EFAS forecasts based on Cosmo-LEPS

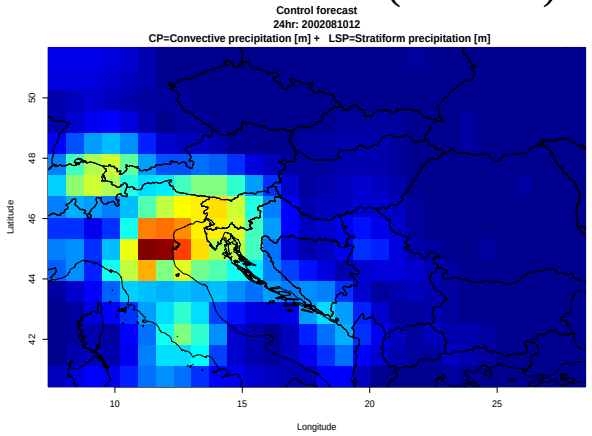
Konrad Bogner, Mauro del Medico, Peter Salamon, Jutta Thielen

Outline

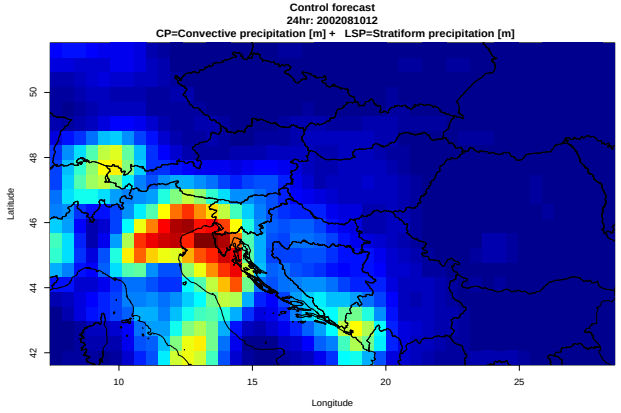
- COSMO-LEPS results of the PREVIEW case study (Danube catchment)
- Comparison COSMO-LEPS and VAREPS
- Preliminary results of running COSMO-LEPS operationally (since July 2008) in EFAS

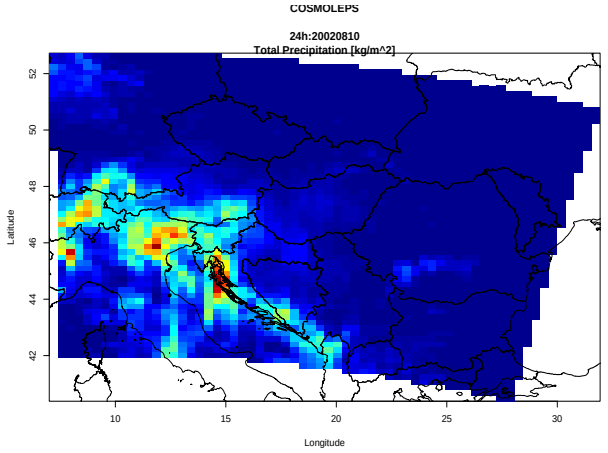
Different precipitation forecasts for the 10.08.2002 (24h Forecast)

EPS Control run (~ 80 km)

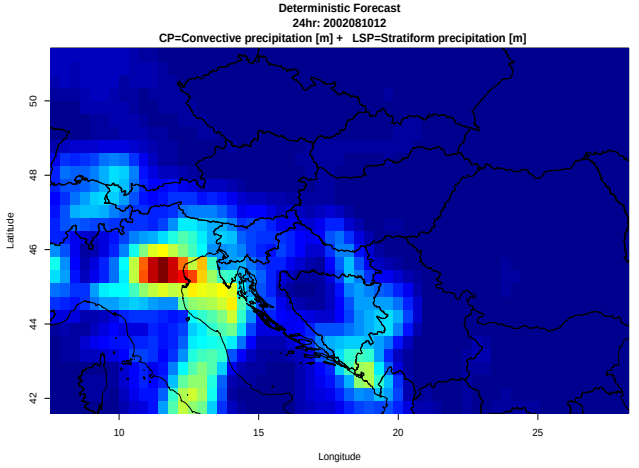


VAREPS Control run (~ 40km)



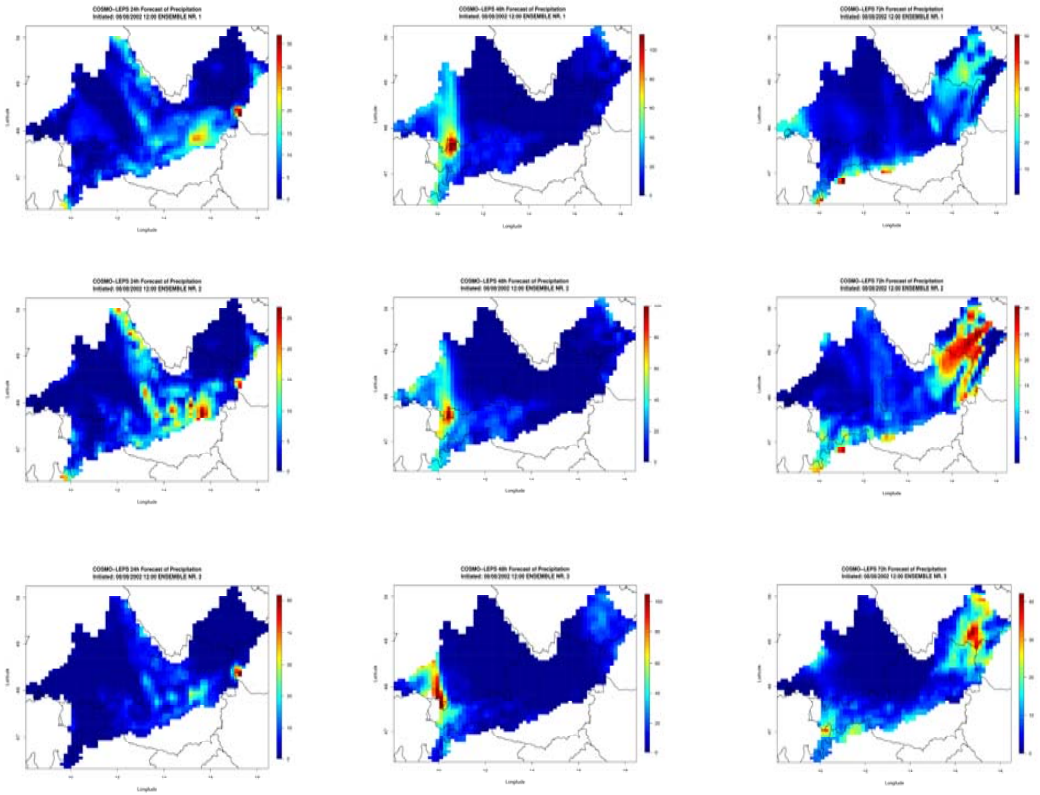


COSMO-LEPS 1 Member (~10 km)



Deterministic Forecast (~40 km)

24h 48h 72h … 120h



Ensemble Nr. 1

Ensemble Nr. 2

Ensemble Nr. 3

Ensemble Nr. 16

Example of COSMO-LEPS precipitation forecast

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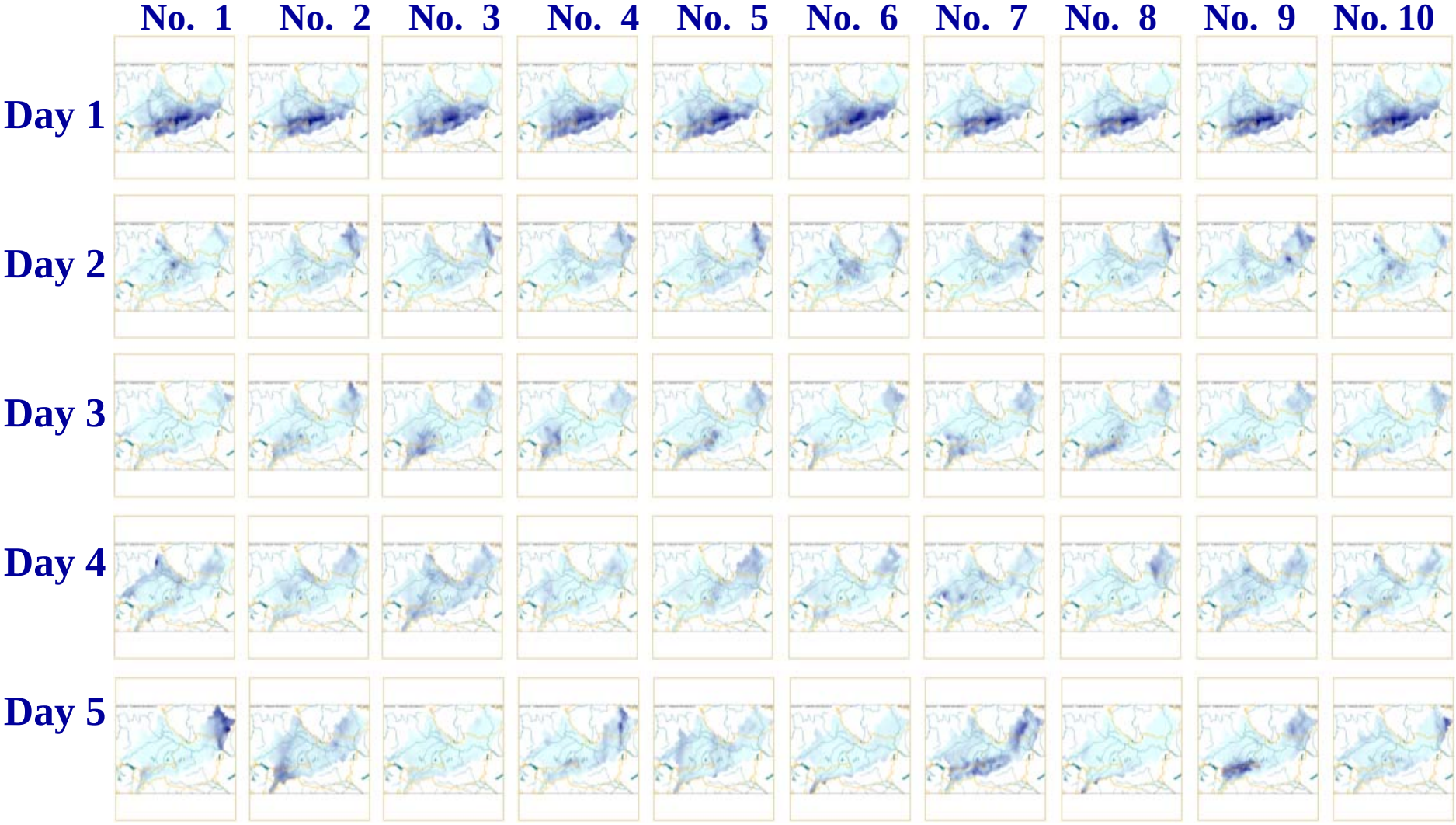
COSMO-LEPS 2002-08-07



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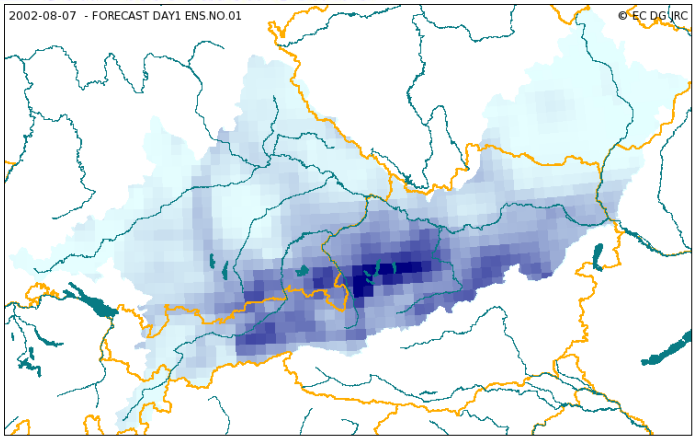

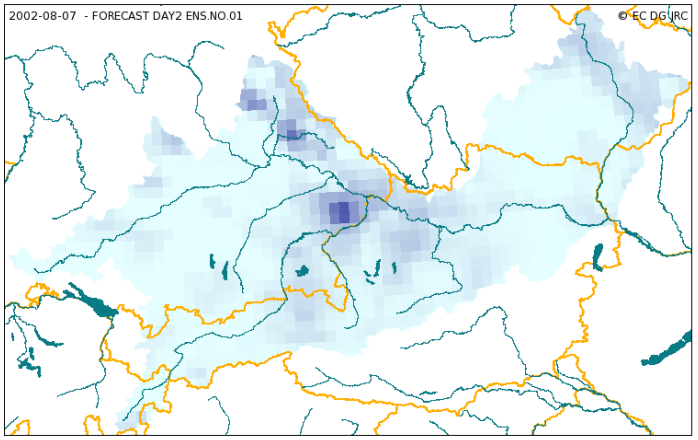

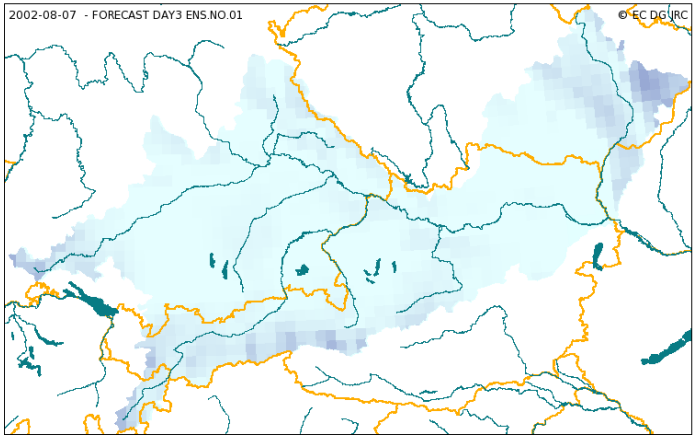

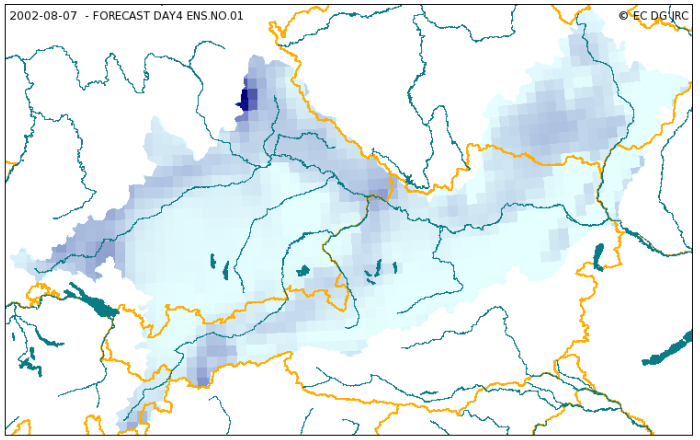

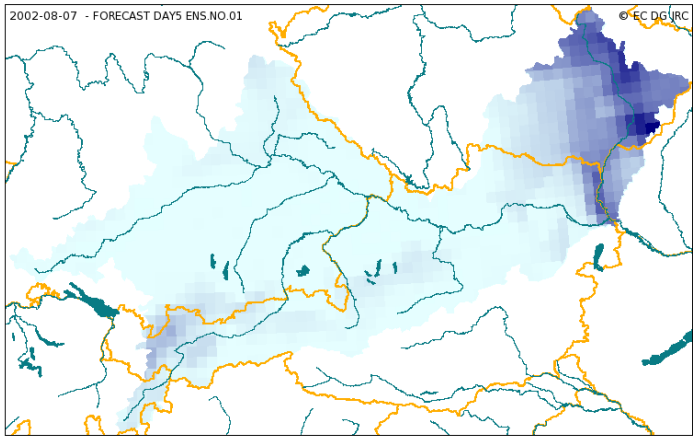

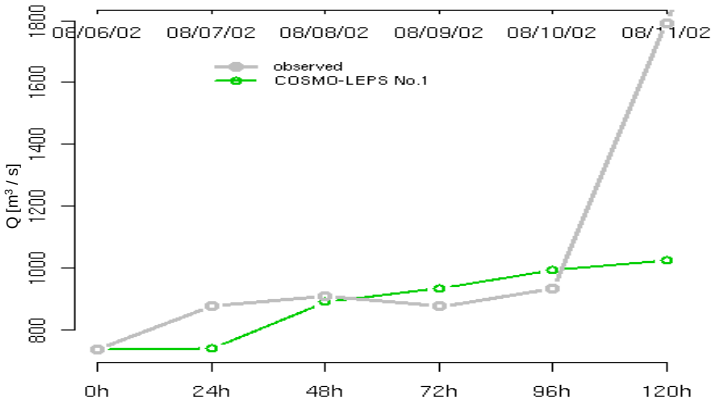

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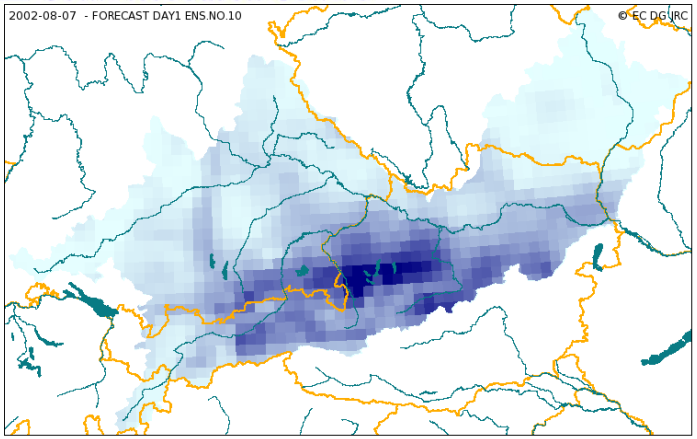

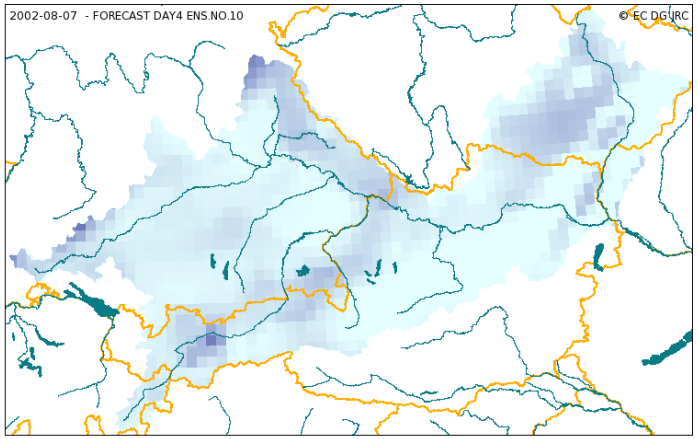

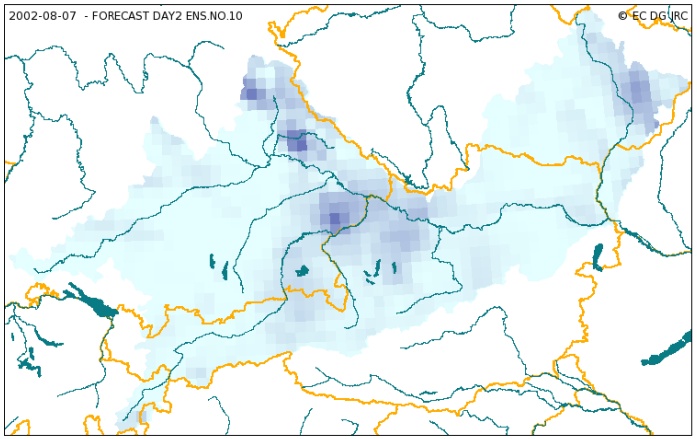

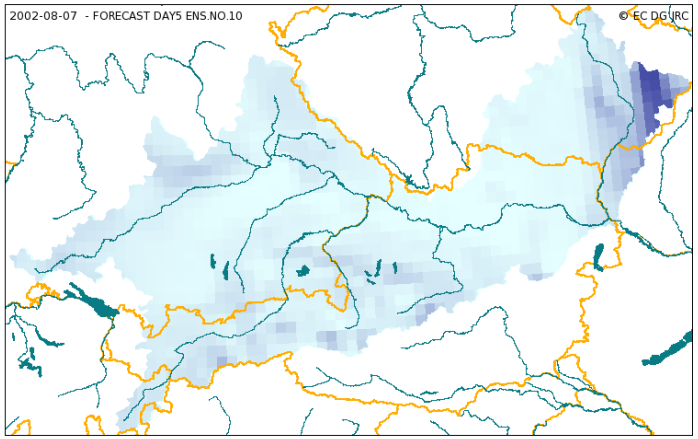

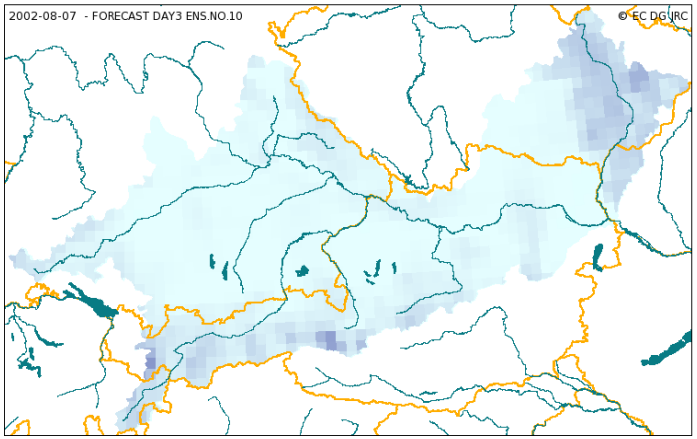

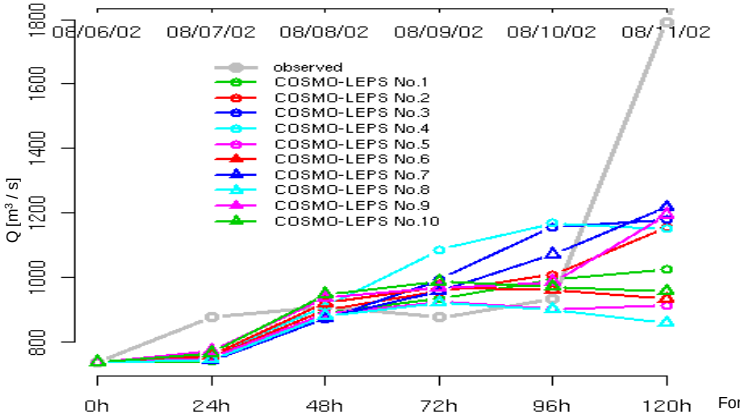

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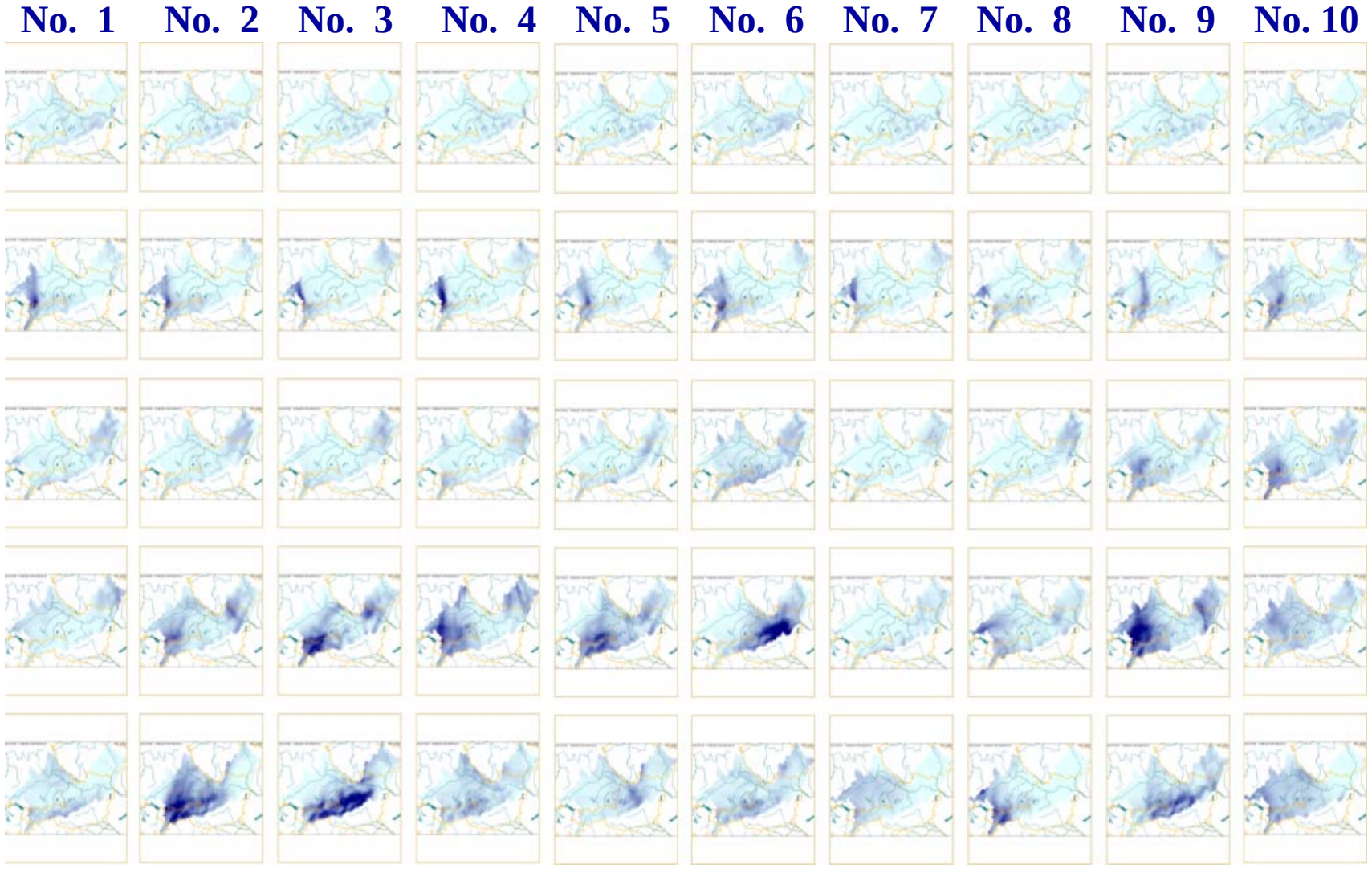
COSMO-LEPS 2002-08-08



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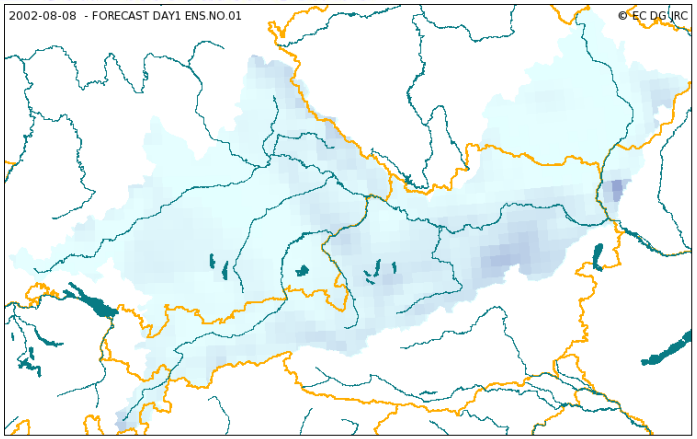

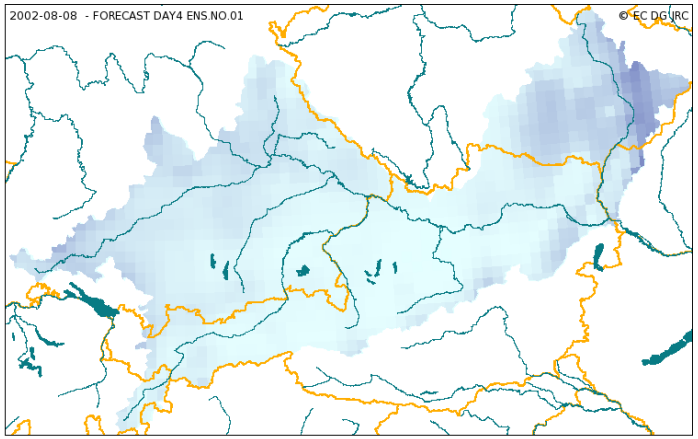

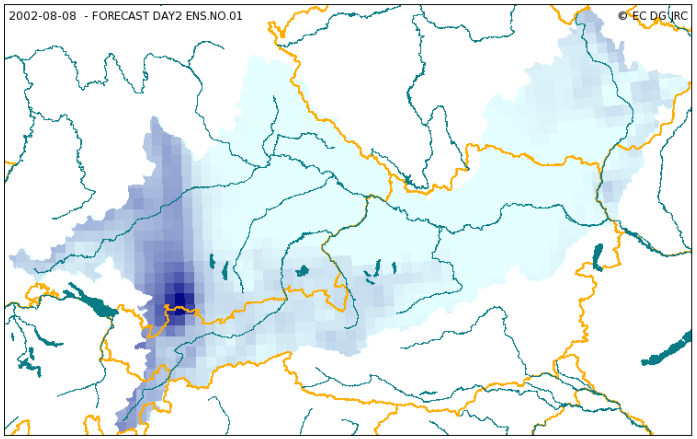

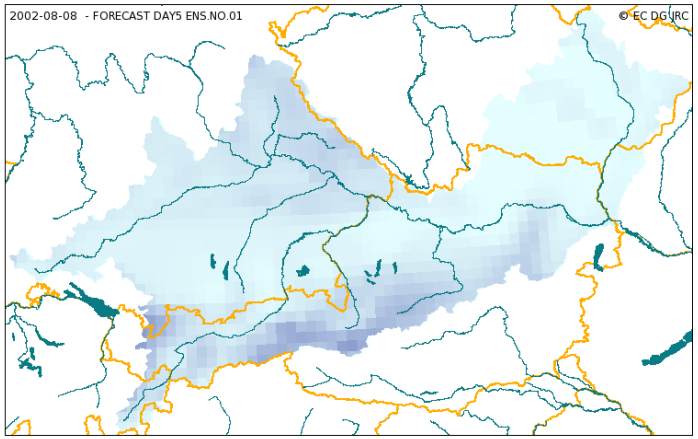

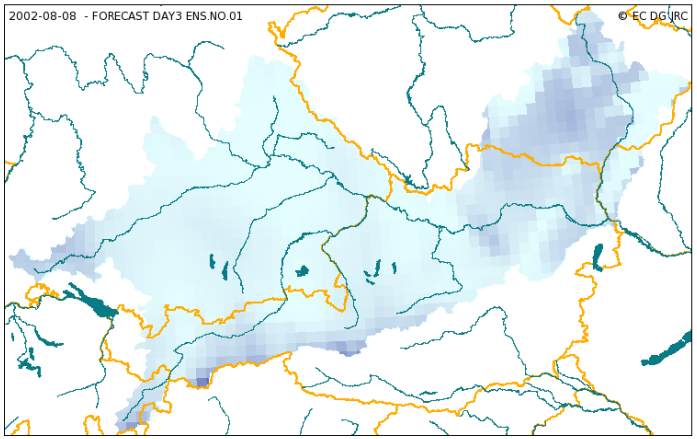

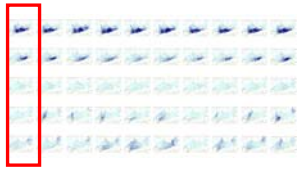

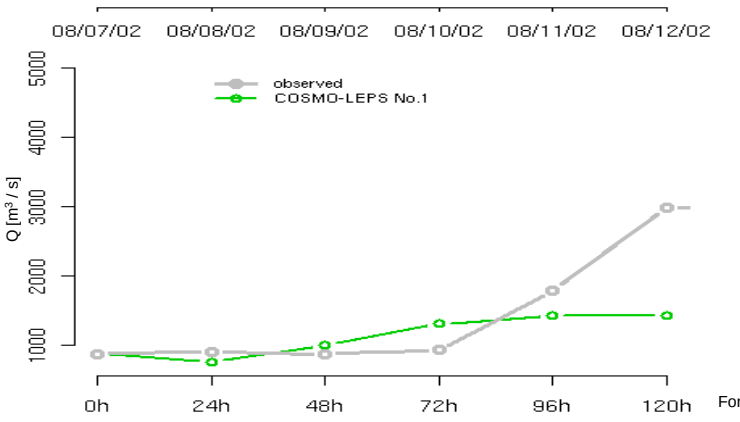

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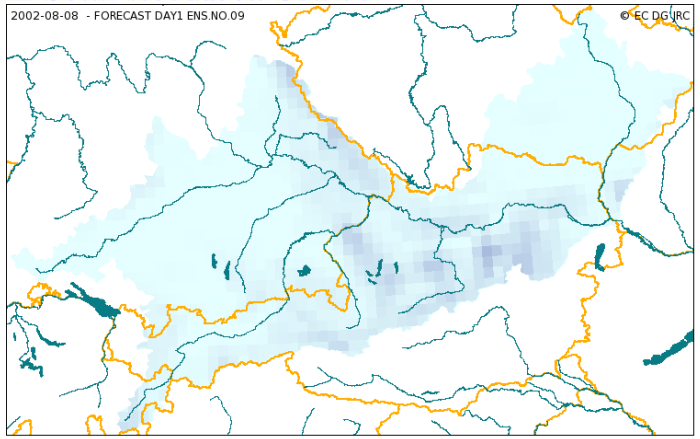

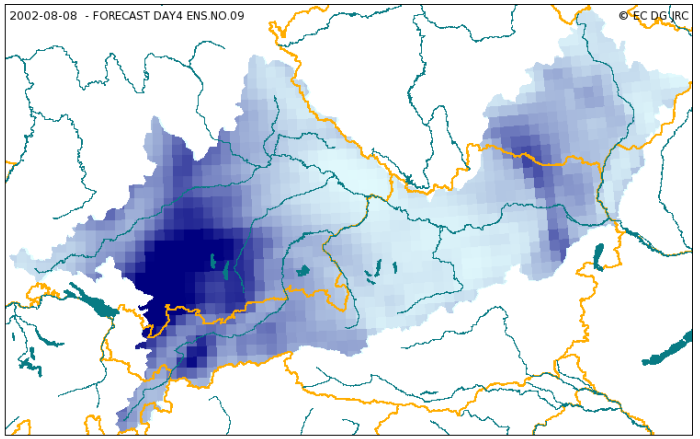

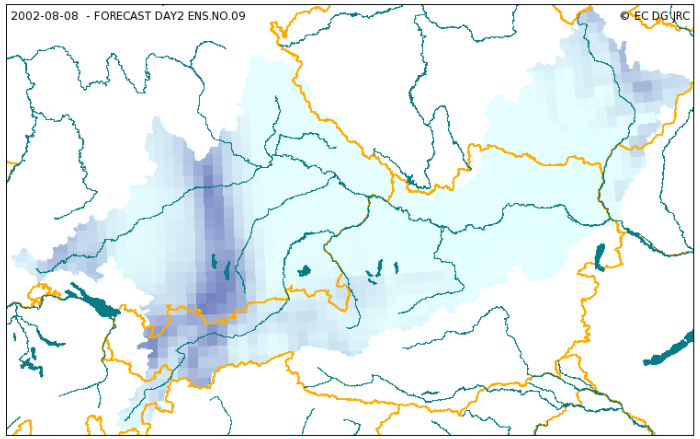

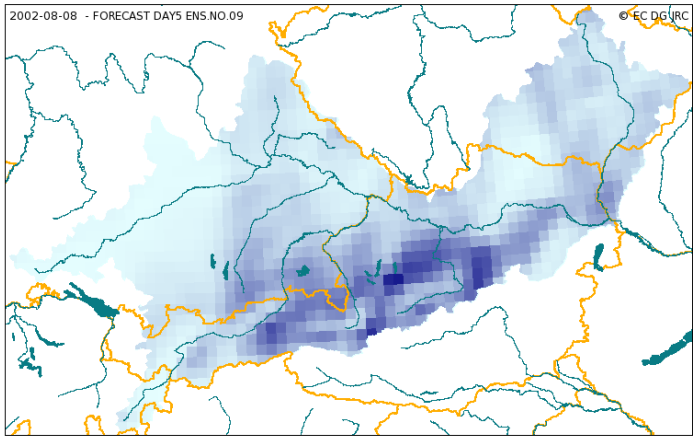

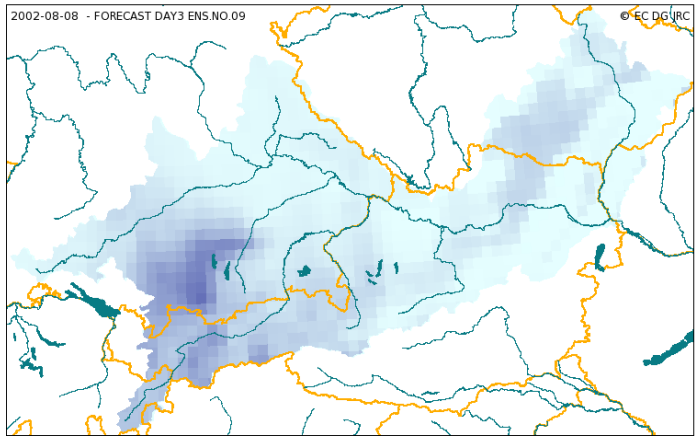

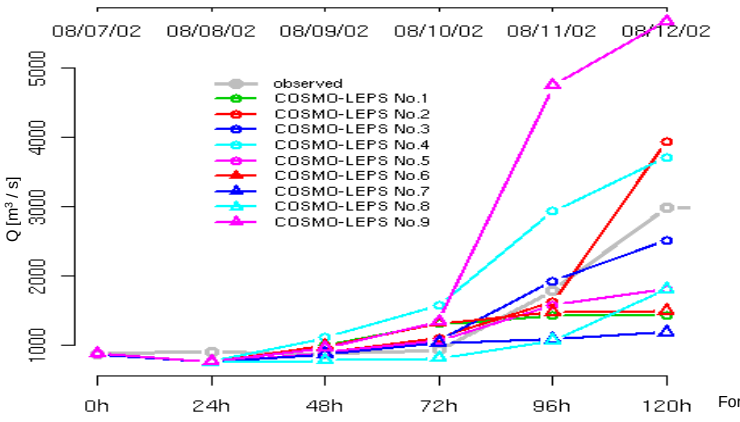

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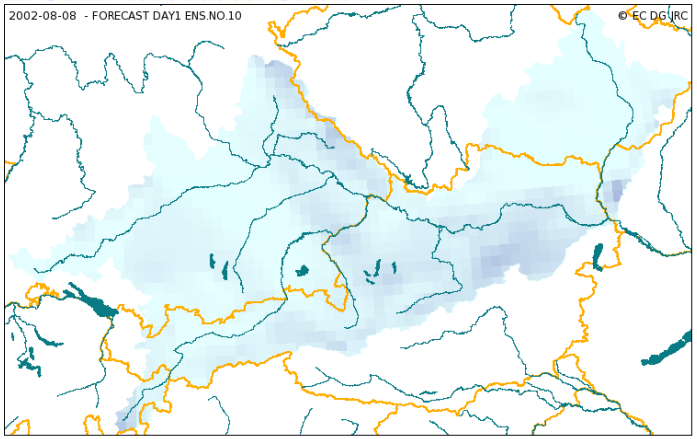

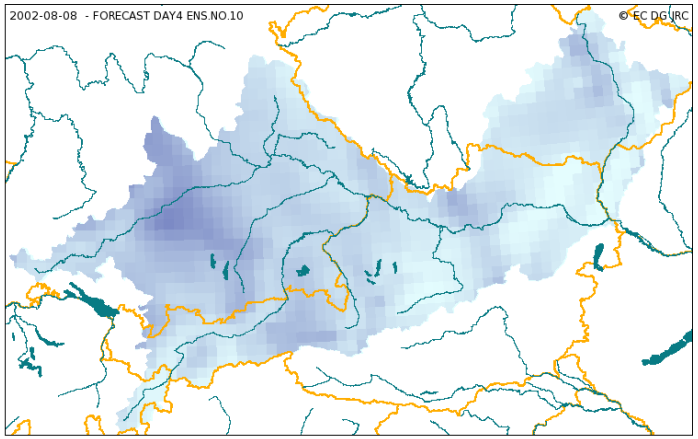

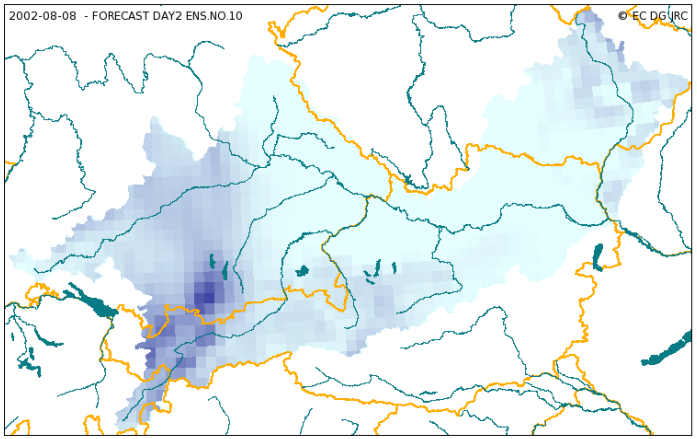

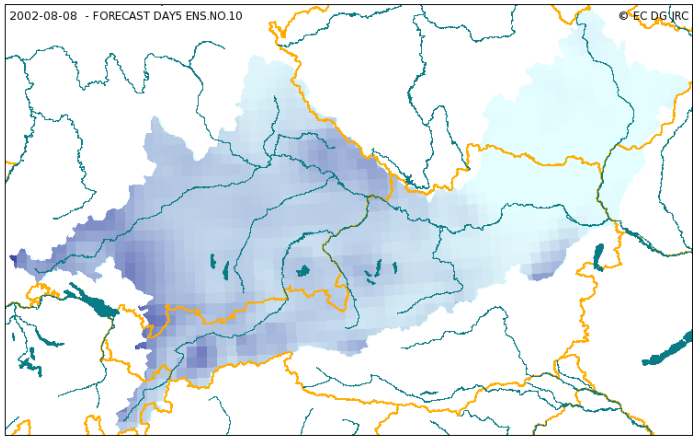

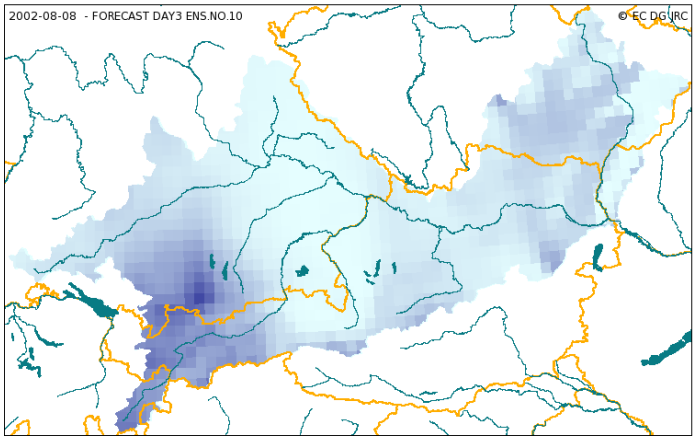

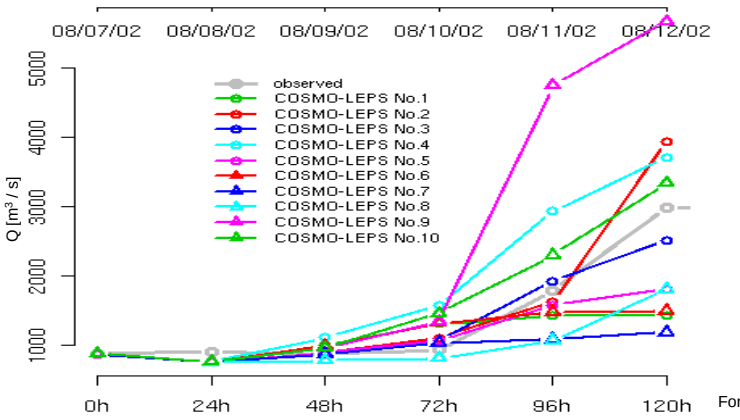

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Forecast from 08/06/2002 & 08/07/2002

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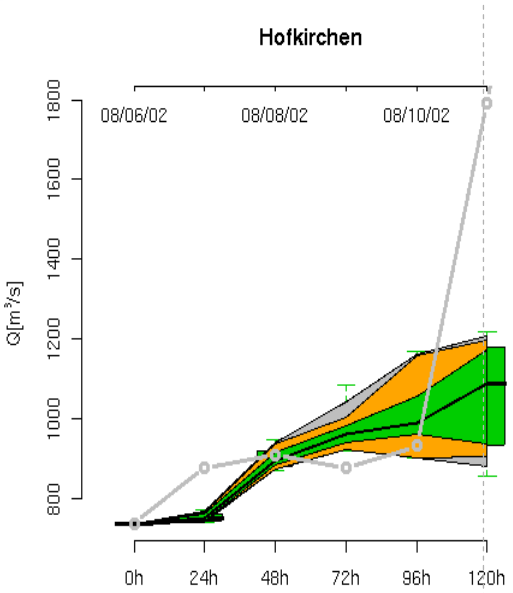
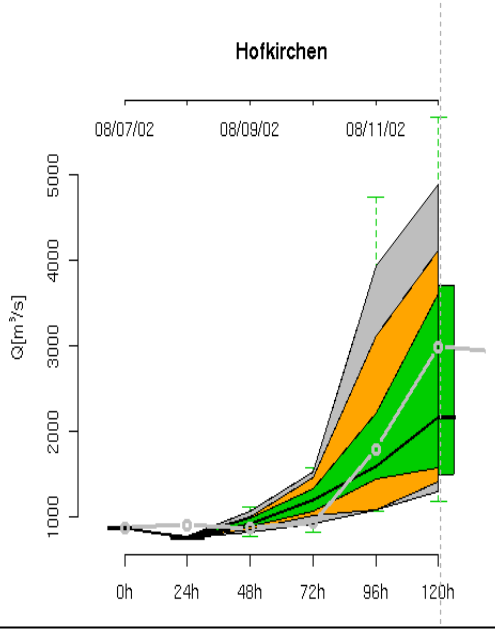
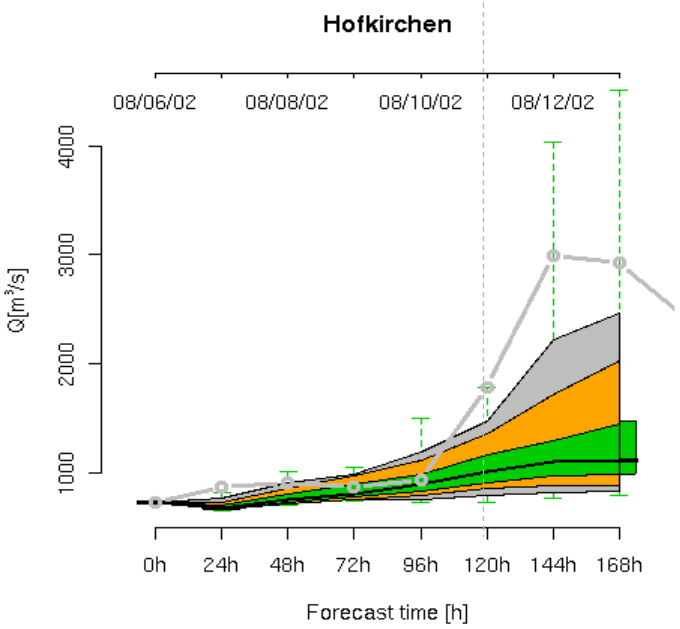
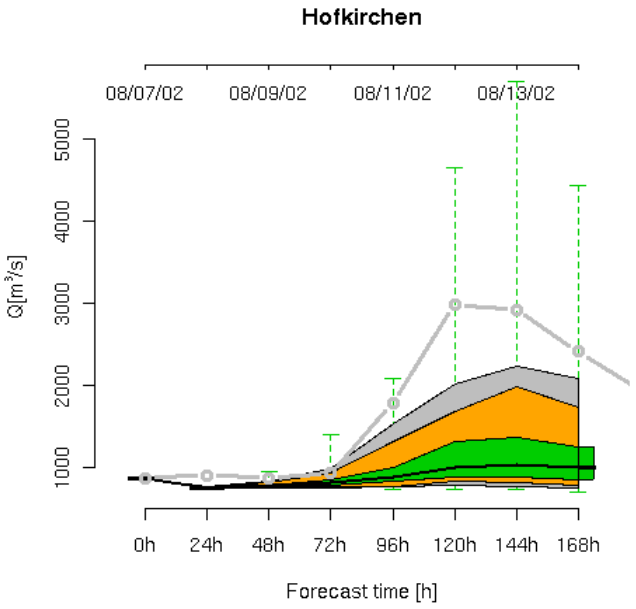




VAREPS





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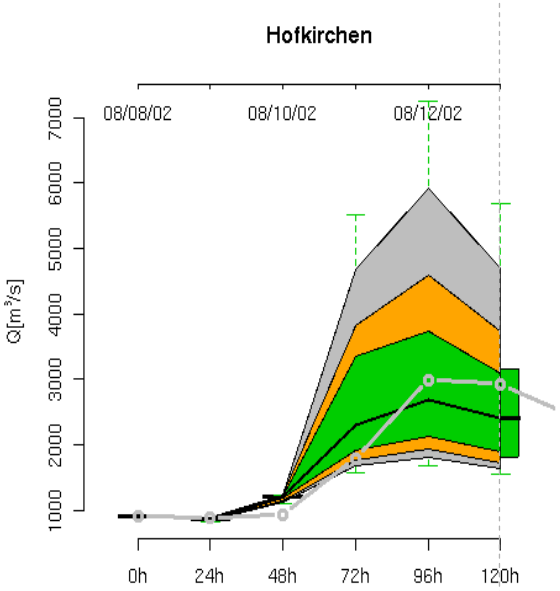
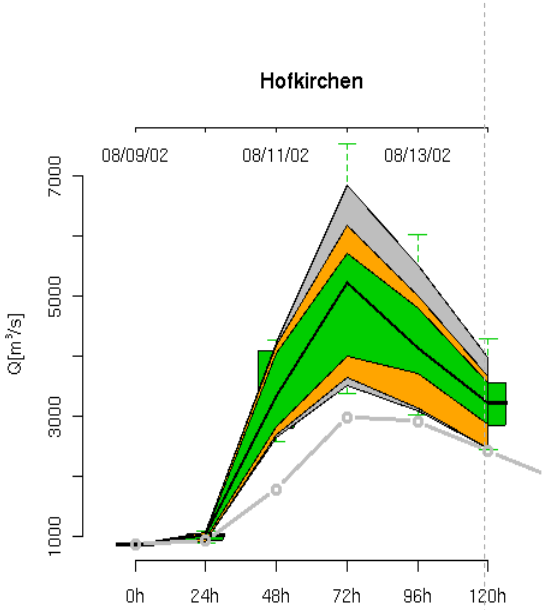
Forecast from 08/08/2002 & 08/09/2002

COSMO-LEPS





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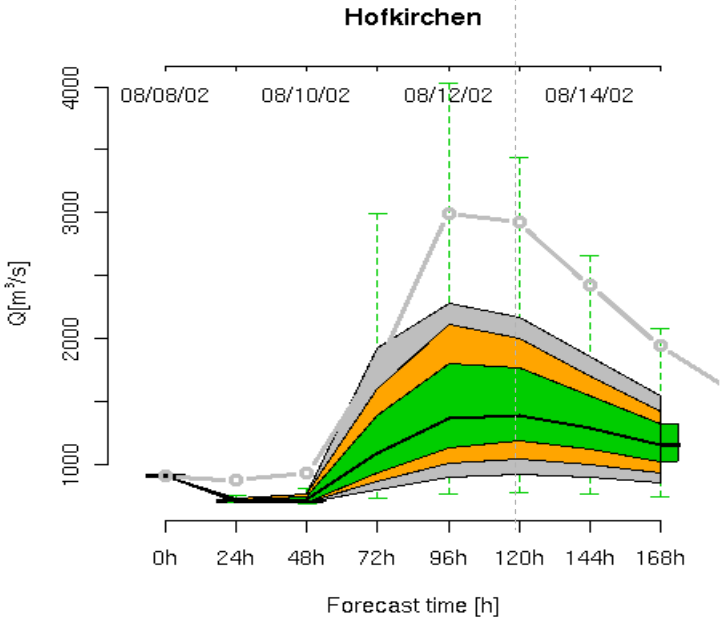
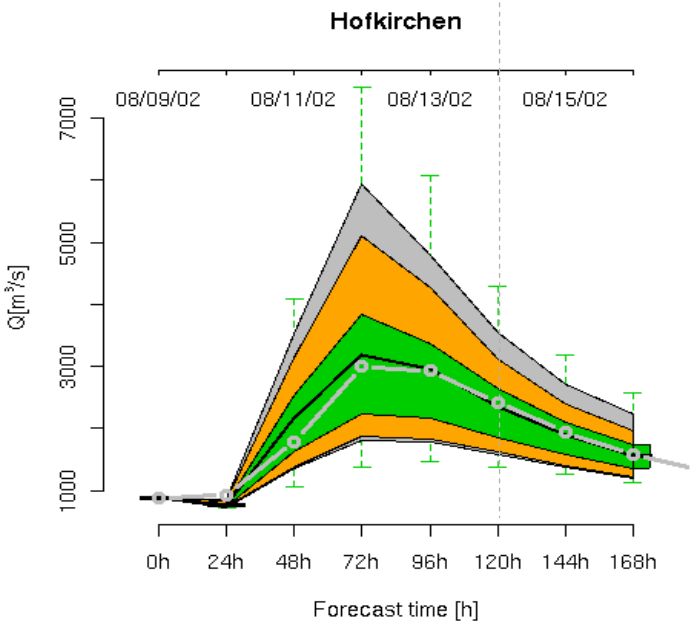
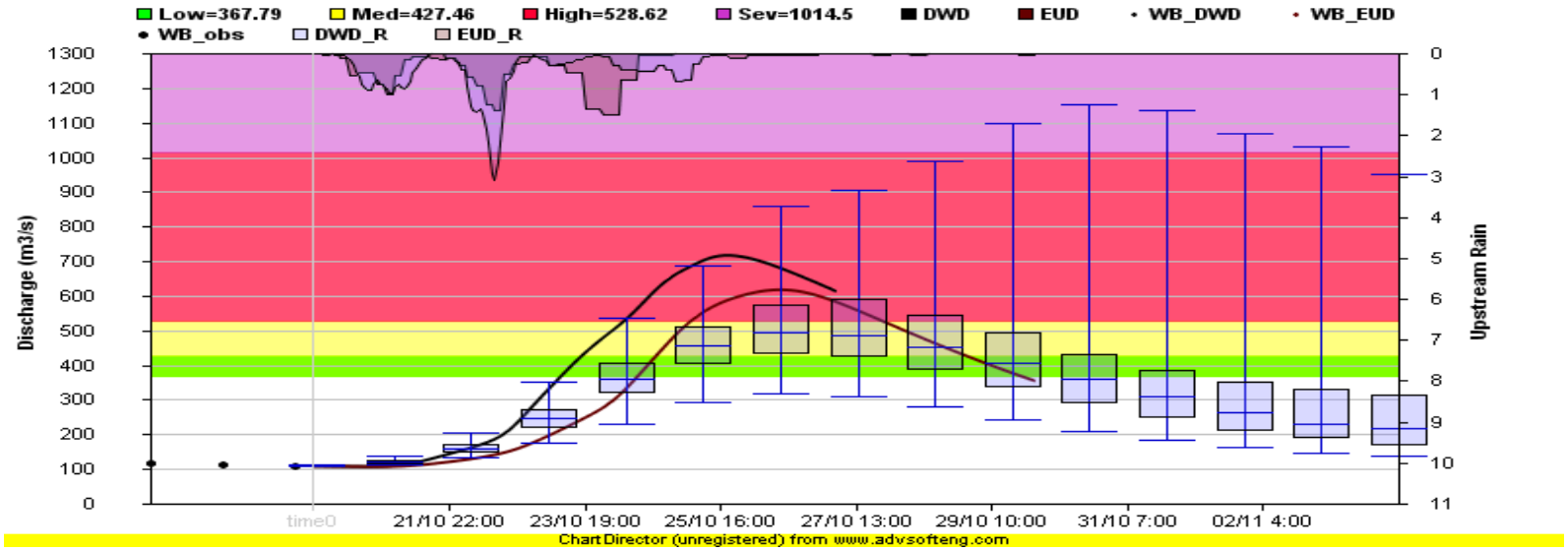
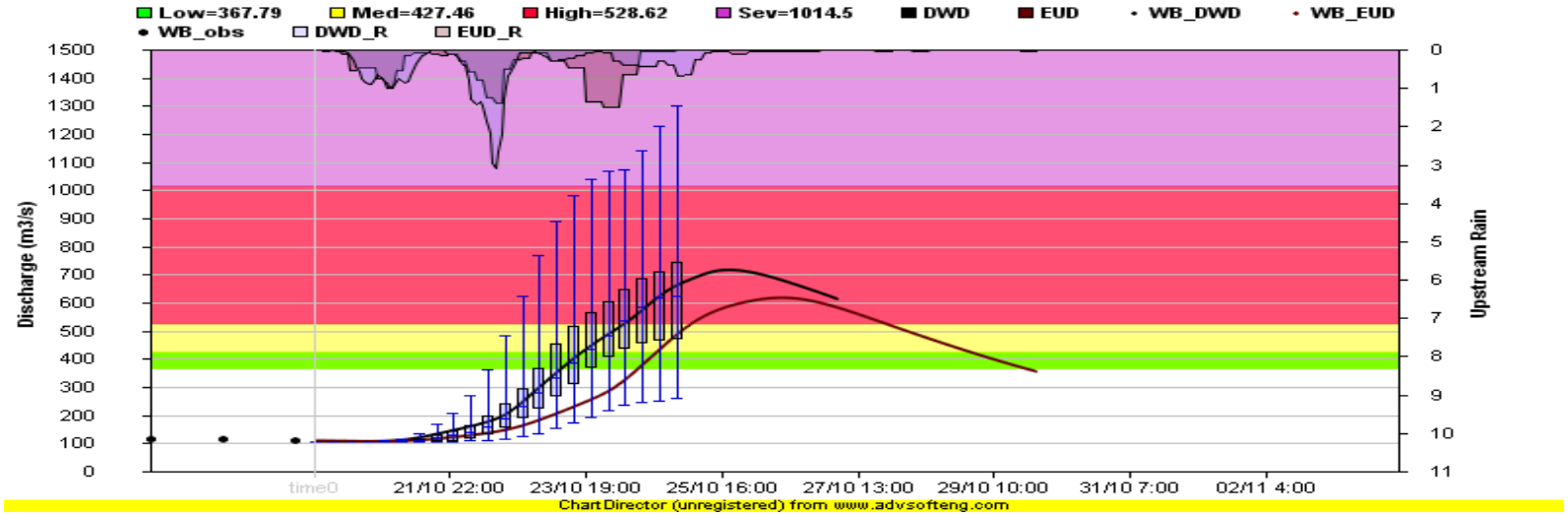




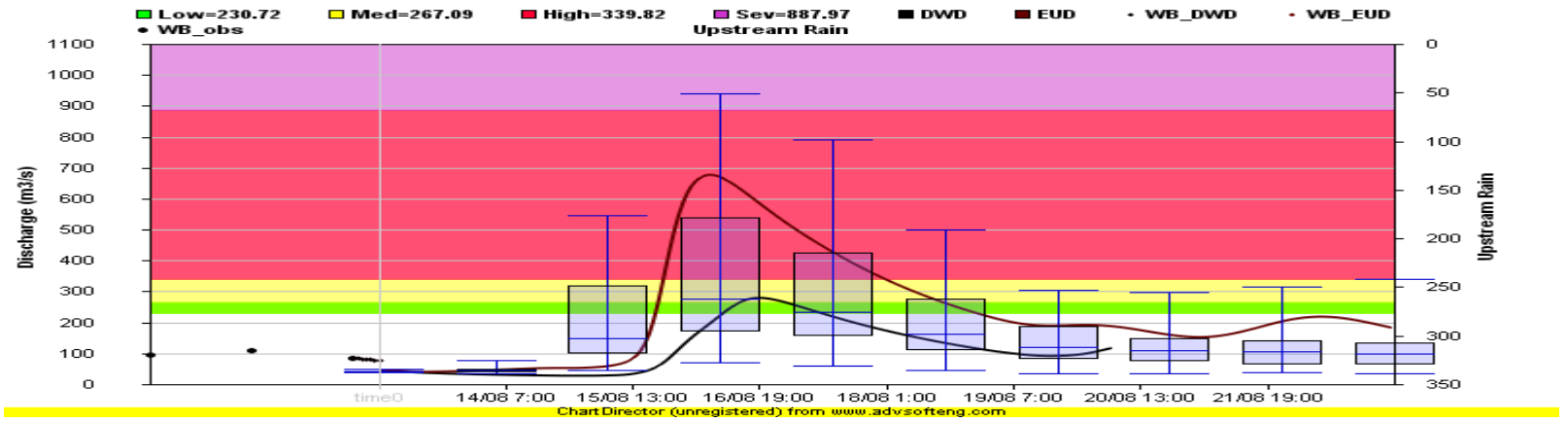
Summary of this case study

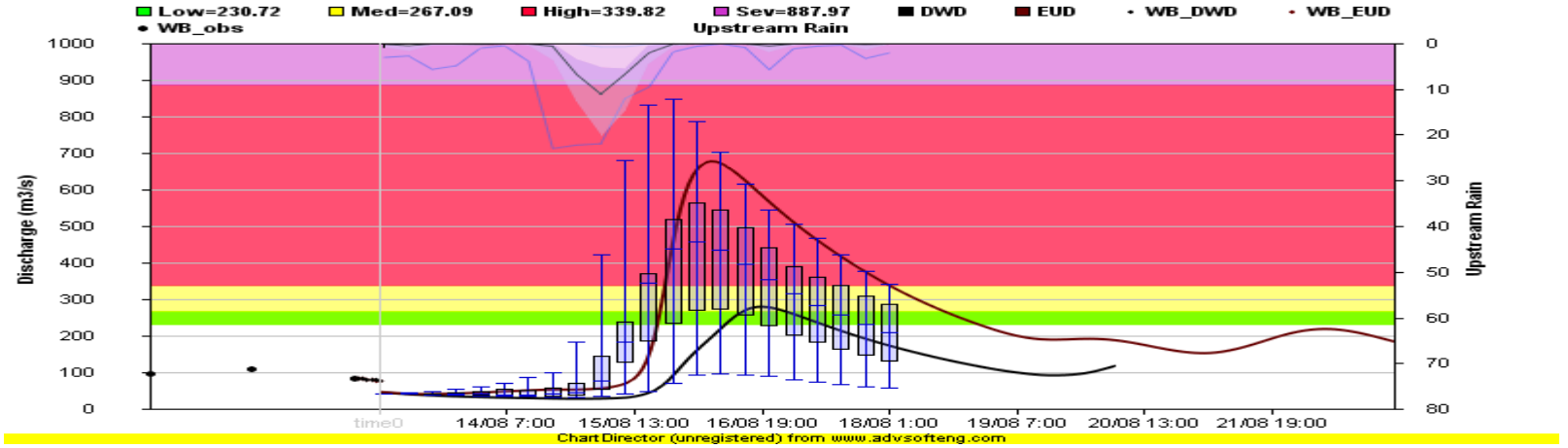
- 6 days before the flood peak occurred 1 out of 51 Ensemble members of VAREPS indicated the possibility of flooding
- Forecasts based on COSMO-LEPS predicted already 5 days before the actual flood occurred the timing of the peak and the peak discharge with very high probability (but still only 1 member from VAREPS!!)
- 3 days before the flood event both EPS's show the high probability of the flood, although COSMO-LEPS is overestimating



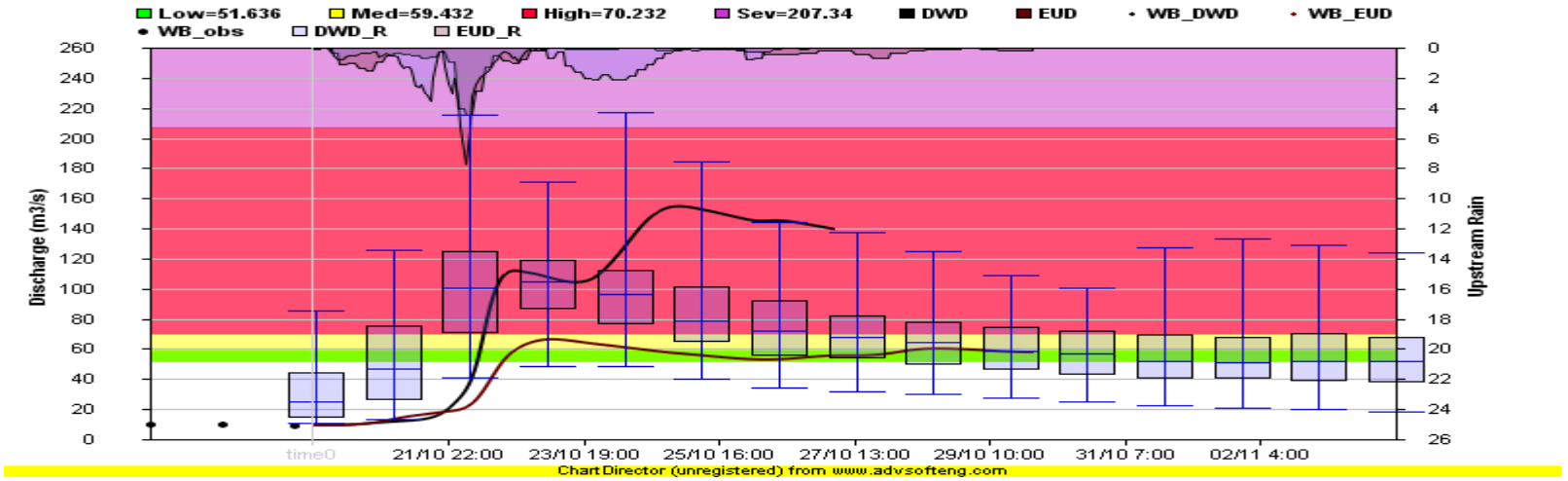


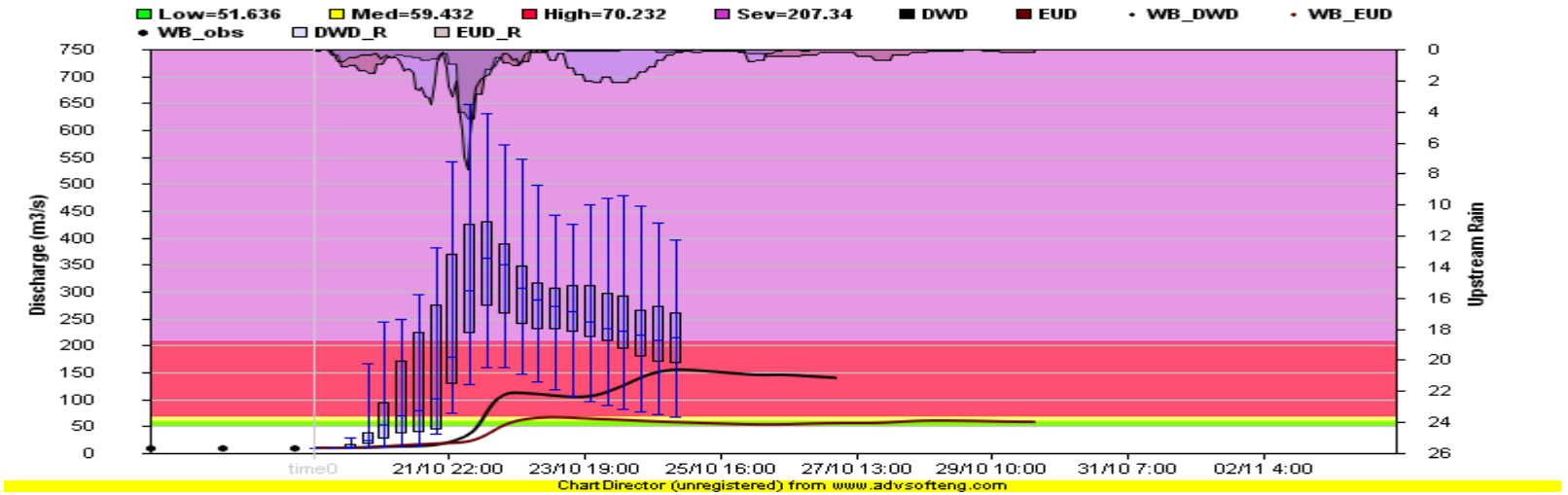
Siret (Romania) 2007/08/20 ~35000 km^2





Enns (Austria): 2008/13/08 ~5000 km^2





Jiu (Romania) 2007/08/20 ~10000 km^2

General Conclusions

- In an EPS all members should be considered to have equal probability
- Regarding floods it could be dangerous to neglect “Outliers”
- It is necessary to combine different forecast systems (deterministic and probabilistic) in order to increase reliability
- Local forecasters should have the possibility to use all information available

First conclusions regarding COSMO-LEPS

- Mostly the median discharge forecasted by the use of COSMO-LEPS lies somewhere in between the DWD and the ECMWF deterministic forecasts
- The higher resolution of the COSMO-LEPS improves the predictability of small scale events (regarding timing of the peak and its spatial localization)
- For a more detailed verification of the quality of the COSMO-LEPS based forecasts a longer testing period is necessary, in particular for statistical assessment