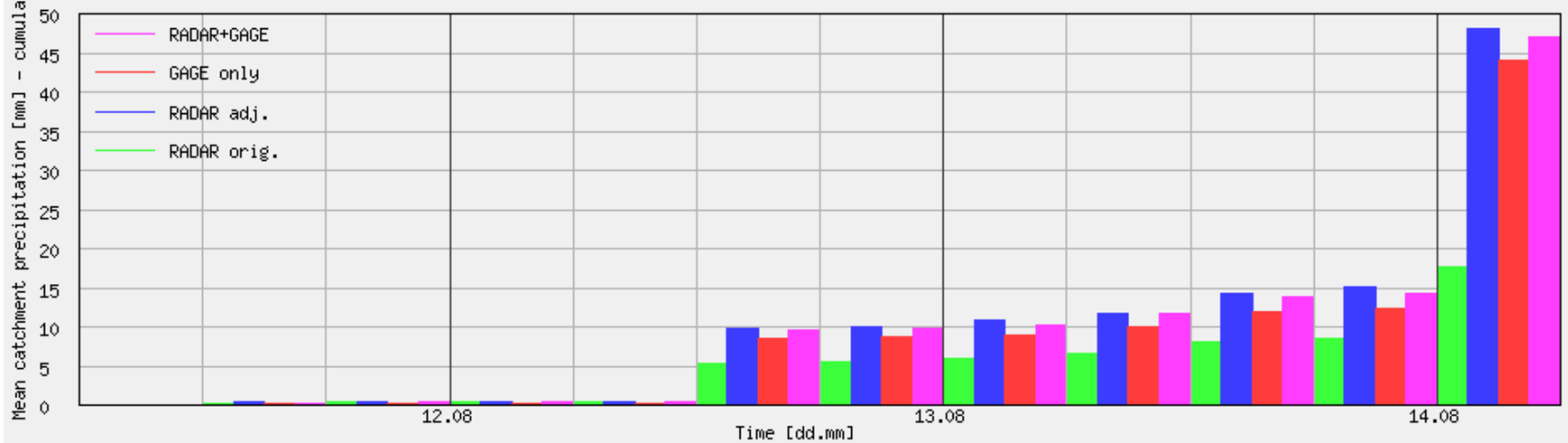
JOINED IMAGE



show_cat_plot.php (PNG obrázek, 950x300 bodů) - Mozilla Firefox

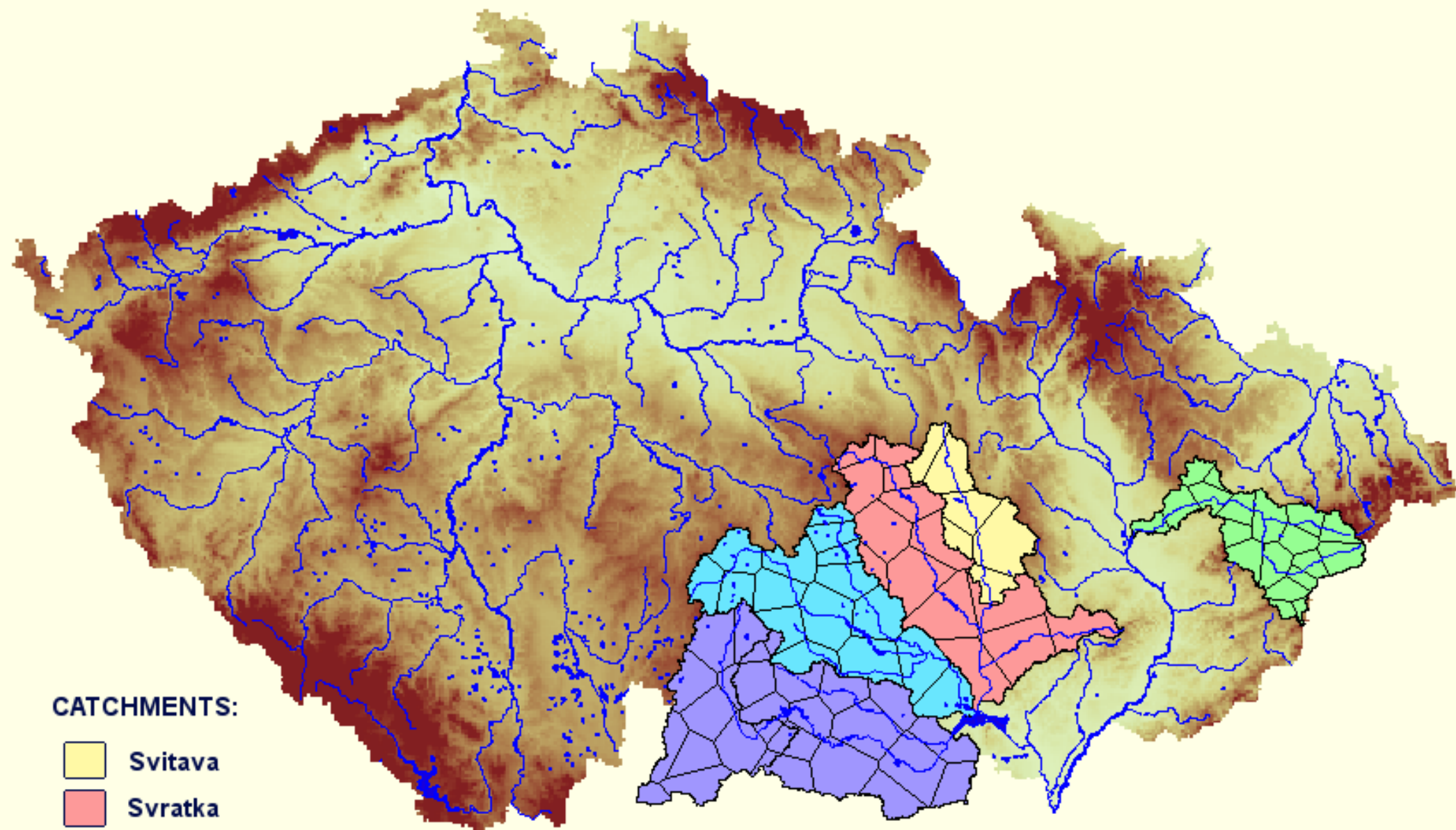


6h Radar Precipitation Estimates 11.08.2010 06:00 - 14.08.2010 06:00
 Catchment 2-04-07 - Luzicka Nisa po Mandavu (area 370.49km2/378pixs)








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 CAT 2-04-0
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 cursor posi





CATCHMENTS:

-  Svitava
-  Svratka
-  Jihlava
-  Dyje
-  Bečva

Příklady Thiessenových polygonů, pro vybraná povodí, pro které je možné počítat plošné odhady srážek

Závěry

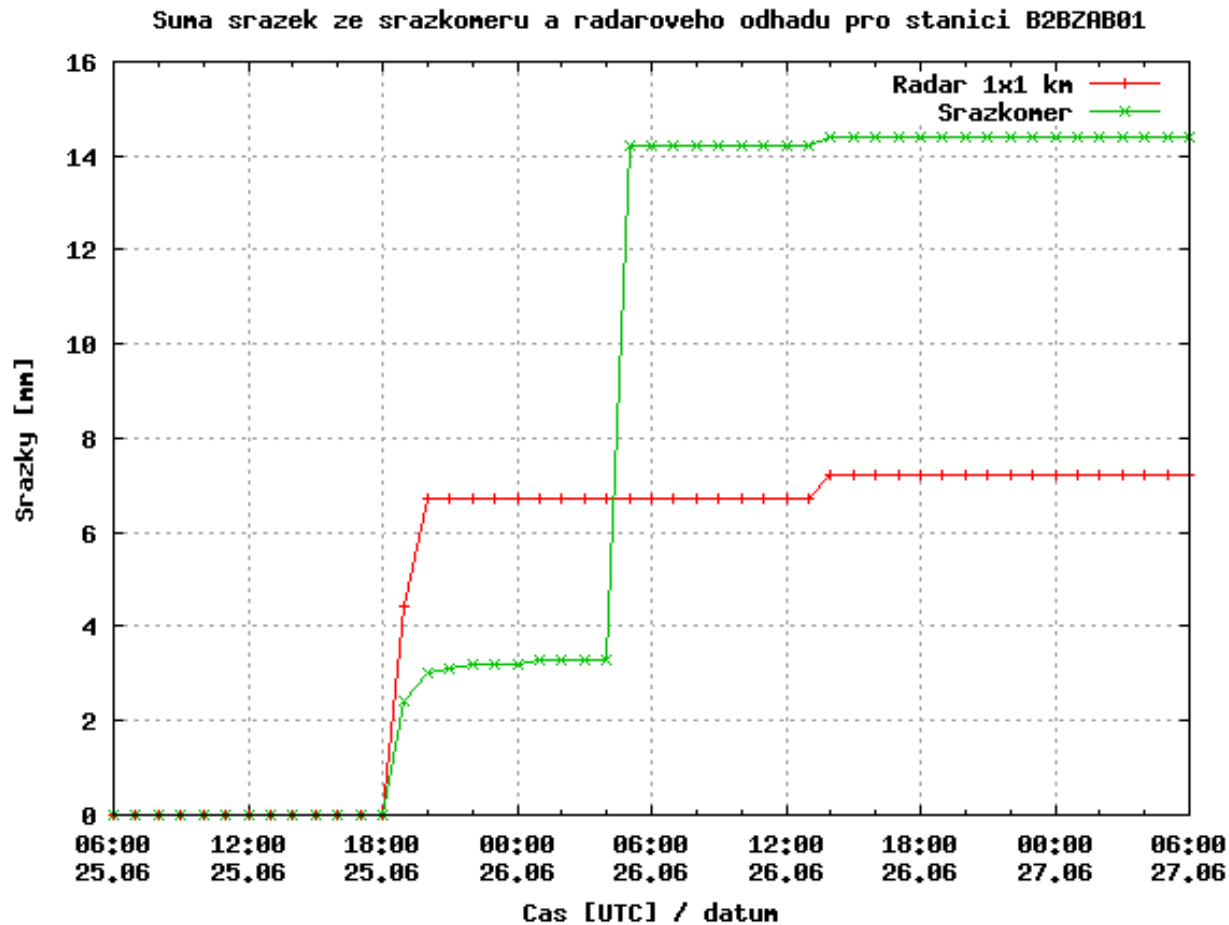
- Nekorigovaná radarová měření srážek jsou nepřesná, odhady vyžadují korekce
- Adjustace územně proměnným koeficientem přesnost významně zvyšuje
- *Průměrně* nejlepším odhadem je kombinace (např. regresní krigování)

Závěry (pokr.)

- Verifikace na denních úhrnech ukázala i místa, kde radar k přesnosti odhadu srážek nepřispívá (zejm. horské oblasti)
- Výpočty hodinových úhrnů pro město Brno indikují, že radar pozitivně přispívá k hodinovým odhadům srážek až od vzdálenosti asi 4 km od nejbližší stanice (nejbližších stanic) použité ve výpočtech.

Závěry (pokr.)

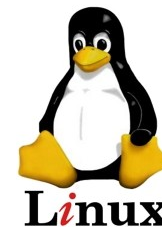
Radarové odhady mohou sloužit ke kontrole (člunkových) srážkoměrů



Použité informační technologie

Při tvorbě a provozu kombinované informace byly a jsou použity tyto technologie:

- Jazyk R + modul gstat
- GIS GRASS, knihovna proj
- OS GNU Linux a příslušné vývojové nástroje (C, Perl, ...)
- ArcGIS

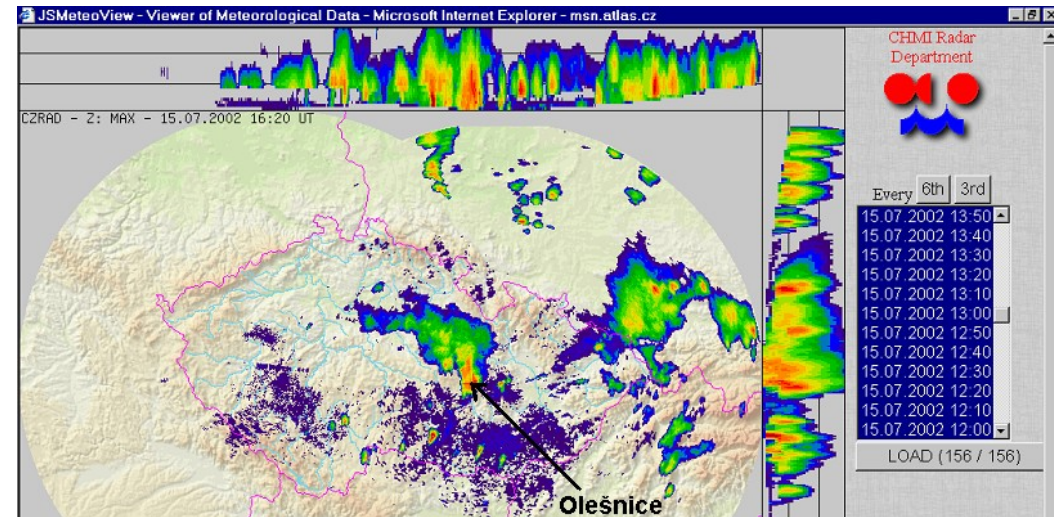


Case studies of flash floods

- **Flash flood at Hodonínka river basin**
 - Catchment area: 67.9 km²
 - Number of radar areal elements: 9
 - Average area of the radar areal elements: 7.5 km²

Basic facts of the flash flood at Hodonínka

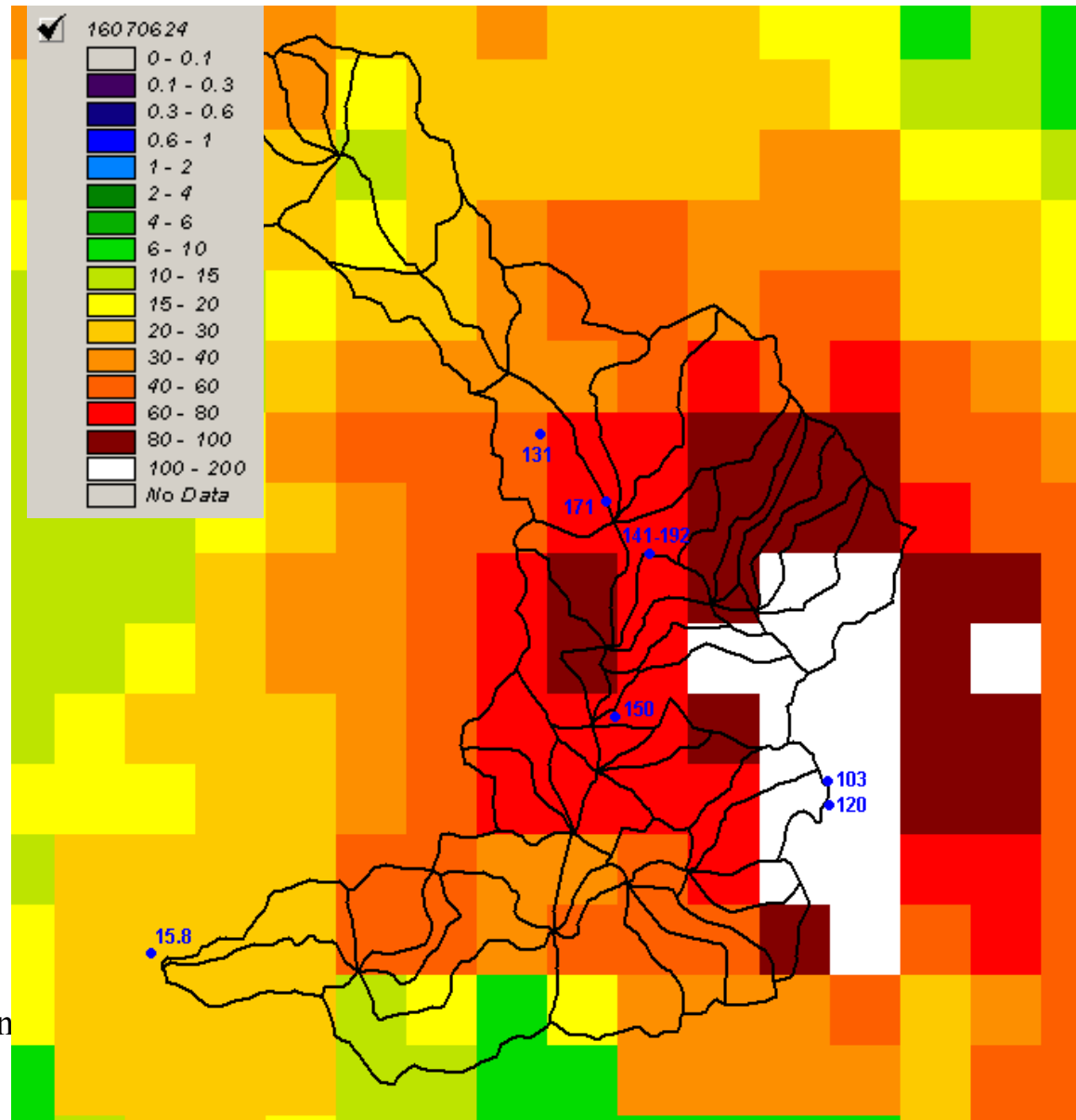
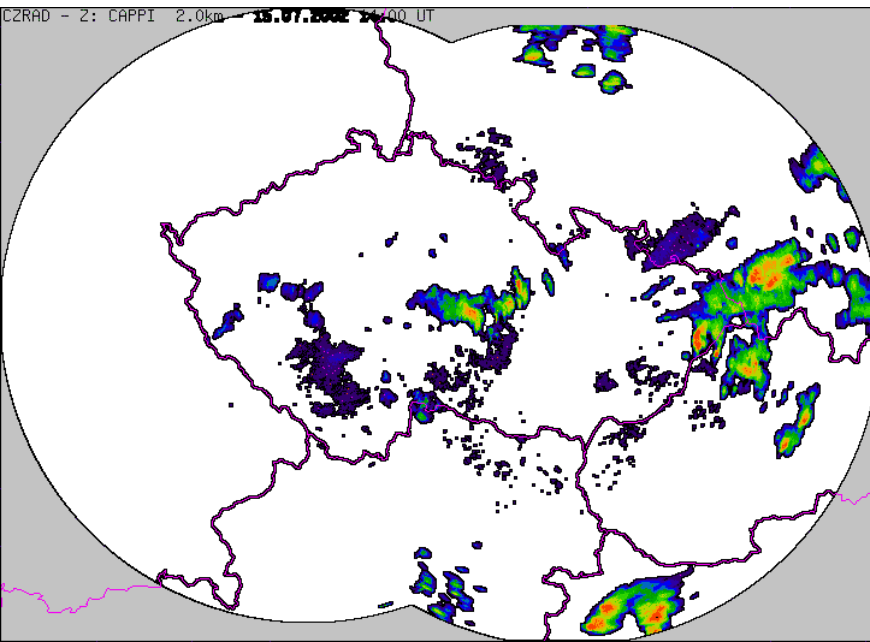
- Occured at small river Hodonínka on July 15, 2002 in evening hours
- one of the worst convection-related disasters in 15 years
- Return period: > **200 years**
- Damage: 5.5 mil EUR
- 2 fatalities
- Cause: Heavy rainfall lasting 1.5 hour, train effect



Hydrological model

Hydrog 'forecasted' the discharge at *the Štěpánov village* using 10-minute radar-based QPE, 2-hour COTREC-based nowcasting and 1-hour *persistence forecast* of the 10-minute values

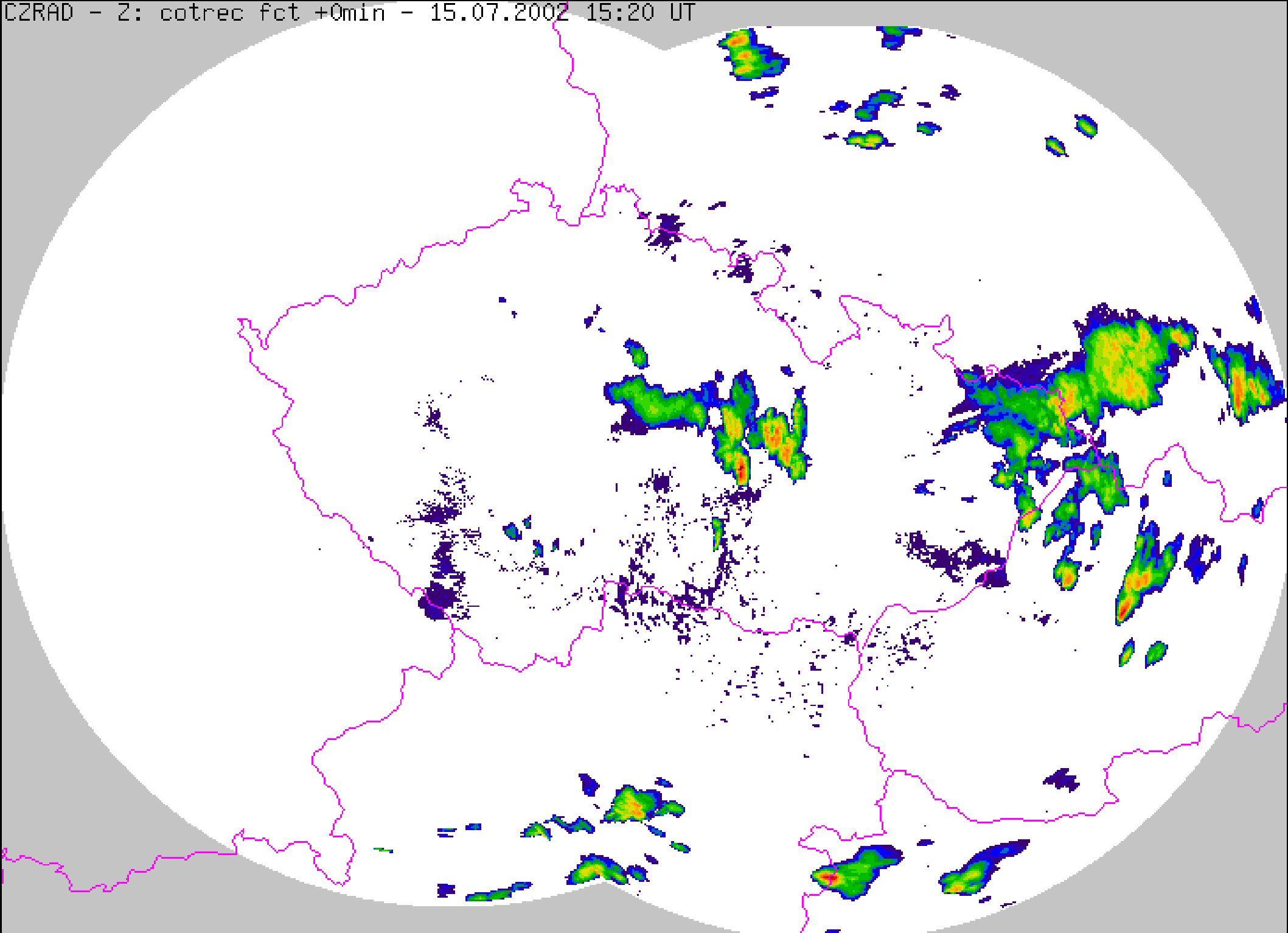
Radar-based QPE (from Max Z, grid 1km) and precipitation measurements (catchment size: 67.9 km²)



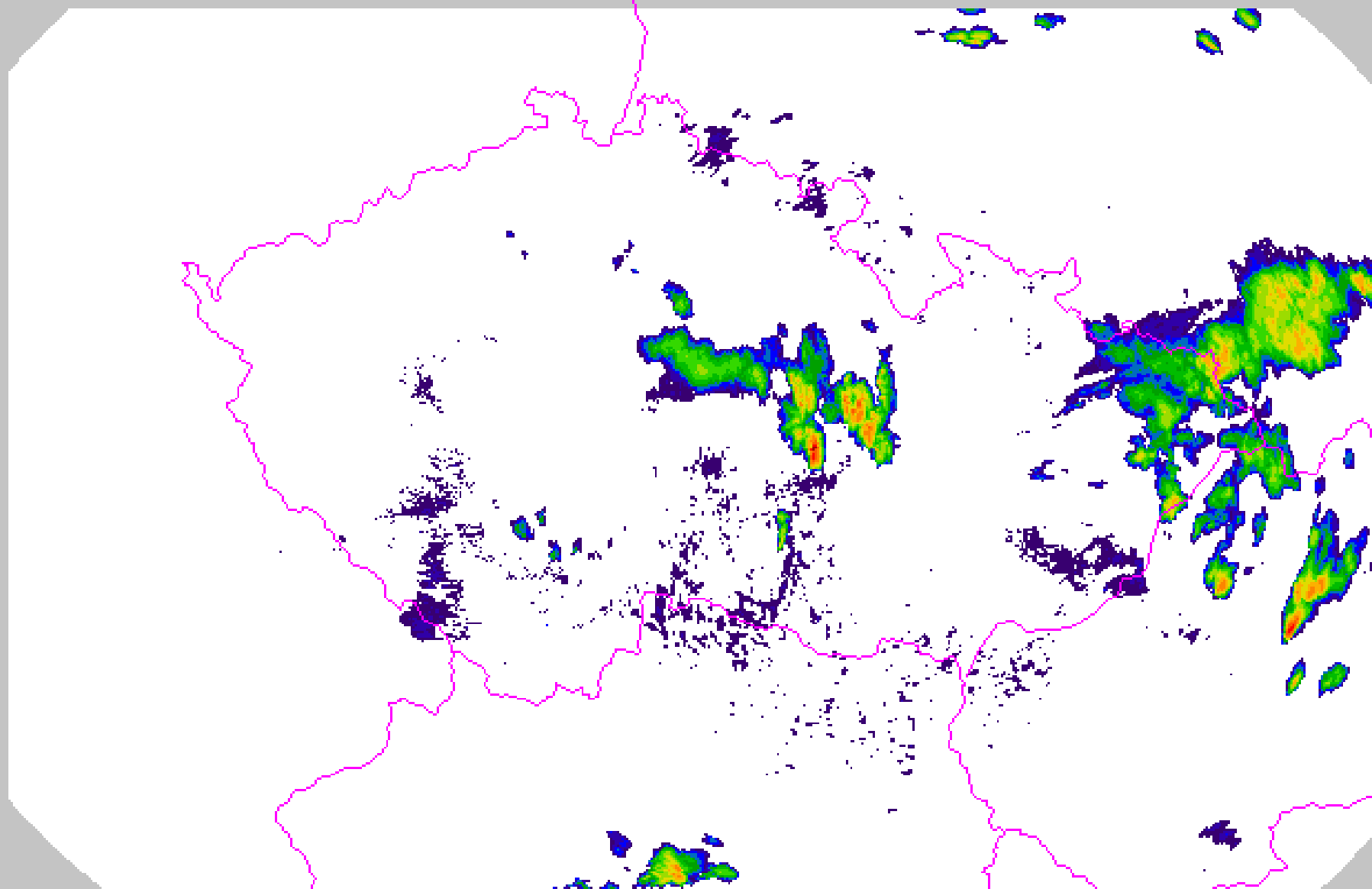
Example of COTREC nowcasting performance

COTREC is more suitable for *linear*
movement ...

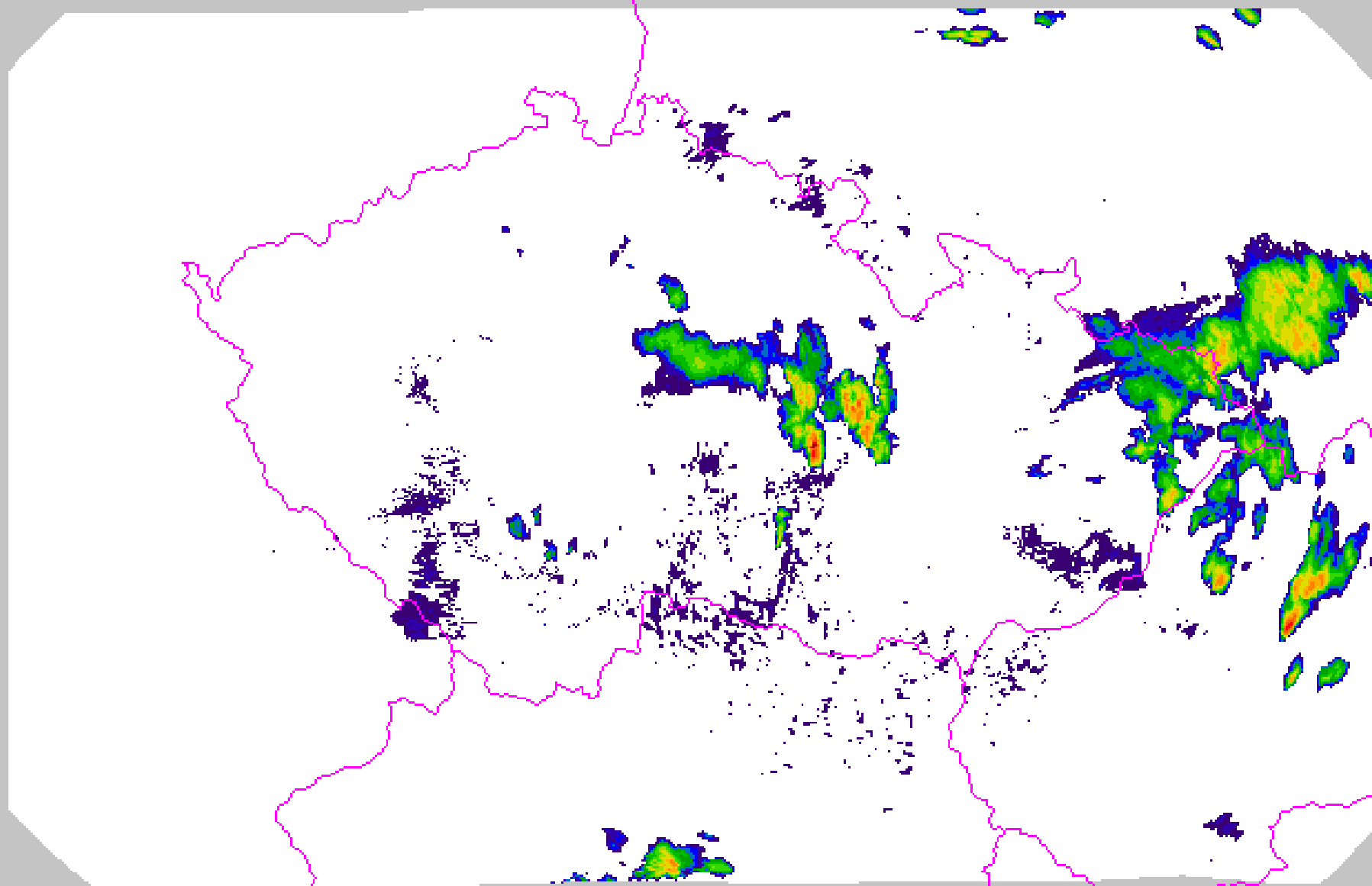
CZRAD - Z: cotrec fct +0min - 15.07.2002 15:20 UT



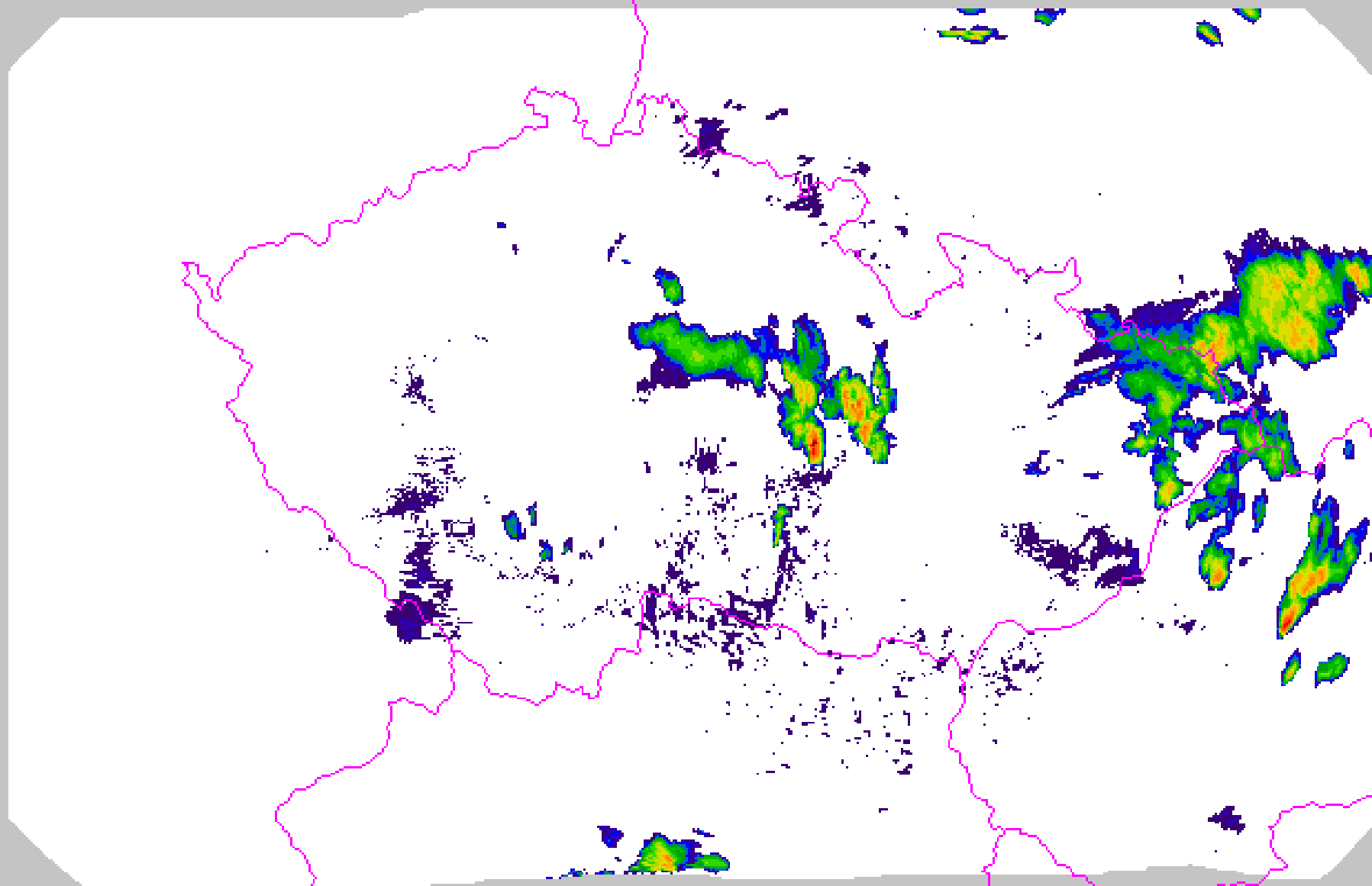
CZRAD - Z: cotrec fct +10min - 15.07.2002 15:30 UT



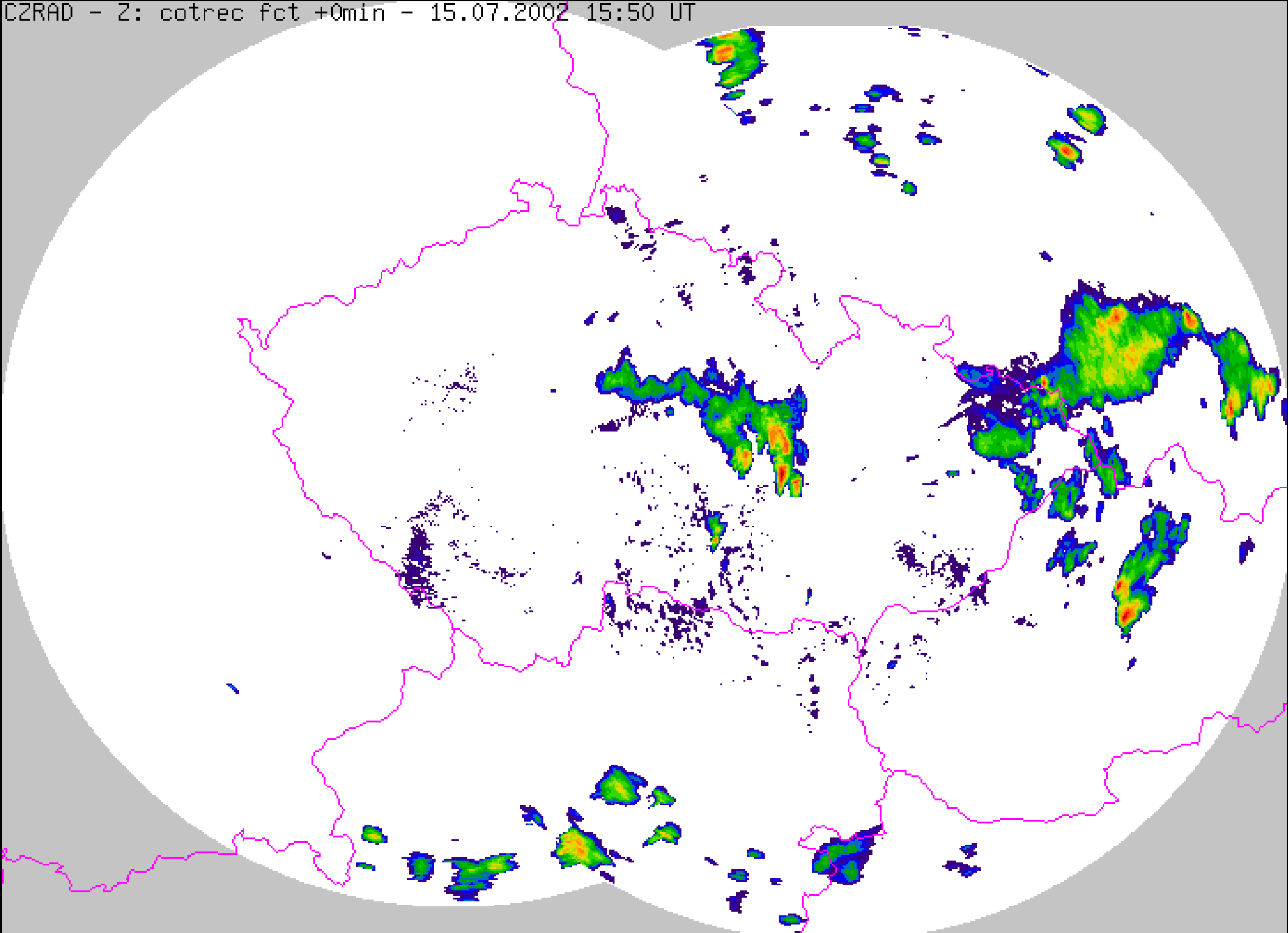
CZRAD - Z: cotrec fct +20min - 15.07.2002 15:40 UT



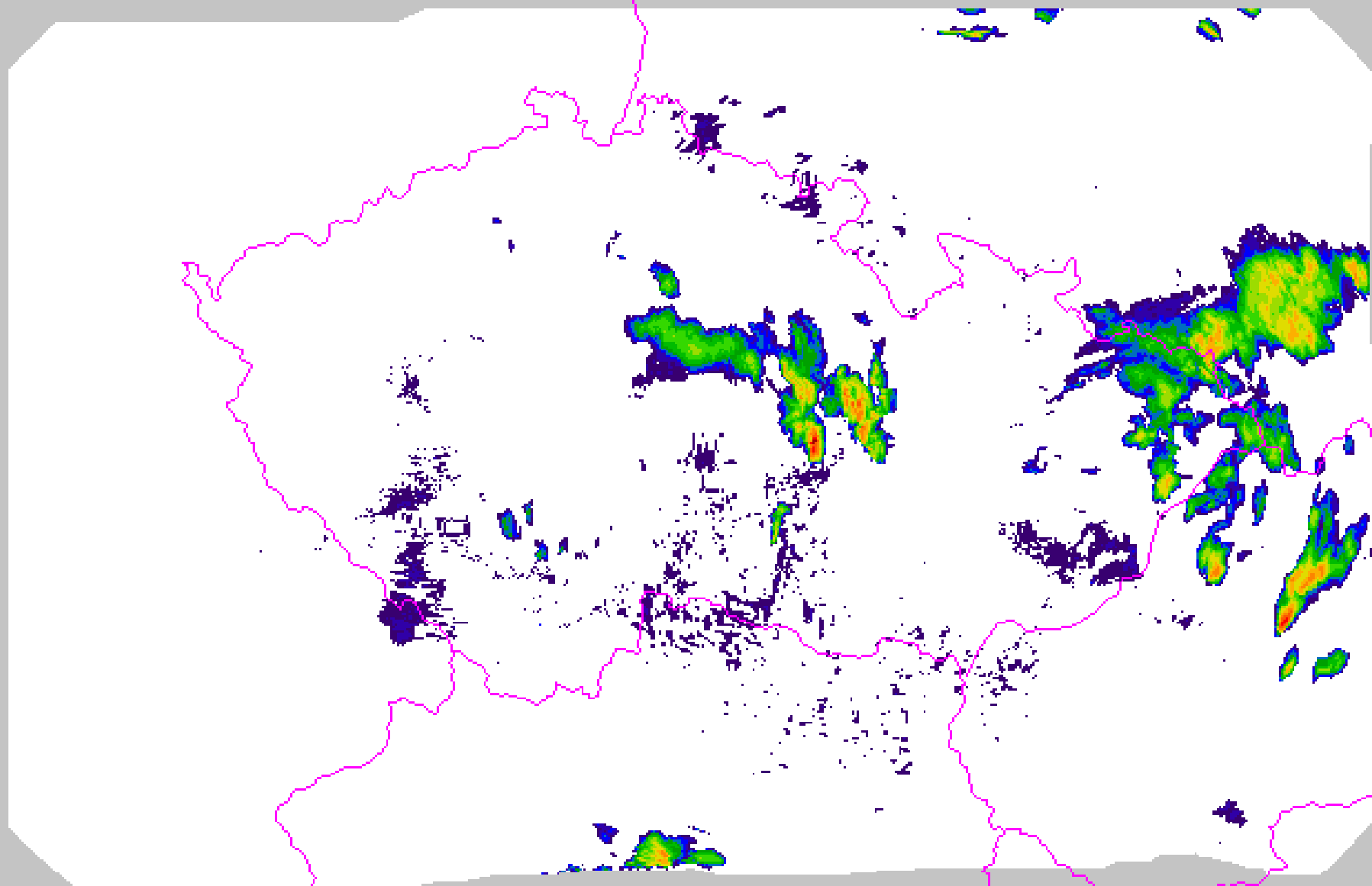
CZRAD - Z: cotrec fct +30min - 15.07.2002 15:50 UT



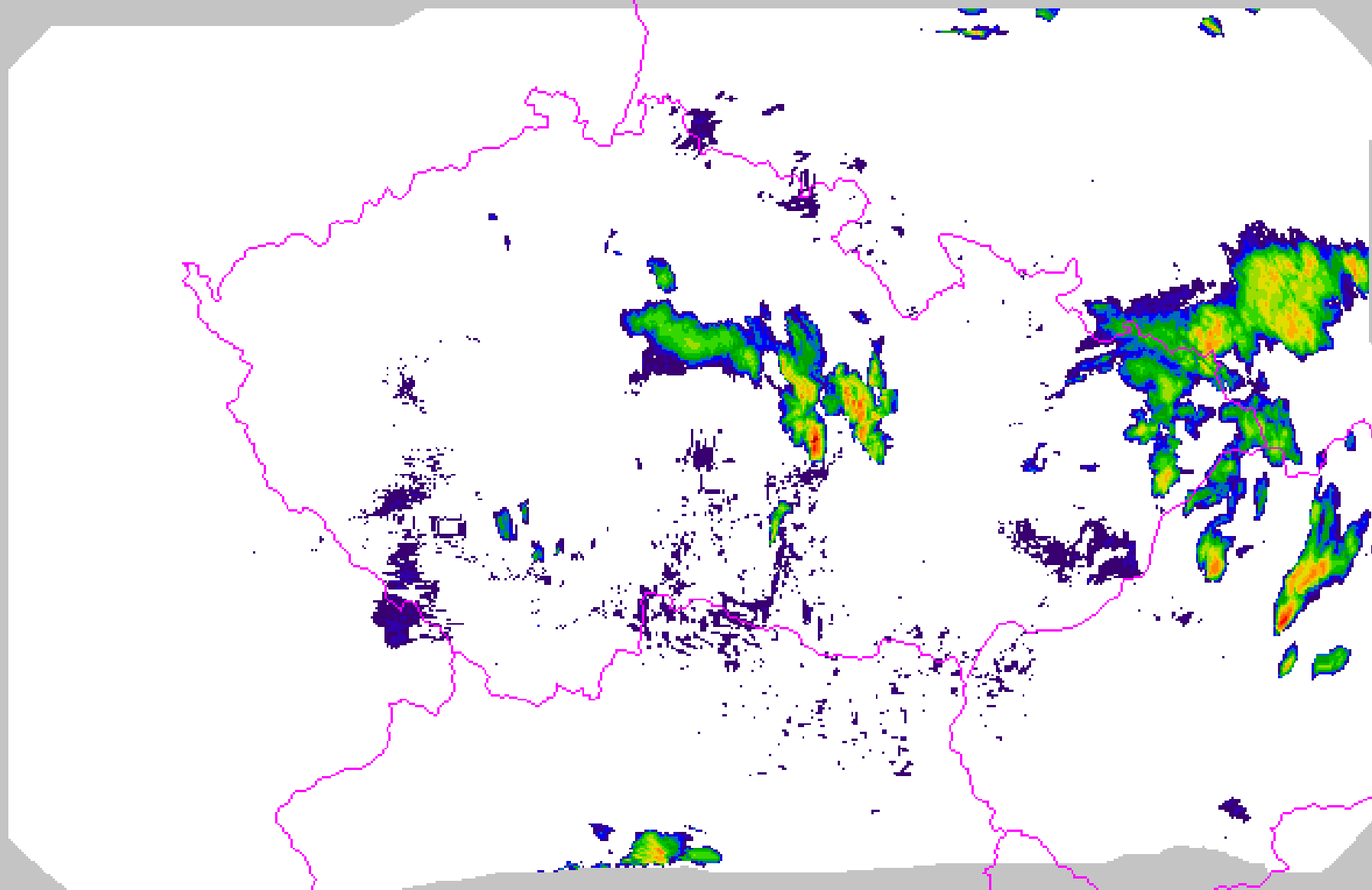
CZRAD - Z: cotrec fct +0min - 15.07.2002 15:50 UT



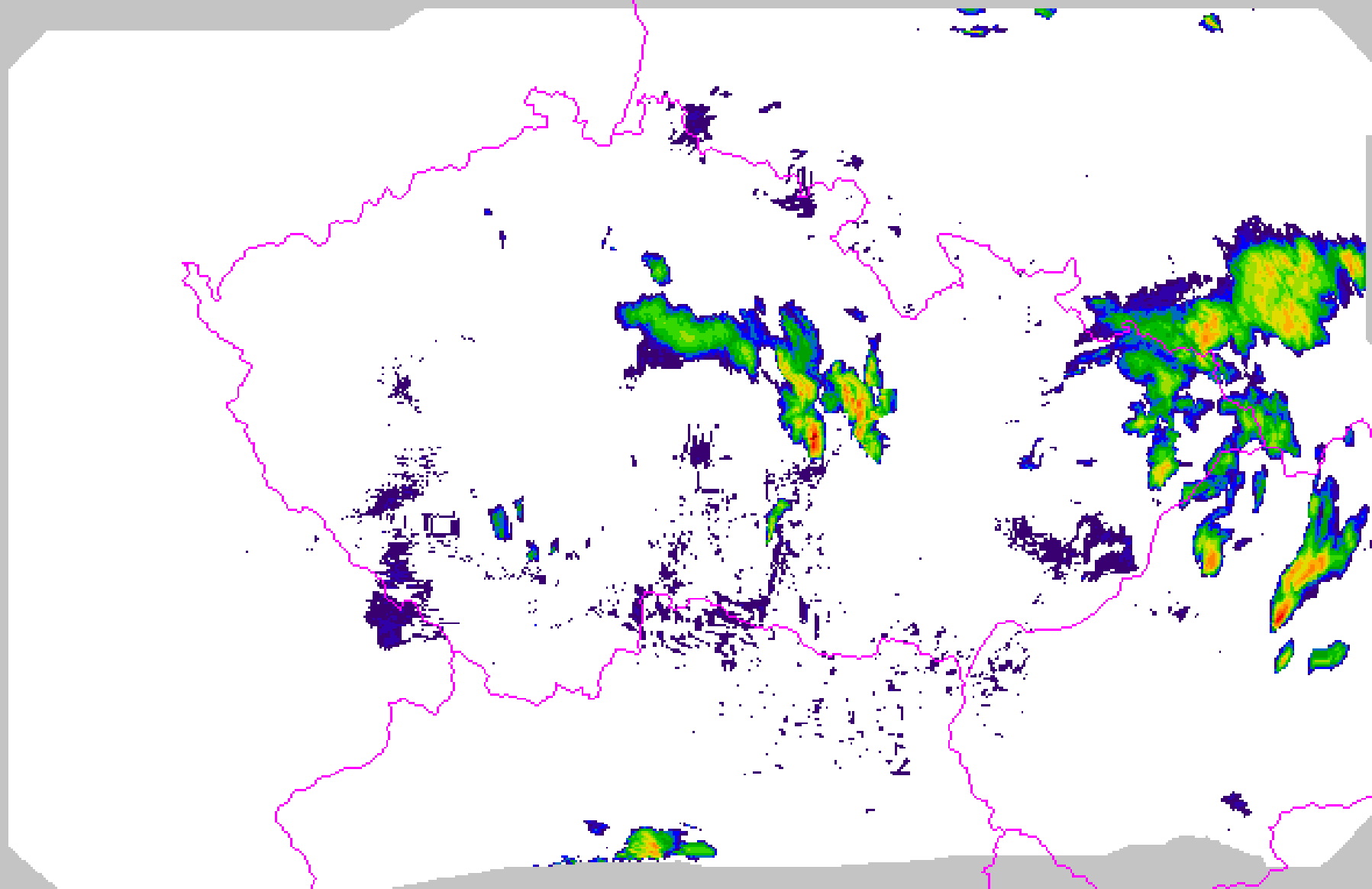
CZRAD - Z: cotrec fct +40min - 15.07.2002 16:00 UT



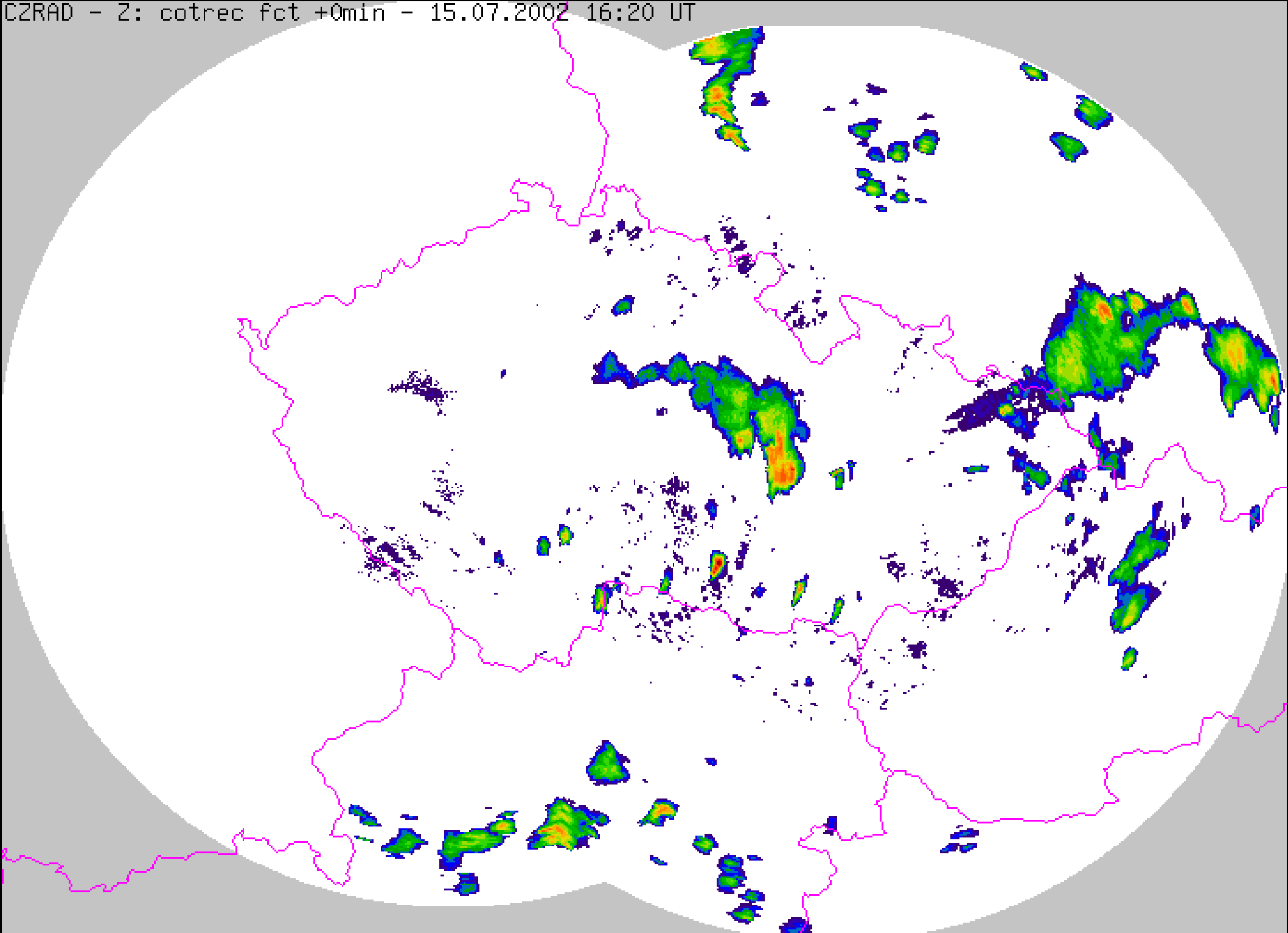
CZRAD - Z: cotrec fct +50min - 15.07.2002 16:10 UT



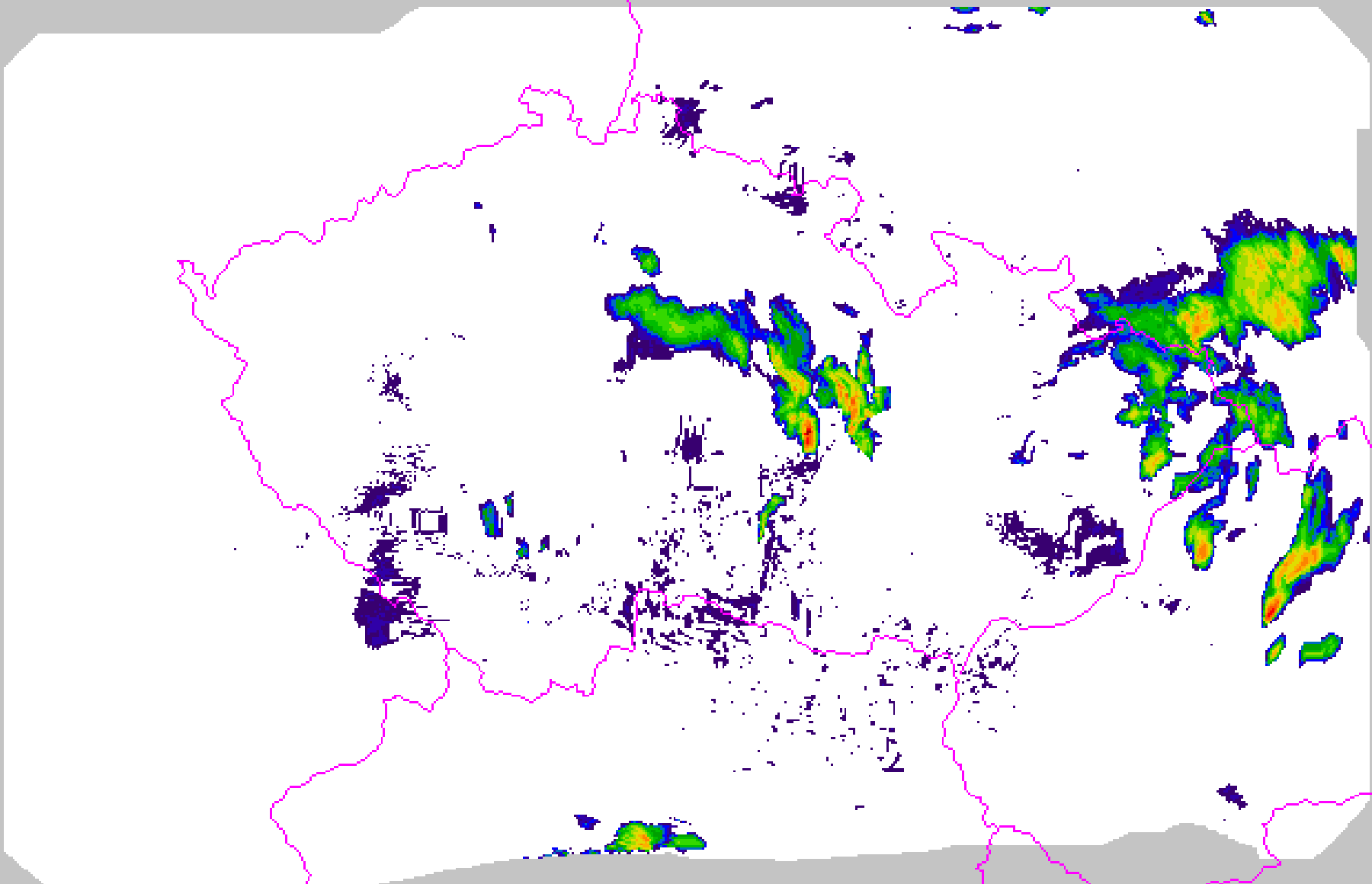
CZRAD - Z: cotrec fct +60min - 15.07.2002 16:20 UT



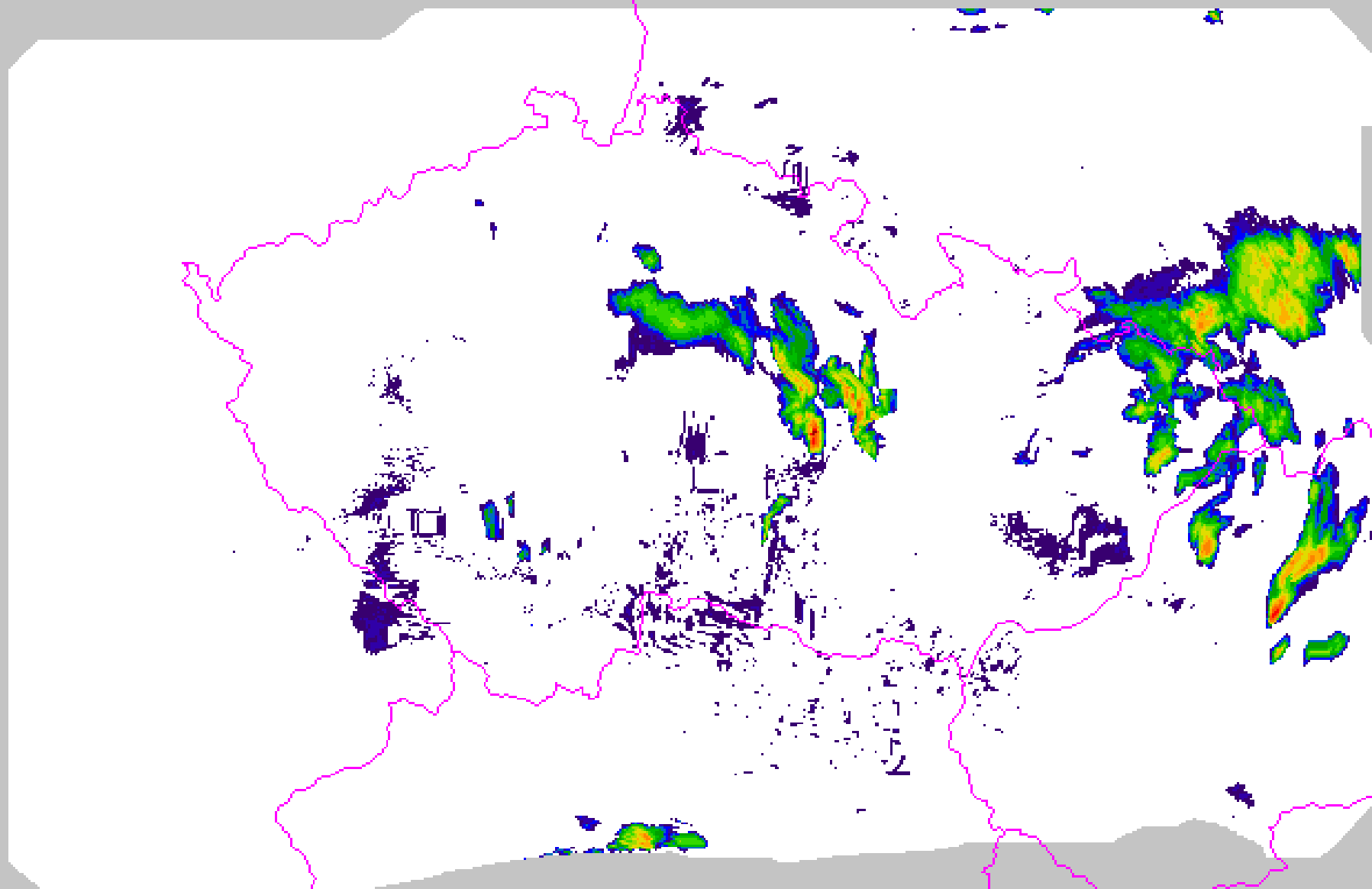
CZRAD - Z: cotrec fct +0min - 15.07.2002 16:20 UT



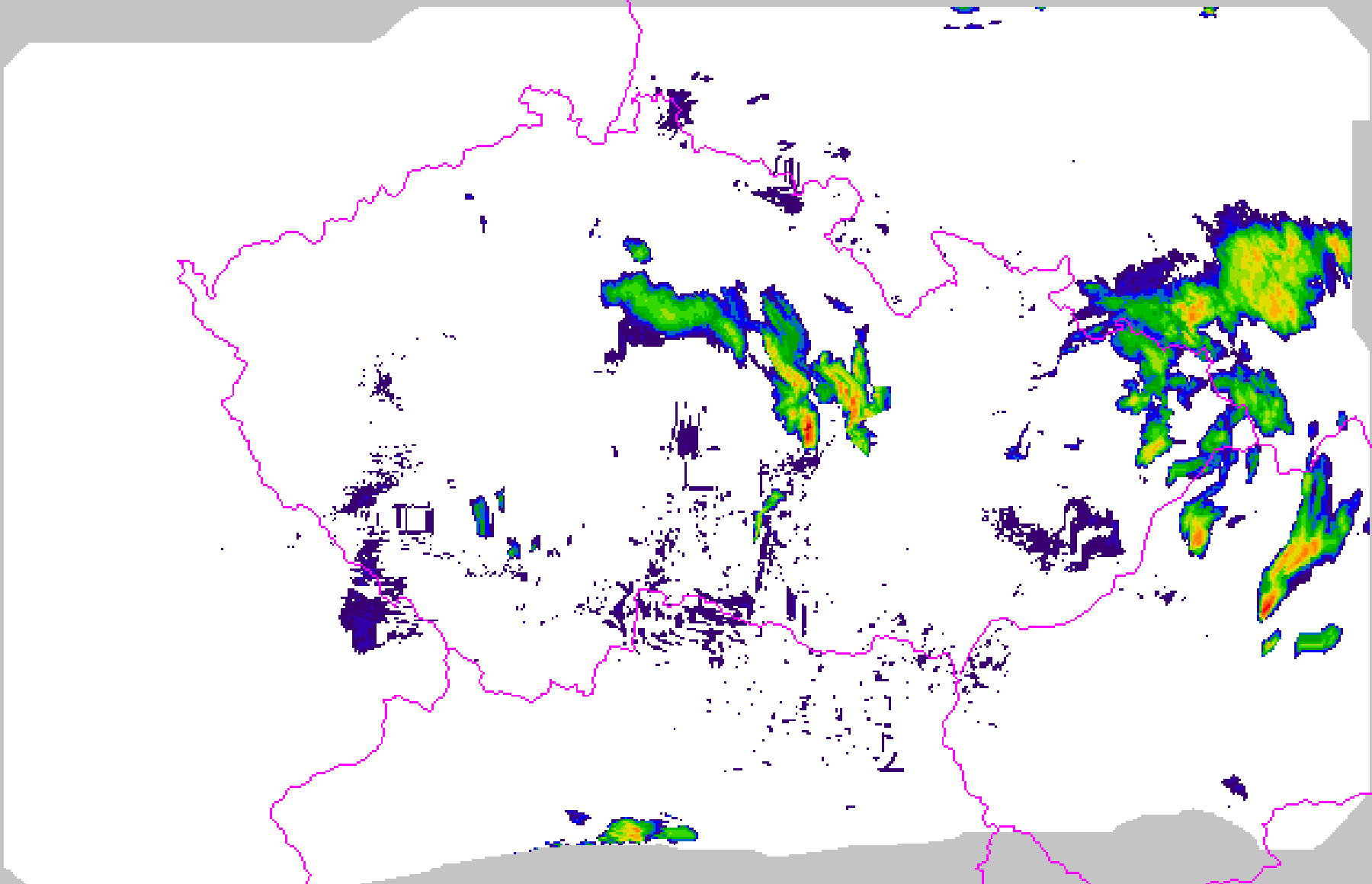
CZRAD - Z: cotrec fct +70min - 15.07.2002 16:30 UT



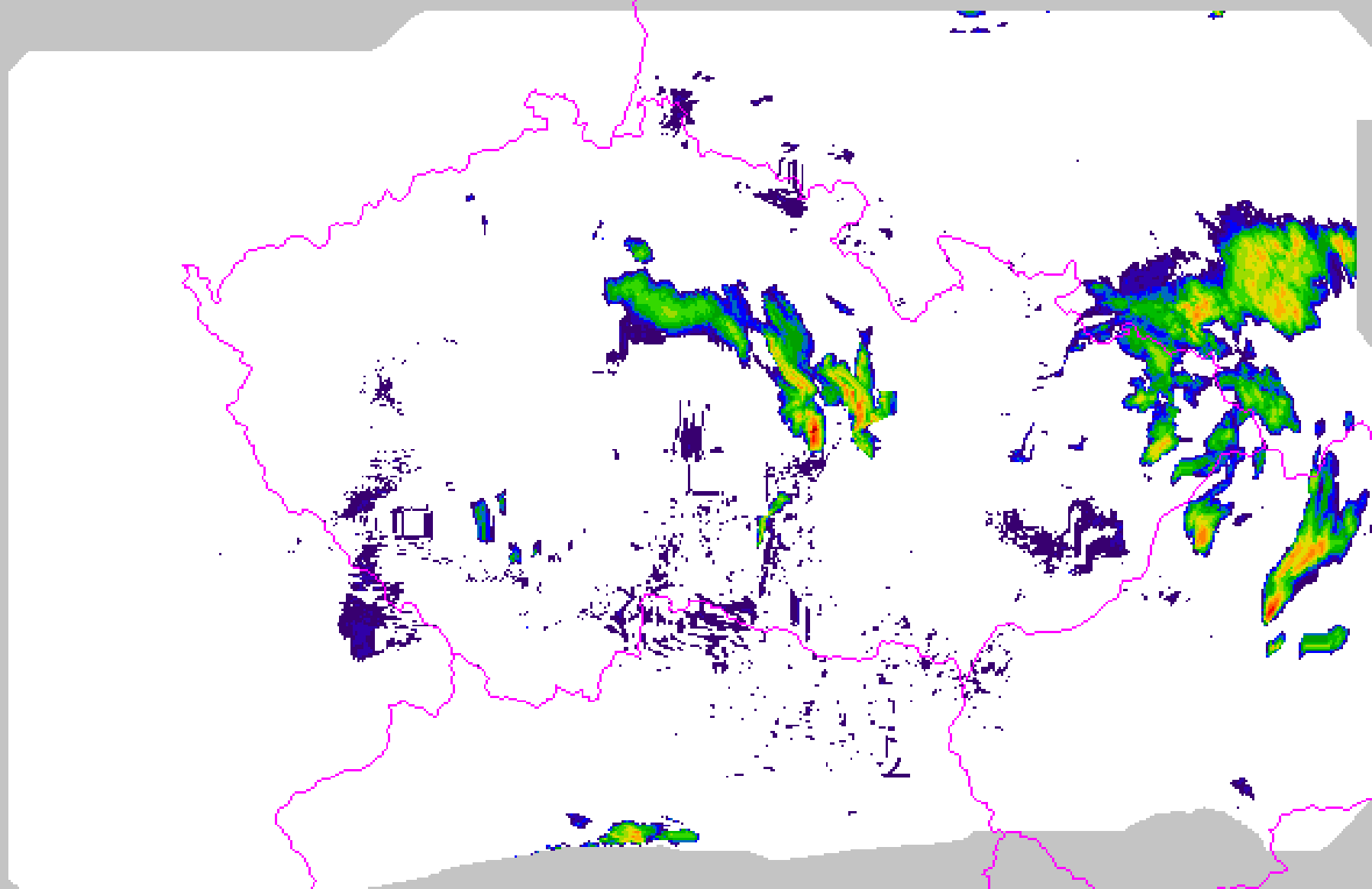
CZRAD - Z: cotrec fct +80min - 15.07.2002 16:40 UT



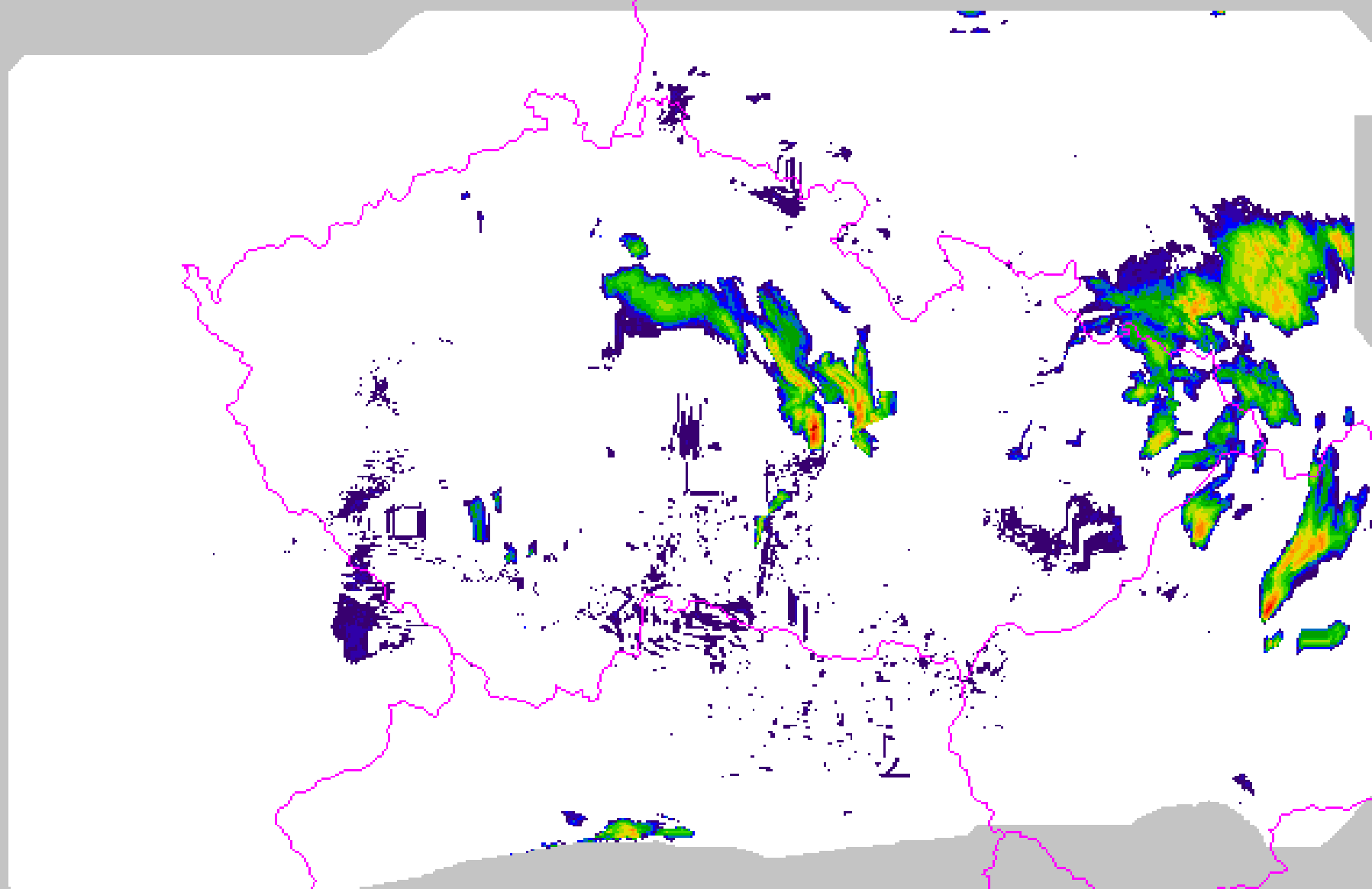
CZRAD - Z: cotrec fct +90min - 15.07.2002 16:50 UT



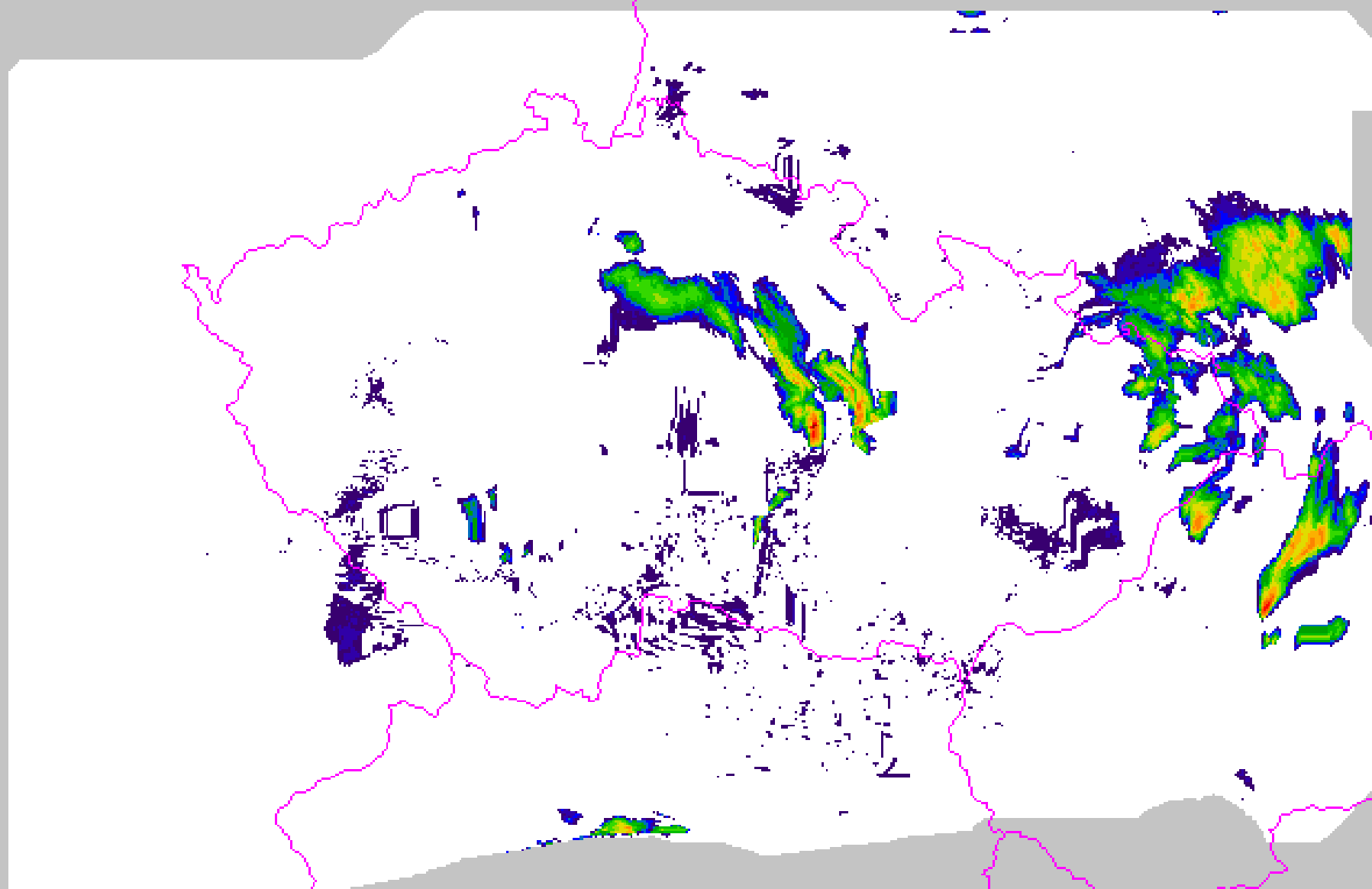
CZRAD - Z: cotrec fct +100min - 15.07.2002 17:00 UT



CZRAD - Z: cotrec fct +110min - 15.07.2002 17:10 UT



CZRAD - Z: cotrec fct +120min - 15.07.2002 17:20 UT



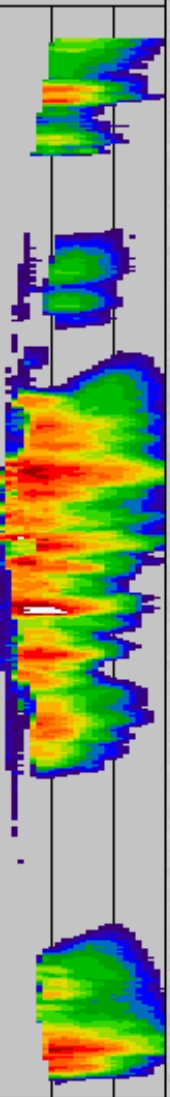
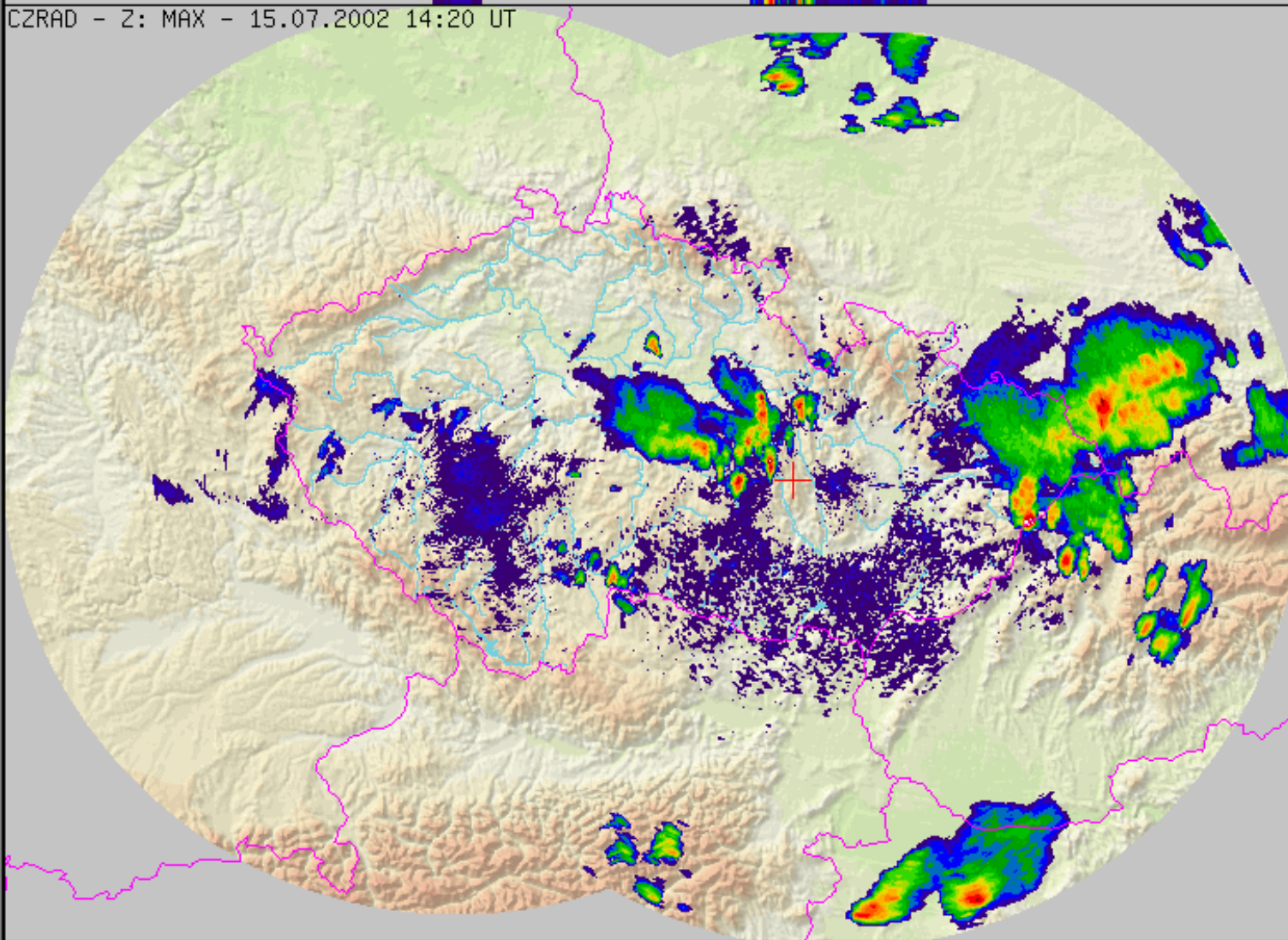
Overview of the convection development along with discharge forecasts

- radar reflectivities (10 minute measurement)
- discharge forecasts for Štěpánov profile

CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 14:20 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)

dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

<< || >> > ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

ORO col UND riv PDUS RAD LIGHTNING NWP none OVR none

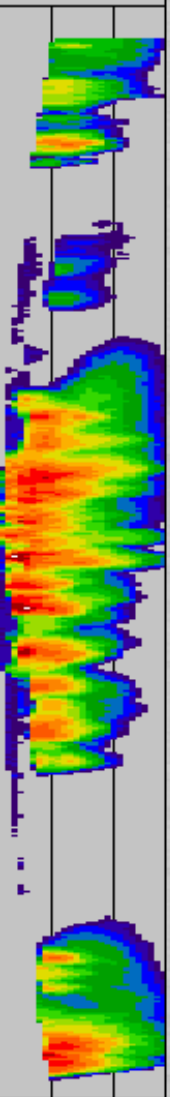
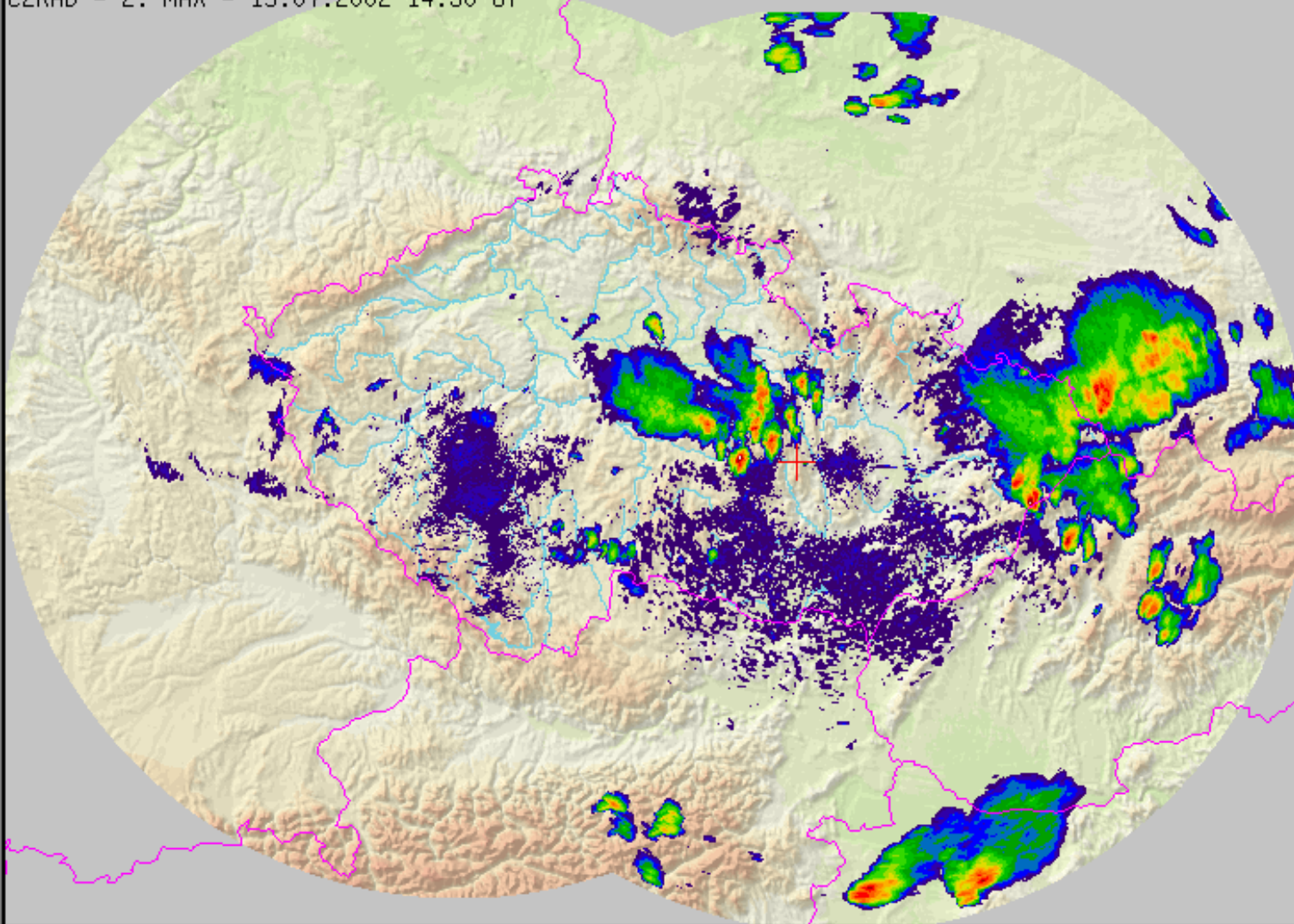
NAVIG. red LON. 16.432 LAT. 49.549 Choose predefined position

- CG neg
+ CG pos
| CC

CHMI Radar
Department



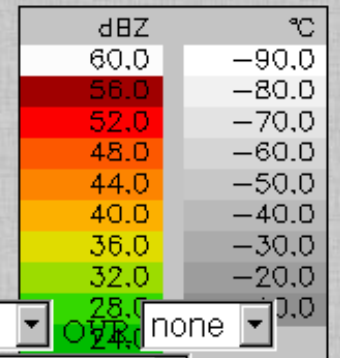
CZRAD - Z: MAX - 15.07.2002 14:30 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)



ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

ORO: col UND: riv PDUS: RAD: LIGHTNING: NWP: none

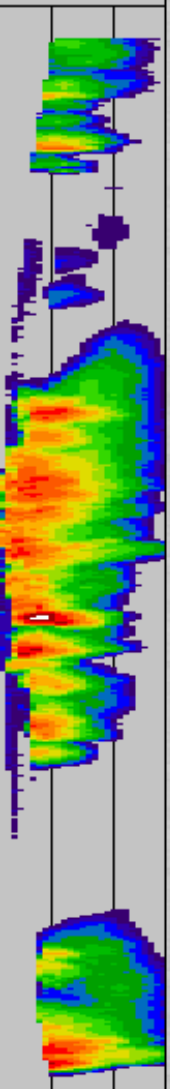
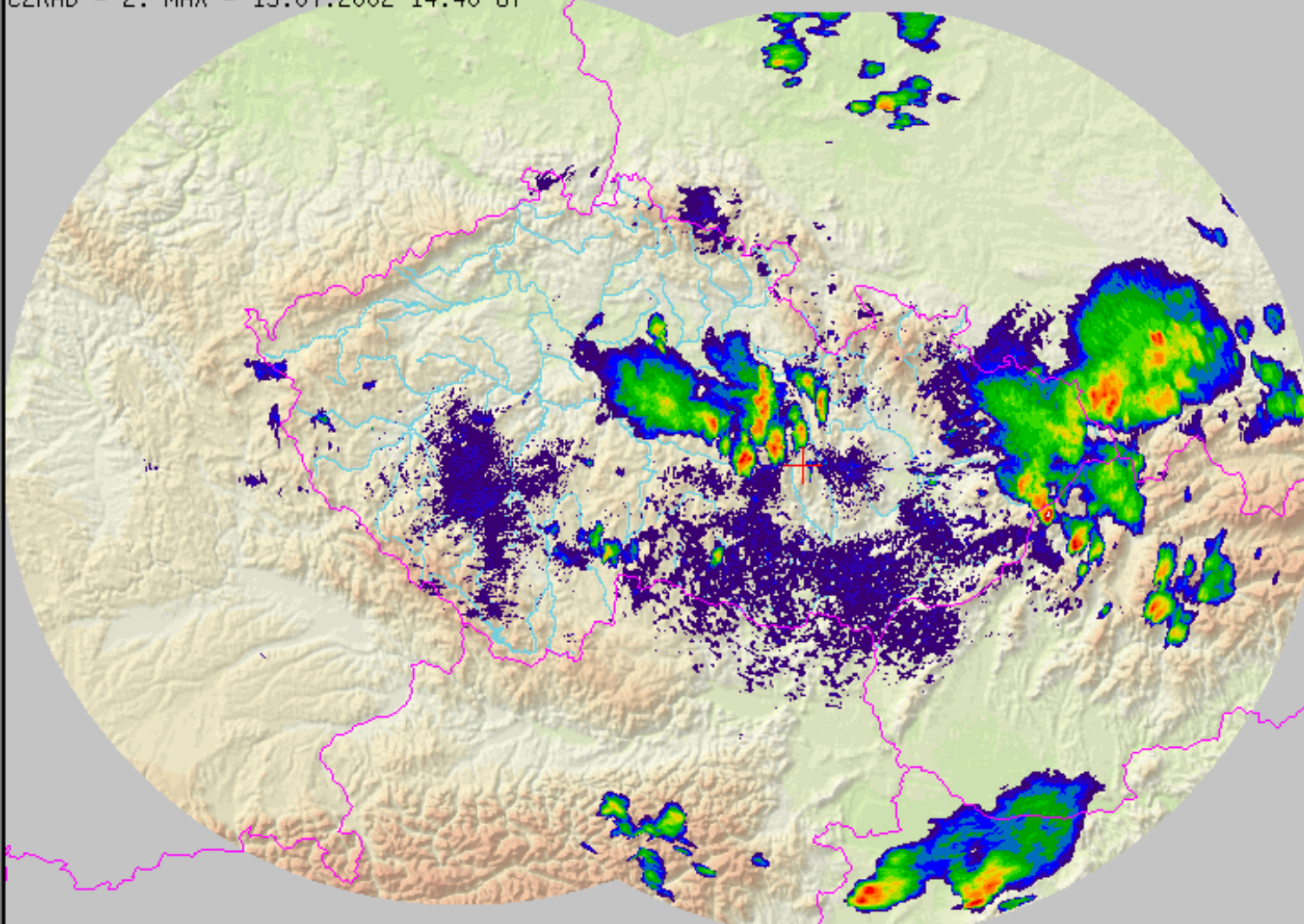
NAVIG: red LON: 16.432 LAT: 49.549 Choose predefined position

CG neg
CG pos
CC

CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 14:40 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)

dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

ORO col UND riv PDUS RAD LIGHTNING NWP none OVR none

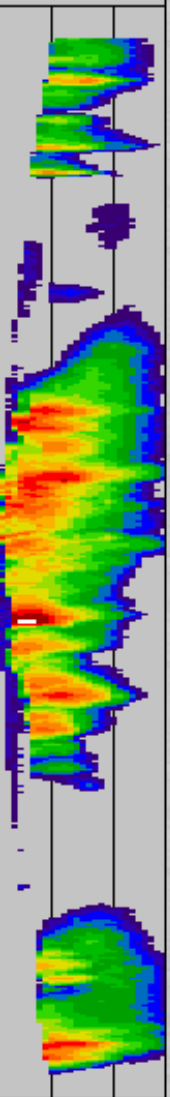
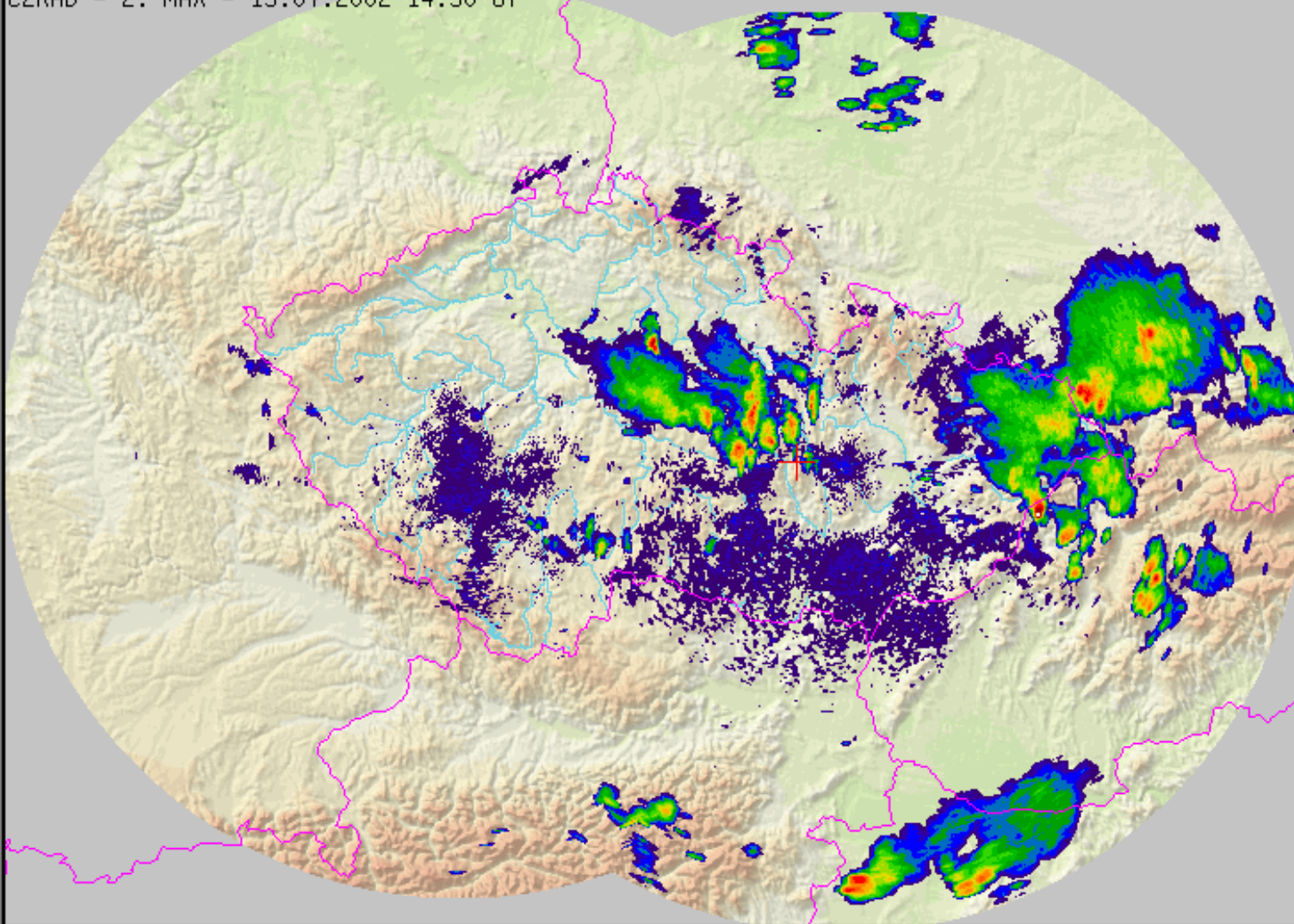
NAVIG. red LON. 16.432 LAT. 49.549 Choose predefined position

- CG neg
+ CG pos
| CC

CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 14:50 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)

dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

< < || >> > ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

ORO col UND riv PDUS RAD LIGHTNING NWP none OVR none

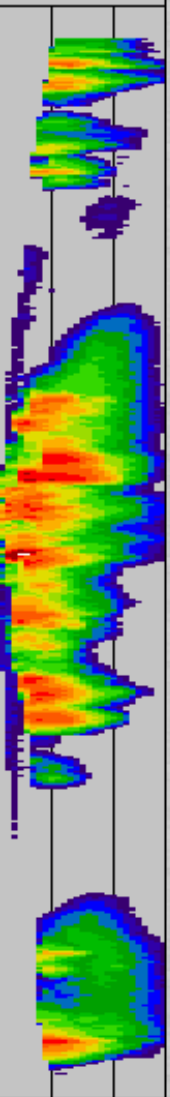
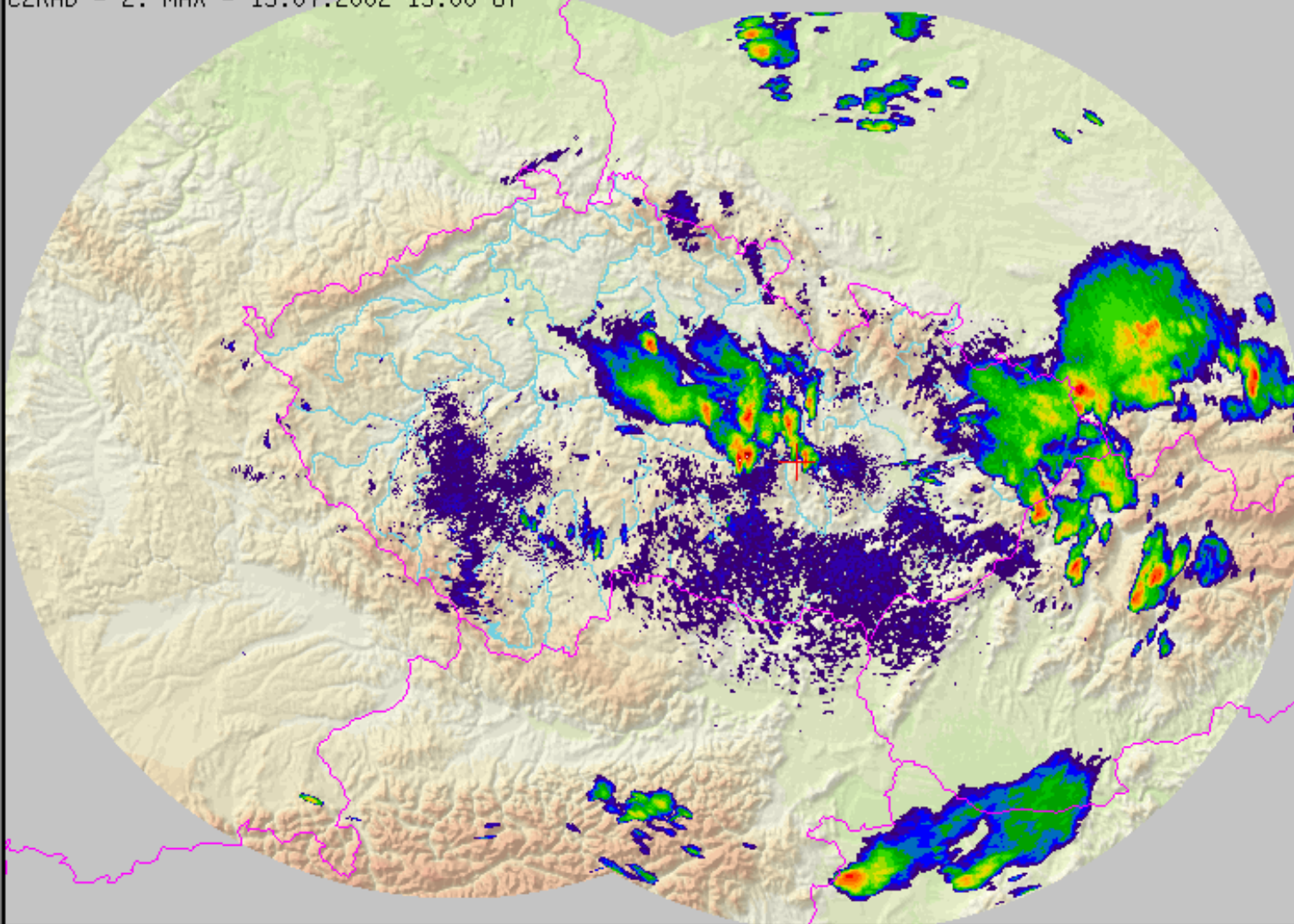
NAVIG. red LON. 16.432 LAT. 49.549 Choose predefined position

- CG neg
+ CG pos
| CC

CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 15:00 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)

dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

ORO col UND riv PDUS RAD LIGHTNING NWP none OVR none

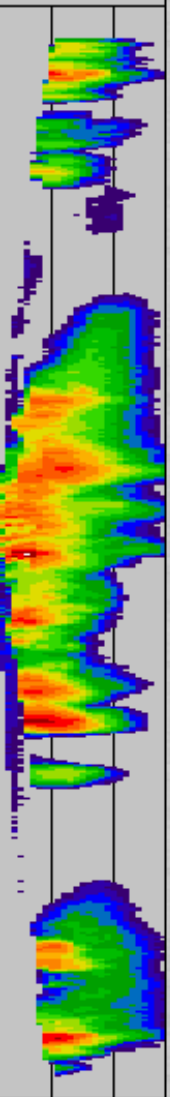
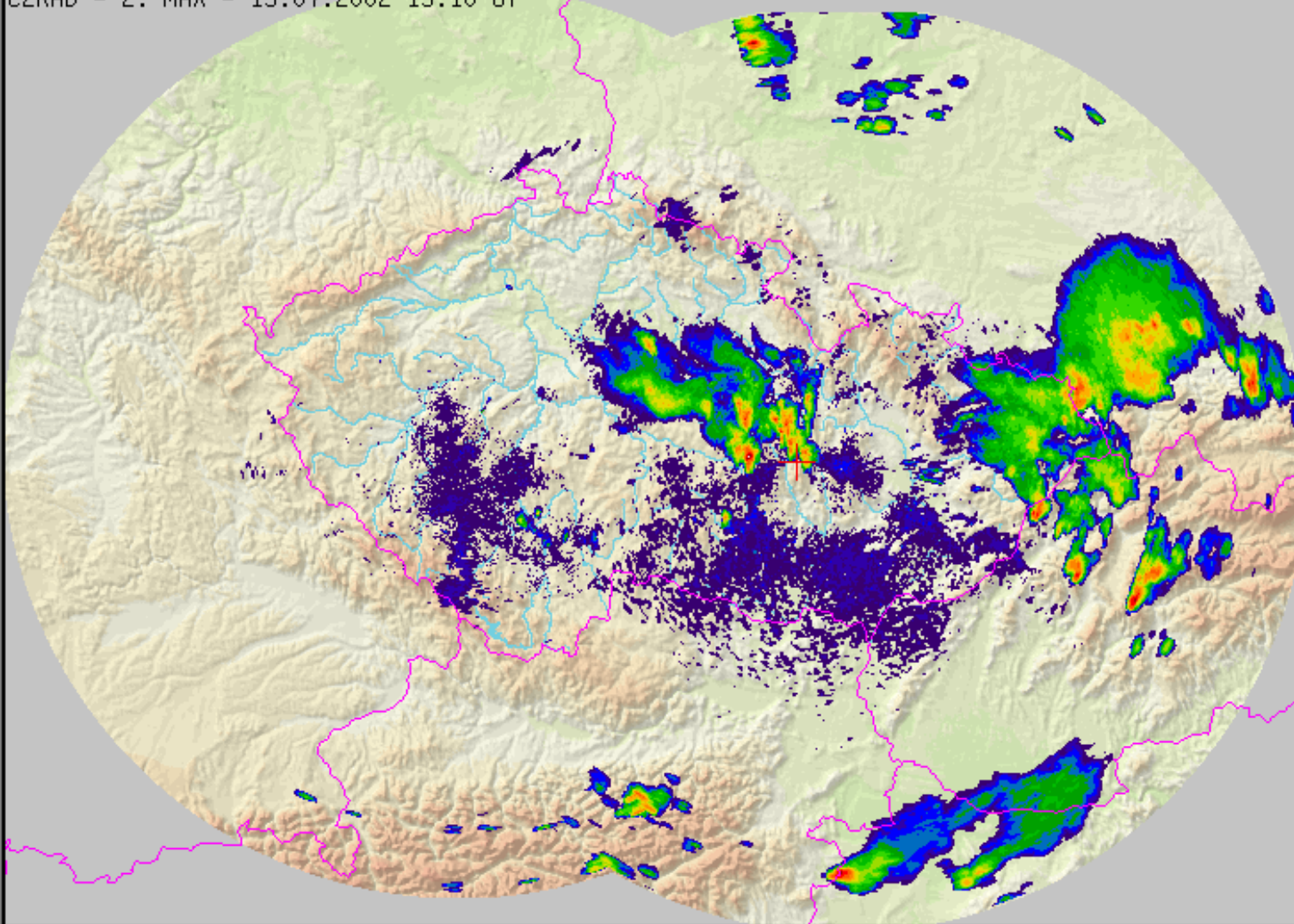
NAVIG. red LON. 16.432 LAT. 49.549 Choose predefined position

- CG neg
+ CG pos
| CC

CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 15:10 UT



Every

- 15.07.2002 16:00 ▲
- 15.07.2002 15:50
- 15.07.2002 15:40
- 15.07.2002 15:30
- 15.07.2002 15:20
- 15.07.2002 15:10
- 15.07.2002 15:00
- 15.07.2002 14:50
- 15.07.2002 14:40
- 15.07.2002 14:30
- 15.07.2002 14:20
- 15.07.2002 14:10 ▼

LOAD (99 / 99)

dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

ORO col UND riv PDUS RAD LIGHTNING NWP none OVR none

NAVIG. red LON. 16.432 LAT. 49.549 Choose predefined position

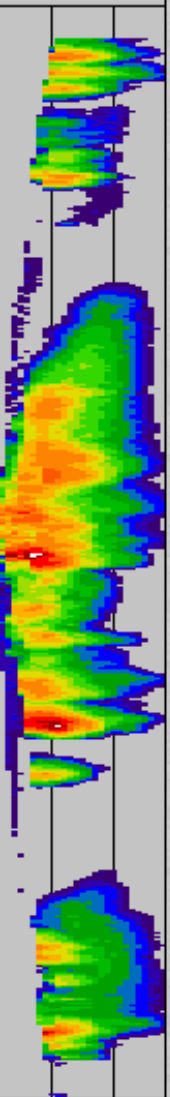
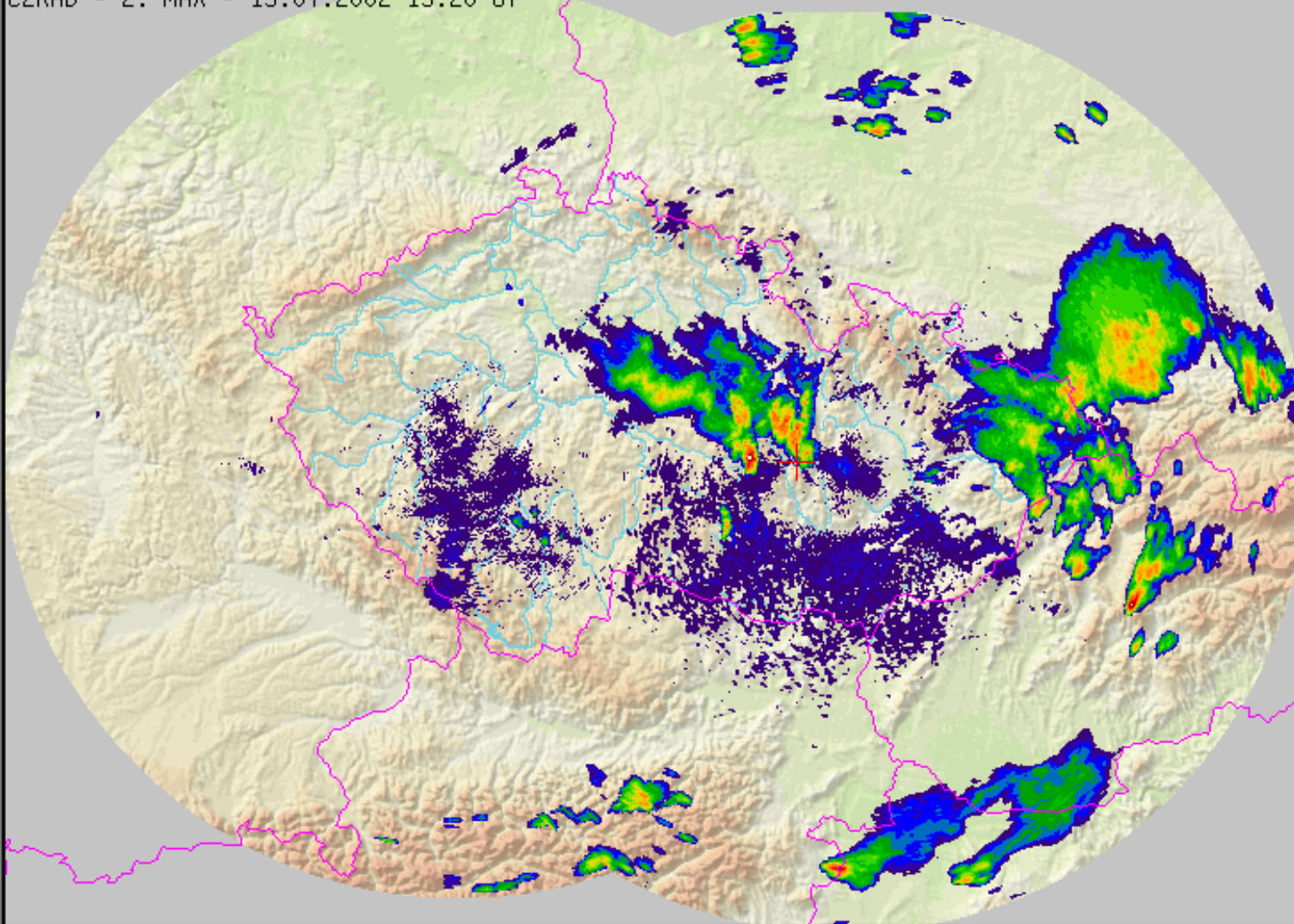
CG neg
+ CG pos
CC

Last update: 15.07.2002 15:10

CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 15:20 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)

dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

ANIM: LAST: AUTO UPDATE

ORO UND PDUS RAD LIGHTNING NWP OVR

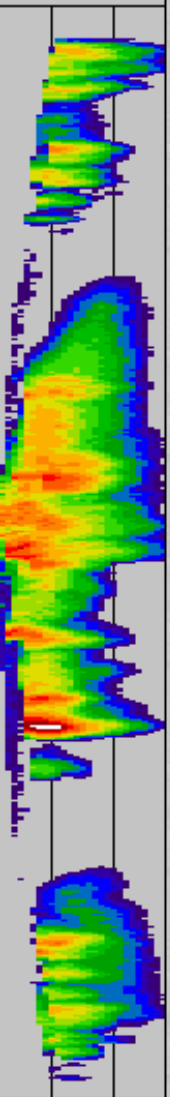
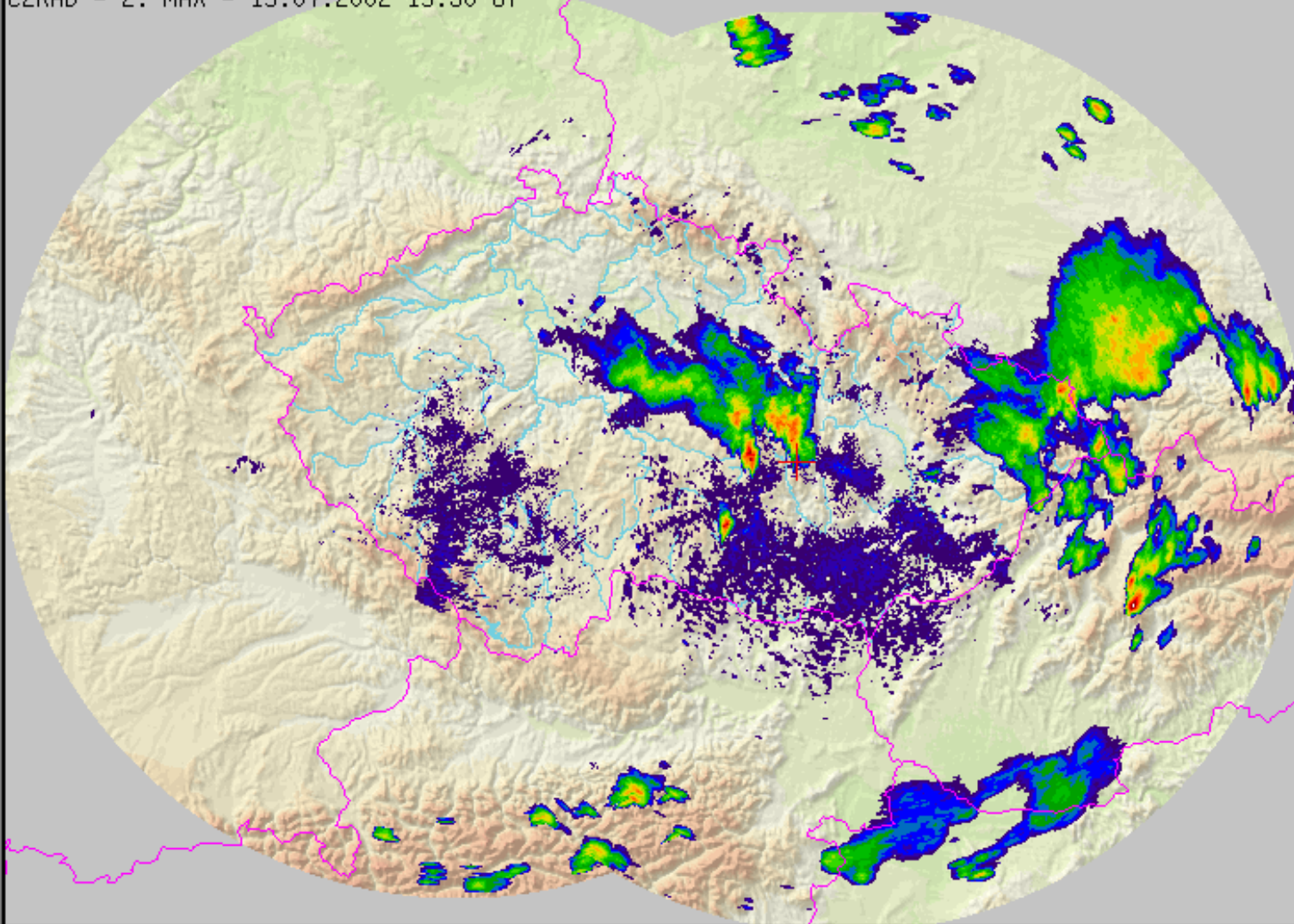
NAVIG. LON. LAT. Choose predefined position

- CG neg
+ CG pos
| CC

CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 15:30 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)

dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

< < || >> > ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

ORO col UND riv PDUS RAD LIGHTNING NWP none OVR none

NAVIG. red LON. 16.432 LAT. 49.549 Choose predefined position

- CG neg
+ CG pos
| CC

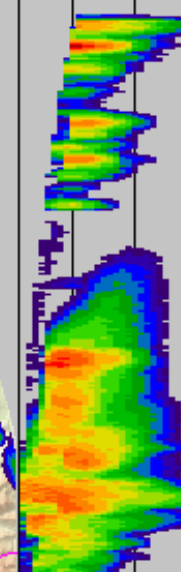
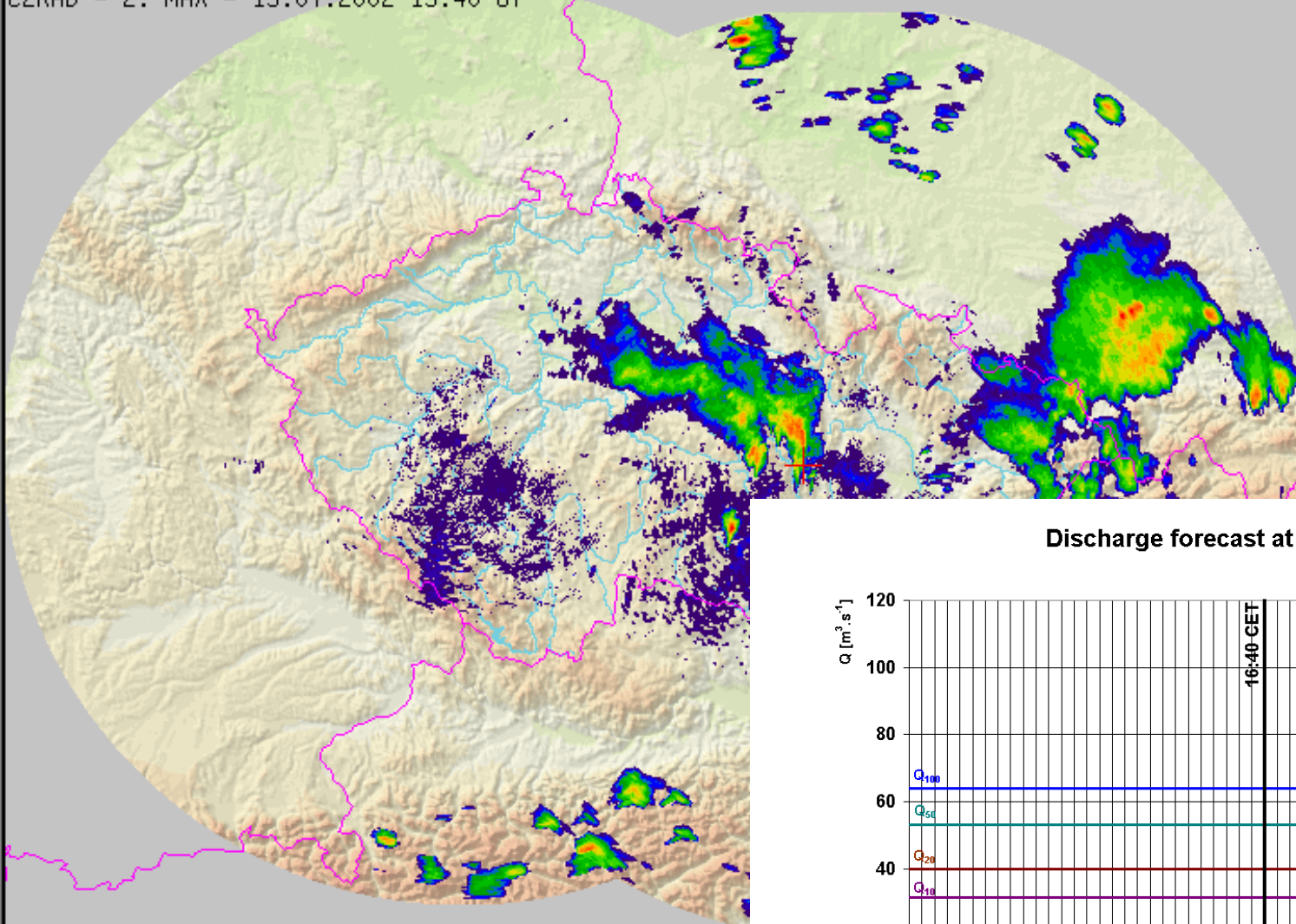
CHMI Radar
Department



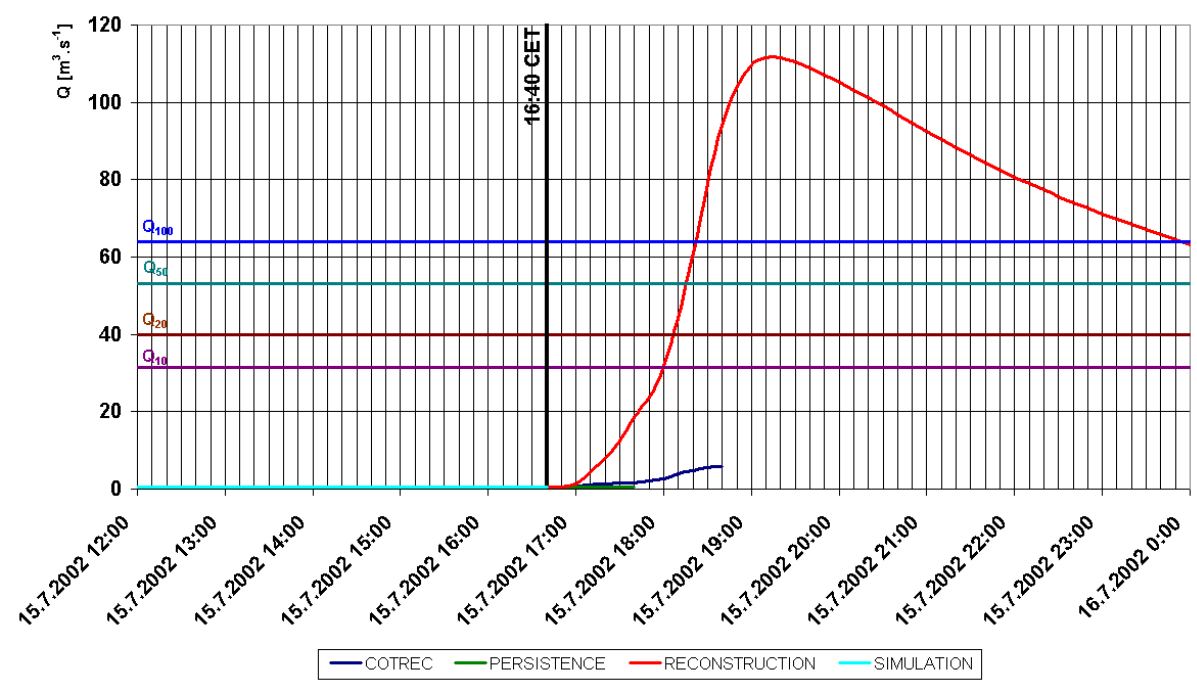
Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20

CZRAD - Z: MAX - 15.07.2002 15:40 UT



Discharge forecast at Štěpánov, 16:40 CET

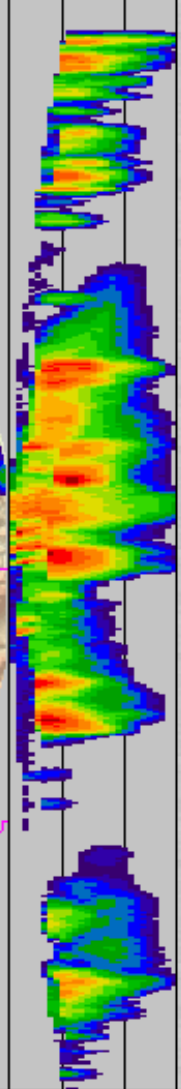
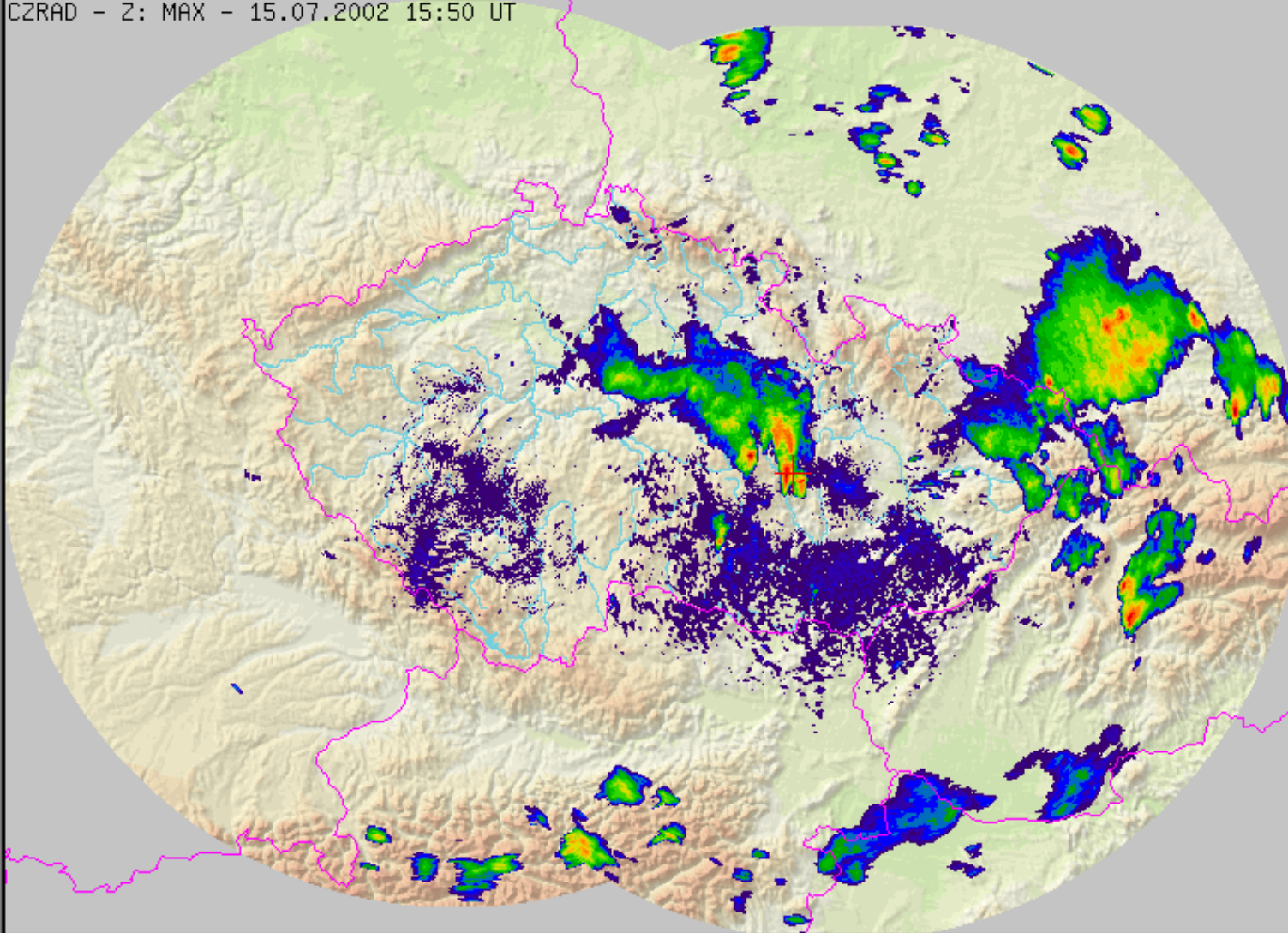


ANIM: 1 s/img LAST: +2 s
 ORO col UND riv PDUS RAD LIGHTND
 NAVIG. red LON. 16.432 LAT. 49.549

CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 15:50 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)

dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

ORO col UND riv PDUS RAD LIGHTNING NWP none OVR none

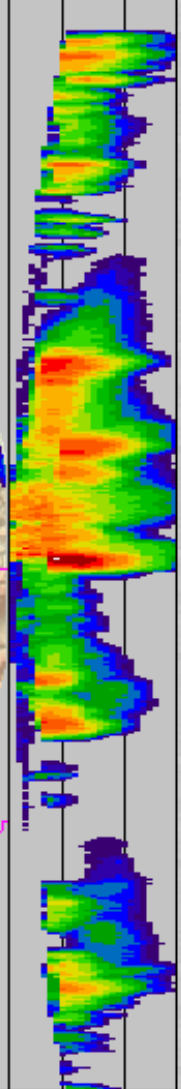
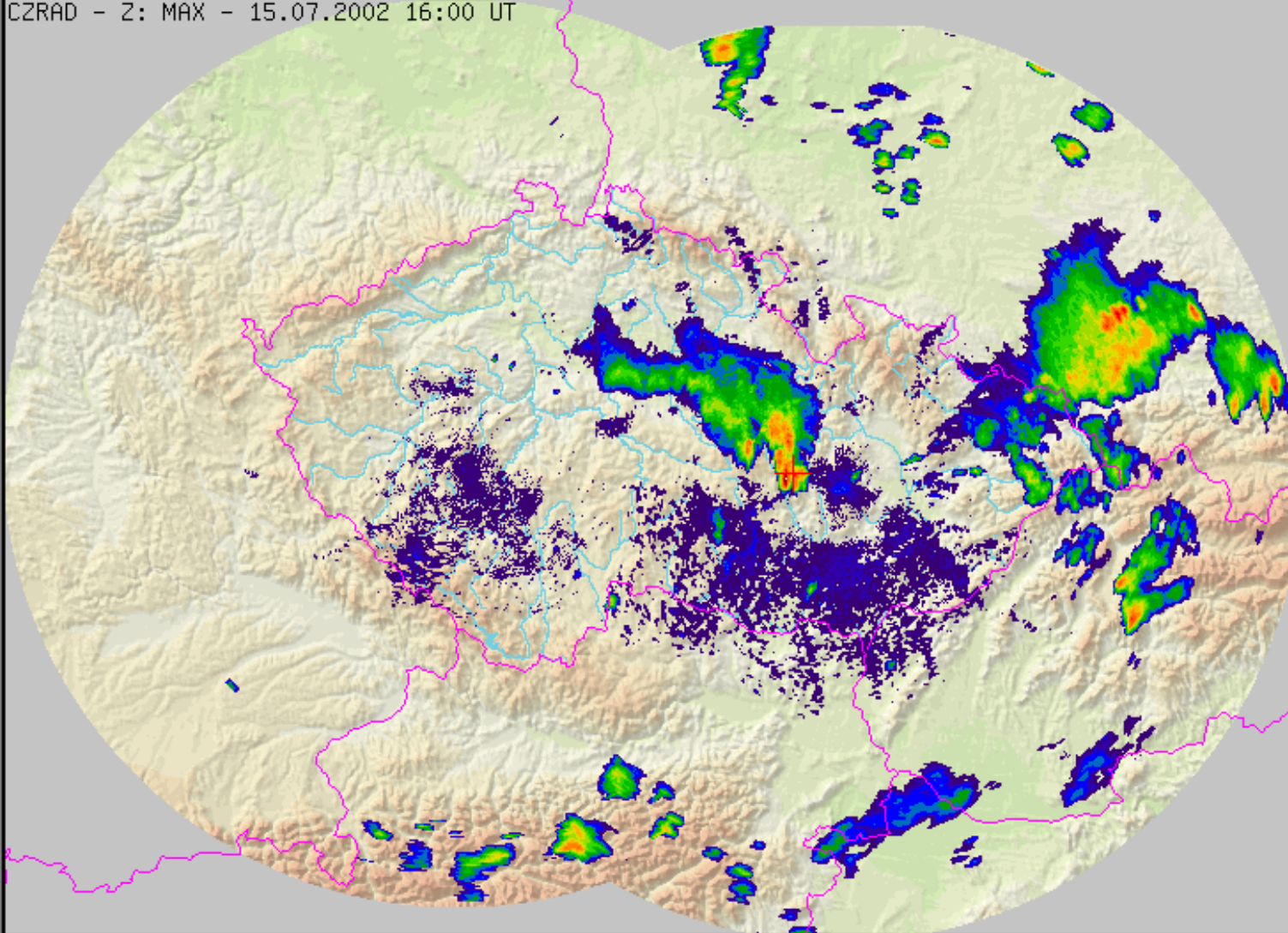
NAVIG. red LON. 16.432 LAT. 49.549 Choose predefined position

- CG neg
+ CG pos
| CC

CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 16:00 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)

dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

< < || >> > ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

ORO col UND riv PDUS RAD LIGHTNING NWP none OVR none

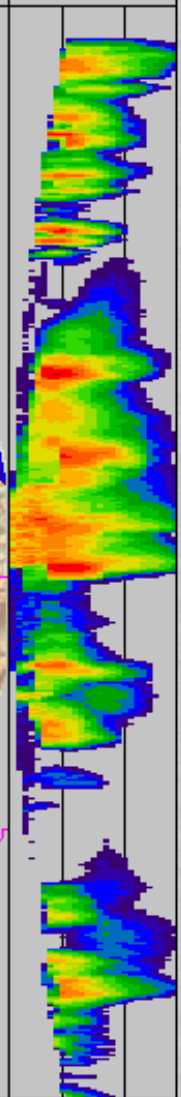
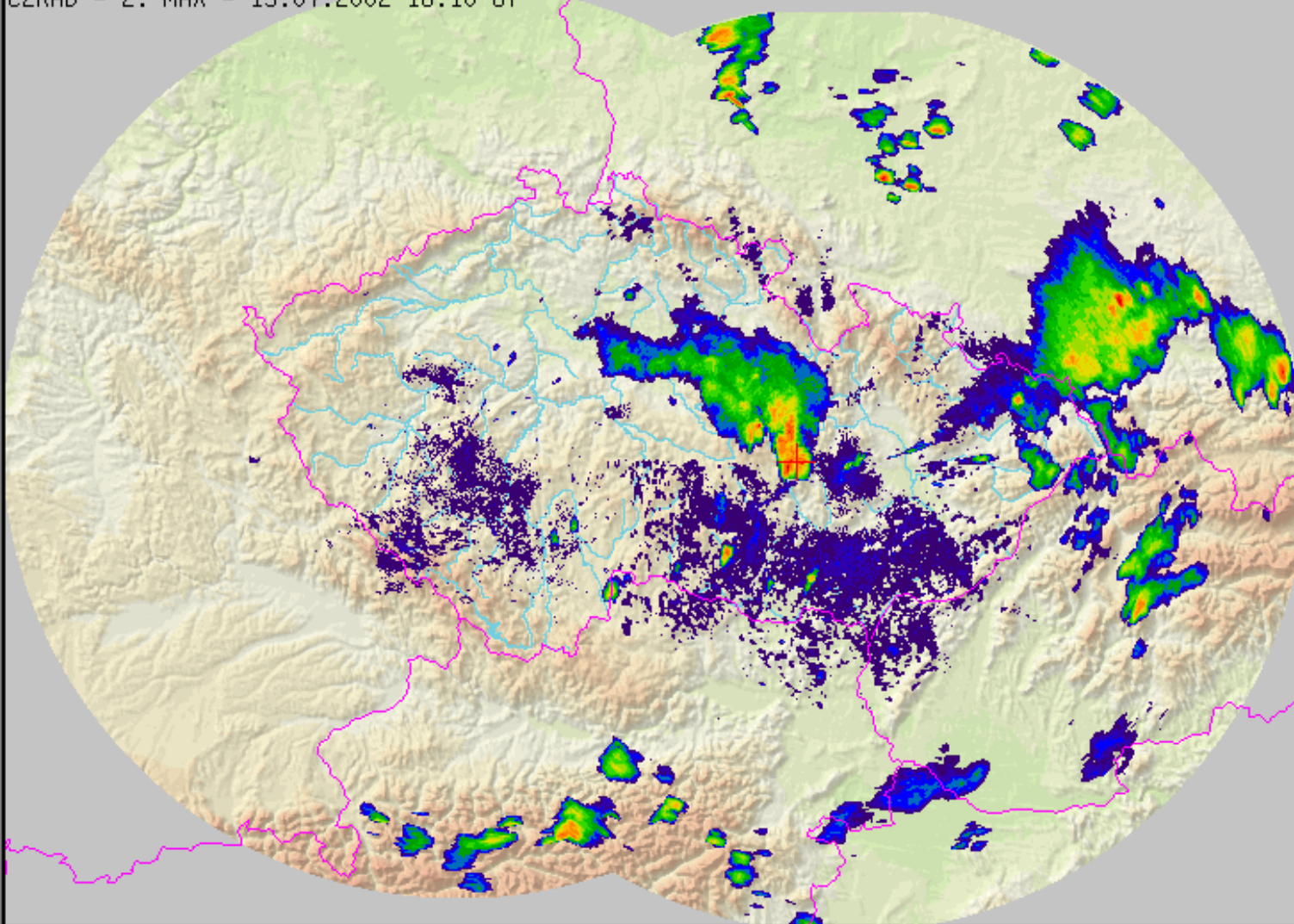
NAVIG. red LON. 16.432 LAT. 49.549 Choose predefined position

- CG neg
+ CG pos
| CC

CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 16:10 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)

dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

<< || >> > ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

ORO col UND riv PDUS RAD LIGHTNING NWP none OVR none

NAVIG. red LON. 16.432 LAT. 49.549 Choose predefined position

- CG neg
+ CG pos
| CC

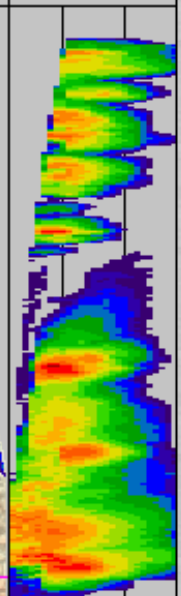
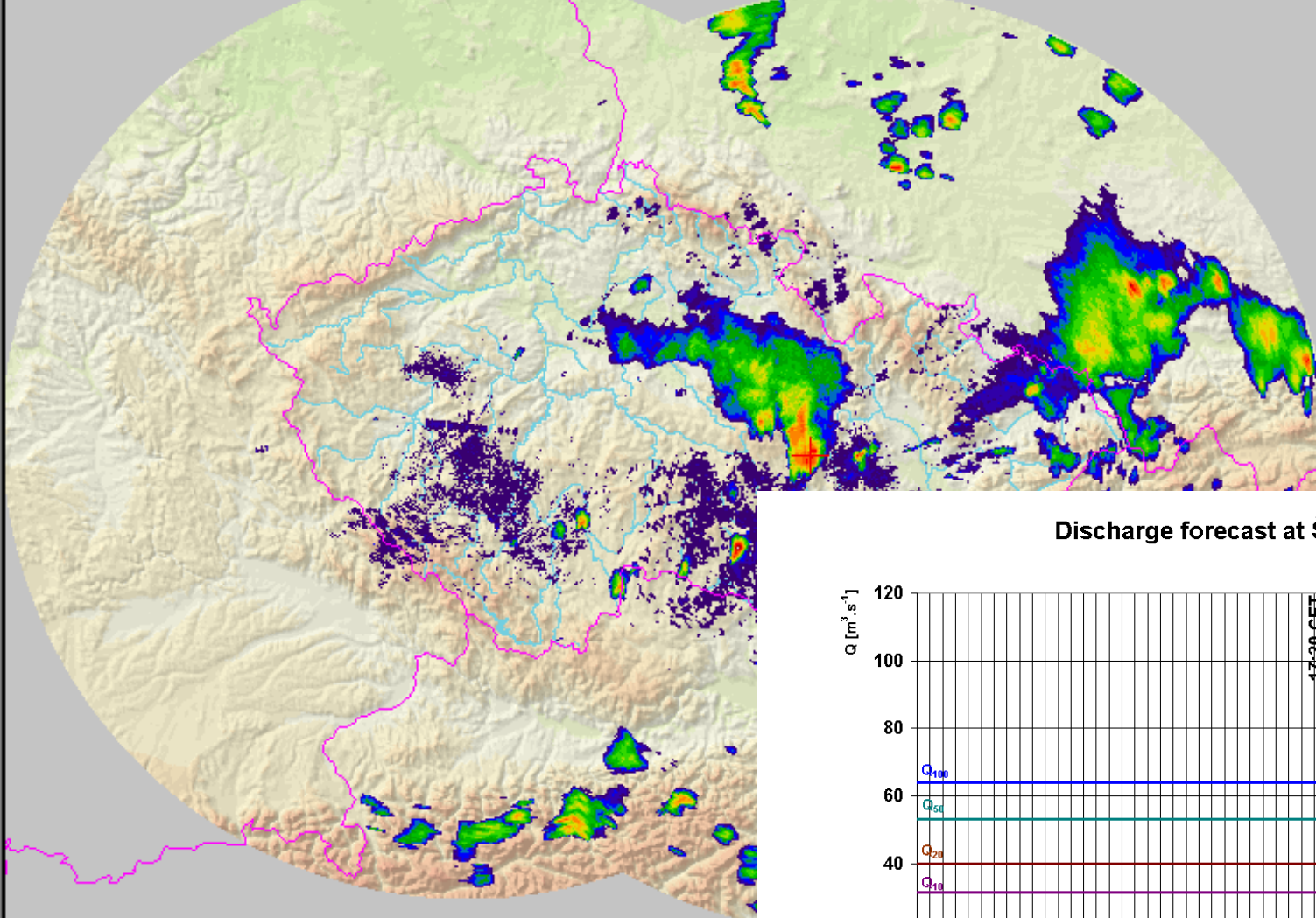
CHMI Radar
Department



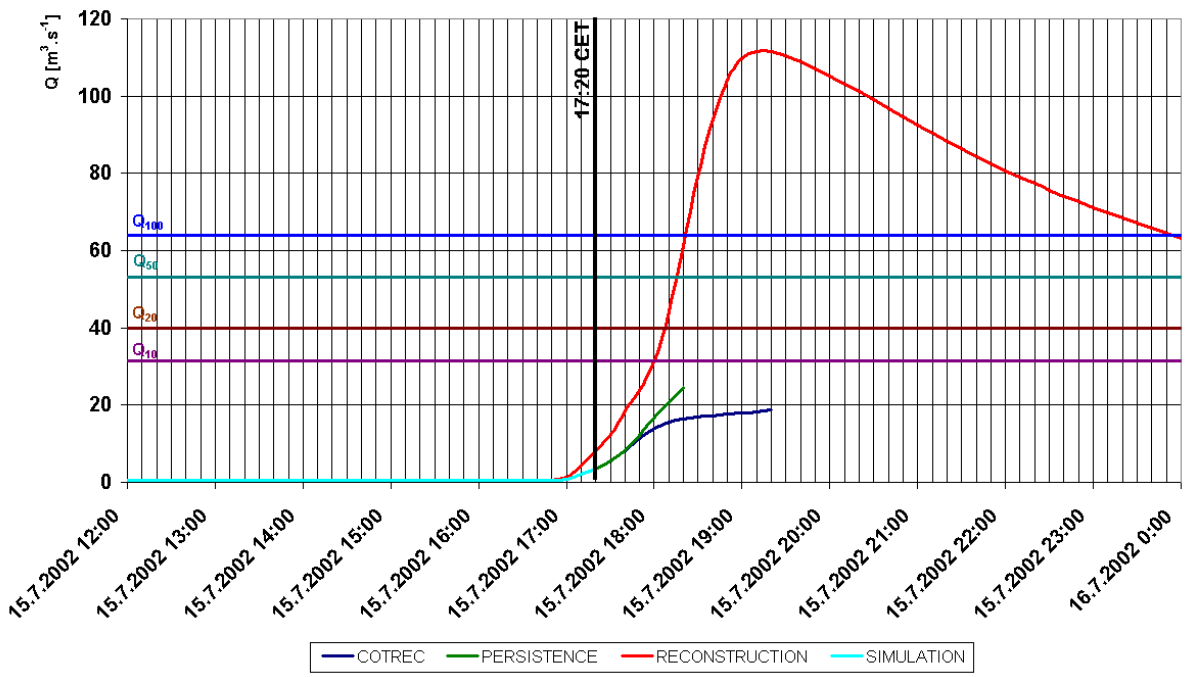
Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20

CZRAD - Z: MAX - 15.07.2002 16:20 UT



Discharge forecast at Štěpánov, 17:20 CET



ANIM: 1 s/img LAST: +2 s
 ORO col UND riv PDUS RAD LIGHTND
 NAVIG. red LON. 16.432 LAT. 49.549

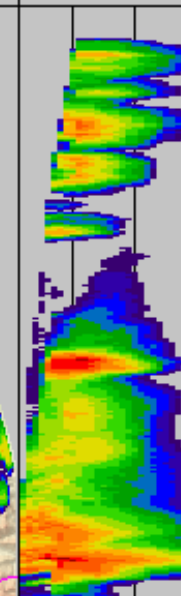
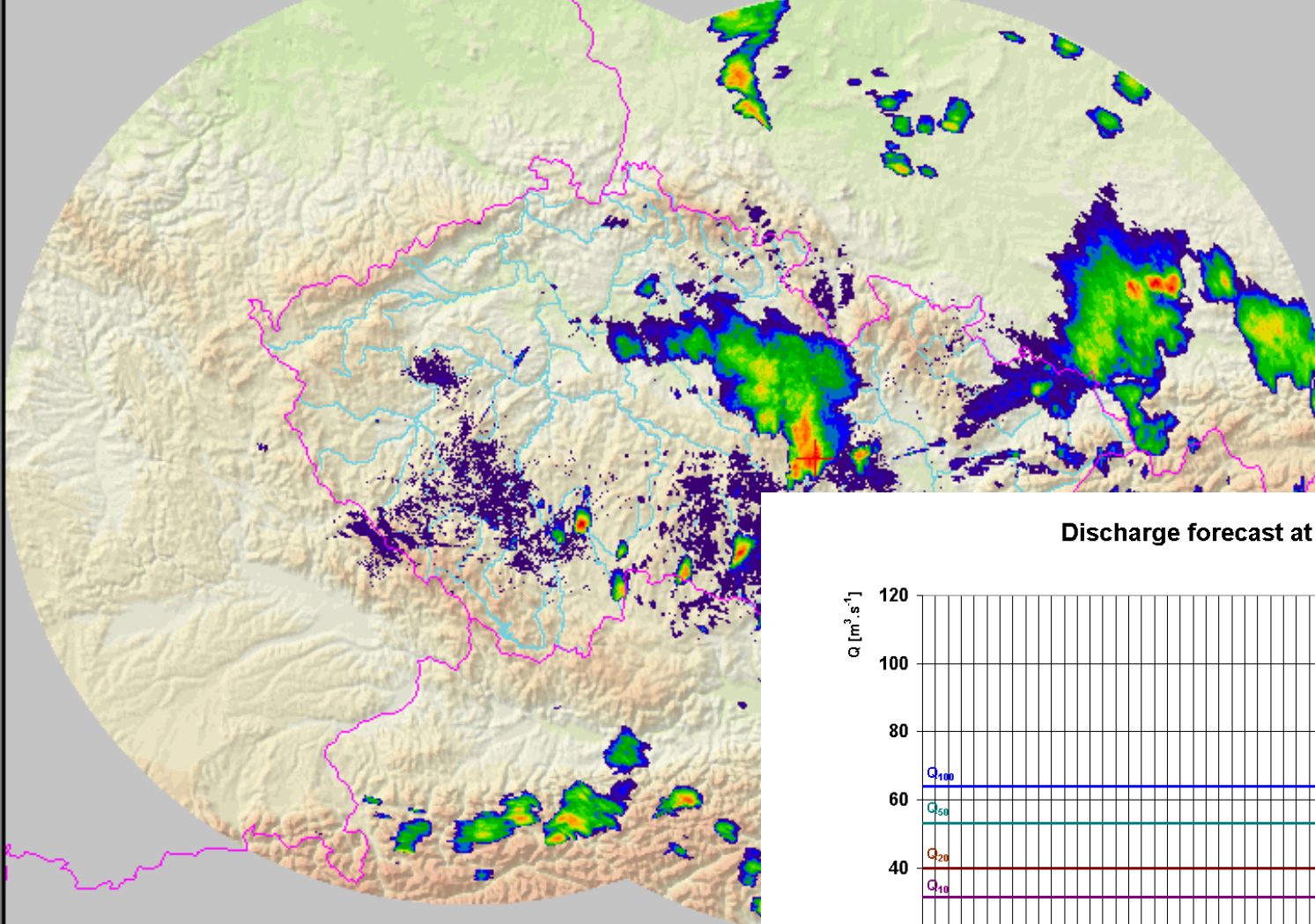
CHMI Radar
Department



Every

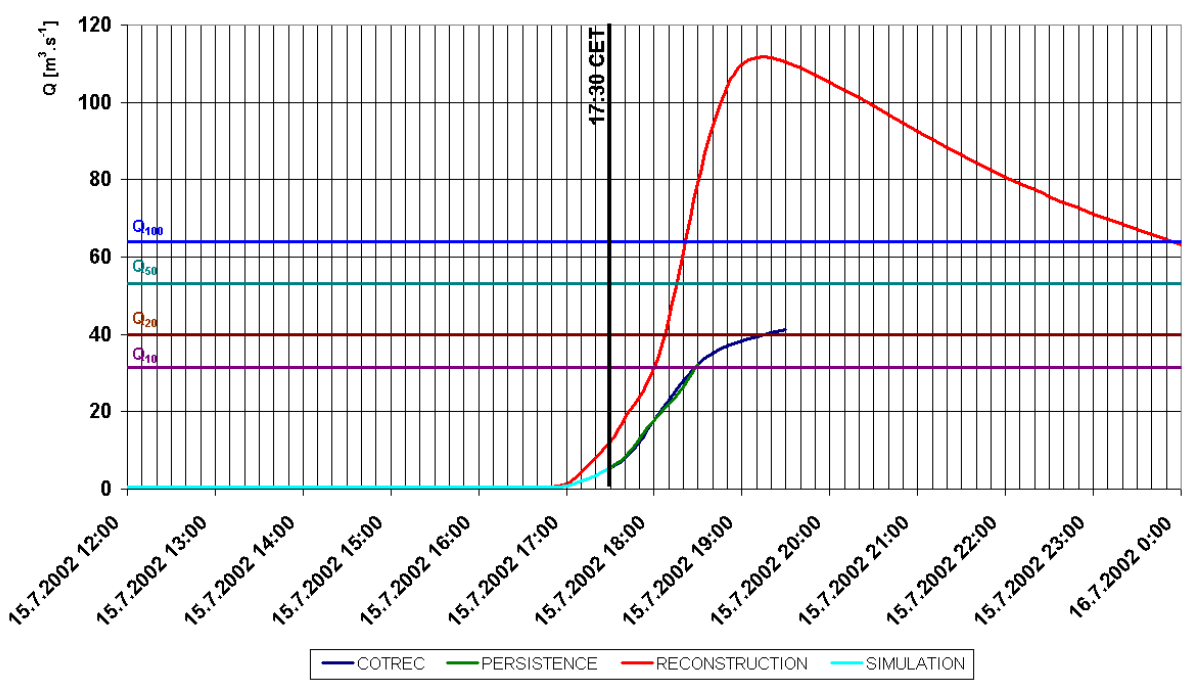
- 15.07.2002 13:50
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20

CZRAD - Z: MAX - 15.07.2002 16:30 UT



Navigation and display controls including buttons for back, forward, and animation speed. Text fields show 'ANIM: 1 s/img', 'LAST: +2 s', 'ORO col', 'UND riv', 'PDUS', 'RAD', 'LIGHTND', 'NAVIG: red', 'LON: 16.432', and 'LAT: 49.549'.

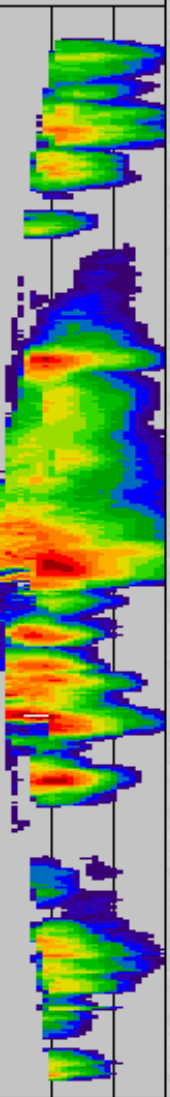
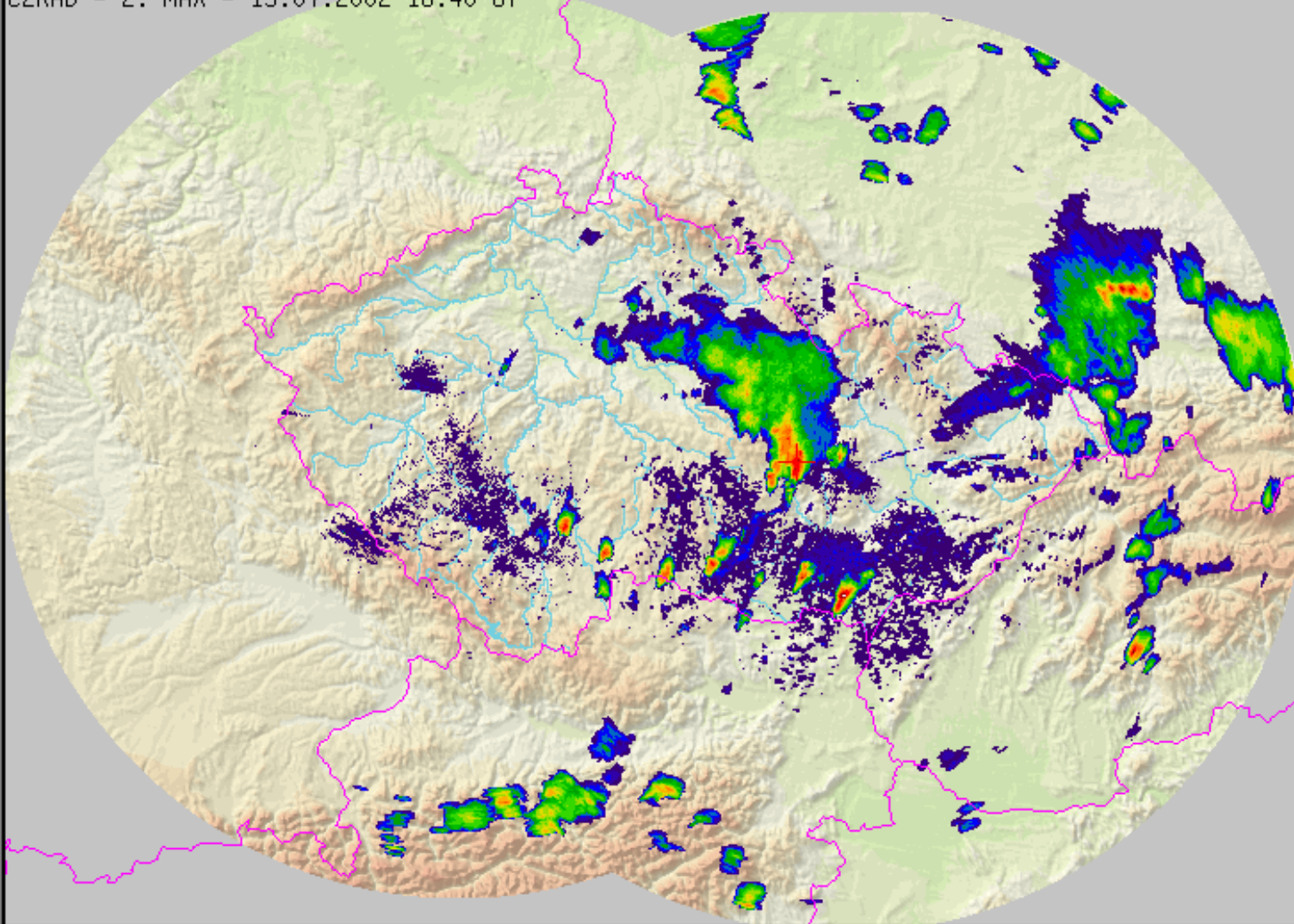
Discharge forecast at Štěpánov, 17:30 CET



CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 16:40 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)

dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

ORO col UND riv PDUS RAD LIGHTNING NWP none OVR none

NAVIG. red LON. 16.432 LAT. 49.549 Choose predefined position

- CG neg
+ CG pos
| CC

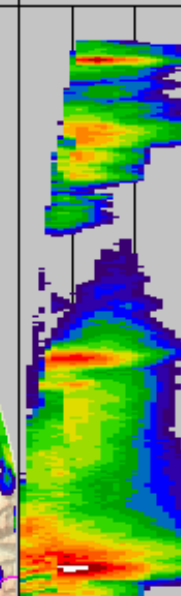
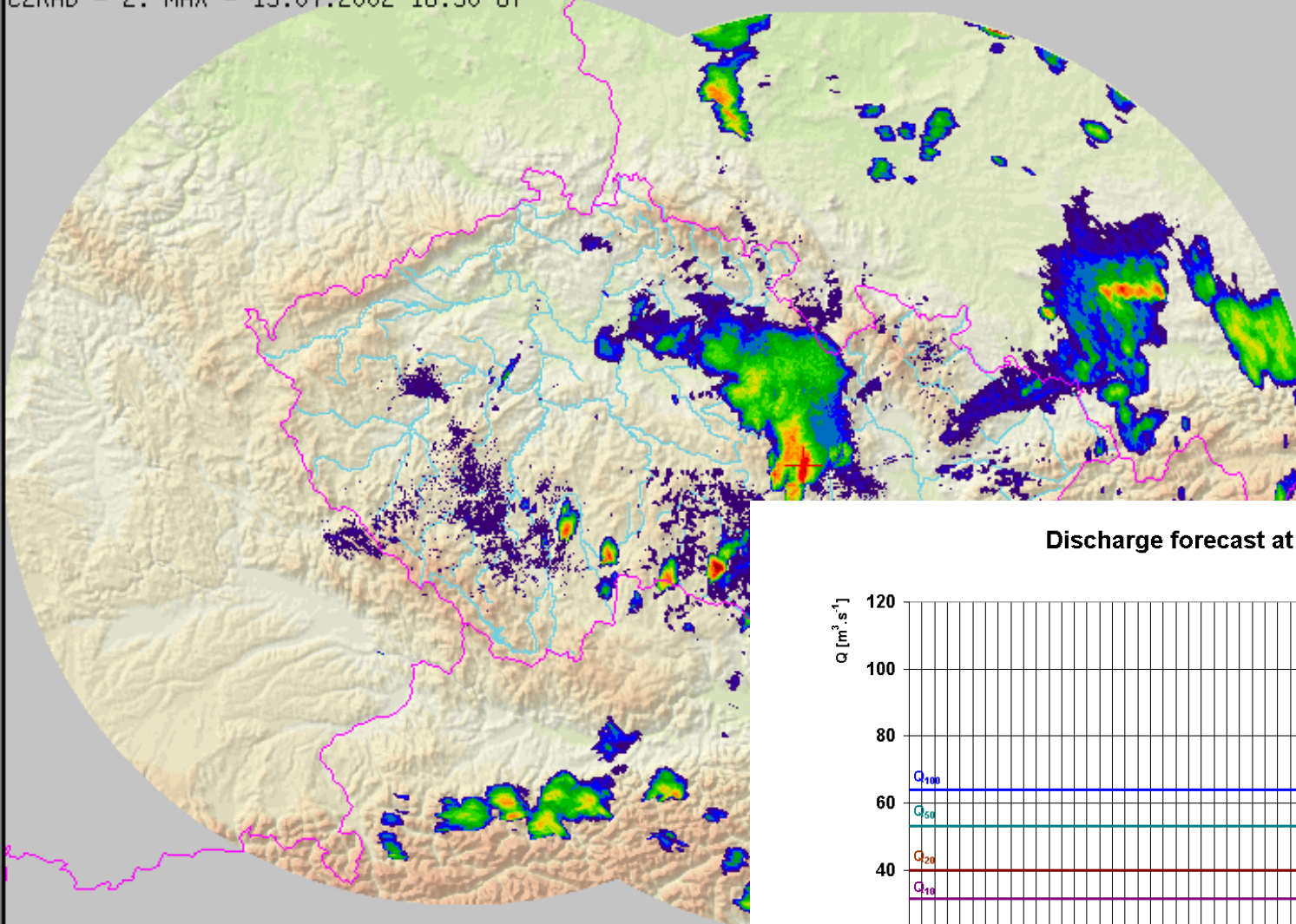
CHMI Radar
Department



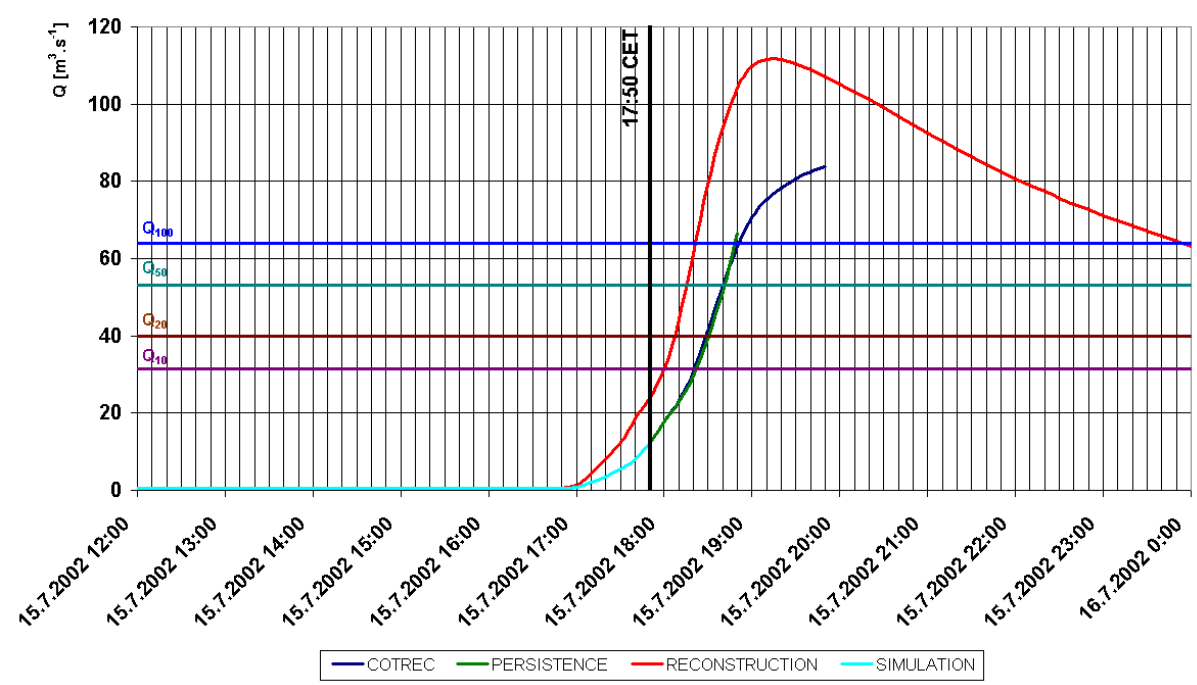
Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20

CZRAD - Z: MAX - 15.07.2002 16:50 UT



Discharge forecast at Štěpánov, 17:50 CET



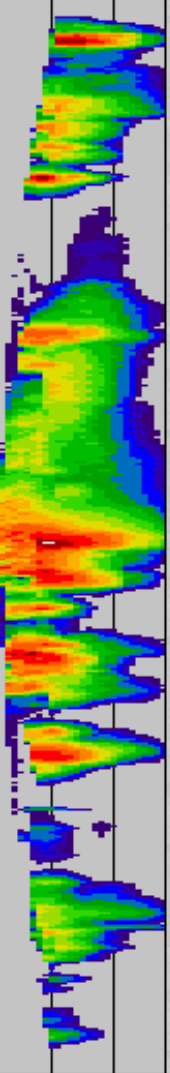
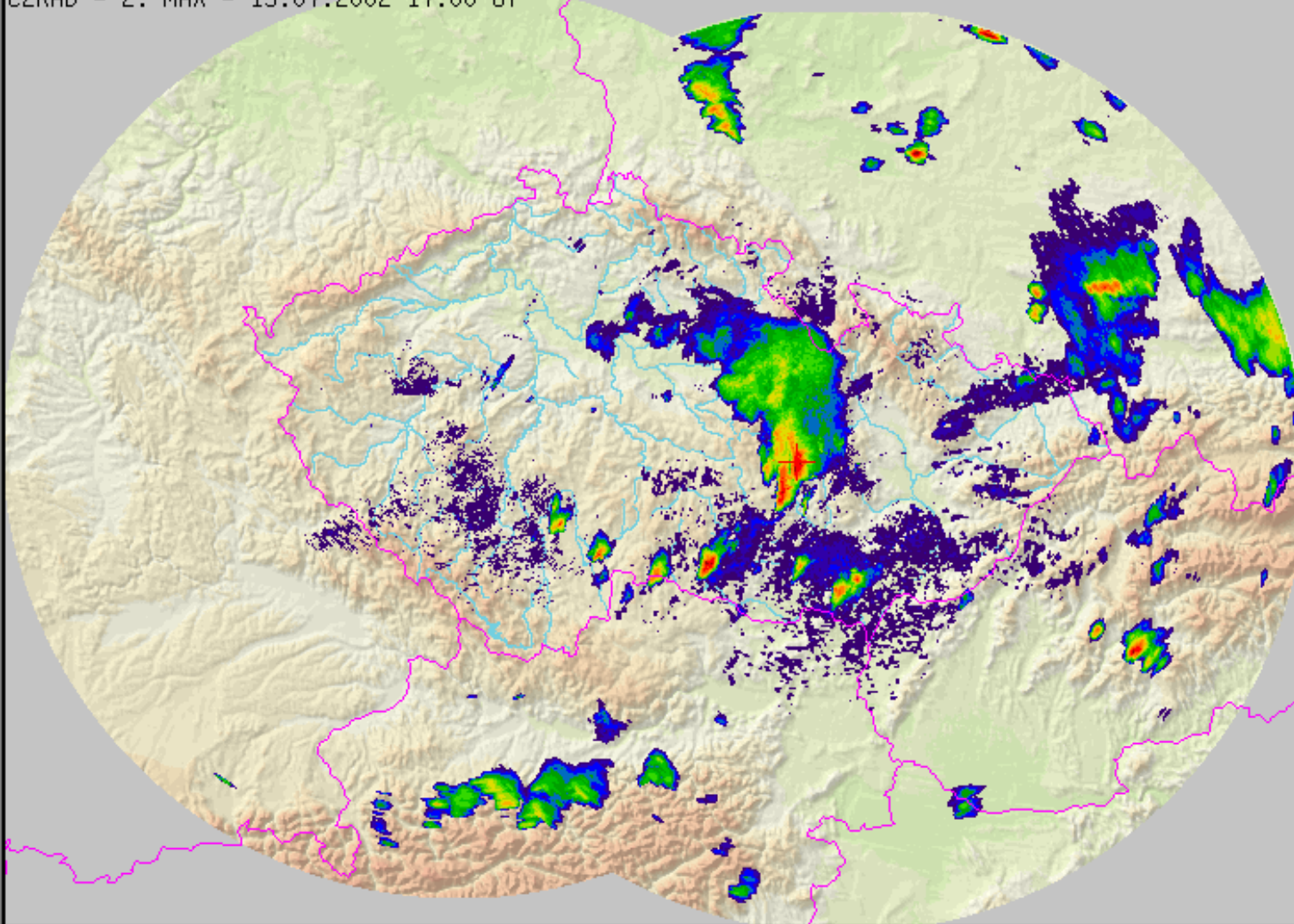
ANIM: 1 s/img LAST: +2 s
 ORO col UND riv PDUS RAD LIGHTND
 NAVIG. red LON. 16.432 LAT. 49.549



CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 17:00 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)

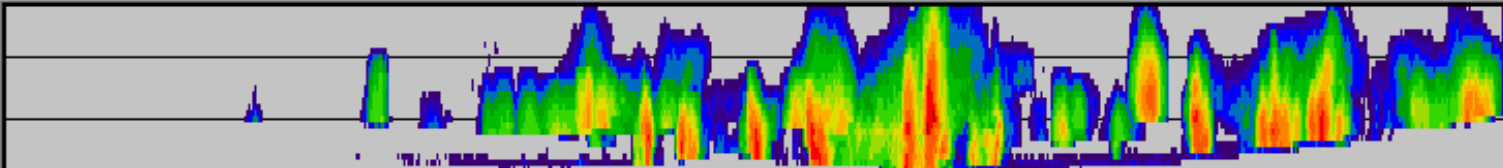
dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

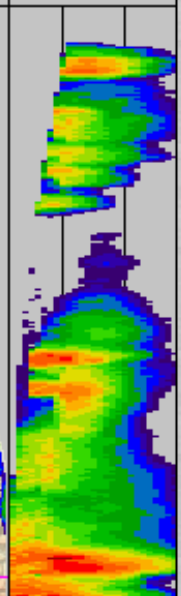
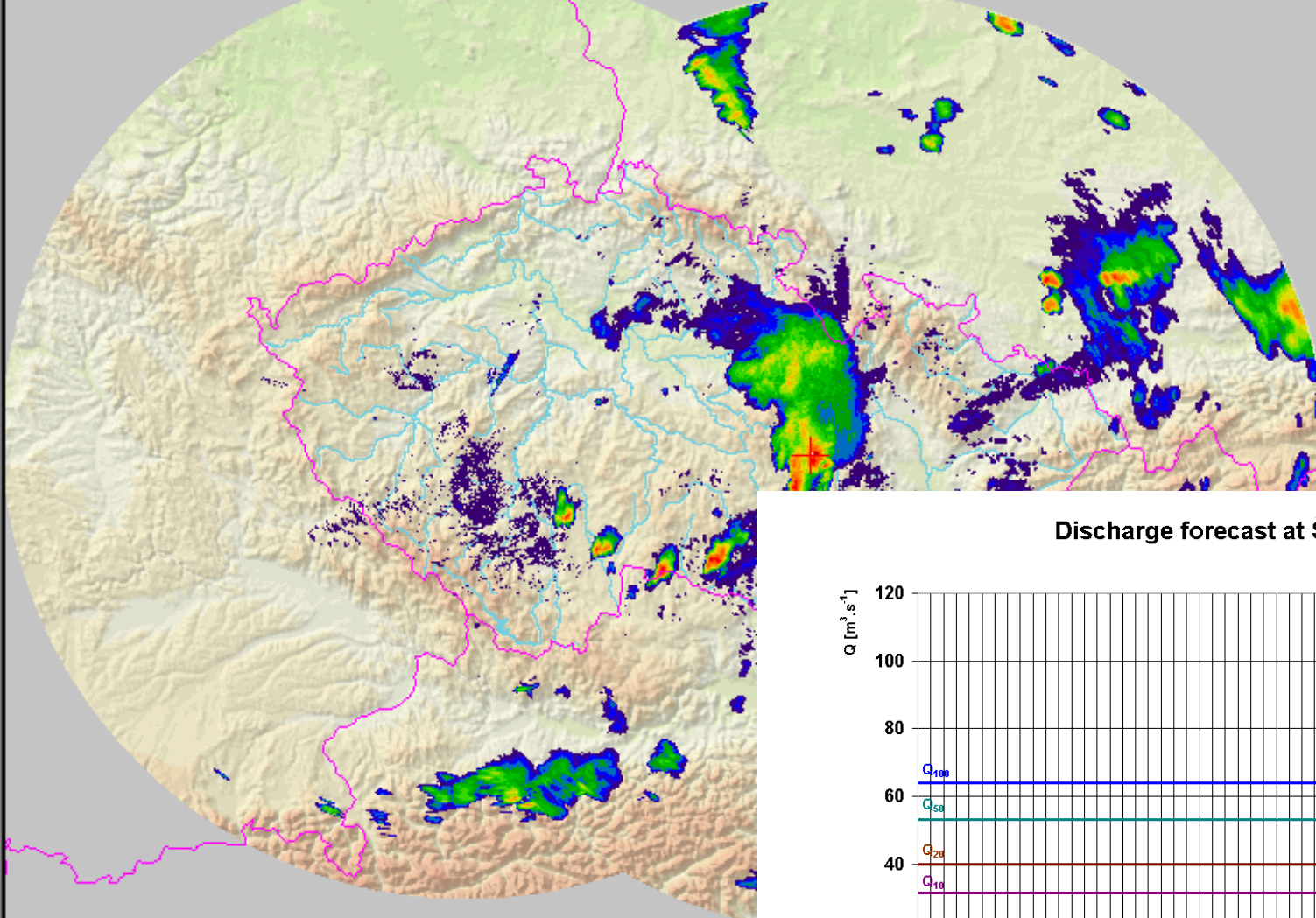
ORO col UND riv PDUS RAD LIGHTNING NWP none OVR none

NAVIG. red LON. 16.432 LAT. 49.549 Choose predefined position

- CG neg
+ CG pos
| CC



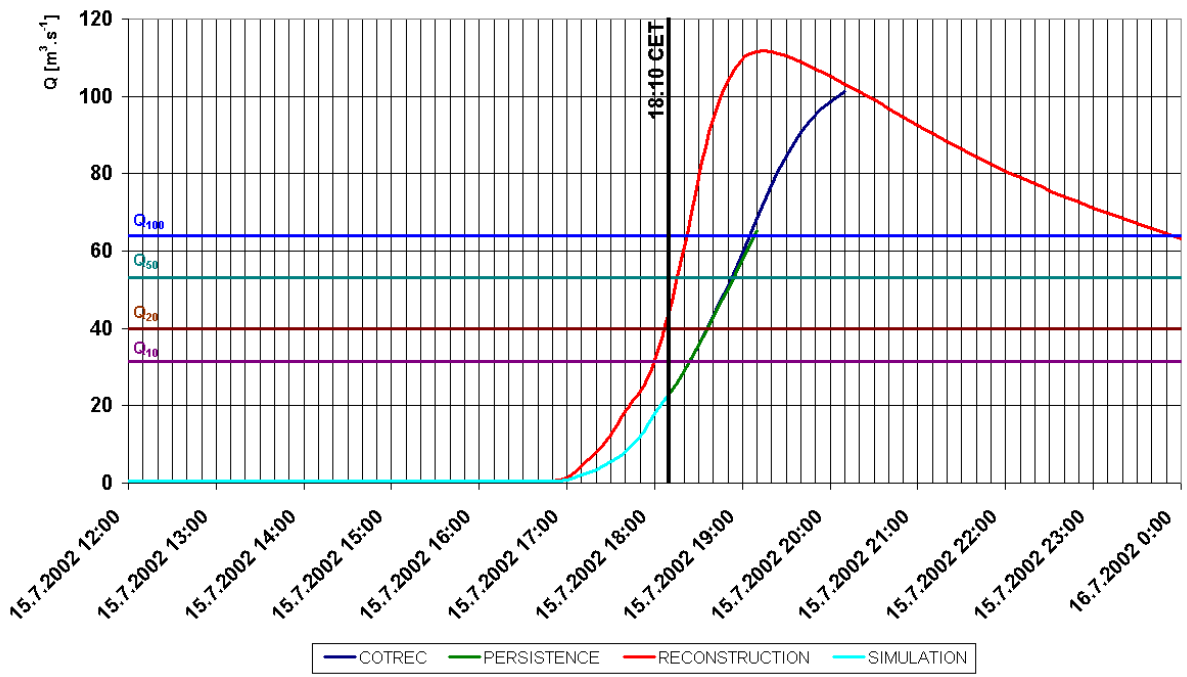
CZRAD - Z: MAX - 15.07.2002 17:10 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20

Discharge forecast at Štěpánov, 18:10 CET



ANIM: 1 s/img LAST: +2 s
 ORO col UND riv PDUS RAD LIGHTND
 NAVIG. red LON. 16.432 LAT. 49.549



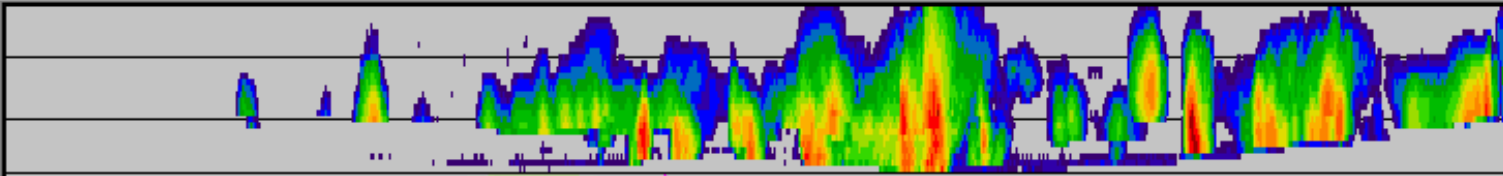
CHMI Radar
Department



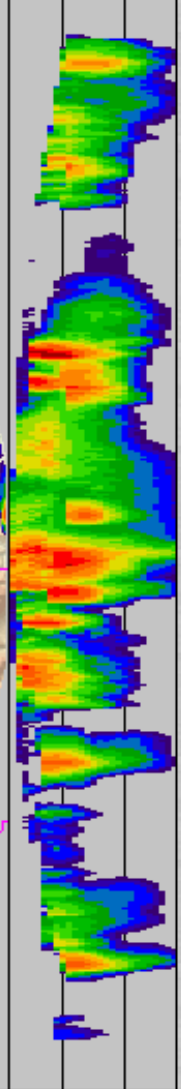
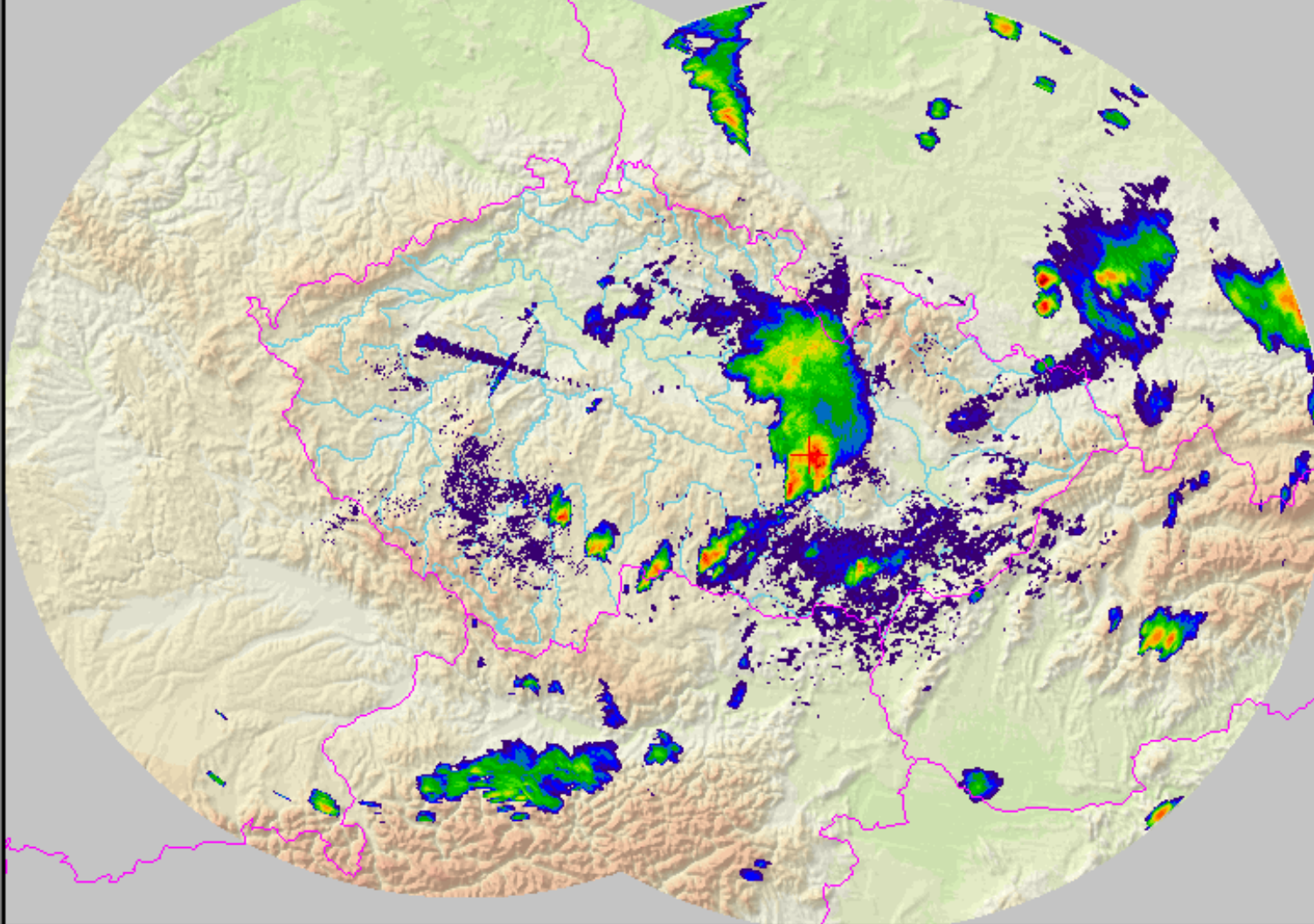
Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)



CZRAD - Z: MAX - 15.07.2002 17:20 UT



dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

ORO col UND riv PDUS RAD LIGHTNING NWP none OVR none

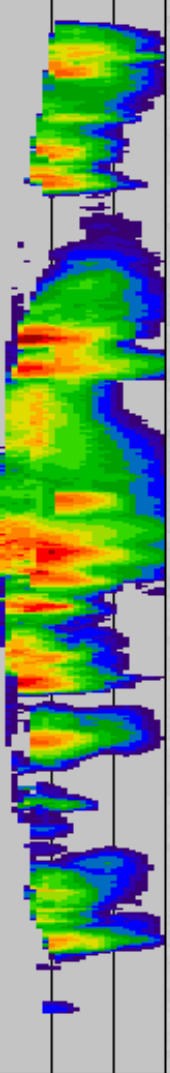
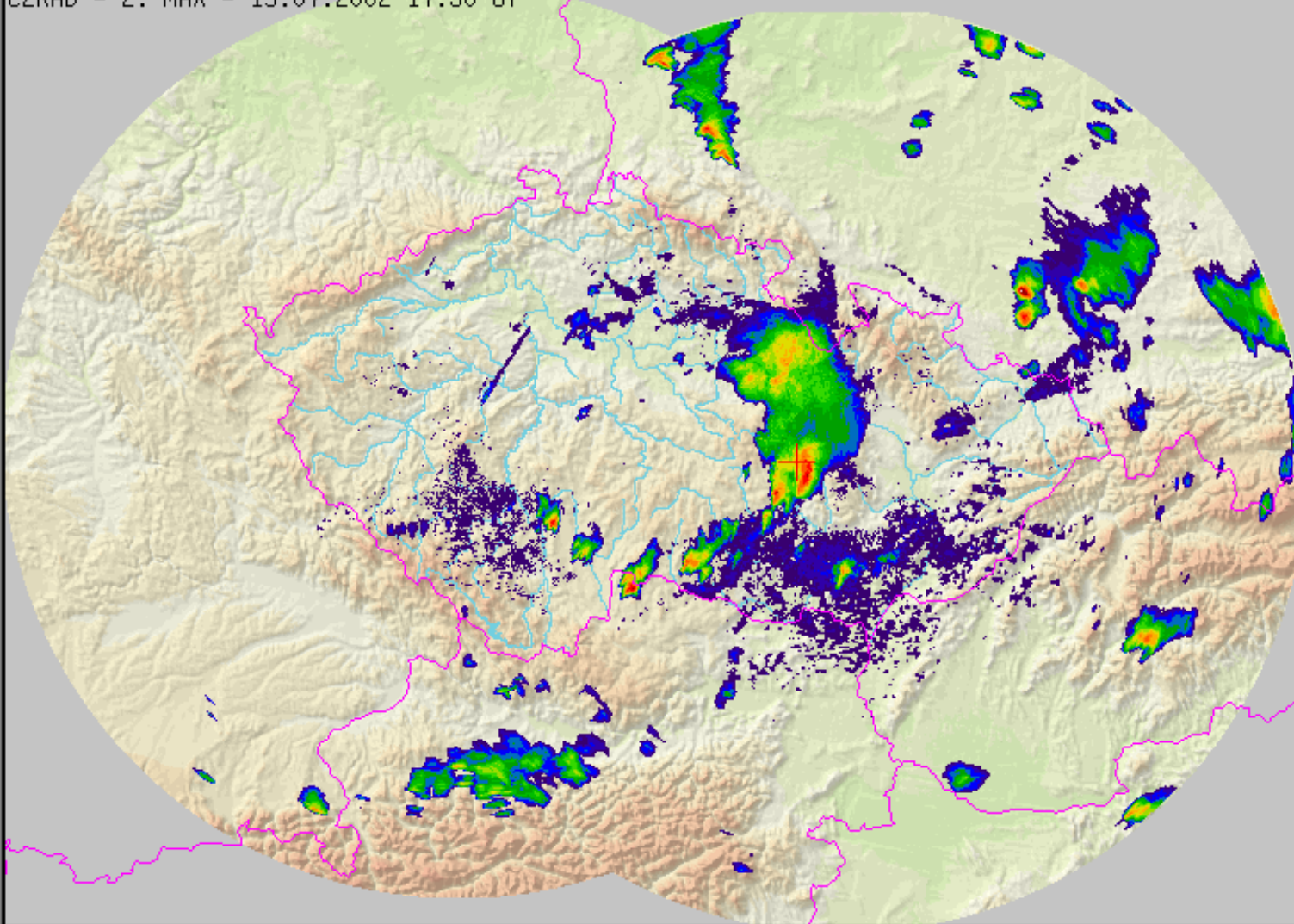
NAVIG. red LON. 16.432 LAT. 49.549 Choose predefined position

- CG neg
+ CG pos
| CC

CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 17:30 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)

dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

< < || >> > ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

ORO col UND riv PDUS RAD LIGHTNING NWP none OVR none

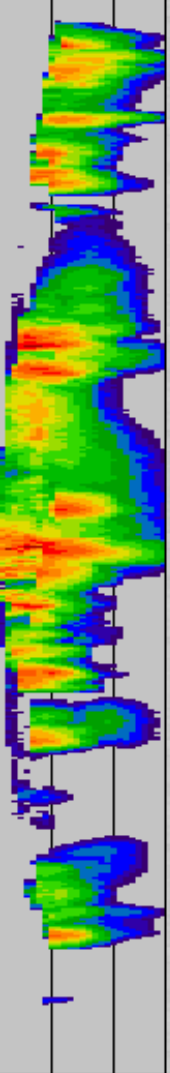
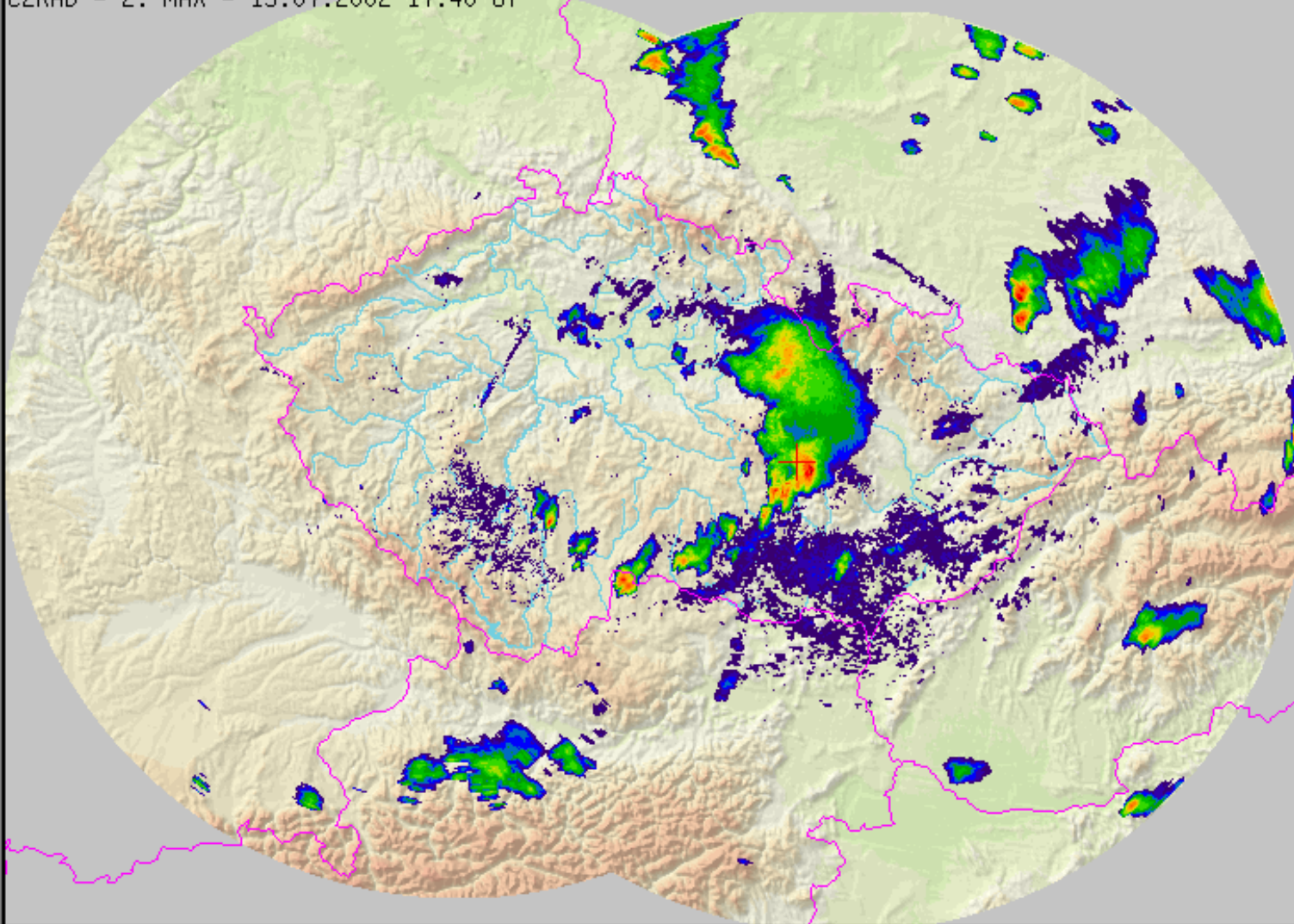
NAVIG. red LON. 16.432 LAT. 49.549 Choose predefined position

CG neg
+ CG pos
CC

CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 17:40 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)

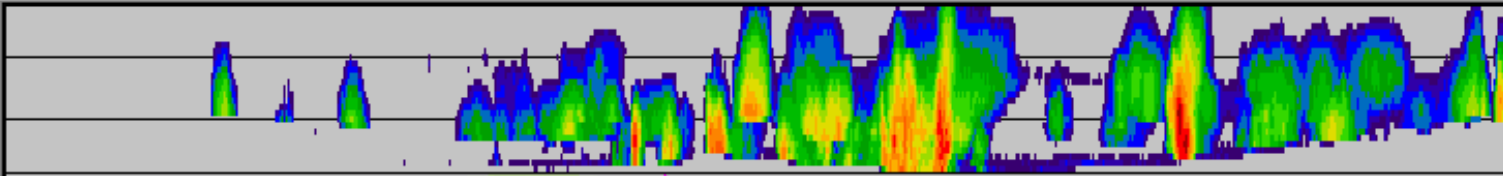
dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

< < || >> > ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

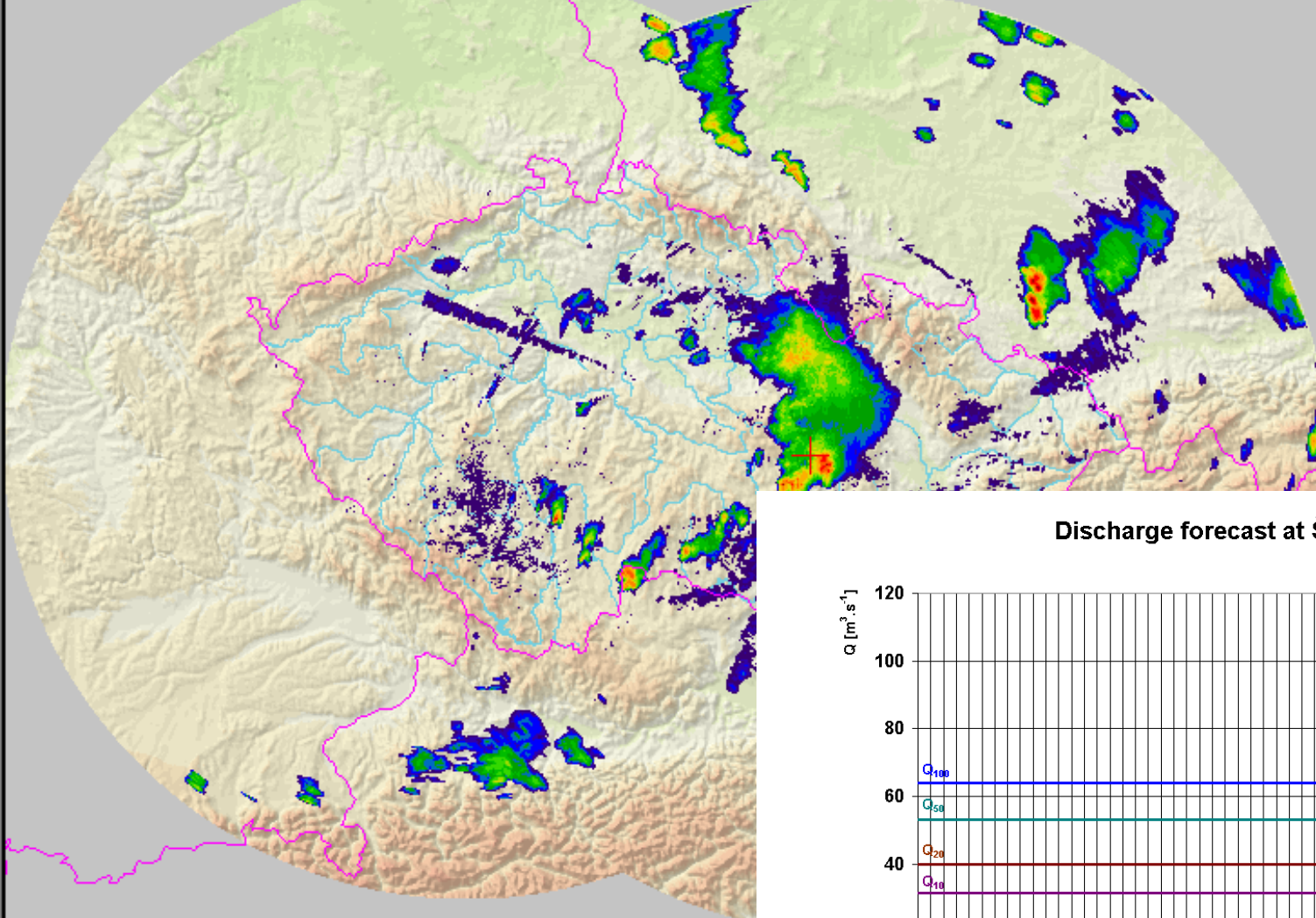
ORO col UND riv PDUS RAD LIGHTNING NWP none OVR none

NAVIG. red LON. 16.432 LAT. 49.549 Choose predefined position

- CG neg
+ CG pos
| CC



CZRAD - Z: MAX - 15.07.2002 17:50 UT



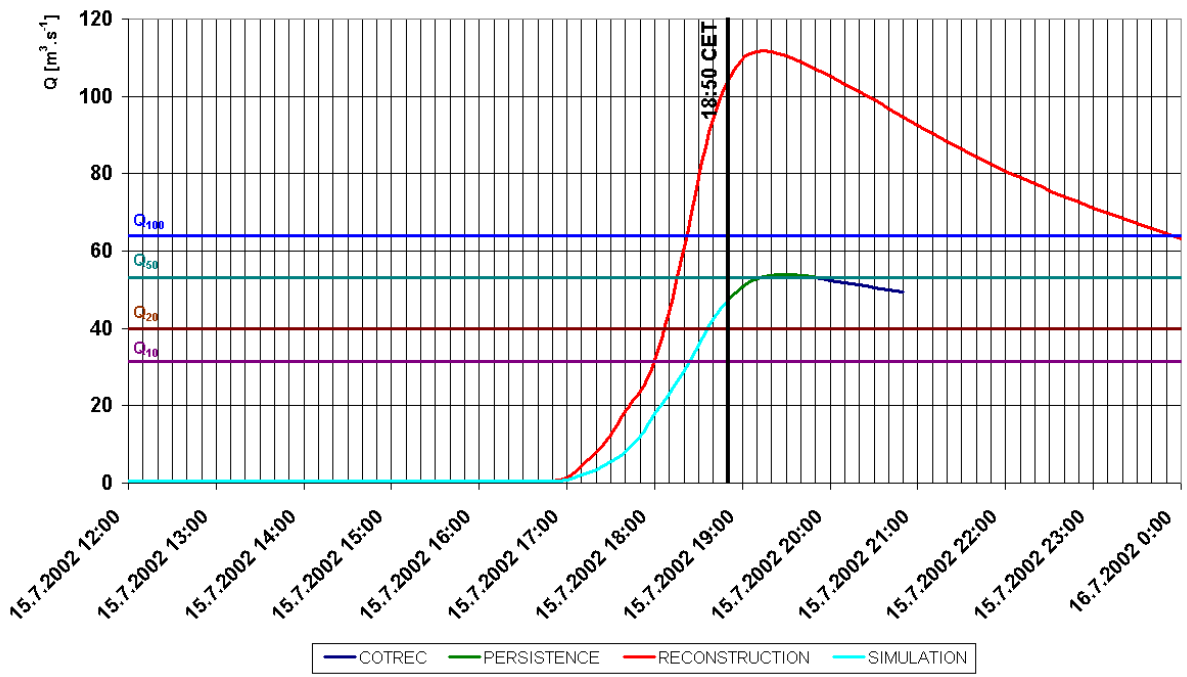
CHMI Radar Department



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20

Discharge forecast at Štěpánov, 18:50 CET

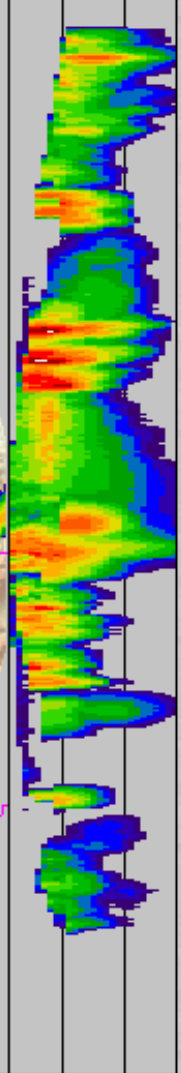
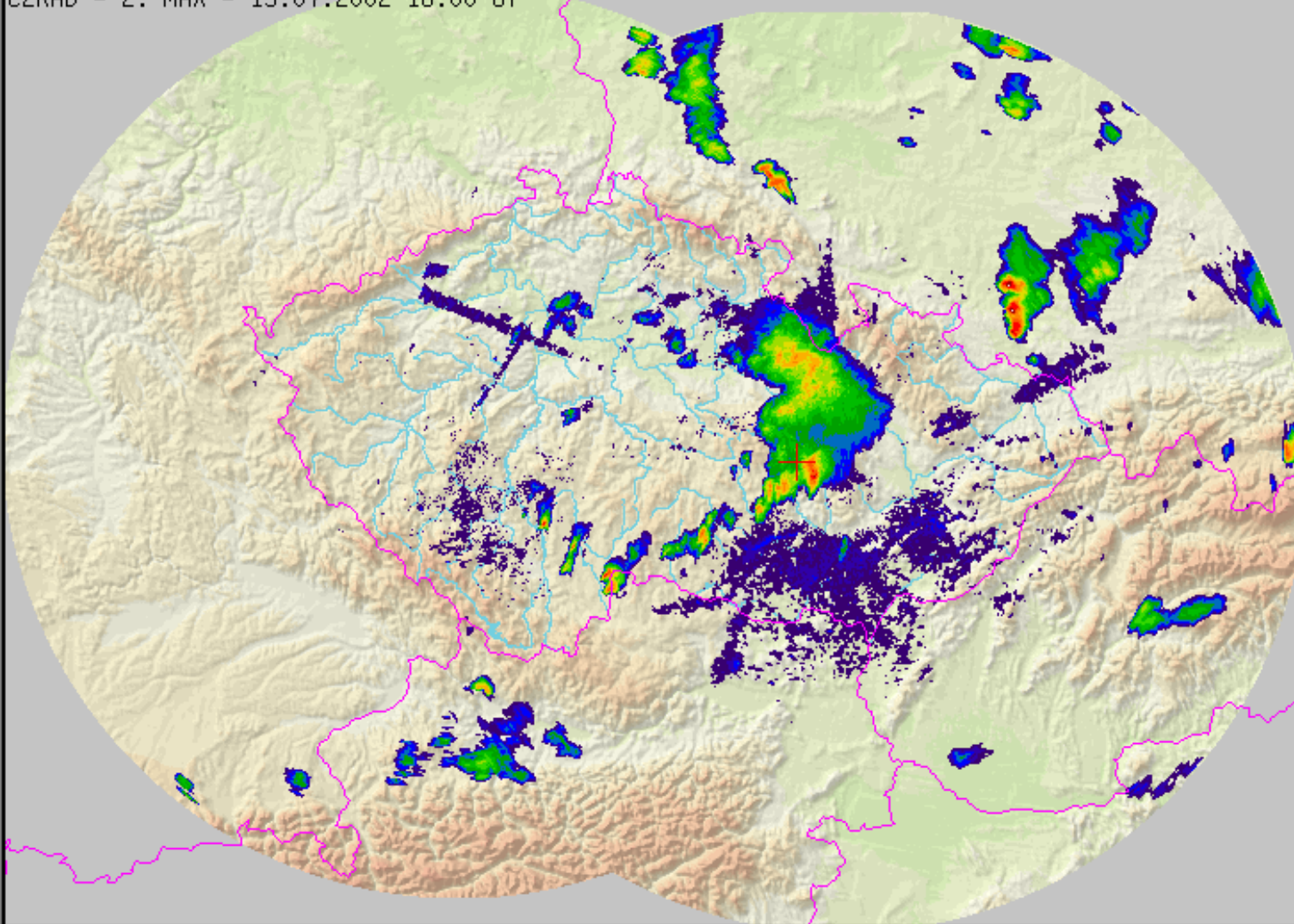


ANIM: 1 s/img LAST: +2 s
 ORO col UND riv PDUS RAD LIGHTND
 NAVIG. red LON. 16.432 LAT. 49.549

CHMI Radar
Department



CZRAD - Z: MAX - 15.07.2002 18:00 UT



Every

- 15.07.2002 13:50 ▲
- 15.07.2002 13:40
- 15.07.2002 13:30
- 15.07.2002 13:20
- 15.07.2002 13:10
- 15.07.2002 13:00
- 15.07.2002 12:50
- 15.07.2002 12:40
- 15.07.2002 12:30
- 15.07.2002 12:20
- 15.07.2002 12:10
- 15.07.2002 12:00 ▼

LOAD (156 / 156)

dBZ	°C
60.0	-90.0
56.0	-80.0
52.0	-70.0
48.0	-60.0
44.0	-50.0
40.0	-40.0
36.0	-30.0
32.0	-20.0
28.0	-10.0
24.0	0.0

Navigation controls: < << || >> > ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update

ORO: col UND: riv PDUS: RAD: LIGHTNING: NWP: none OVR: none

NAVIG: red LON: 16.432 LAT: 49.549 Choose predefined position

CG neg
+ CG pos
CC

Flash flood at Sloup the 26 May 2003

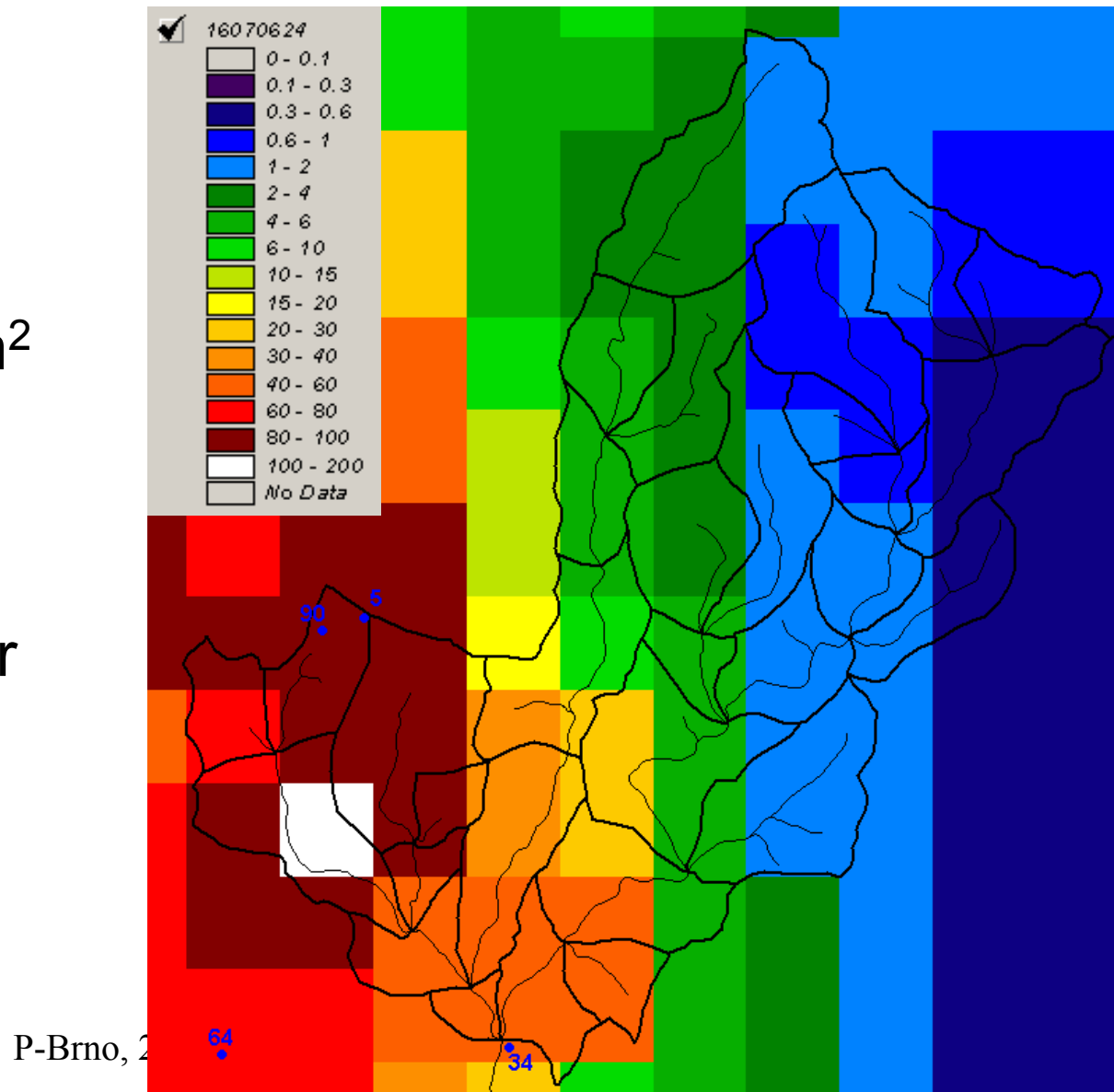
Sloup:

return period: 50-100
years

Catchment area: 49.9 km²

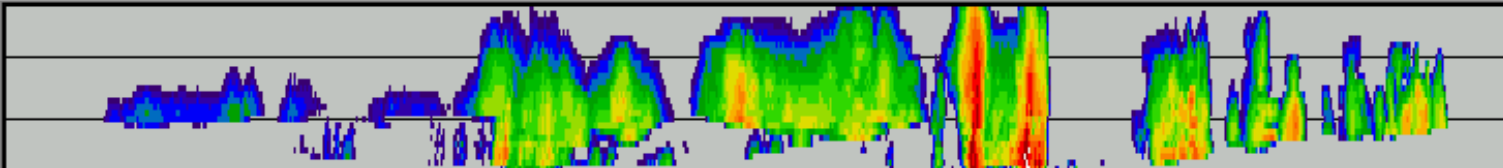
Number of radar areal
elements: 8

Average area of the radar
areal elements: 7.1 km²



Flash flood at Sloup the 26 May 2003



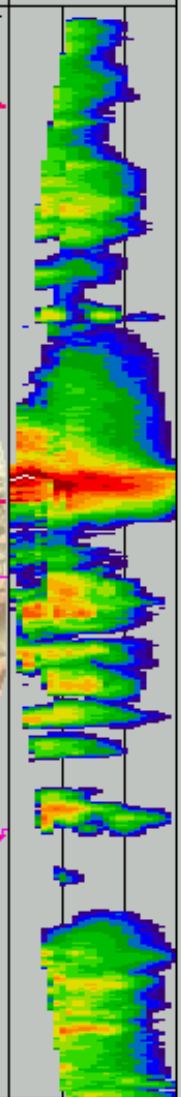
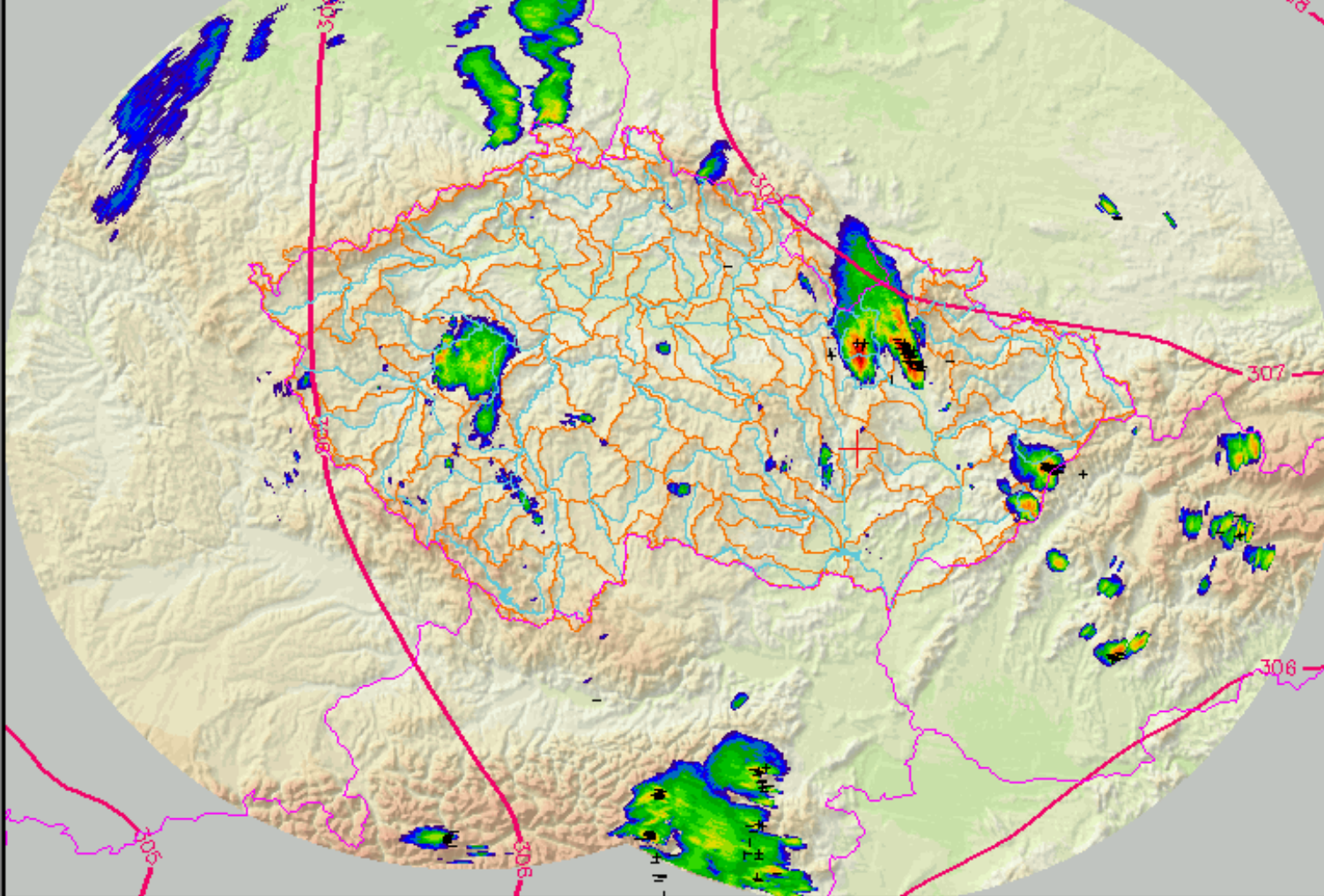


CG+ 20
CG- 179
CC 17
SUM 216



CZRAD - Z: MAX - 26.05.2003 11:00 UT ALADIN_GP_700 - 26.05.2003 12:00 UT +00hr

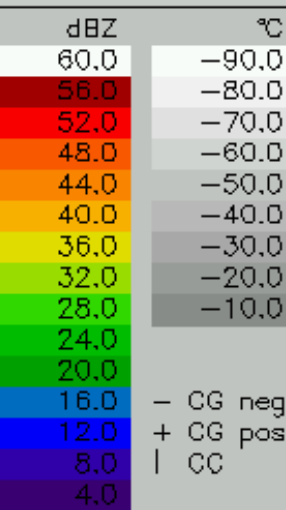
CELDN - 26.05.2003 11:00 UT



Forecast
 Cotrec Aladin
 Persistence True

- Every
- 26.05.2003 06:20 CA ▲
 - 26.05.2003 06:10 CA
 - 26.05.2003 06:00 CA
 - 26.05.2003 05:50 CA
 - 26.05.2003 05:40 CA
 - 26.05.2003 05:30 CA
 - 26.05.2003 05:20 CA
 - 26.05.2003 05:10 CA**
 - 26.05.2003 05:00 CA
 - 26.05.2003 04:50 CA
 - 26.05.2003 04:40 CA
 - 26.05.2003 04:30 CA ▼

LOAD (258 / 258)

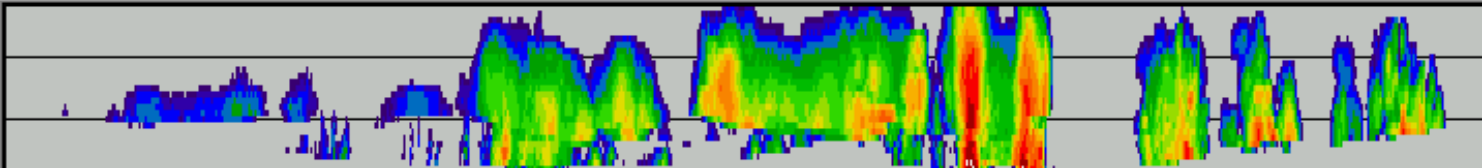


ANIM: LAST: AUTO UPDATE

PDUS RAD LIGHTNING WIND METEO

ORO UND OVR NAVIG LON LAT

cursor position is [517,366] = [17.375,48.637] ZOOM COLOR

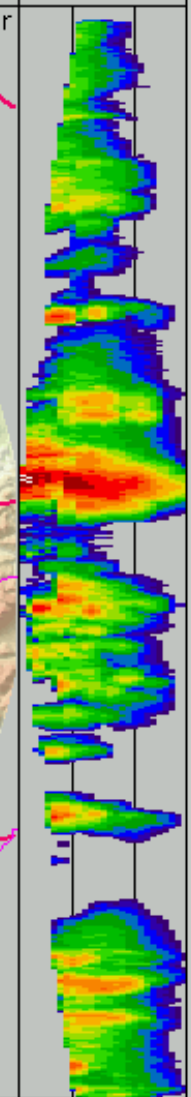
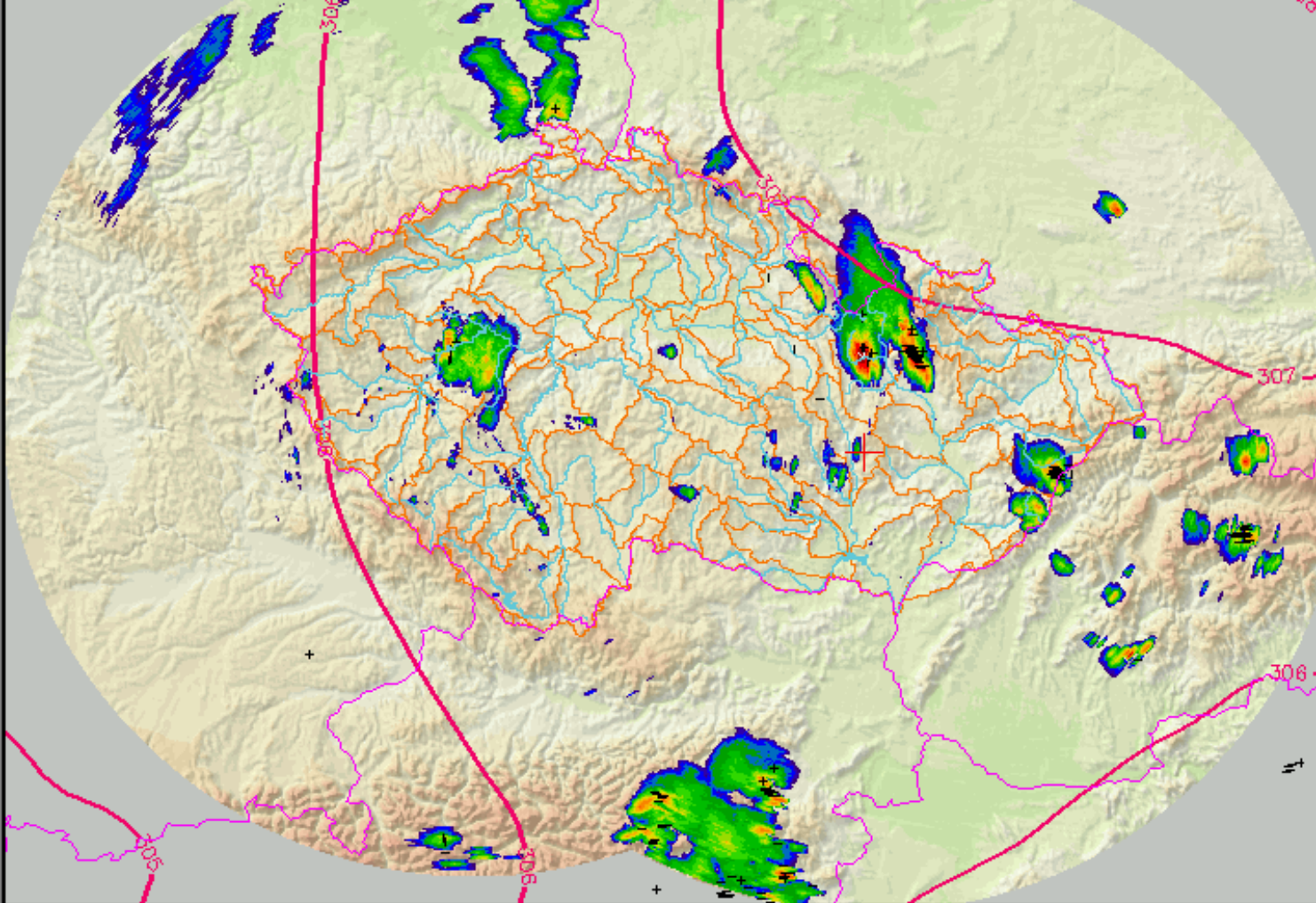


CG+ 12
CG- 210
CC 32
SUM 254



CZRAD - Z: MAX - 26.05.2003 11:10 UT ALADIN_GP_700 - 26.05.2003 12:00 UT +00hr

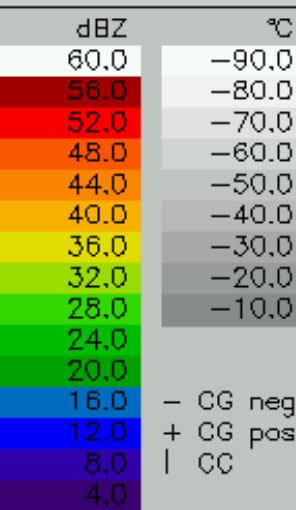
CELDN - 26.05.2003 11:10 UT



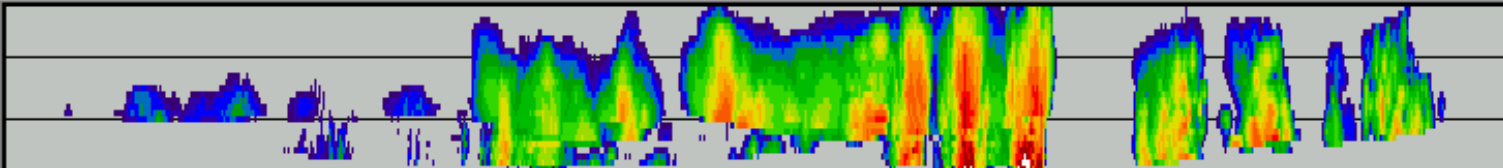
Forecast
 Cotrec Aladin
 Persistence True

- Every
- 26.05.2003 06:20 CA ▲
 - 26.05.2003 06:10 CA
 - 26.05.2003 06:00 CA
 - 26.05.2003 05:50 CA
 - 26.05.2003 05:40 CA
 - 26.05.2003 05:30 CA
 - 26.05.2003 05:20 CA
 - 26.05.2003 05:10 CA**
 - 26.05.2003 05:00 CA
 - 26.05.2003 04:50 CA
 - 26.05.2003 04:40 CA
 - 26.05.2003 04:30 CA ▼

LOAD (258 / 258)



ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update
 PDUS RAD LIGHTNING WIND none METEO ALADIN GP700 - 26.05.2003 12:00 +0h
 ORO col UND catchments OVR rivers NAVIG red LON 16.739 LAT 49.414 Choose predefined locations
 cursor position is [345,525] = [15.022,47.246] ZOOM COLOR black

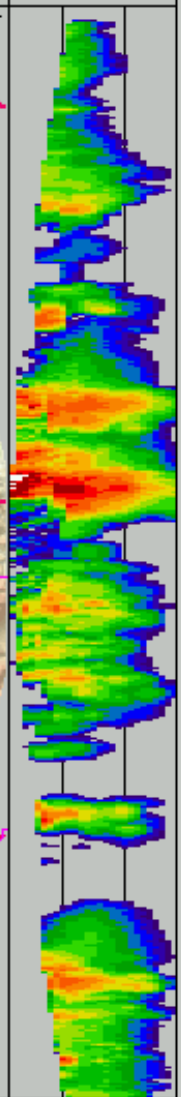
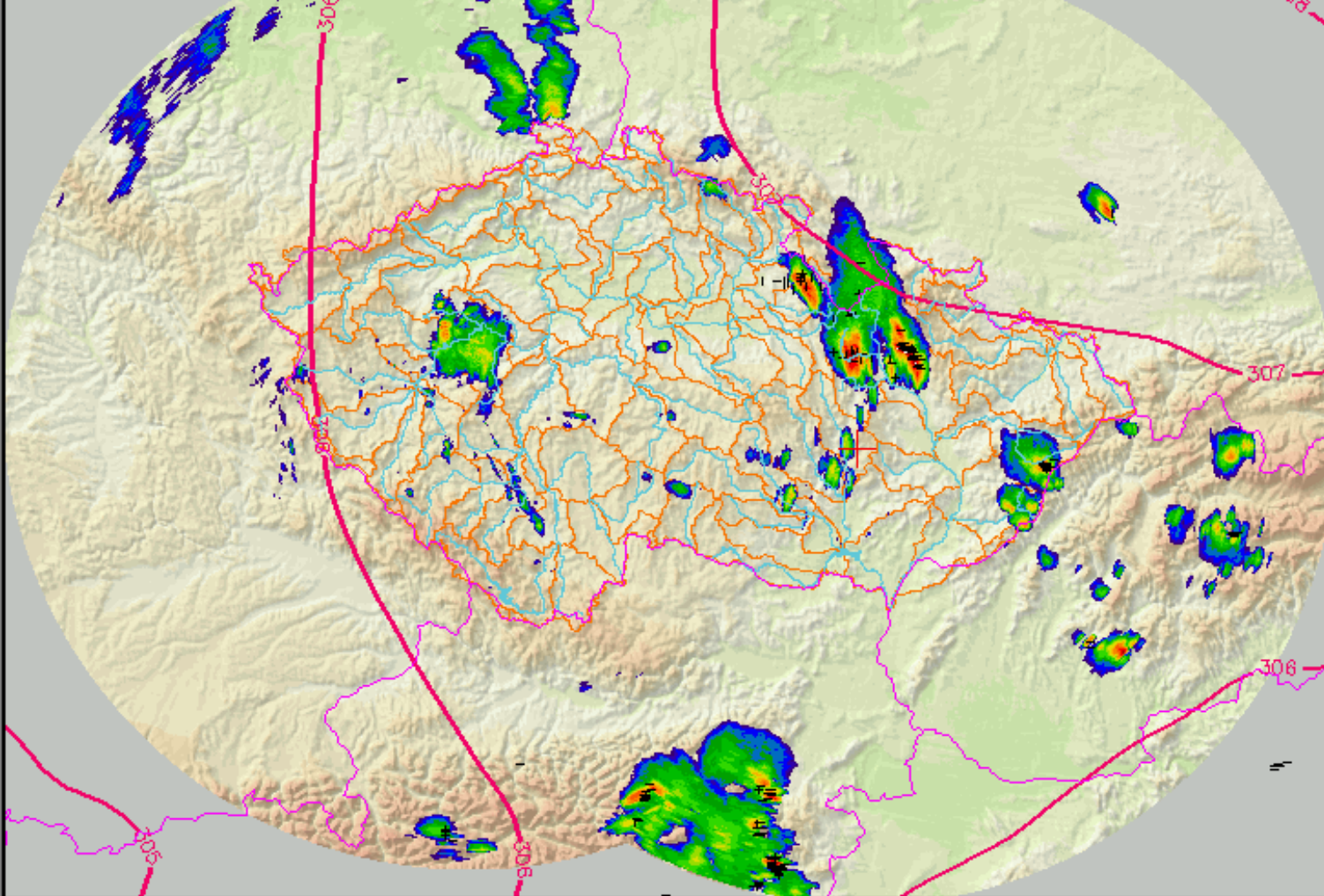


CG+ 11
CG- 194
CC 30
SUM 235



CZRAD - Z: MAX - 26.05.2003 11:20 UT
ALADIN_GP_700 - 26.05.2003 12:00 UT +00hr

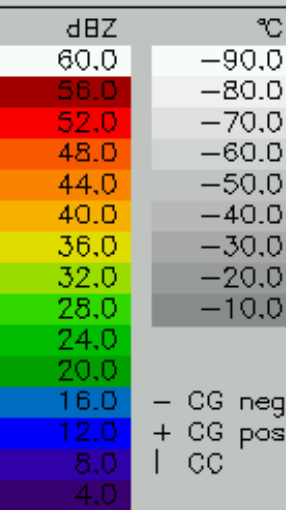
CELDN - 26.05.2003 11:30 UT



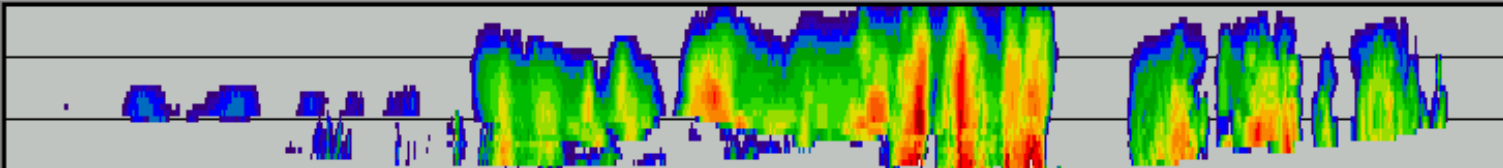
Forecast
 Cotrec Aladin
 Persistence True

- Every
- 26.05.2003 06:20 CA ▲
 - 26.05.2003 06:10 CA
 - 26.05.2003 06:00 CA
 - 26.05.2003 05:50 CA
 - 26.05.2003 05:40 CA
 - 26.05.2003 05:30 CA
 - 26.05.2003 05:20 CA
 - 26.05.2003 05:10 CA**
 - 26.05.2003 05:00 CA
 - 26.05.2003 04:50 CA
 - 26.05.2003 04:40 CA
 - 26.05.2003 04:30 CA ▼

LOAD (258 / 258)



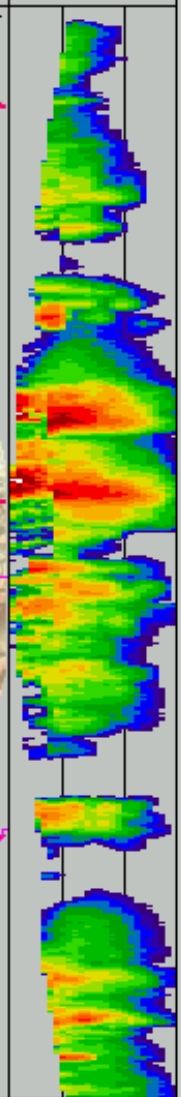
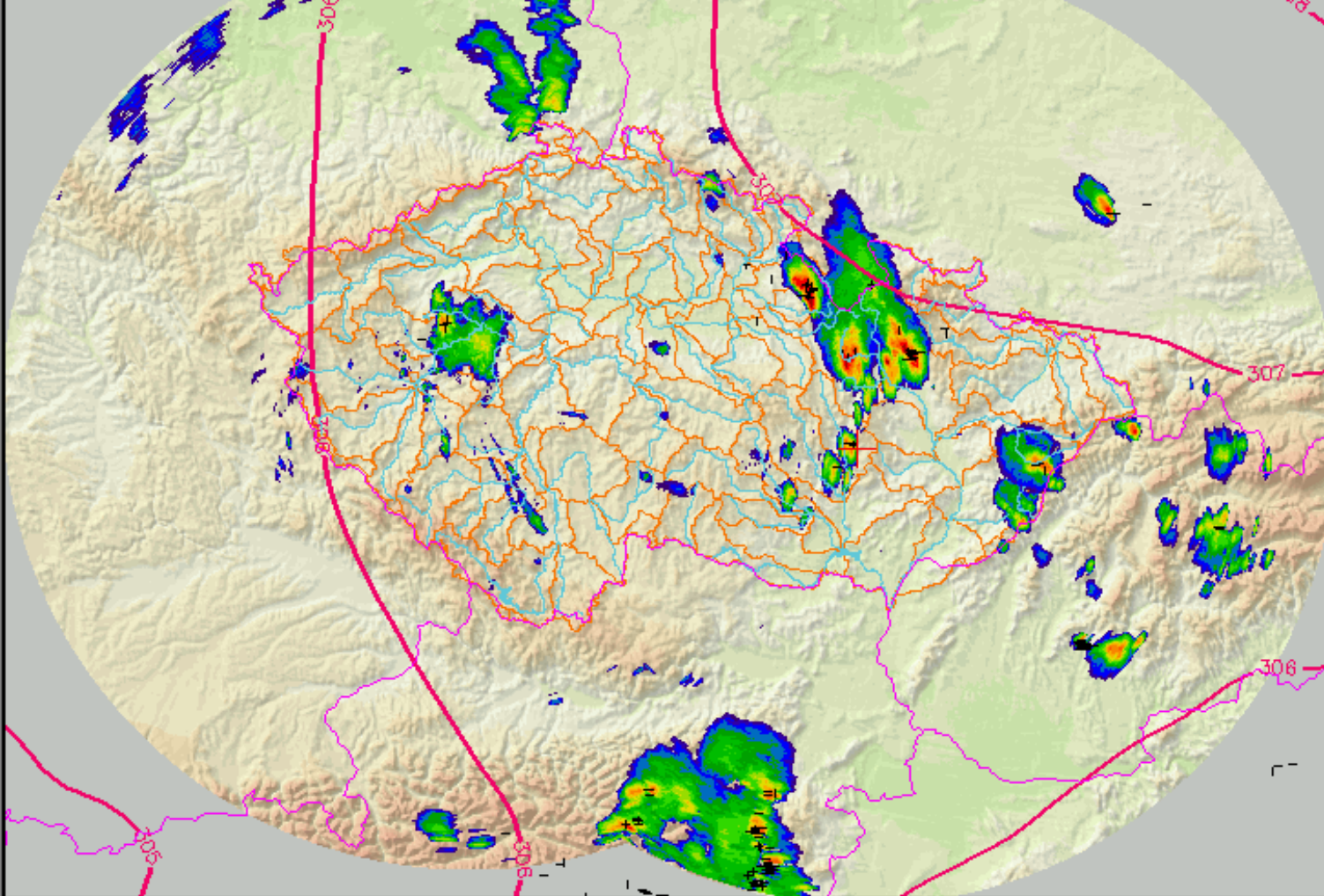
ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update
 PDUS RAD LIGHTNING WIND none METEO ALADIN GP700 - 26.05.2003 12:00 +0h
 ORO col UND catchments OVR rivers NAVIG red LON 16.739 LAT 49.414 Choose predefined locations
 cursor position is [416,484] = [15.971,47.605] ZOOM COLOR black



CG+ 11
CG- 164
CC 25
SUM 200



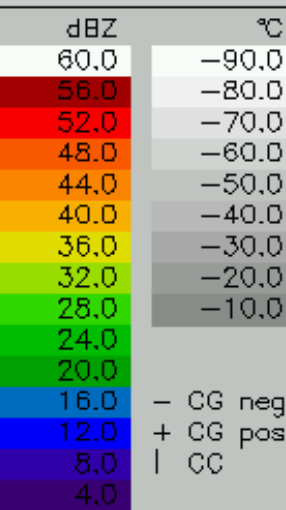
CZRAD - Z: MAX - 26.05.2003 11:30 UT
ALADIN_GP_700 - 26.05.2003 12:00 UT +00hr
CELDN - 26.05.2003 11:30 UT



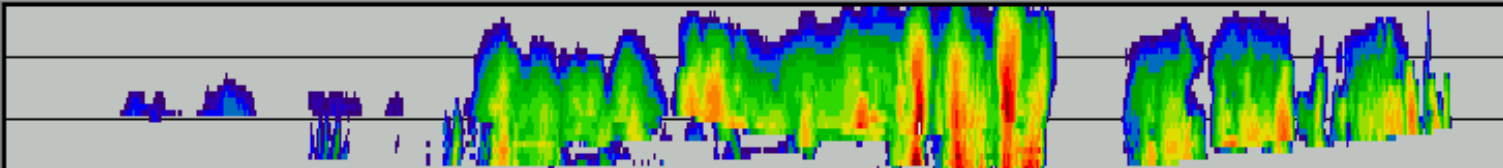
Forecast
 Cotrec Aladin
 Persistence True

- Every
- 26.05.2003 06:20 CA ▲
 - 26.05.2003 06:10 CA
 - 26.05.2003 06:00 CA
 - 26.05.2003 05:50 CA
 - 26.05.2003 05:40 CA
 - 26.05.2003 05:30 CA
 - 26.05.2003 05:20 CA
 - 26.05.2003 05:10 CA**
 - 26.05.2003 05:00 CA
 - 26.05.2003 04:50 CA
 - 26.05.2003 04:40 CA
 - 26.05.2003 04:30 CA ▼

LOAD (258 / 258)



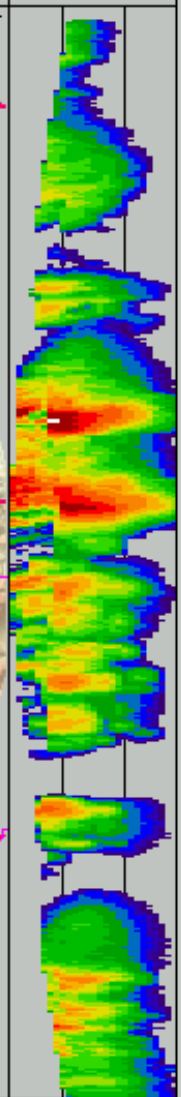
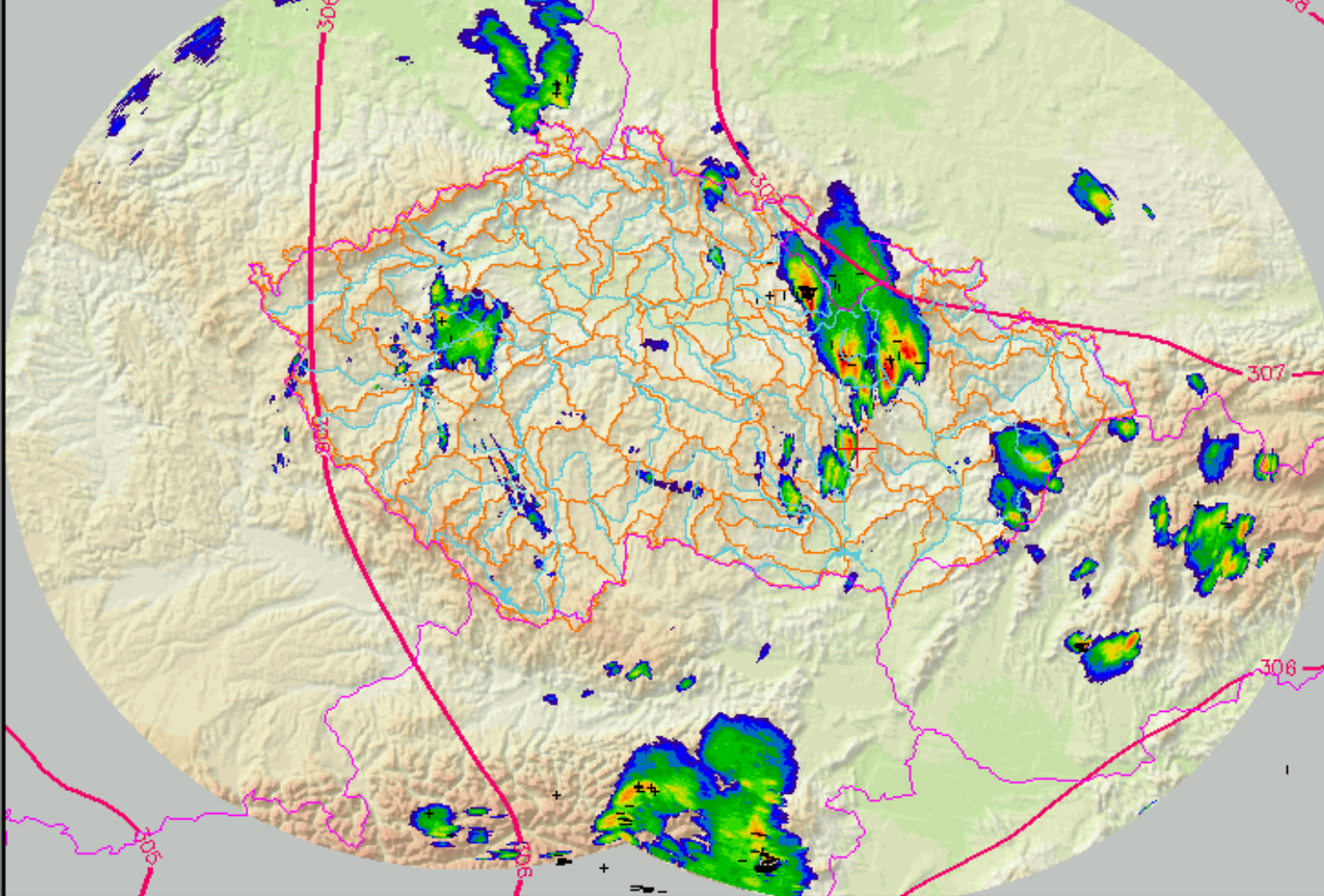
ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update
 PDUS RAD LIGHTNING WIND none METEO ALADIN GP700 - 26.05.2003 12:00 +0h
 ORO col UND catchments OVR rivers NAVIG red LON 16.739 LAT 49.414 Choose predefined locations
 cursor position is [136,527] = [12.261,47.209] ZOOM COLOR black



CG+ 14
CG- 132
CC 27
SUM 173



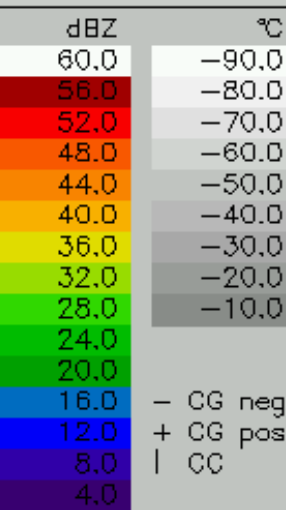
CZRAD - Z: MAX - 26.05.2003 11:40 UT
ALADIN_GP_700 - 26.05.2003 12:00 UT +00hr
CELDN - 26.05.2003 11:40 UT



Forecast
 Cotrec Aladin
 Persistence True

- Every
- 26.05.2003 06:20 CA ▲
 - 26.05.2003 06:10 CA
 - 26.05.2003 06:00 CA
 - 26.05.2003 05:50 CA
 - 26.05.2003 05:40 CA
 - 26.05.2003 05:30 CA
 - 26.05.2003 05:20 CA
 - 26.05.2003 05:10 CA**
 - 26.05.2003 05:00 CA
 - 26.05.2003 04:50 CA
 - 26.05.2003 04:40 CA
 - 26.05.2003 04:30 CA ▼

LOAD (258 / 258)



ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update
 PDUS RAD LIGHTNING WIND none METEO ALADIN GP700 - 26.05.2003 12:00 +0h
 ORO col UND catchments OVR rivers NAVIG red LON 16.739 LAT 49.414 Choose predefined locations
 cursor position is [792,119] = [21.397,50.686] ZOOM COLOR black

CG+ 5
CG- 70
CC 13
SUM 88

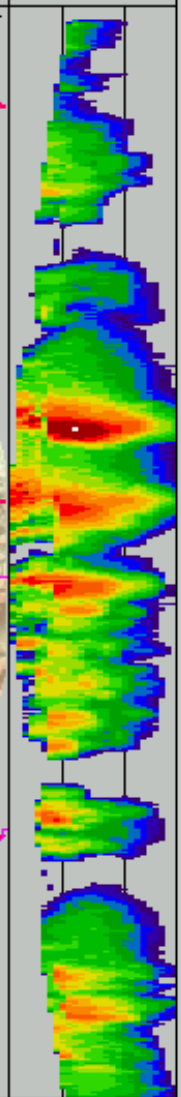
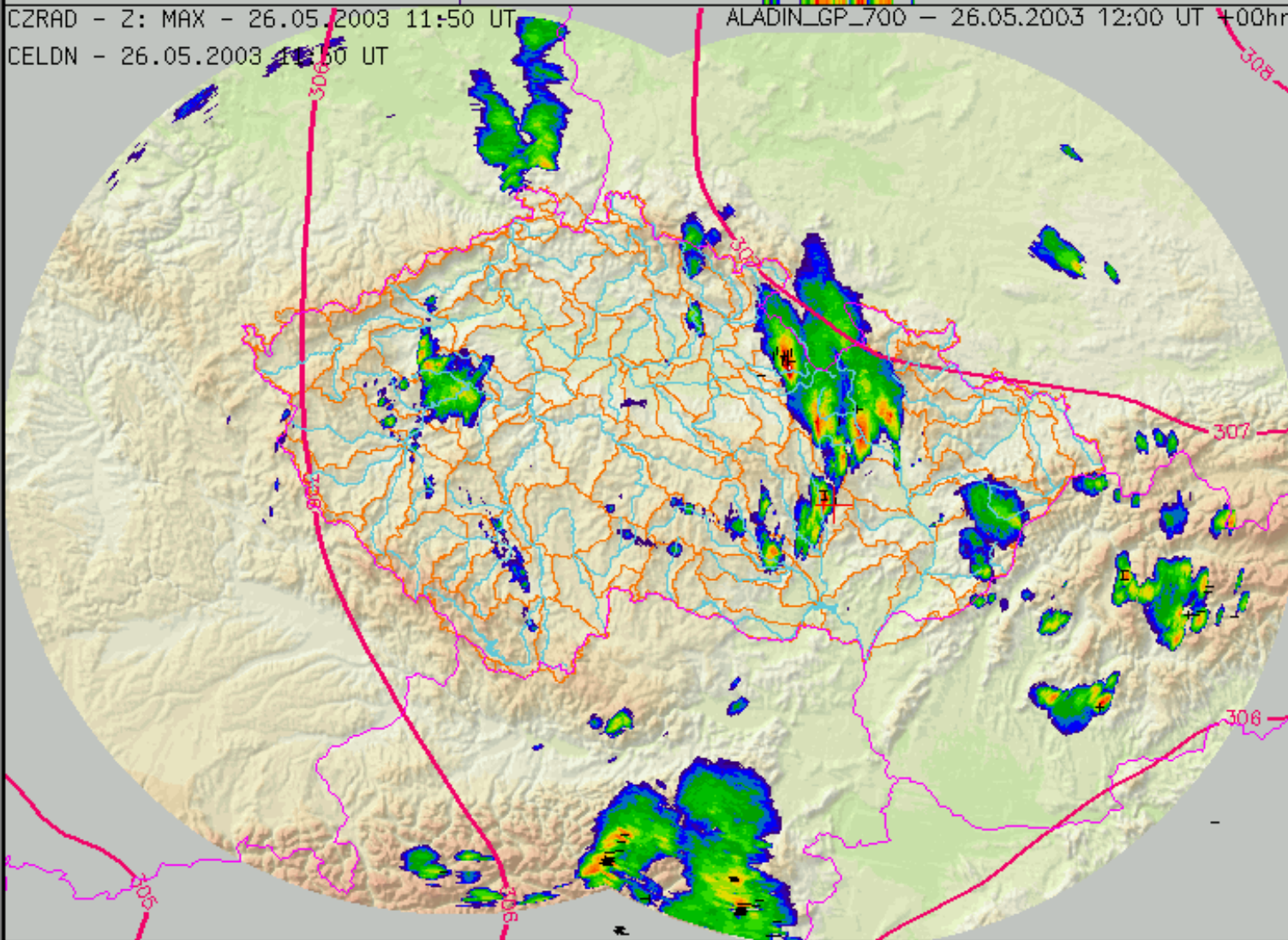
Forecast
 Cotrec Aladin
 Persistence True

- Every
- 26.05.2003 06:20 CA ▲
 - 26.05.2003 06:10 CA
 - 26.05.2003 06:00 CA
 - 26.05.2003 05:50 CA
 - 26.05.2003 05:40 CA
 - 26.05.2003 05:30 CA
 - 26.05.2003 05:20 CA
 - 26.05.2003 05:10 CA
 - 26.05.2003 05:00 CA
 - 26.05.2003 04:50 CA
 - 26.05.2003 04:40 CA
 - 26.05.2003 04:30 CA ▼

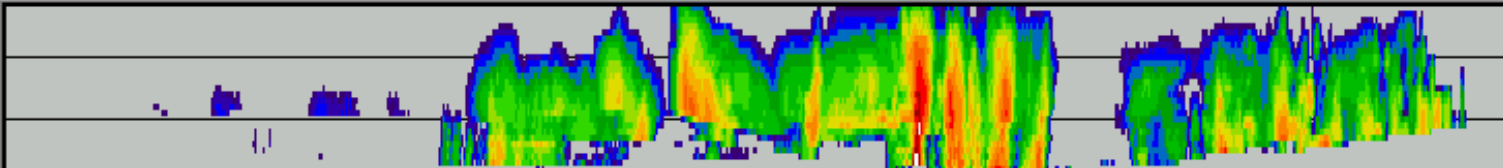
LOAD (258 / 258)



CZRAD - Z: MAX - 26.05.2003 11:50 UT
ALADIN_GP_700 - 26.05.2003 12:00 UT +00hr
CELDN - 26.05.2003 11:50 UT



ANIM: 1 s/img LAST: +2 s AUTO UPDATE Do not update
 PDUS RAD LIGHTNING WIND none METEO ALADIN GP700 - 26.05.2003 12:00 +0h
 ORO col UND catchments OVR rivers NAVIG red LON 16.739 LAT 49.414 Choose predefined locations
 cursor position is [805,366] = [21.262,48.473] ZOOM COLOR black

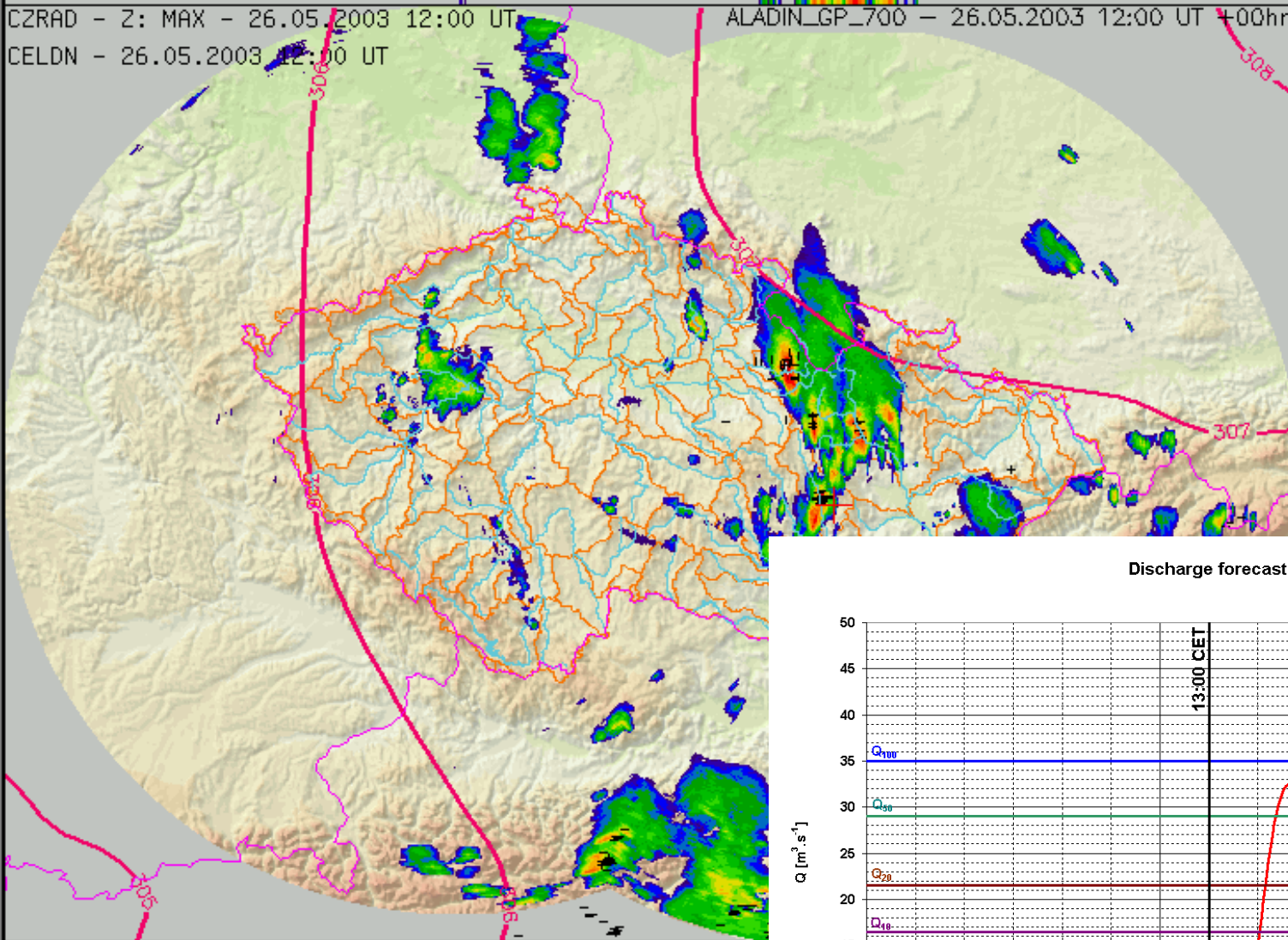


CG+ 4
 CG- 174
 CC 21
 SUM 199



Forecast
 Cotrec Aladin
 Persistence True

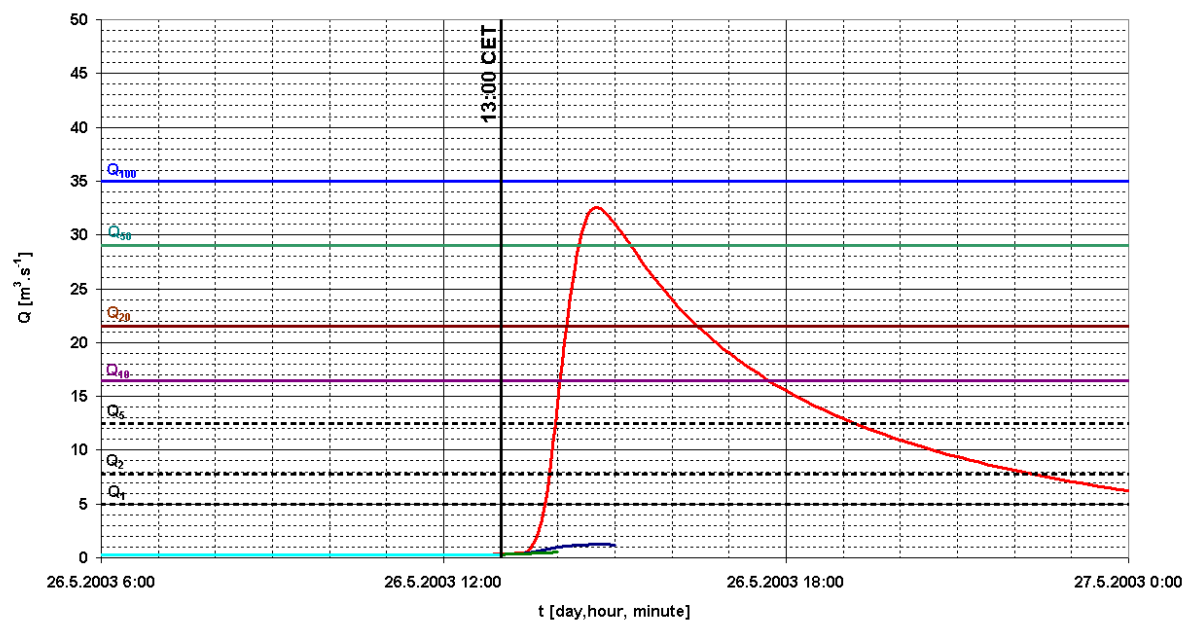
- Every
- ▲
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-



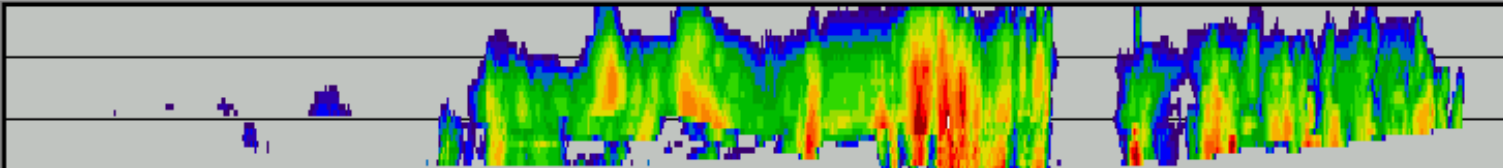
Navigation and display controls:

ANIM: 1 s/img LAST: +2 s AUT
 PDUS RAD LIGHTNING WIND none
 ORO col UND catchments OVR rivers NAVIG red
 cursor position is [784,246] = [21.125,49.56]

Discharge forecast at Sloup, 13:00 CET



— RECONSTRUCTION — SIMULATION — COTREC — PERSISTENCE



CG+ 10
 CG- 136
 CC 37
 SUM 183

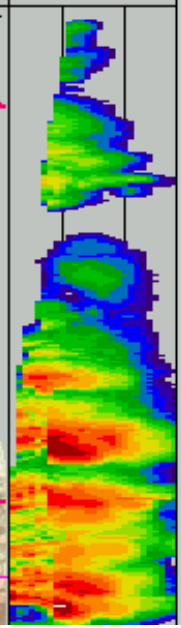
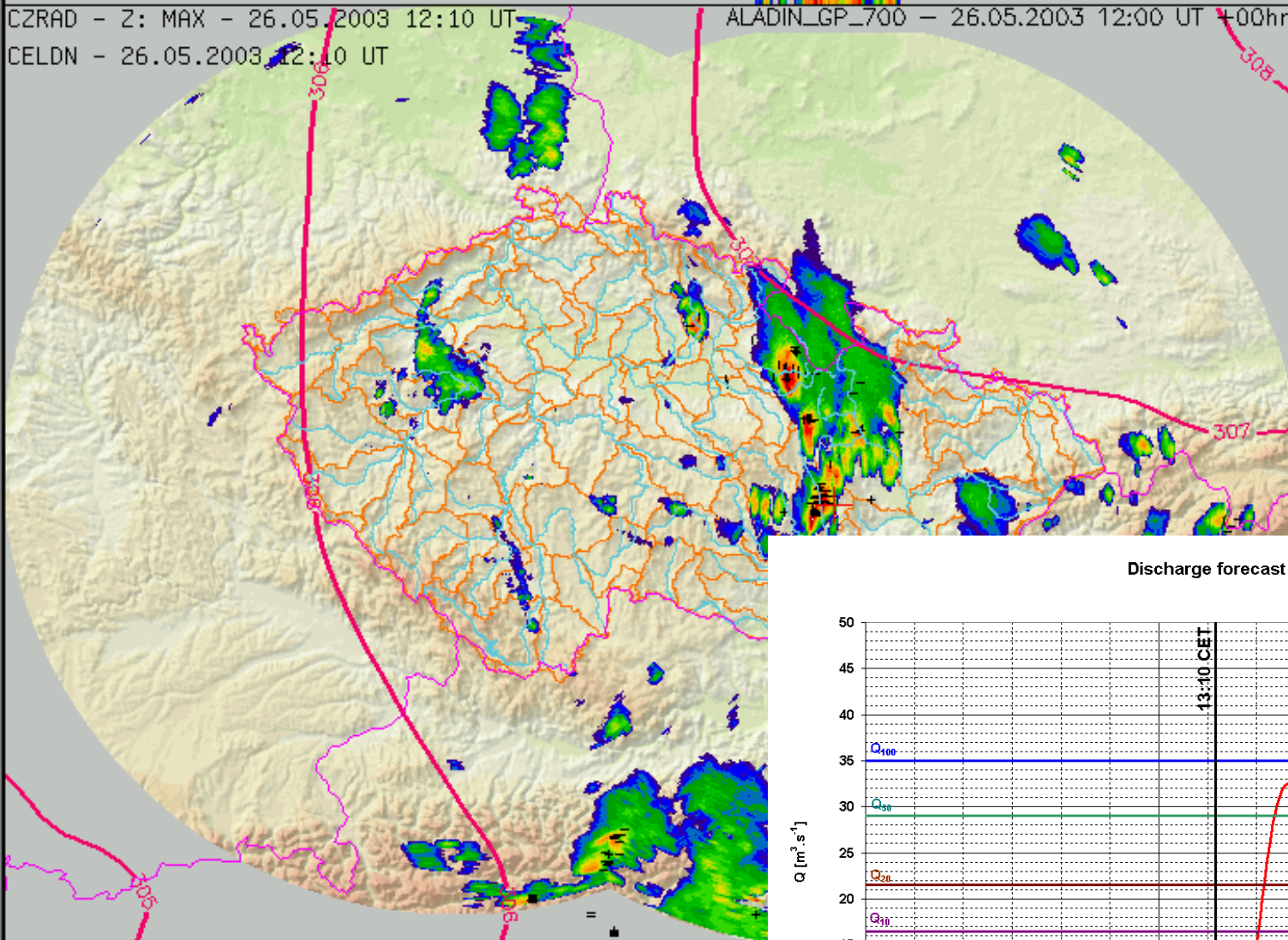


Forecast

Cotrec Aladin
 Persistence True

Every

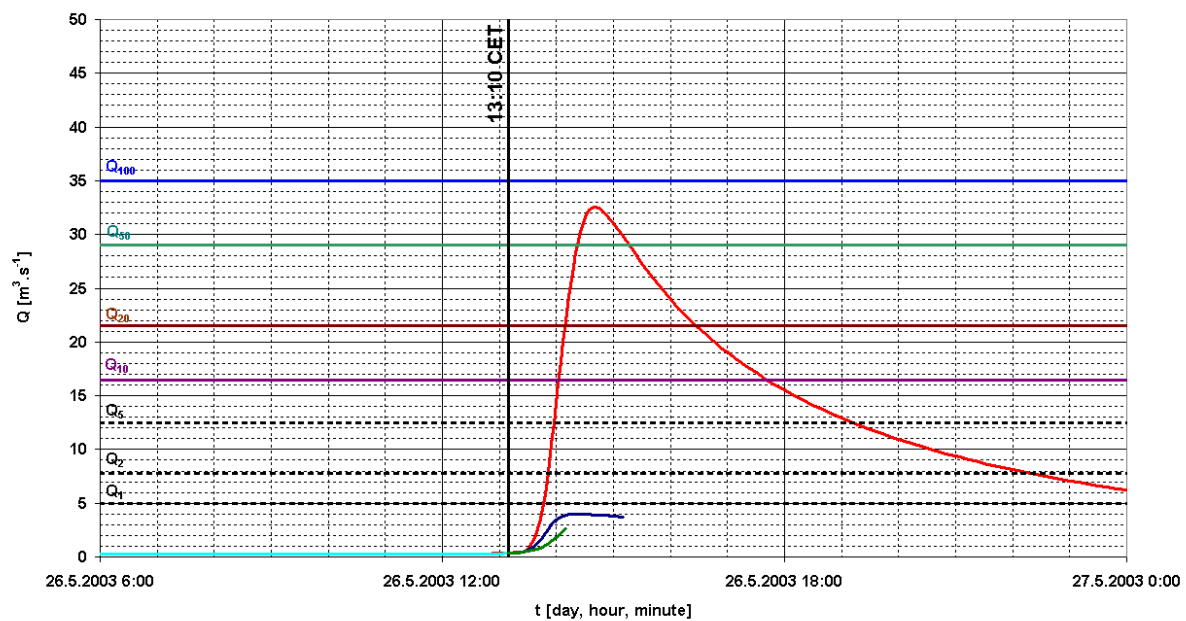
- 26.05.2003 06:20 CA ▲
- 26.05.2003 06:10 CA
- 26.05.2003 06:00 CA
- 26.05.2003 05:50 CA
- 26.05.2003 05:40 CA
- 26.05.2003 05:30 CA
- 26.05.2003 05:20 CA
- 26.05.2003 05:10 CA
- 26.05.2003 05:00 CA
- 26.05.2003 04:50 CA
- 26.05.2003 04:40 CA
- 26.05.2003 04:30 CA ▼

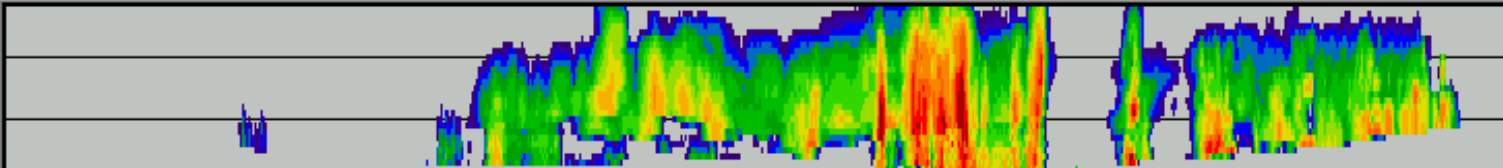


Navigation and display controls:

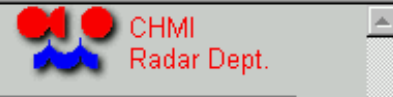
-
- ANIM: 1 s/img LAST: +2 s AUT
- PDUS RAD LIGHTNING WIND none
- ORO col UND catchments OVR rivers NAVIG red
- cursor position is [184,525] = [12.894,47.237]

Discharge forecast at Sloup, 13:10 CET





CG+ 22
 CG- 236
 CC 40
 SUM 298



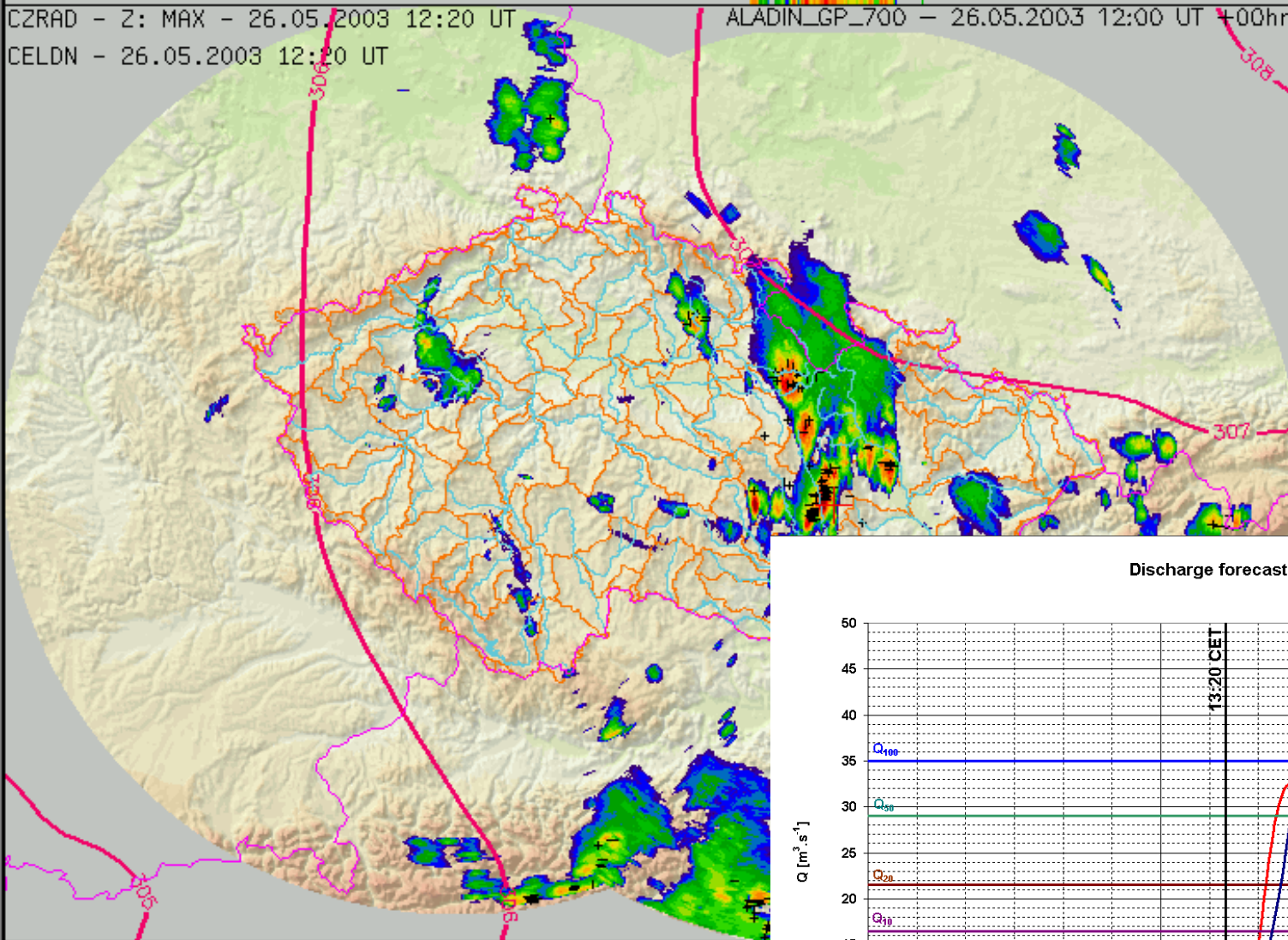
Forecast +00 min

- Cotrec Aladin
- Persistence True

Every 6th 3rd

- 26.05.2003 06:20 CA
- 26.05.2003 06:10 CA
- 26.05.2003 06:00 CA
- 26.05.2003 05:50 CA
- 26.05.2003 05:40 CA
- 26.05.2003 05:30 CA
- 26.05.2003 05:20 CA
- 26.05.2003 05:10 CA
- 26.05.2003 05:00 CA
- 26.05.2003 04:50 CA
- 26.05.2003 04:40 CA
- 26.05.2003 04:30 CA

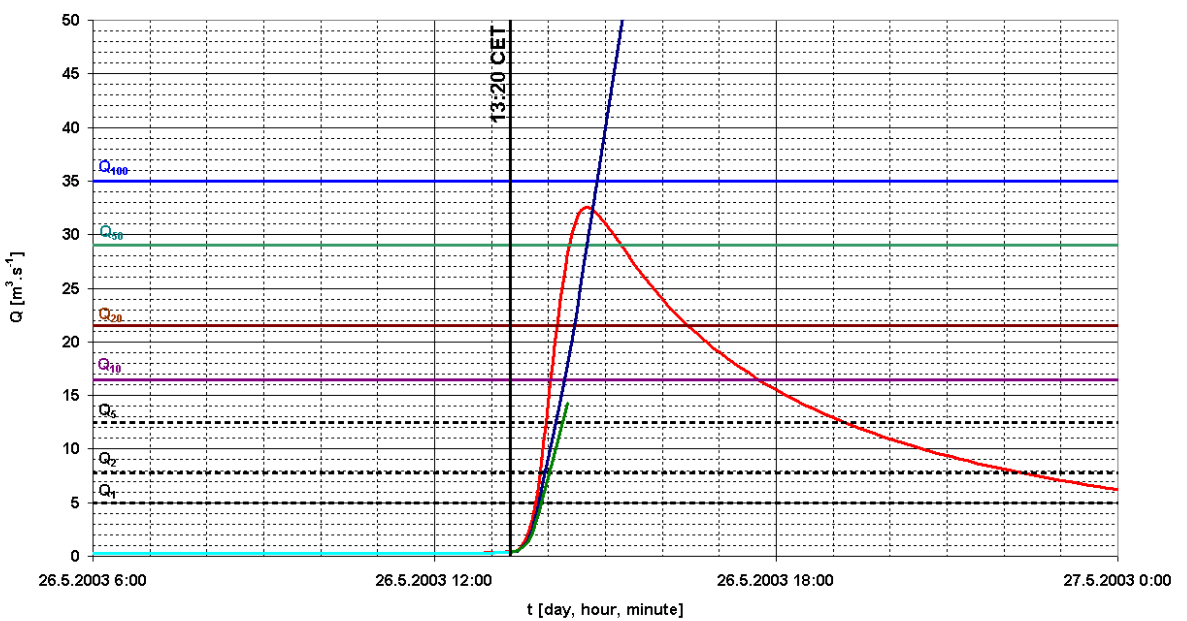
LOAD (258 / 258)



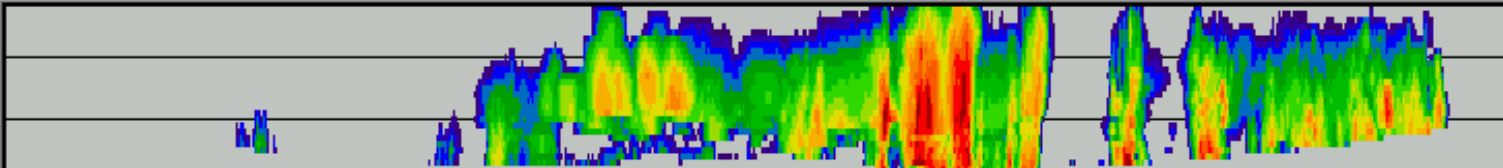
Navigation and display controls:

- ANIM: 1 s/img
- LAST: +2 s
- AUT
- PDUS RAD LIGHTNING WIND none
- ORO col UND catchments OVR rivers NAVIG red
- cursor position is [790,207] = [21.256,49.903]

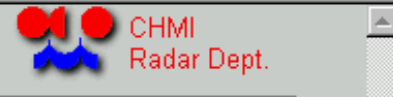
Discharge forecast at Sloup, 13:20 CET



RECONSTRUCTION SIMULATION COTREC PERSISTENCE



CG+ 15
CG- 237
CC 45
SUM 297



Forecast +00 min

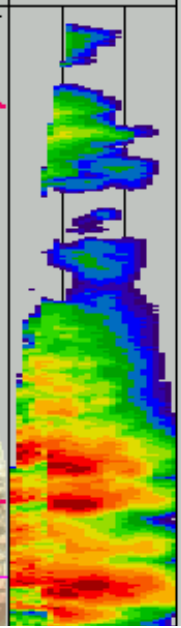
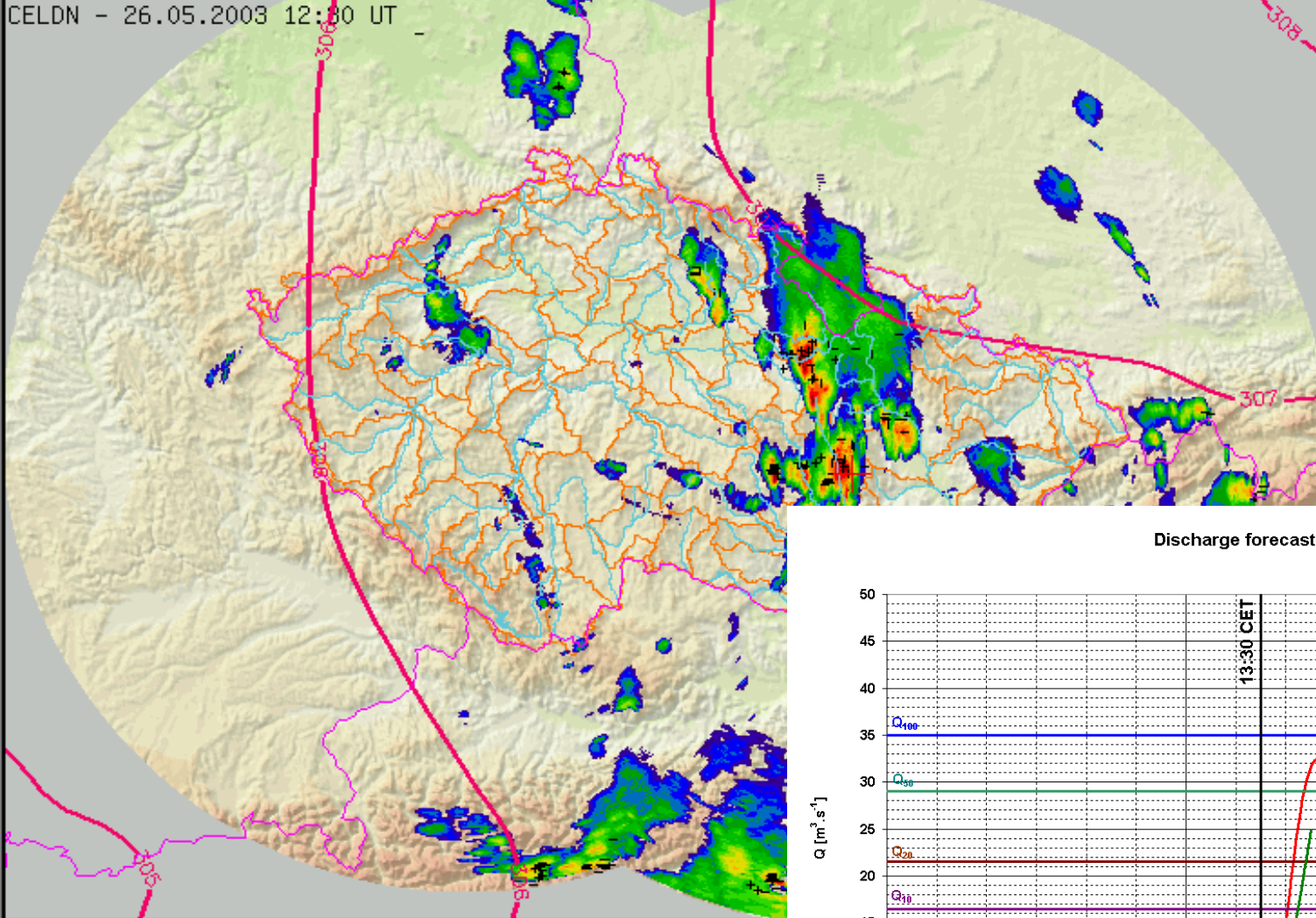
- Cotrec Aladin
- Persistence True

Every 6th 3rd

- 26.05.2003 06:20 CA
- 26.05.2003 06:10 CA
- 26.05.2003 06:00 CA
- 26.05.2003 05:50 CA
- 26.05.2003 05:40 CA
- 26.05.2003 05:30 CA
- 26.05.2003 05:20 CA
- 26.05.2003 05:10 CA
- 26.05.2003 05:00 CA
- 26.05.2003 04:50 CA
- 26.05.2003 04:40 CA
- 26.05.2003 04:30 CA

LOAD (258 / 258)

CZRAD - Z: MAX - 26.05.2003 12:30 UT
ALADIN_GP_700 - 26.05.2003 12:00 UT +00hr
CELDN - 26.05.2003 12:30 UT



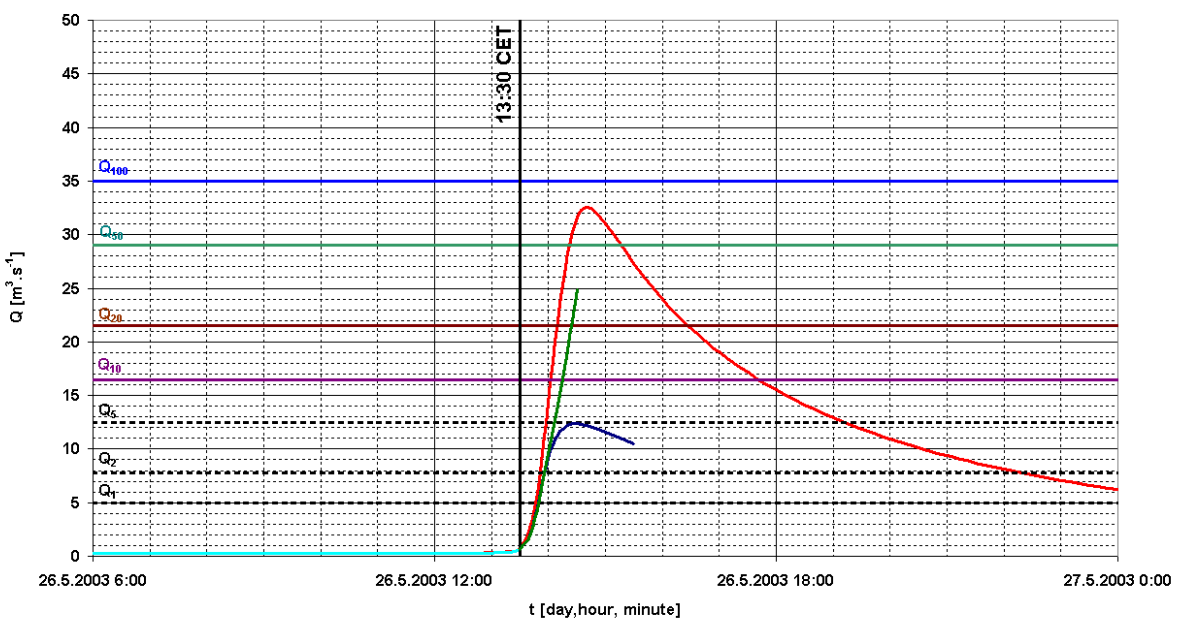
Navigation controls: |< < || >> >| ANIM: 1 s/img LAST: +2 s AUT

PDUS RAD LIGHTNING WIND none

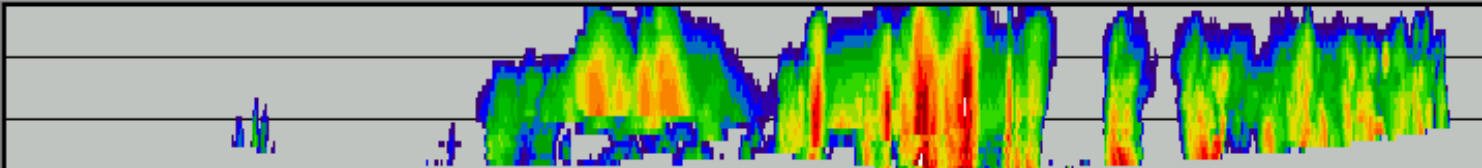
ORO col UND catchments OVR rivers NAVIG red

cursor position is [796,177] = [21.378,50.165]

Discharge forecast at Sloup, 13:30 CET



RECONSTRUCTION SIMULATION COTREC PERSISTENCE



CG+ 18
 CG- 212
 CC 32
 SUM 262



Forecast +00 min

- Cotrec Aladin
- Persistence True

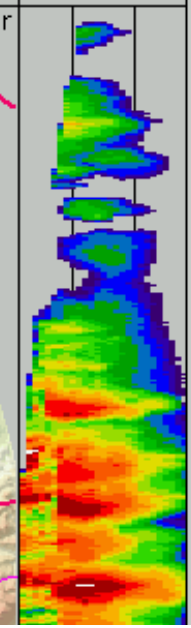
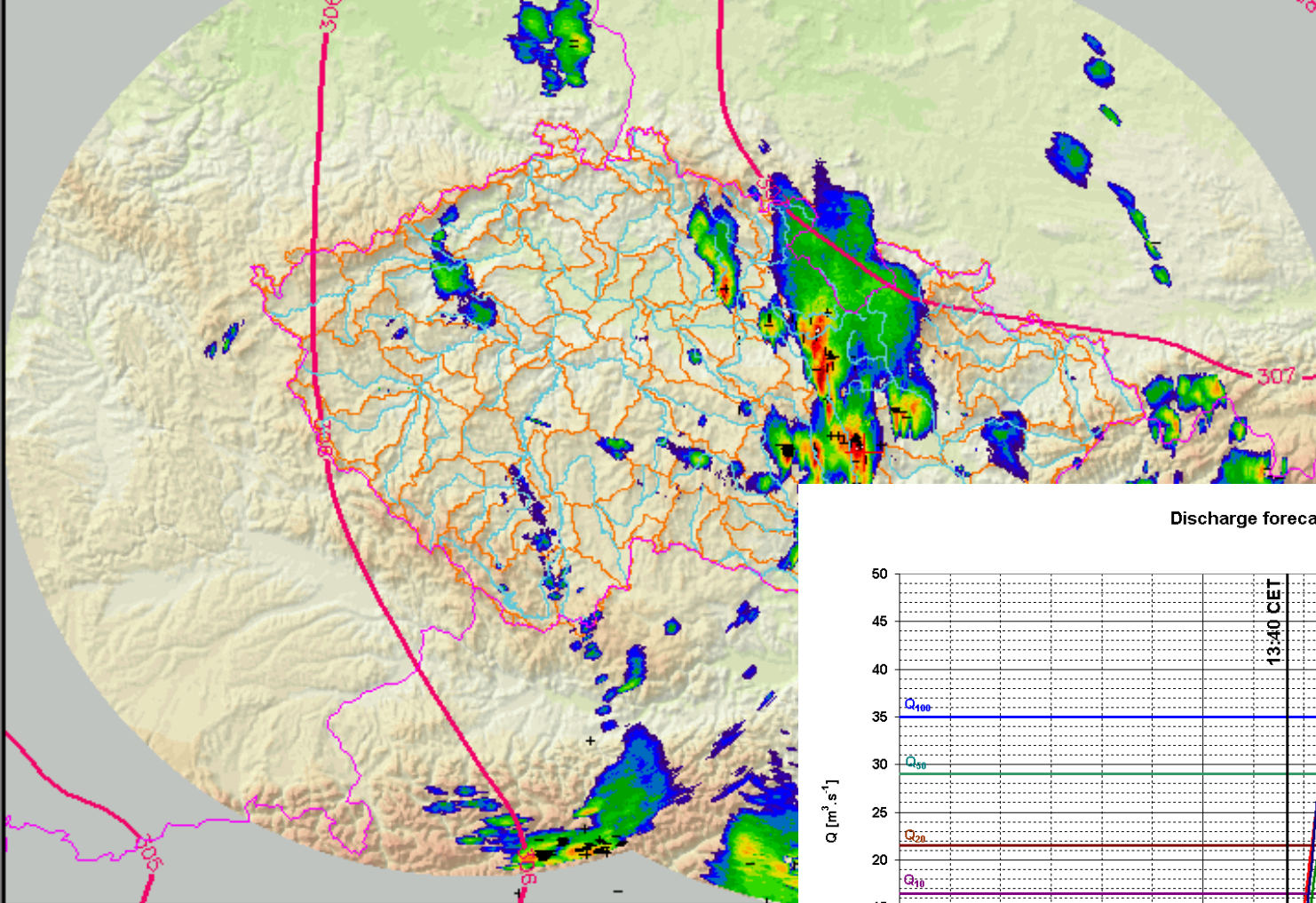
Every 6th 3rd

- 26.05.2003 06:20 CA
- 26.05.2003 06:10 CA
- 26.05.2003 06:00 CA
- 26.05.2003 05:50 CA
- 26.05.2003 05:40 CA
- 26.05.2003 05:30 CA
- 26.05.2003 05:20 CA
- 26.05.2003 05:10 CA
- 26.05.2003 05:00 CA
- 26.05.2003 04:50 CA
- 26.05.2003 04:40 CA
- 26.05.2003 04:30 CA

LOAD (258 / 258)

CZRAD - Z: MAX - 26.05.2003 12:40 UT ALADIN_GP_700 - 26.05.2003 12:00 UT +00hr

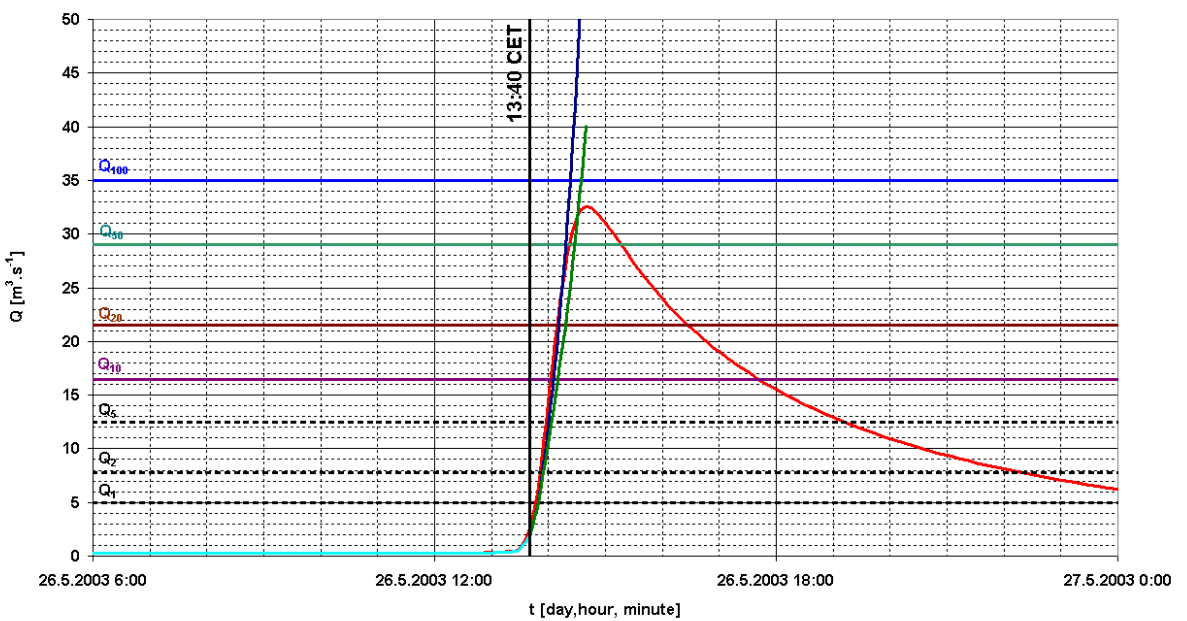
CELDN - 26.05.2003 12:40 UT



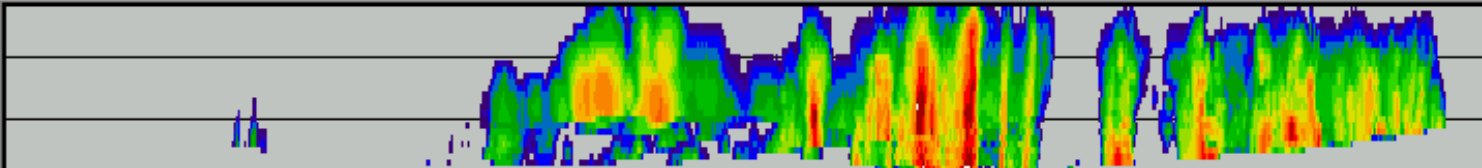
Navigation and display controls:

- ANIM: 1 s/img
- LAST: +2 s
- AUT
- PDUS RAD LIGHTNING WIND none
- ORO col UND catchments OVR rivers NAVIG red
- cursor position is [359,524] = [15.207,47.254]

Discharge forecast at Sloup, 13:40 CET



RECONSTRUCTION SIMULATION COTREC PERSISTENCE



CG+ 19
 CG- 391
 CC 52
 SUM 462



Forecast

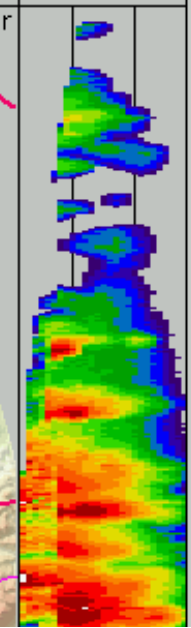
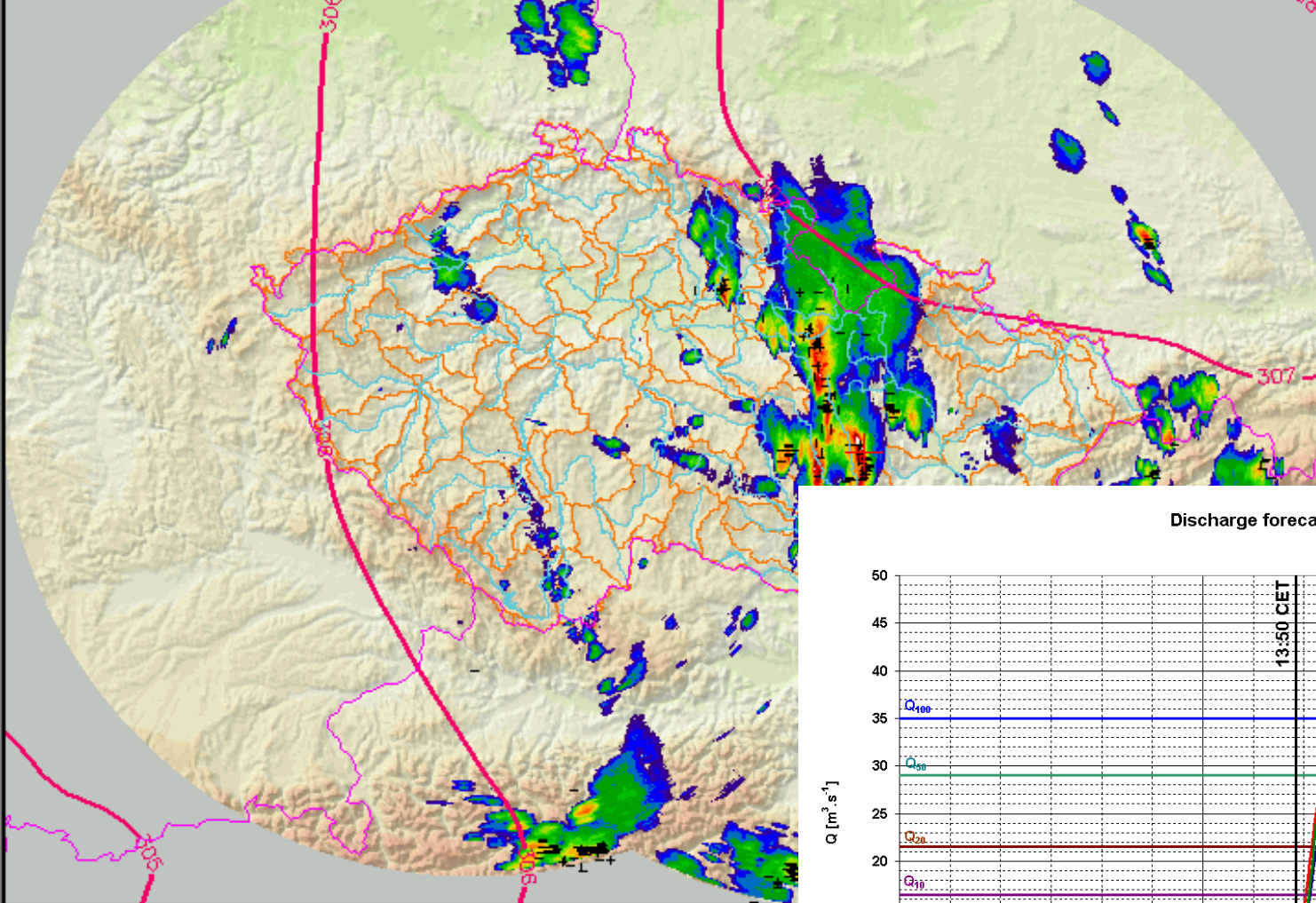
Cotrec Aladin
 Persistence True

Every

- ▲
-
-
-
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-
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- ▼

CZRAD - Z: MAX - 26.05.2003 12:50 UT ALADIN_GP_700 - 26.05.2003 12:00 UT +00hr

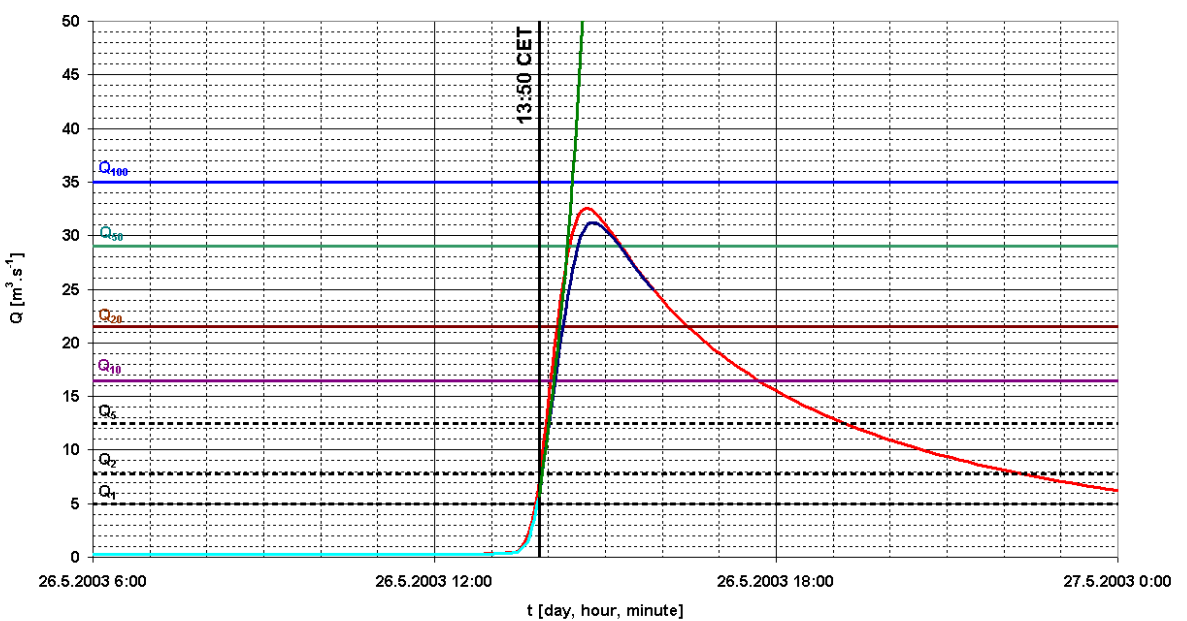
CELDN - 26.05.2003 12:50 UT



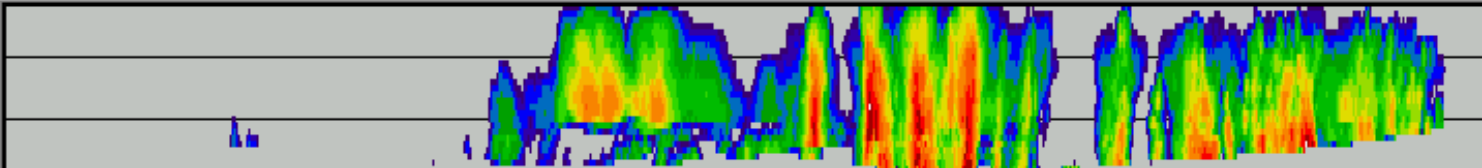
ANIM: 1 s/img LAST: +2 s AUT
 PDUS RAD LIGHTNING WIND none
 ORO UND OVR NAVIG

cursor position is [362,526] = [15.246,47.236]

Discharge forecast at Sloup, 13:50 CET



— RECONSTRUCTION — SIMULATION — COTREC — PERSISTENCE

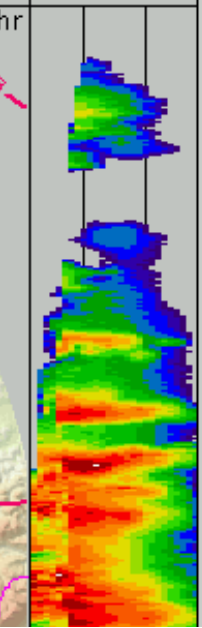
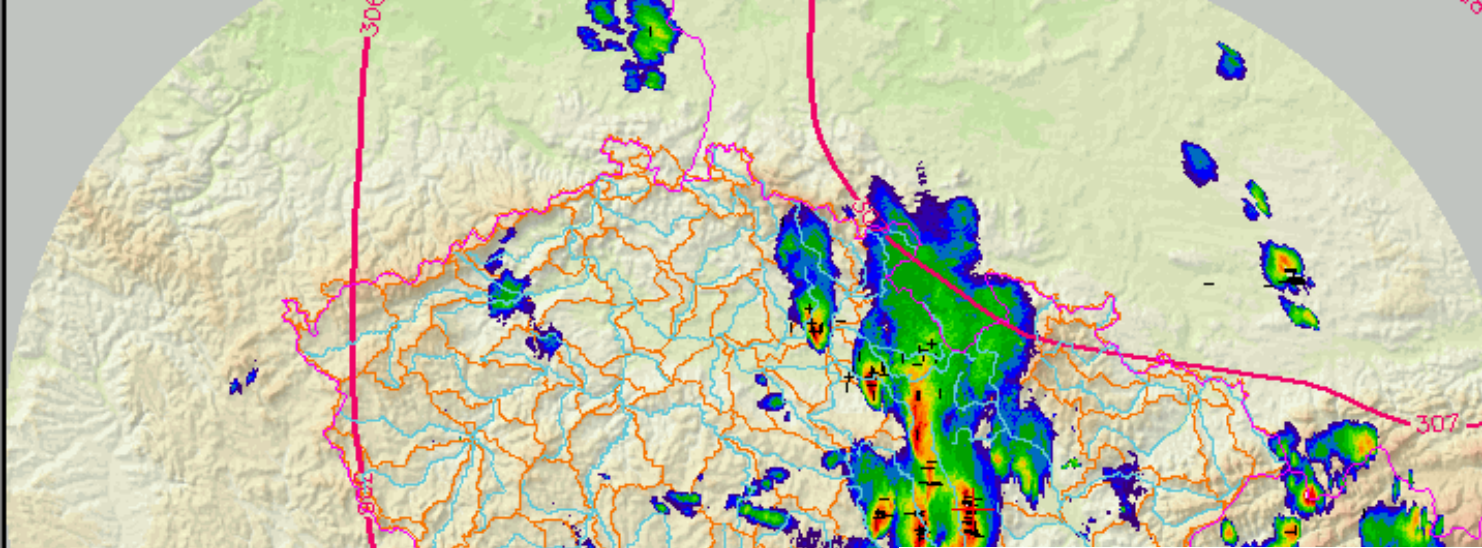


CG+ 12
 CG- 267
 CC 37
 SUM 316



CZRAD - Z: MAX - 26.05.2003 13:00 UT
 ALADIN_GP_700 - 26.05.2003 12:00 UT +00hr

CELDN - 26.05.2003 13:00 UT



Forecast

Cotrec Aladin
 Persistence True

Every

- 26.05.2003 06:20 CA ▲
- 26.05.2003 06:10 CA
- 26.05.2003 06:00 CA
- 26.05.2003 05:50 CA
- 26.05.2003 05:40 CA
- 26.05.2003 05:30 CA
- 26.05.2003 05:20 CA
- 26.05.2003 05:10 CA**
- 26.05.2003 05:00 CA
- 26.05.2003 04:50 CA
- 26.05.2003 04:40 CA
- 26.05.2003 04:30 CA ▼

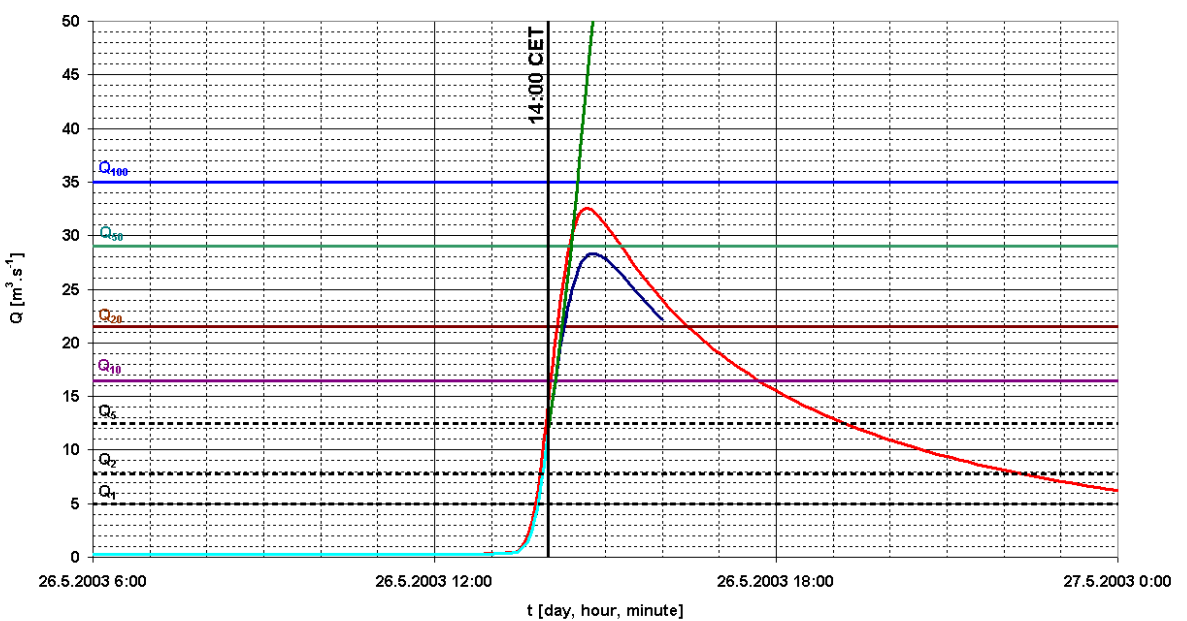
Navigation controls: |< < || >> >| ANIM: 1 s/img LAST: +2 s AUT

PDUS RAD LIGHTNING WIND none

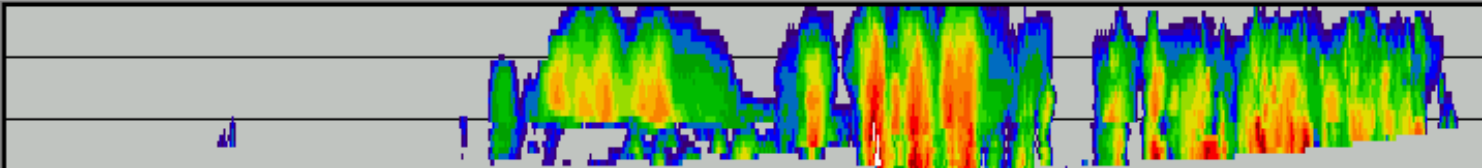
ORO col UND catchments OVR rivers NAVIG red

cursor position is [799,254] = [21.321,49.476]

Discharge forecast at Sloup, 14:00 CET



— RECONSTRUCTION — SIMULATION — COTREC — PERSISTENCE



CG+ 30
 CG- 298
 CC 66
 SUM 394



Forecast

Cotrec Aladin
 Persistence True

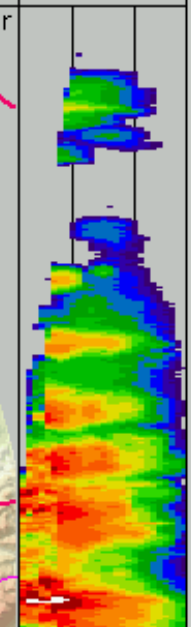
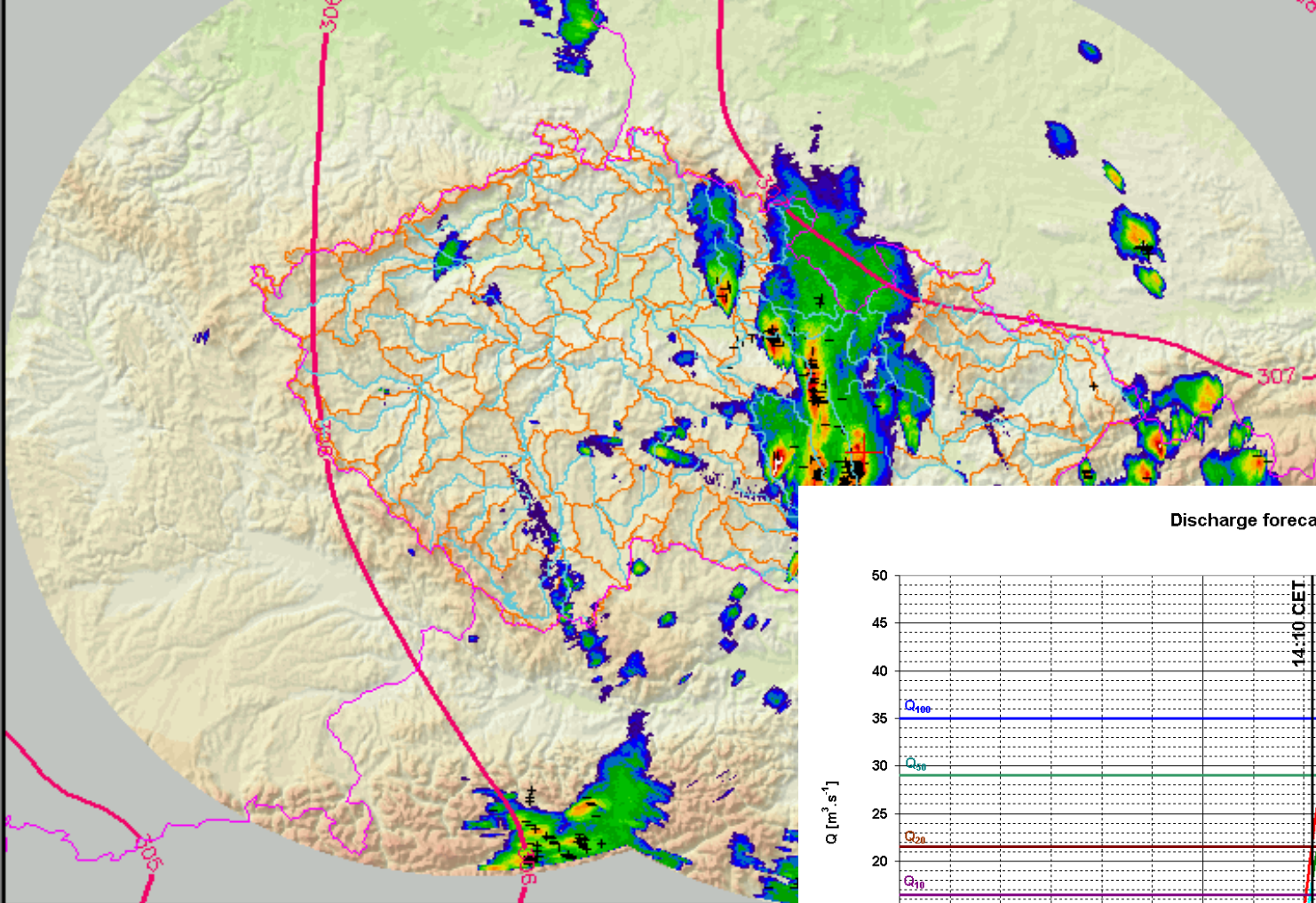
Every

- 26.05.2003 06:20 CA ▲
- 26.05.2003 06:10 CA
- 26.05.2003 06:00 CA
- 26.05.2003 05:50 CA
- 26.05.2003 05:40 CA
- 26.05.2003 05:30 CA
- 26.05.2003 05:20 CA
- 26.05.2003 05:10 CA
- 26.05.2003 05:00 CA
- 26.05.2003 04:50 CA
- 26.05.2003 04:40 CA
- 26.05.2003 04:30 CA ▼

LOAD (258 / 258)

CZRAD - Z: MAX - 26.05.2003 13:10 UT ALADIN_GP_700 - 26.05.2003 12:00 UT +00hr

CELDN - 26.05.2003 13:10 UT



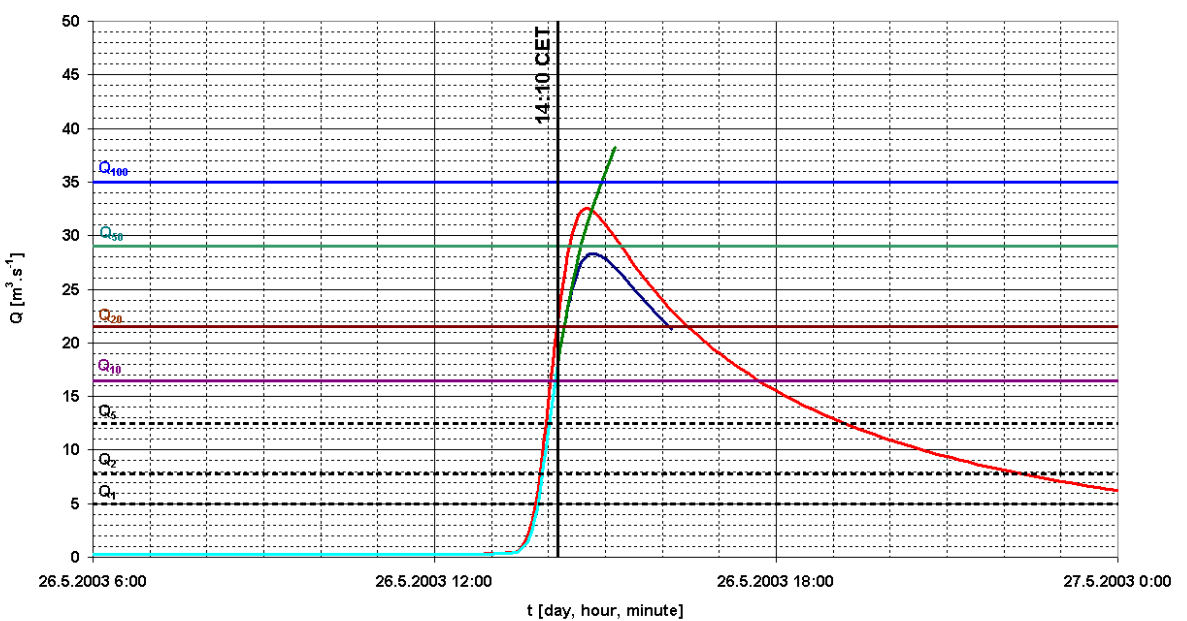
Navigation controls: ANIM: 1 s/img LAST: +2 s AUT

PDUS RAD LIGHTNING WIND none

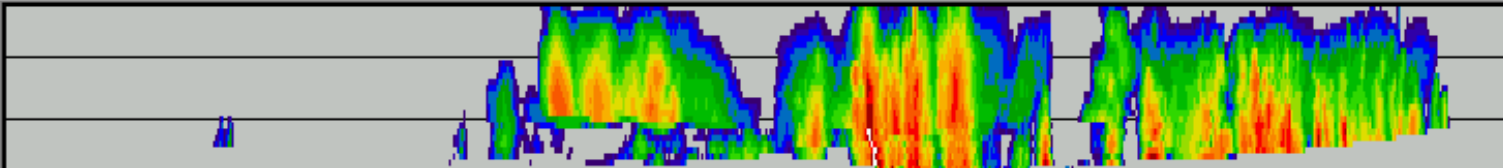
ORO col UND catchments OVR rivers NAVIG red

cursor position is [524,309] = [17.502,49.146]

Discharge forecast at Sloup, 14:10 CET



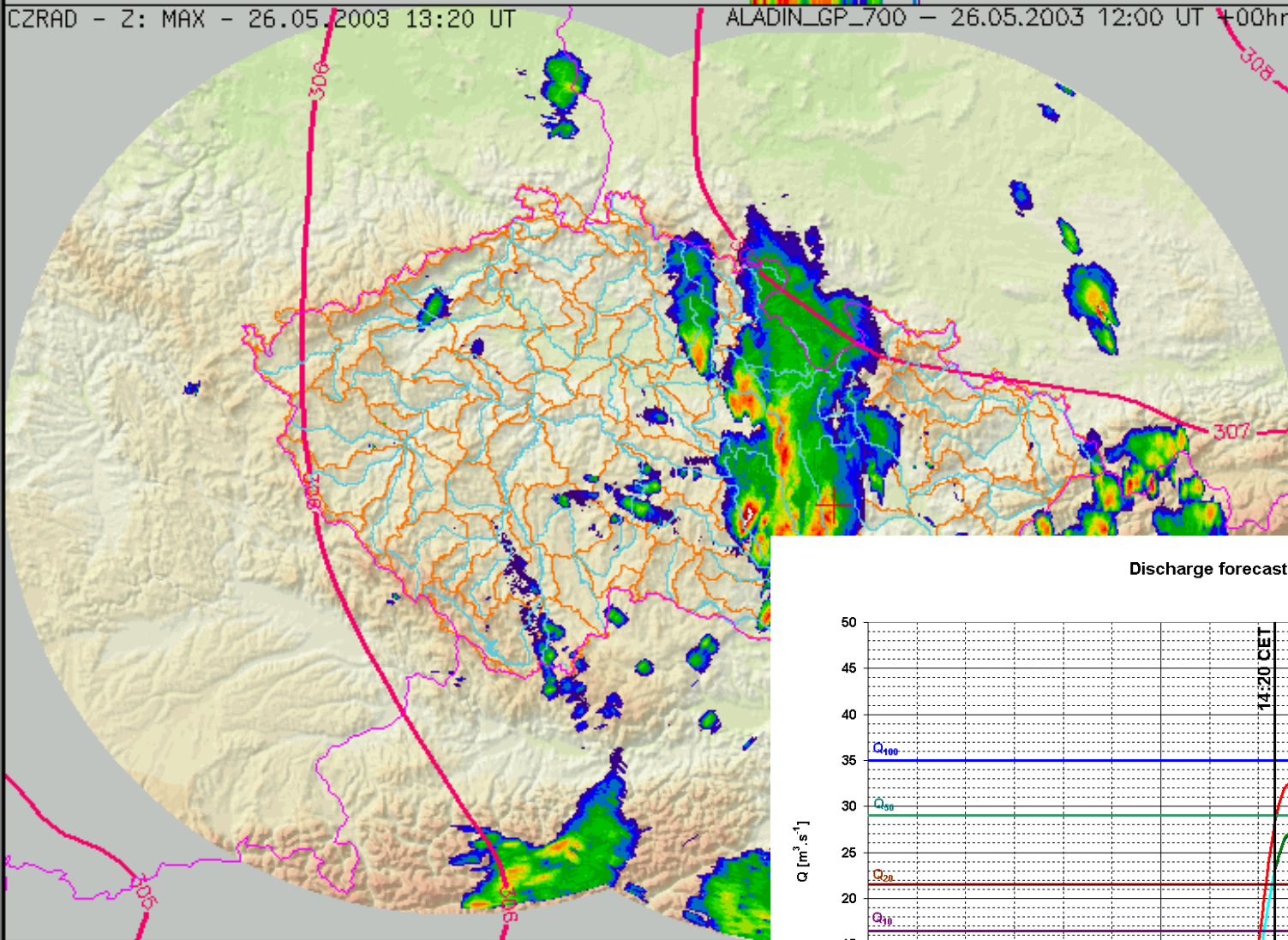
— RECONSTRUCTION — SIMULATION — COTREC — PERSISTENCE



Forecast

Cotrec
 Aladin
 Persistence
 True

- Every
- 26.05.2003 06:20 CA ▲
 - 26.05.2003 06:10 CA
 - 26.05.2003 06:00 CA
 - 26.05.2003 05:50 CA
 - 26.05.2003 05:40 CA
 - 26.05.2003 05:30 CA
 - 26.05.2003 05:20 CA
 - 26.05.2003 05:10 CA
 - 26.05.2003 05:00 CA
 - 26.05.2003 04:50 CA
 - 26.05.2003 04:40 CA
 - 26.05.2003 04:30 CA ▼
- LOAD (258 / 258)



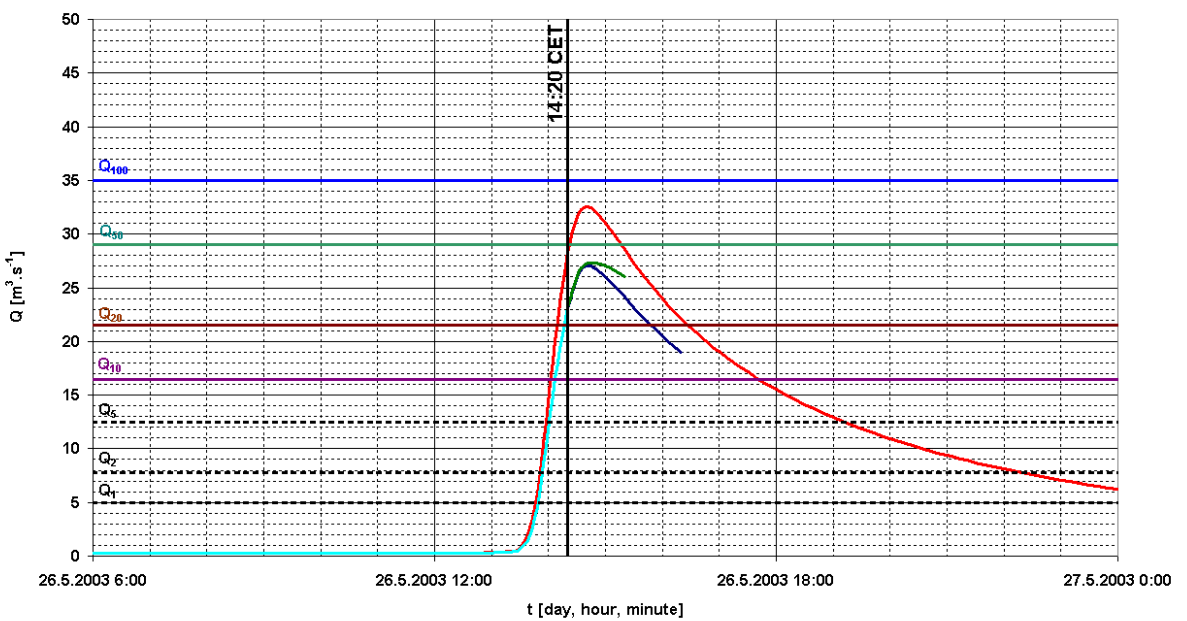
ANIM: 1 s/img
 LAST: +2 s
 AUT

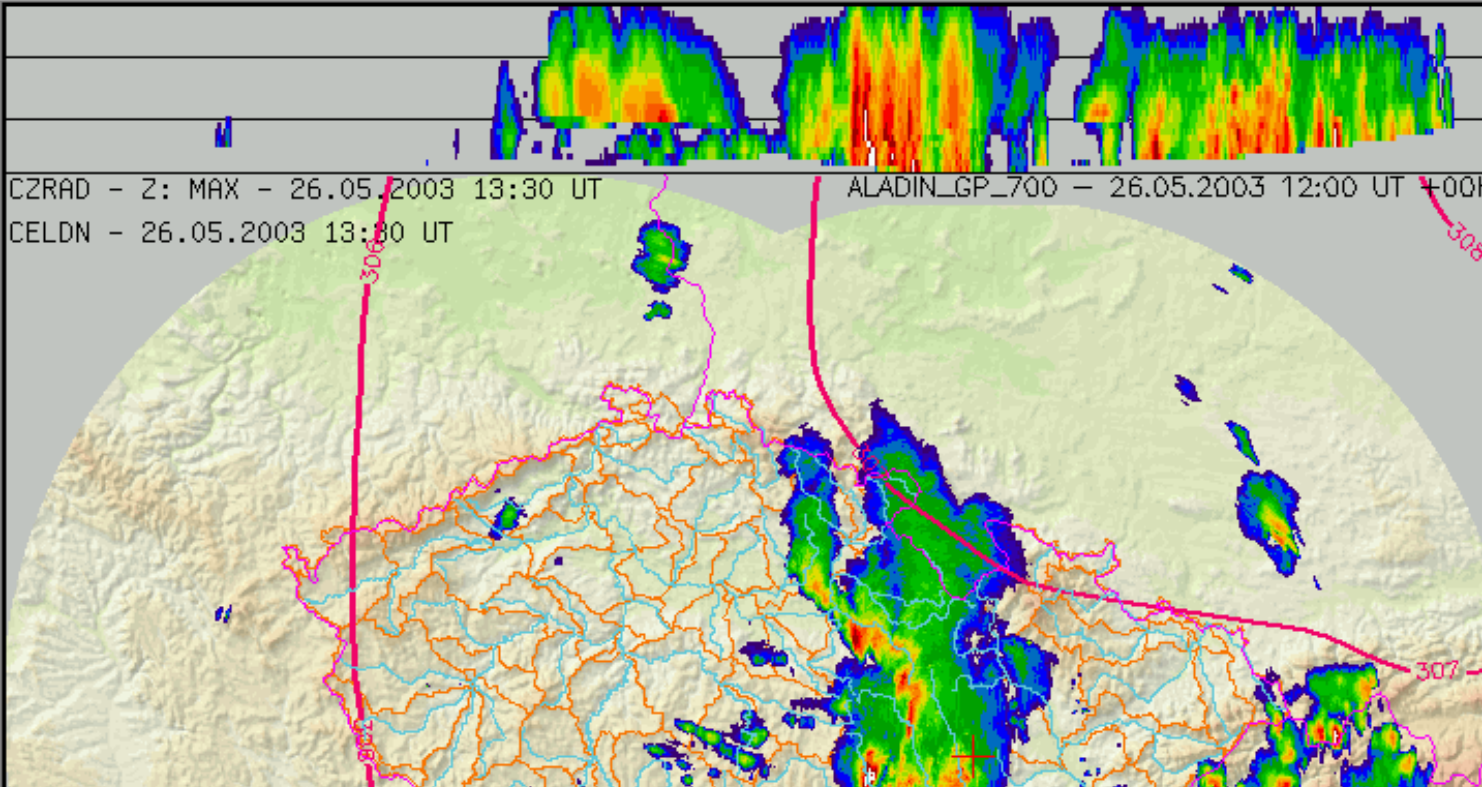
PDUS
 RAD
 LIGHTNING
 WIND none

ORO col
 UND catchments
 OVR rivers
 NAVIG red

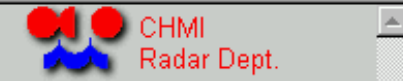
cursor position is [104,527] = [11.839,47.2]

Discharge forecast at Sloup, 14:20 CET





NO CELDN
DATA !!!



Forecast
 Cotrec Aladin
 Persistence True

- Every
- 26.05.2003 06:20 CA ▲
 - 26.05.2003 06:10 CA
 - 26.05.2003 06:00 CA
 - 26.05.2003 05:50 CA
 - 26.05.2003 05:40 CA
 - 26.05.2003 05:30 CA
 - 26.05.2003 05:20 CA
 - 26.05.2003 05:10 CA
 - 26.05.2003 05:00 CA
 - 26.05.2003 04:50 CA
 - 26.05.2003 04:40 CA
 - 26.05.2003 04:30 CA ▼
- LOAD (258 / 258)

CZRAD - Z: MAX - 26.05.2003 13:30 UT
 CELDN - 26.05.2003 13:30 UT
 ALADIN_GP_700 - 26.05.2003 12:00 UT +00hr

ANIM: 1 s/img LAST: +2 s AUT
 PDUS RAD LIGHTNING WIND none
 ORO col UND catchments OVR rivers NAVIG red
 cursor position is [272,525] = [14.057,47.247]

Discharge forecast at Sloup, 14:30 CET

