



# Comparison of catchment and grid based model evaluation on the example of the Danube 2002 flood

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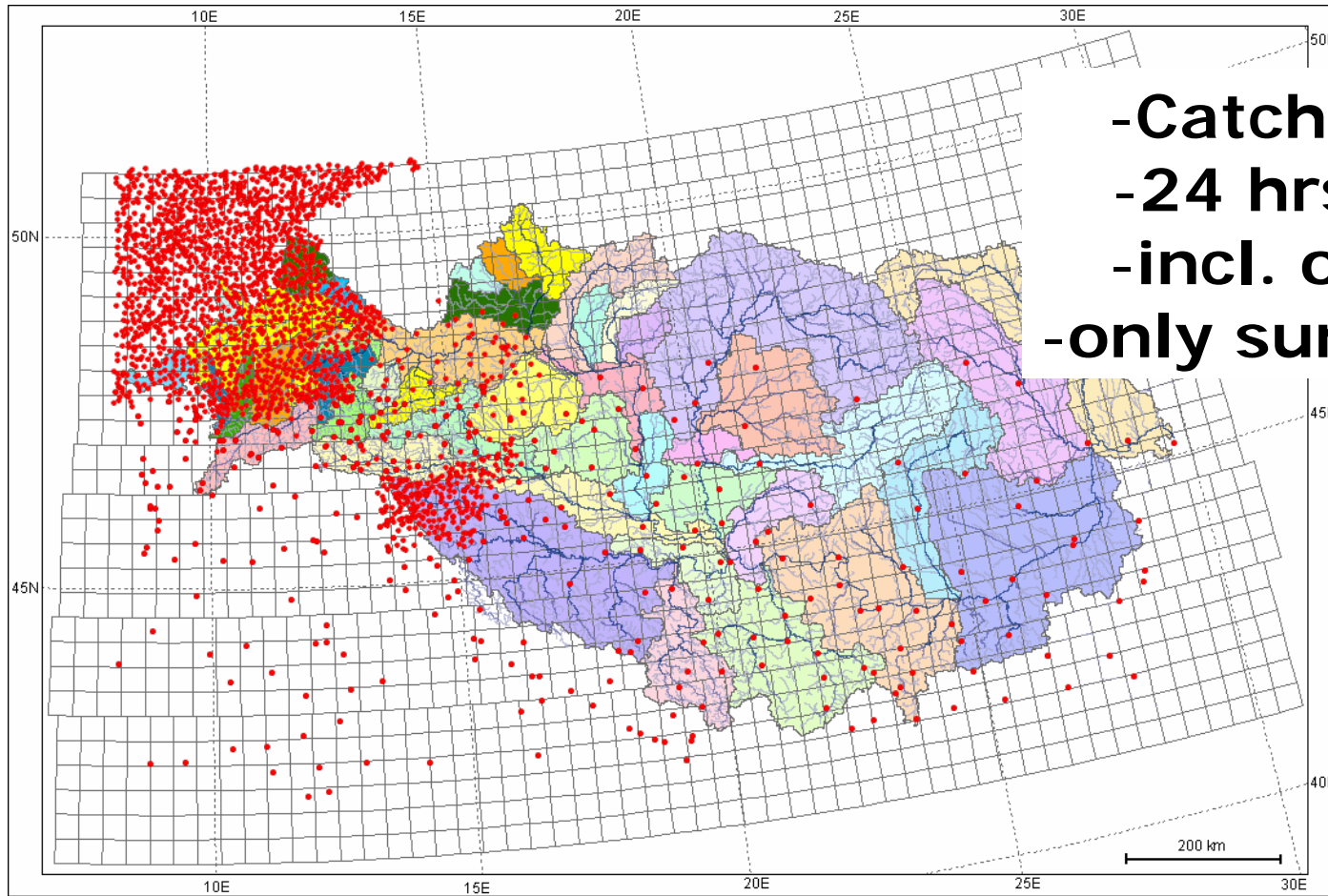


# Topics

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1. Evaluation of the precip forecast for the Danube 2002 flood under observational uncertainties
2. The value of EPS for Global Flood Forecasting (indicative study)
3. New products at ECMWF

# Evaluating under observational uncertainties

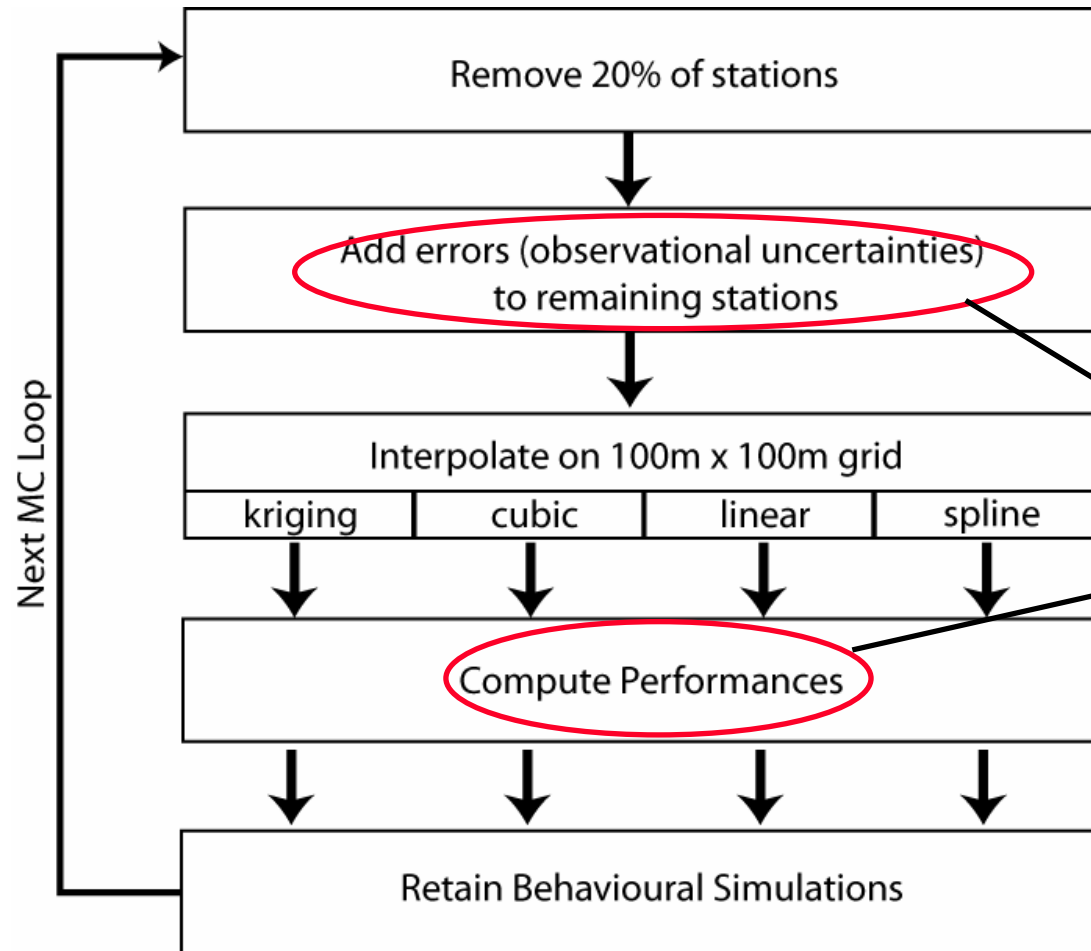


- Catchment averages
- 24 hrs accum precip
- incl. obs uncertainty
- only summer flood 2002



# Consider uncertainty in obs

**Currently  
Scaling  
ignored**



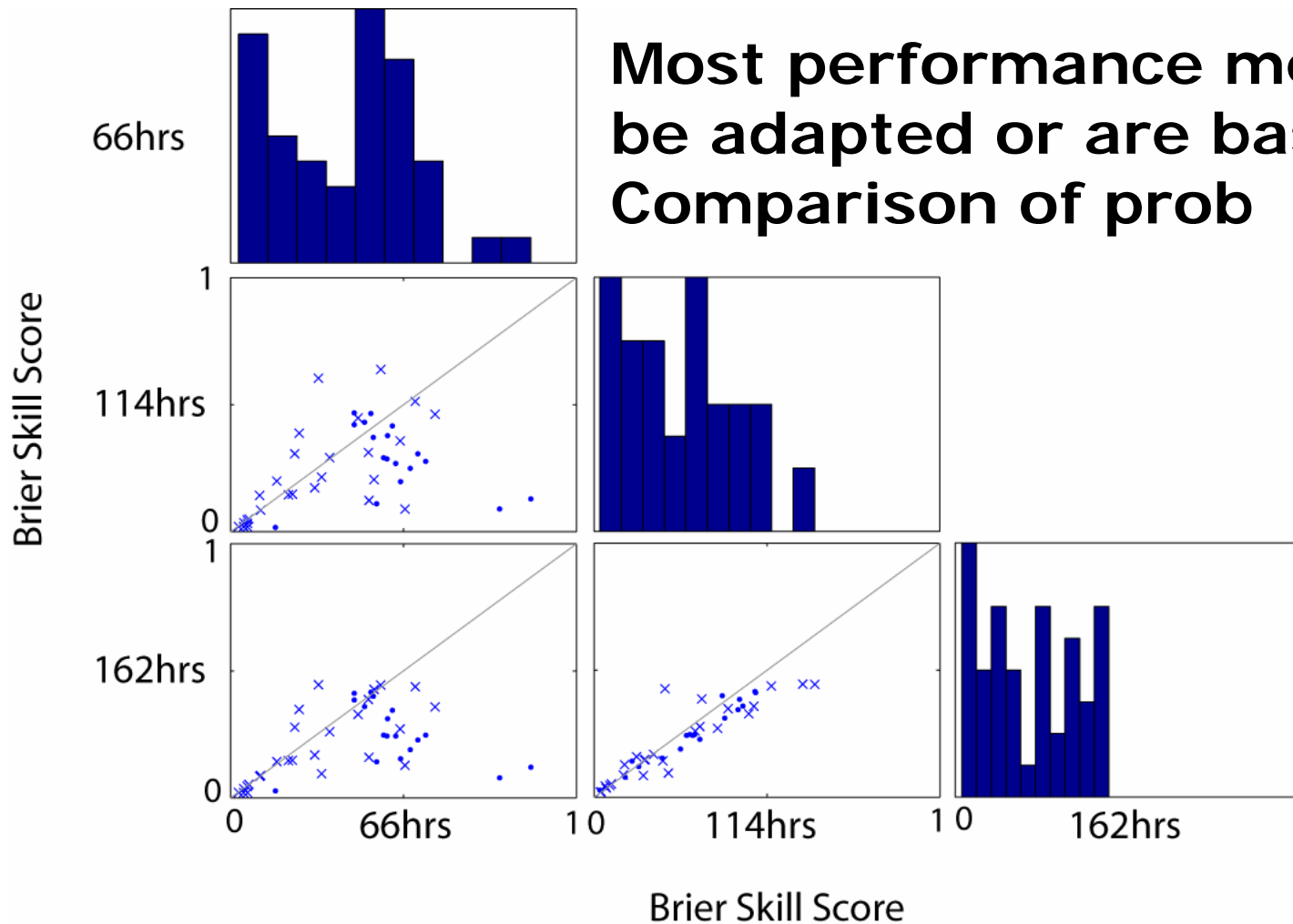
**Based on  
simplified  
error  
assumptions**

**Pdf of obs aver. precip**



# Obs uncertainty evaluation

**Most performance measures can be adapted or are based on the Comparison of prob distributions**





# Conclusions for evaluating the Danube 2002 flood under obs uncertainty

- Obs uncertainty can be included in evaluation
- The precip forecast for the 2002 flood has been skill full (if evaluated under obs uncertainty)
- Uncertainty in obs improves the BSS (more spread)



# Current meteo type evaluation – need for user oriented evaluation.

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Examples:

- Field (T 850hP vs precip)
- Domain (Catchments not continents)
- Smoothing (90 day averages relevant?)
- Accumulation (not 24hrs accum, but over forecast)
- Climatology (not many extremes)
- Thresholds (are they hydro relevant?)

# Global Flood forecasting with EPS

Evaluate all major floods in the last 6 years (2001-2006)

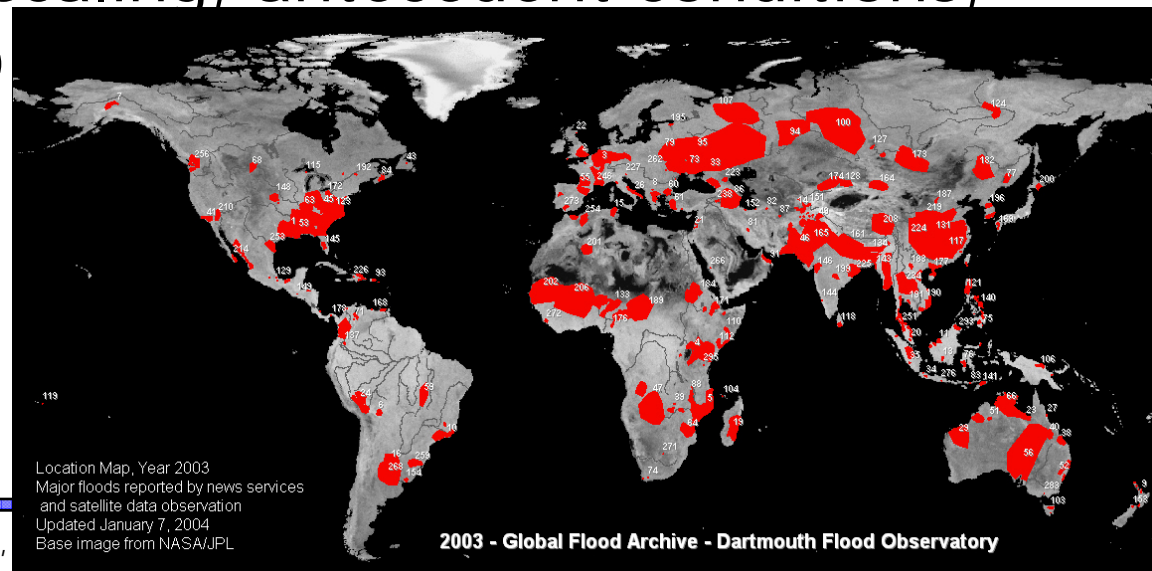
**Aim:** GFF possible? & EPS behaviour at end of cdf

**Method:** Raided Dartmouth Flood Observatory

**Conditions:** last 3 days, at least 3 stations in ECMWF system, minimum size (~800 events)

**Challenges:** obs error, uniqueness of place (hydro and meteo), downscaling, antecedent conditions, believe in DFO

**Ignorance  
is bliss  
==  
Ignored all  
challenges**

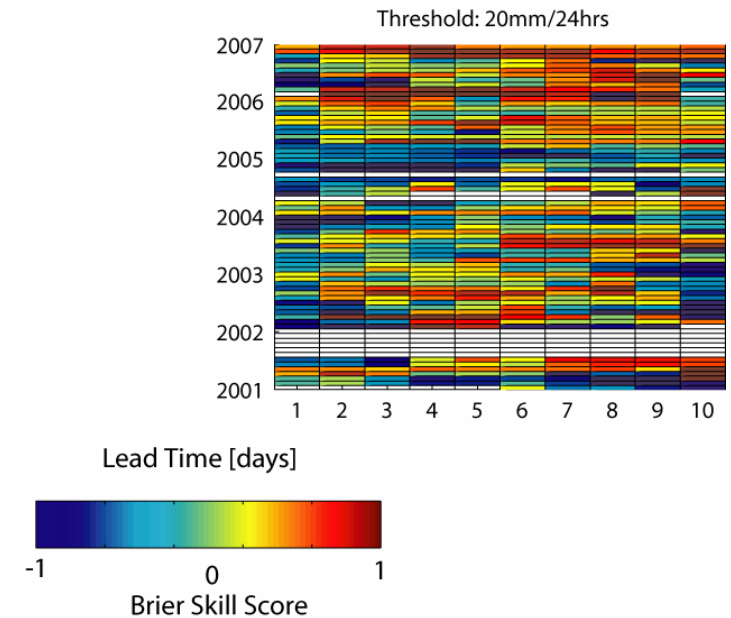




# Global Flood forecasting with EPS

## Conclusions (qualitatively):

- Skill is highly variable (spatial, temporal)
- Low Nr of observations/frequency impacts 'skill score'
- There is predominantly skill at a 3-5 day forecast (BSS 80% >0 compared to a 20a climatology)
- Cost/Loss (assuming UK conditions everywhere) analysis always justifies a global system

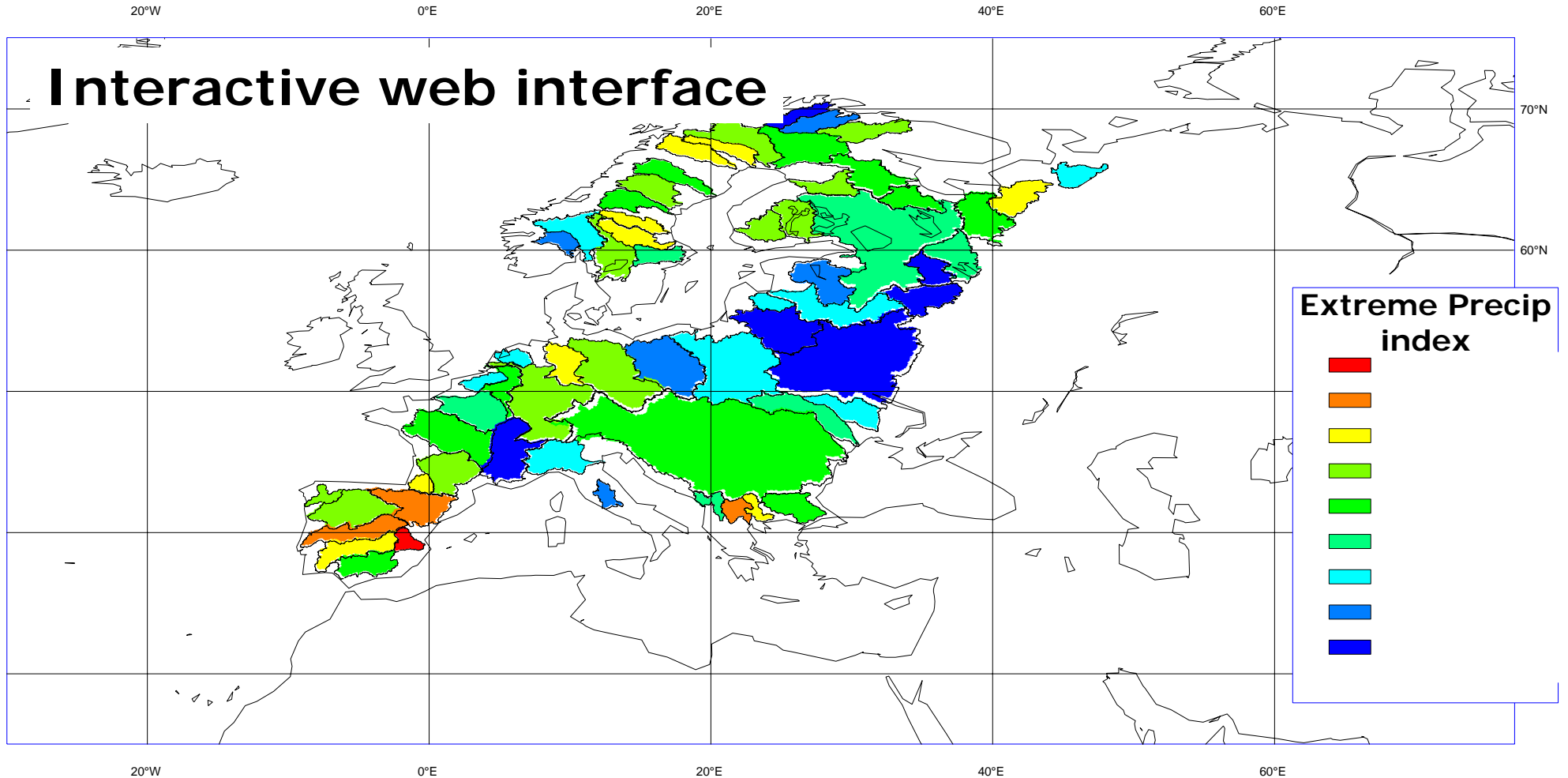




# Products of ECMWF for hydrology

Prototype (only large European Catchments)

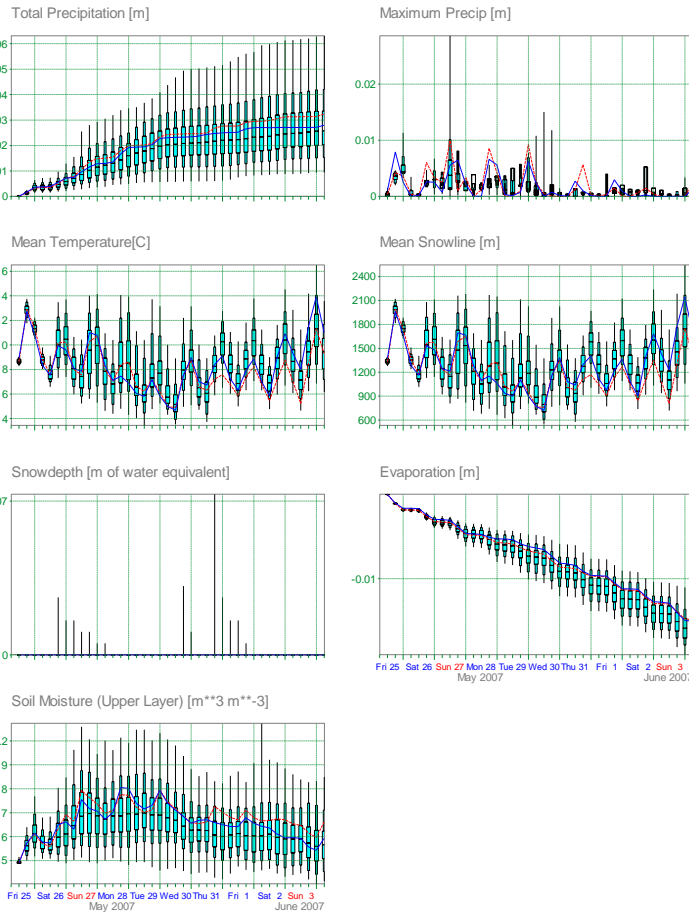
Interactive web interface



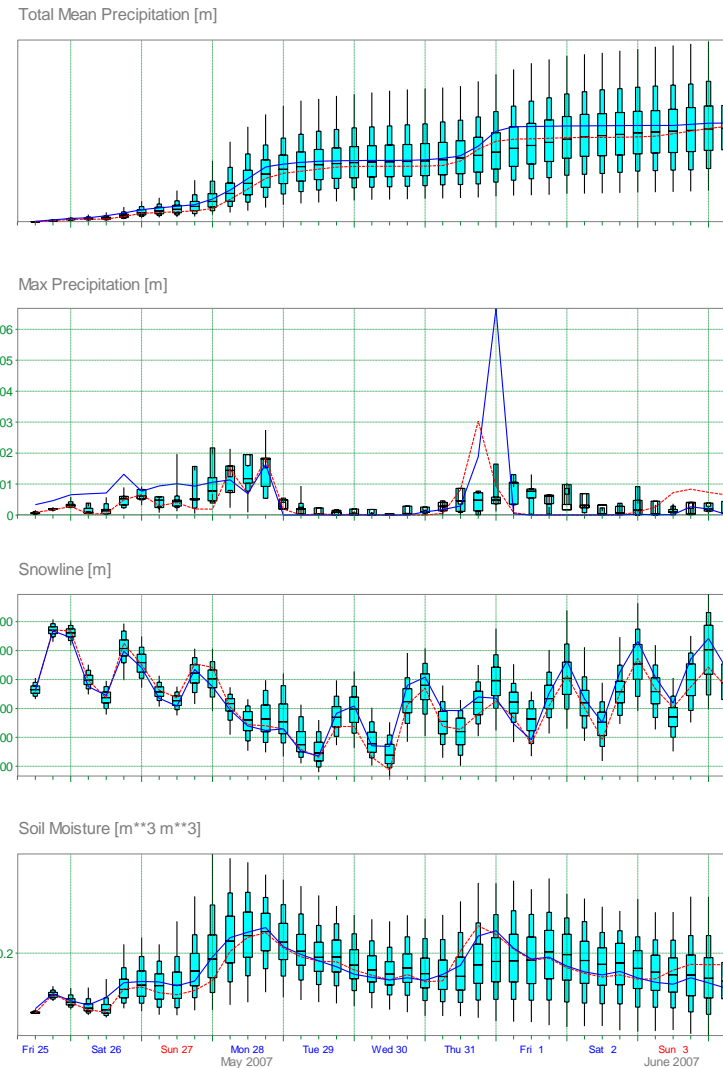


# Products of ECMWF for hydrology

EPS Meteogram  
Catchment: Weser  
Deterministic Forecast and EPS Distribution Friday 25 May 2007 00 UTC



EPS Meteogram  
Catchment Po  
Deterministic Forecast and EPS Distribution Friday 25 May 2007 00 UTC





# Acknowledgements

**Obs Uncertainty**

**ECMWF Products**

**Global Flood**

Thank you!

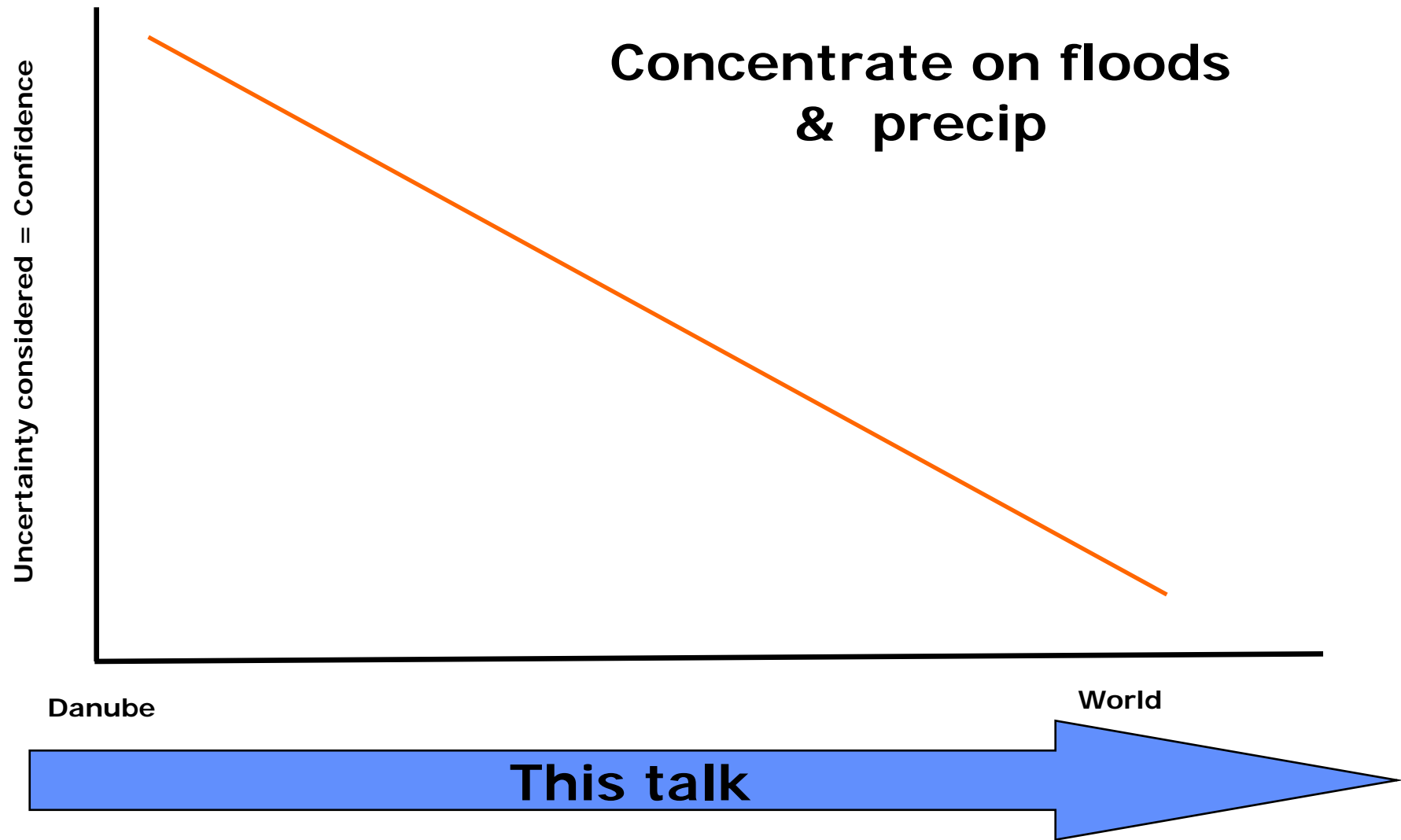
Received funding by the Preview Project  
(EC Framework program, WP Plain Floods)

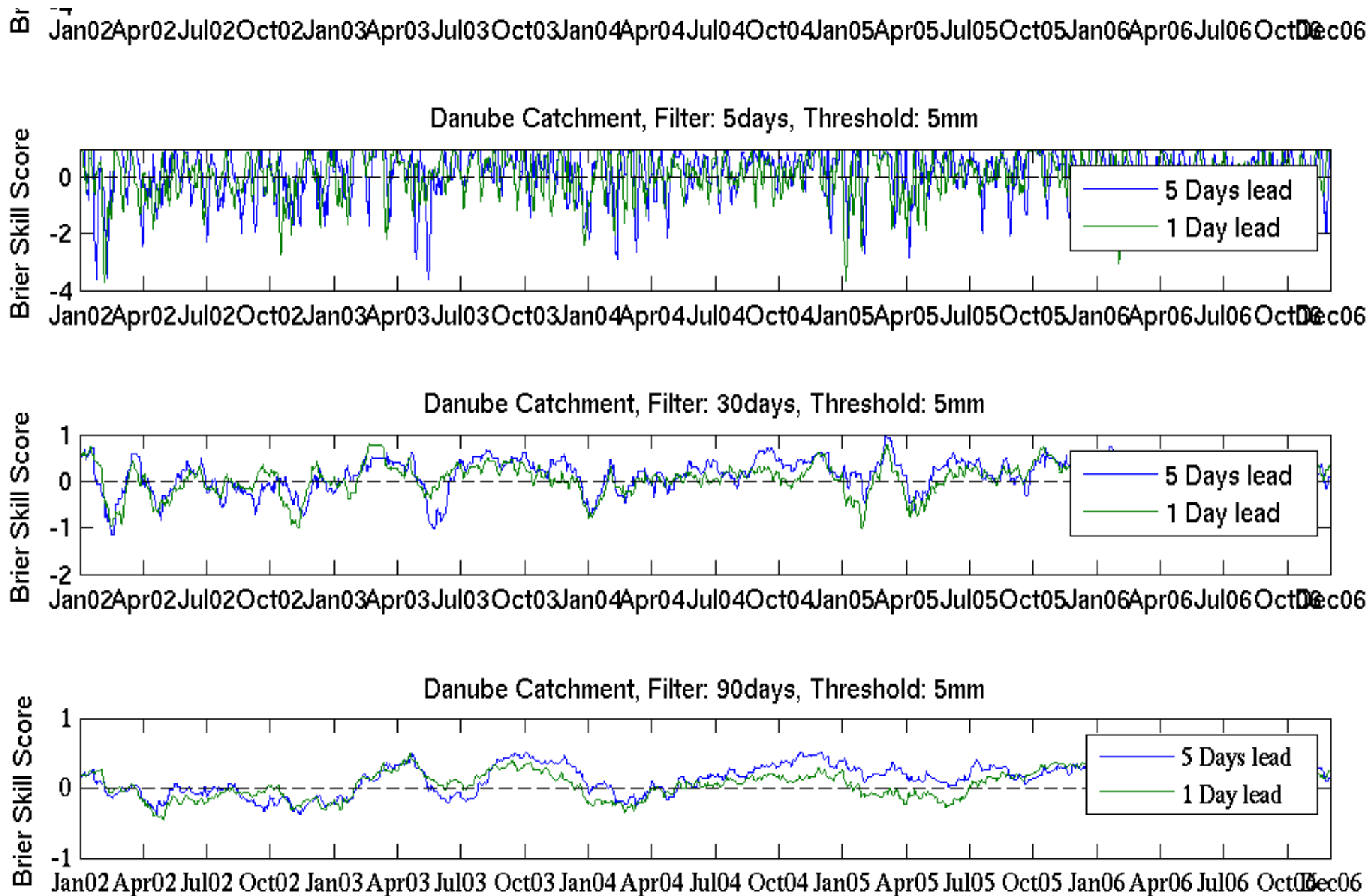






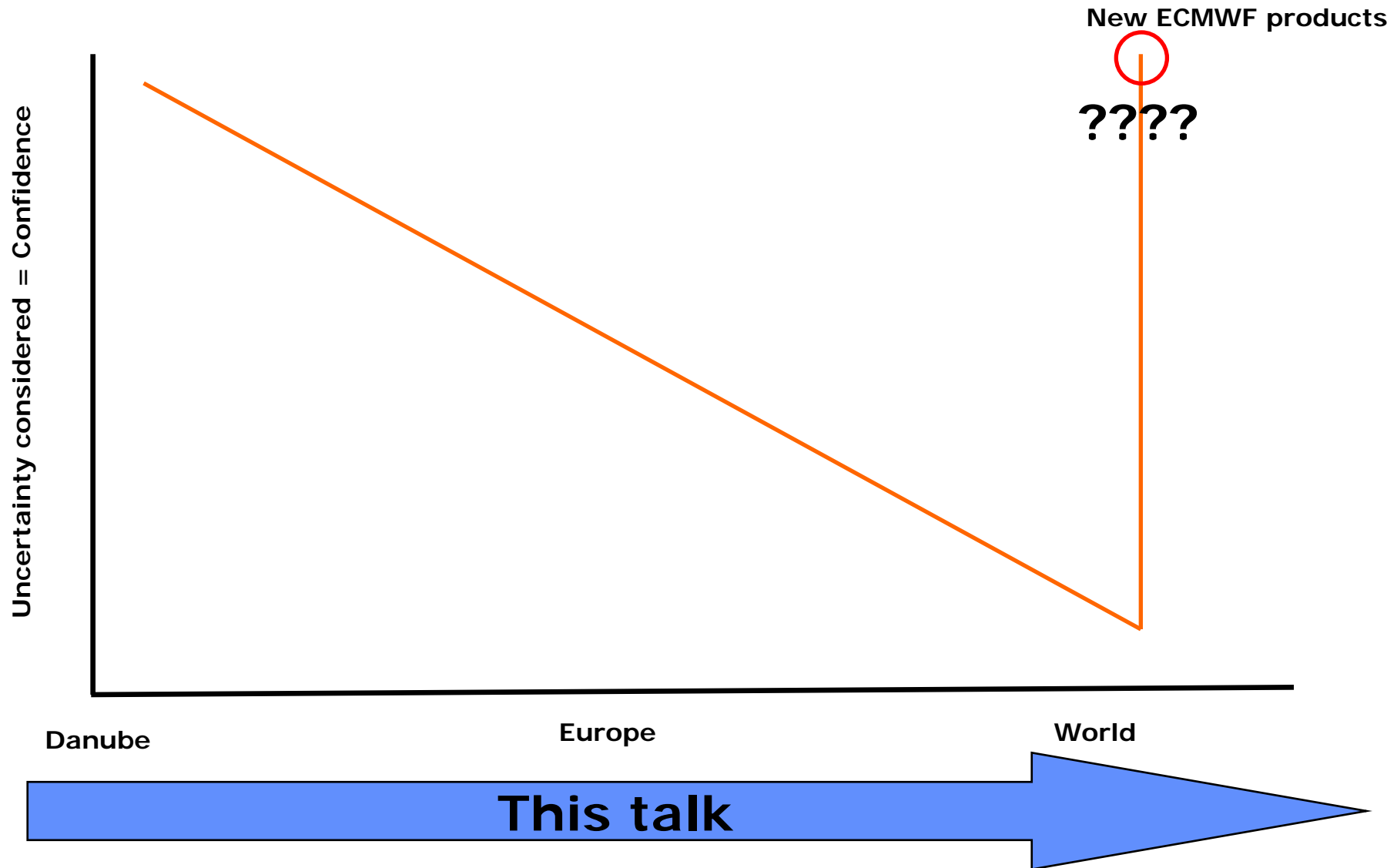
.... Disclaimer ...

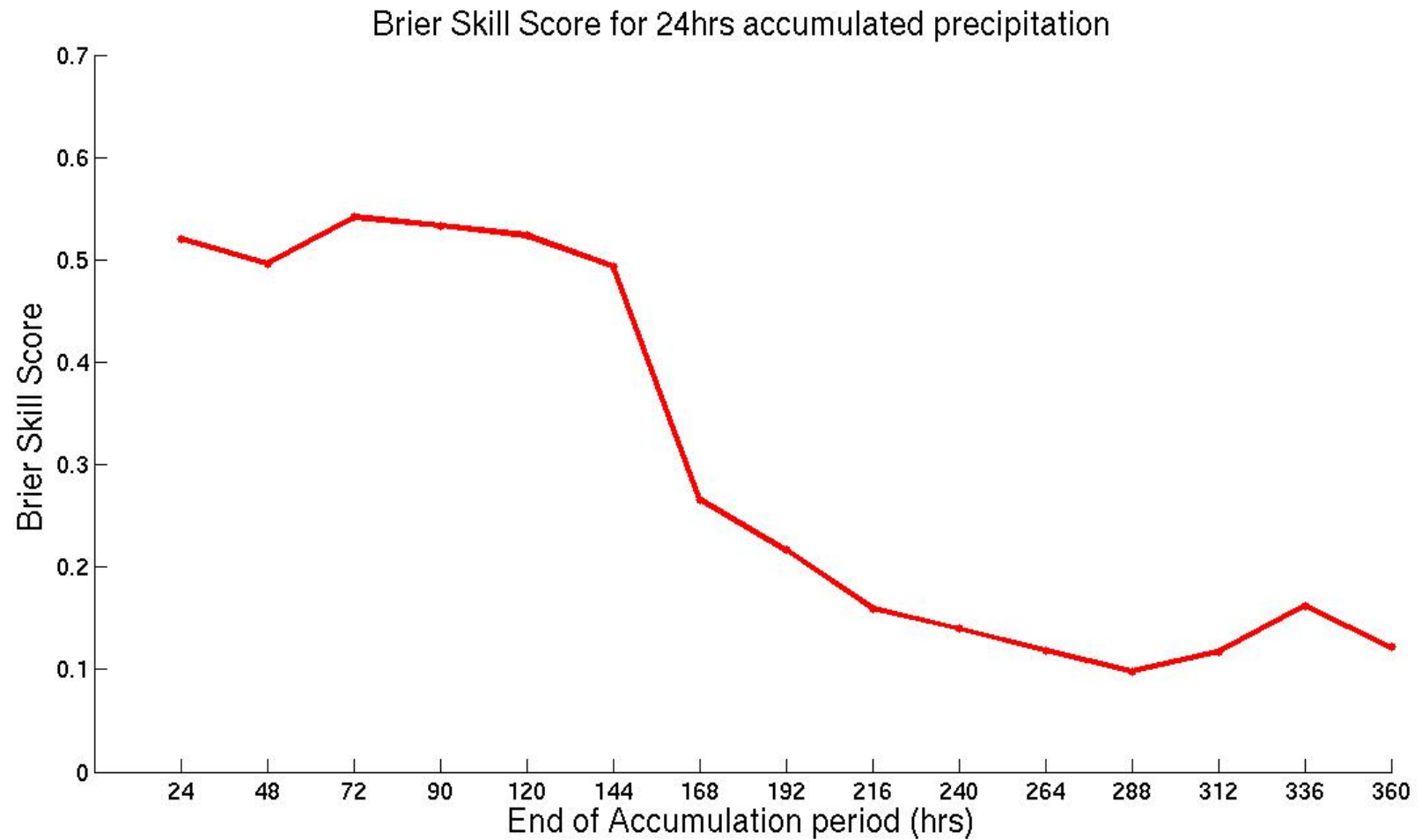






# .... Disclaimer ...

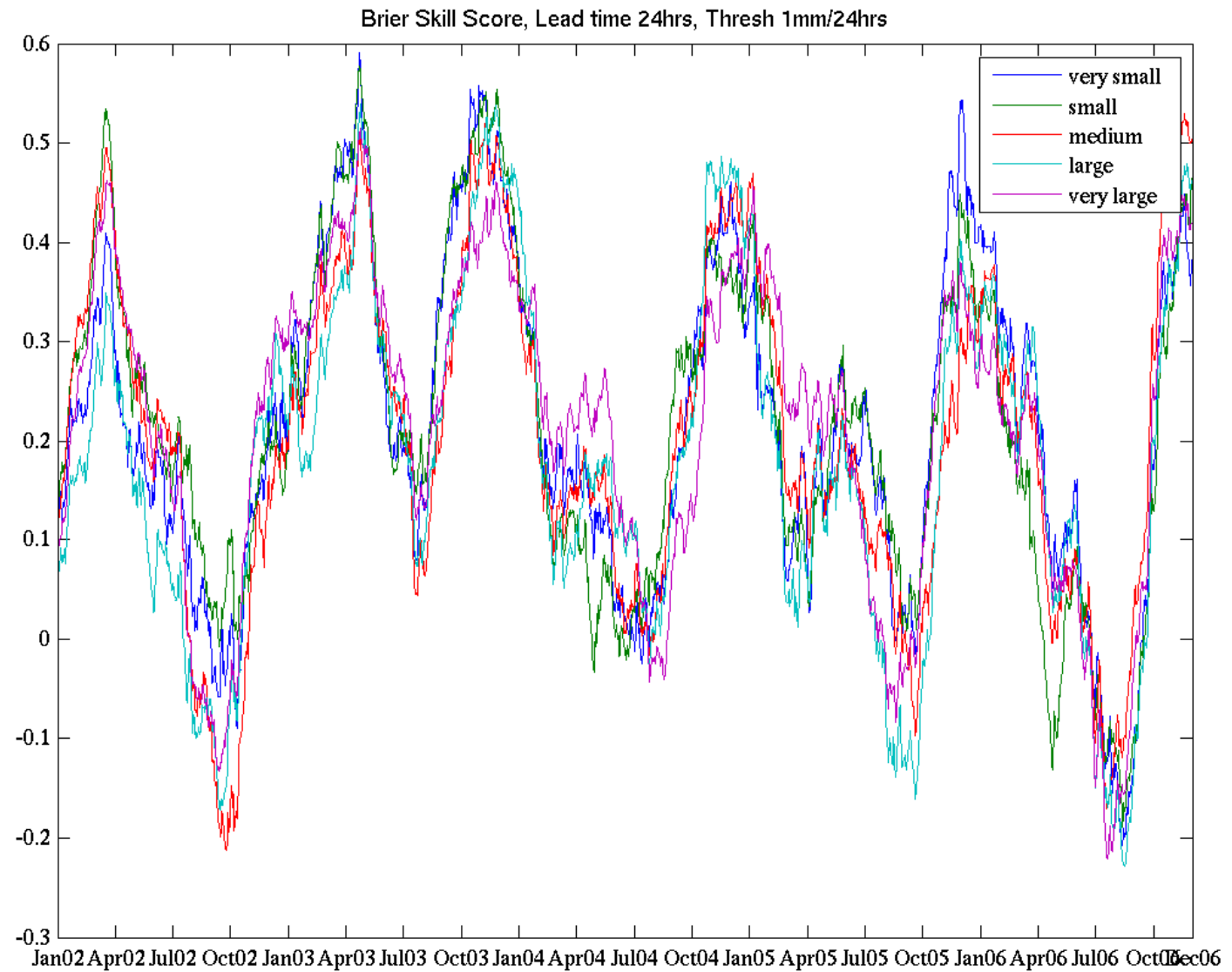


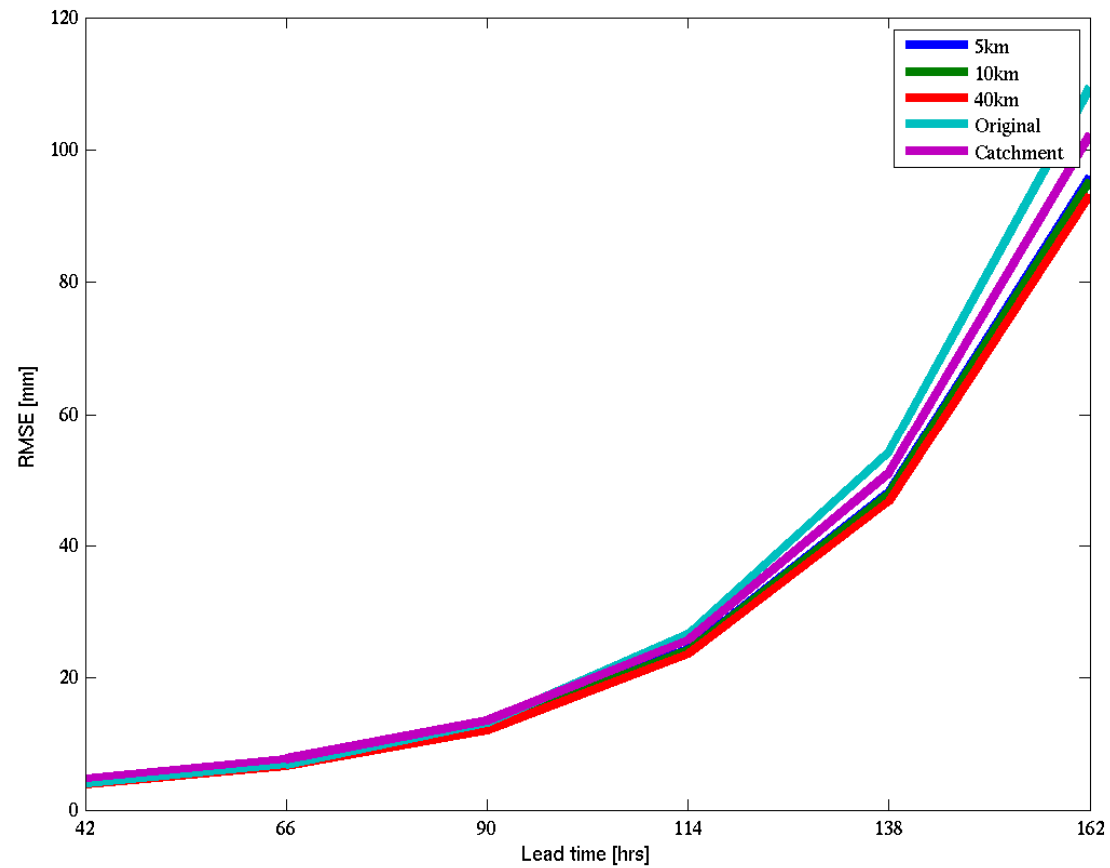




# Preview analysis – Long Term and Global Flood Analysis

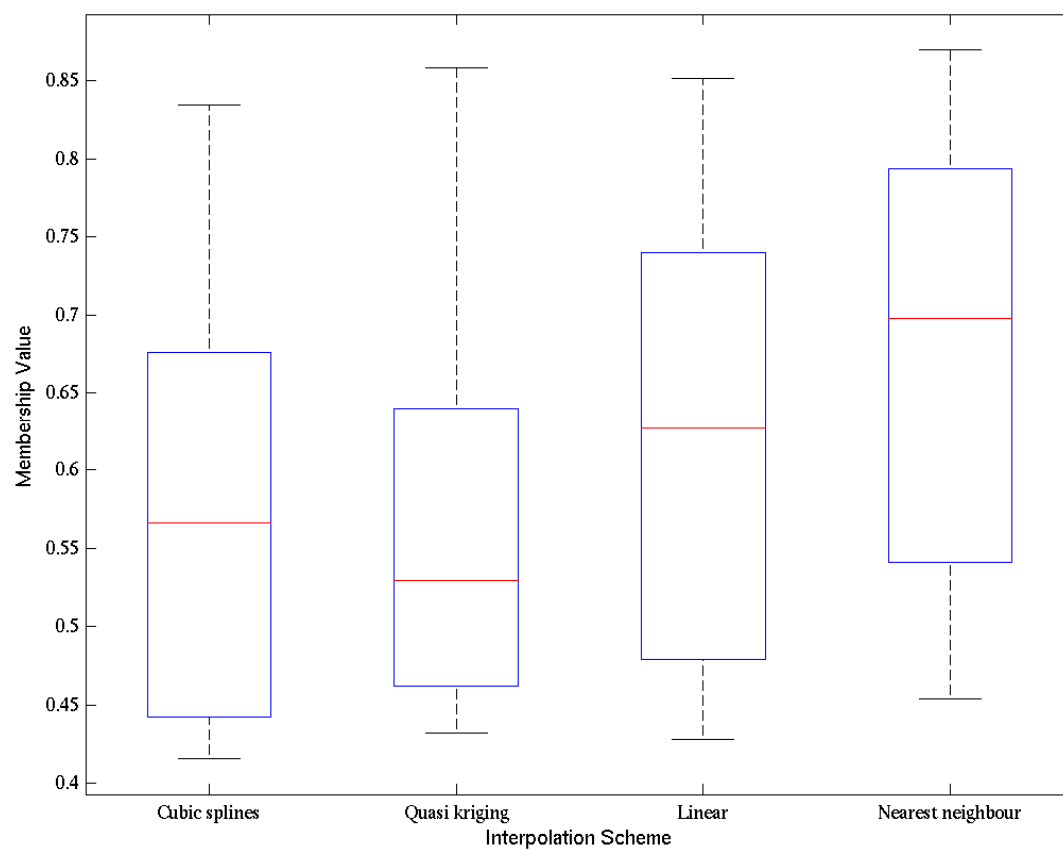
HEPEX  
Hydrologic Ensemble Prediction EXperiment

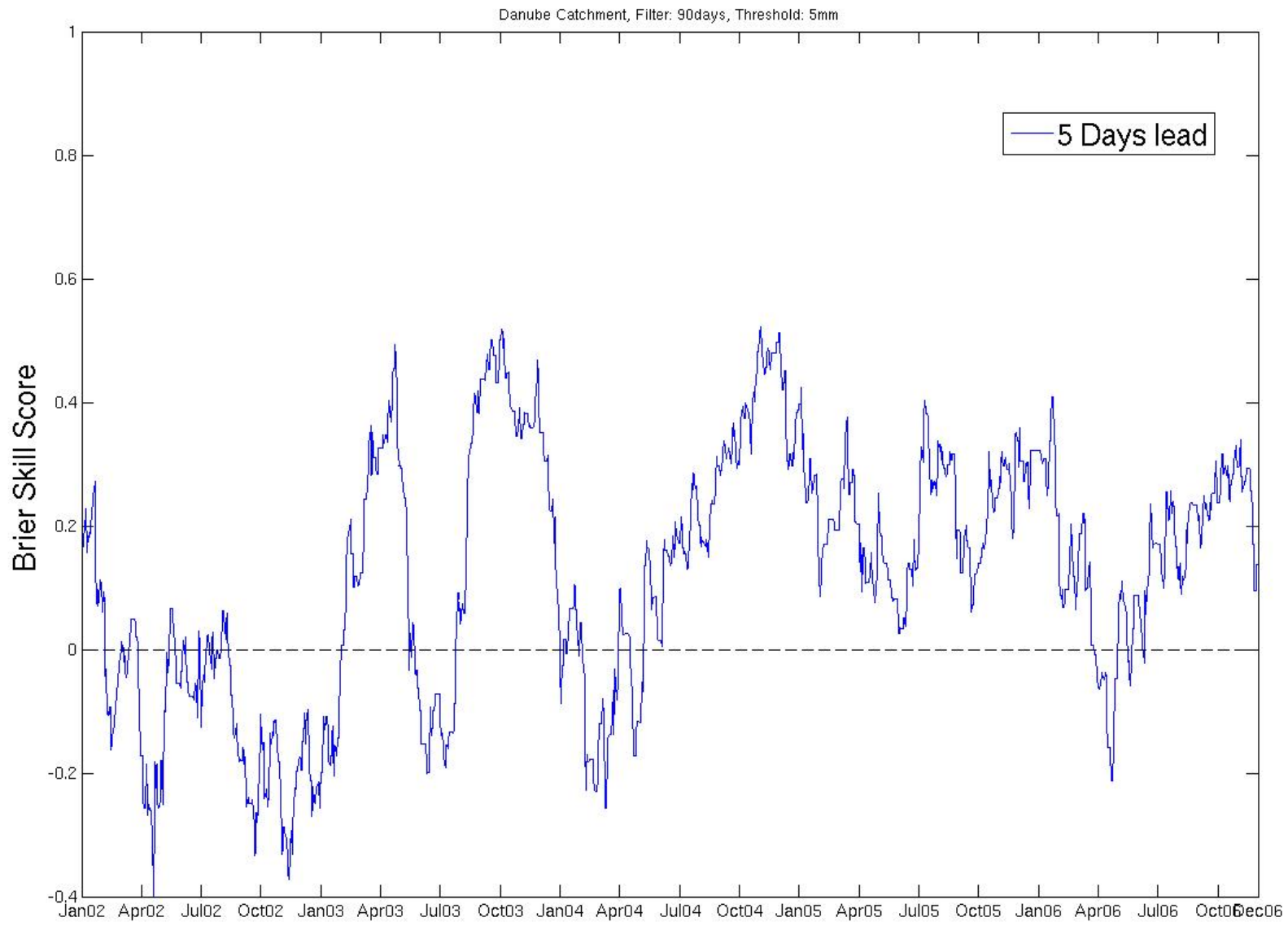


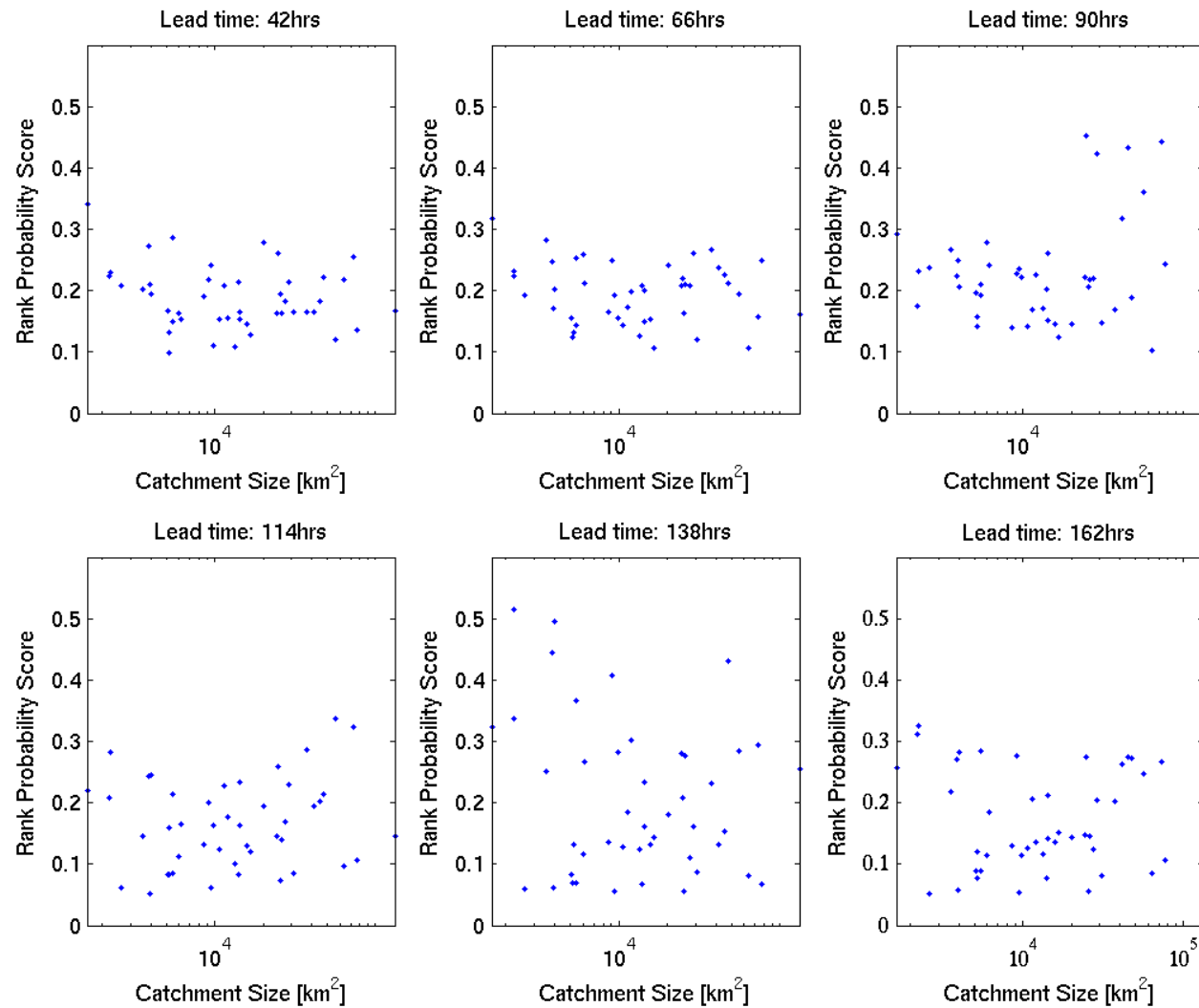




# Comparison of









# Preview analysis

- **Aim:** To analyse the performance of the PREVIEW forecast periods (Spring 2002 & Summer 2006) for different variables
- **Publication:** *Comparison of the performances of forecasts of the 2002 Danube flood by all project partners* (lead me)
- **Problem:** Ad signing the data agreement

