

*Torpshammar  
Sweden, juli 2000*

# Probabilistic Flood Forecasting at SMHI

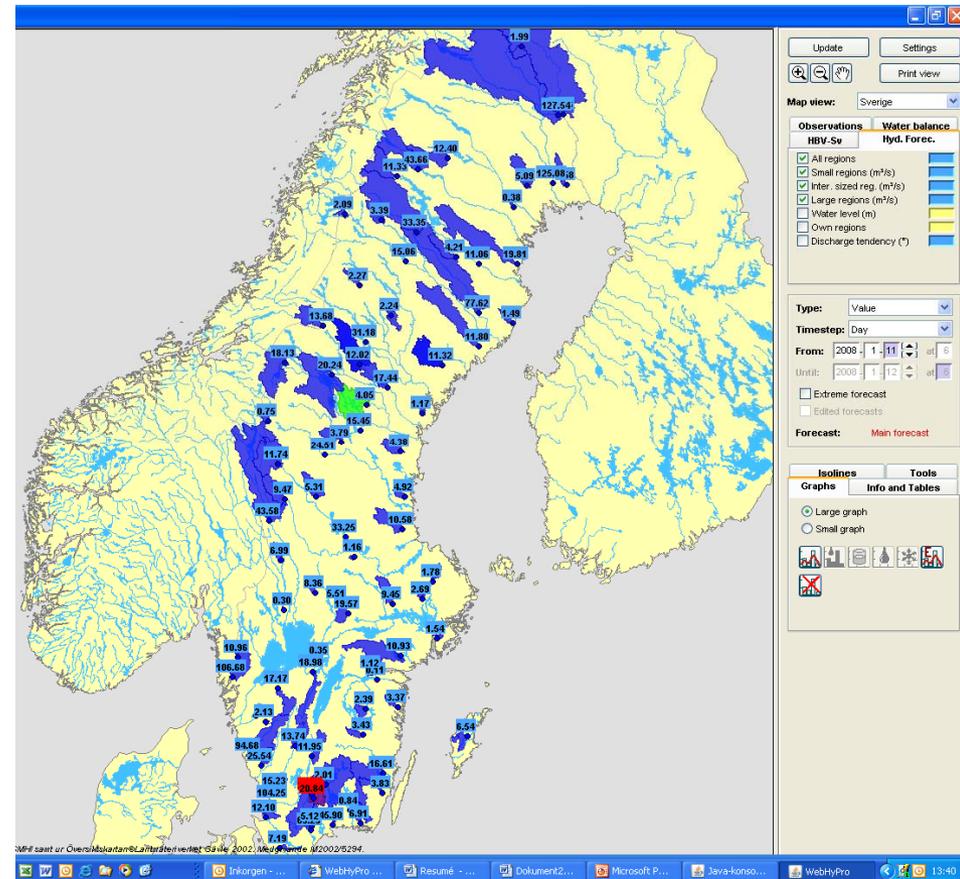
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**Project/System Manager**



# FORECASTING TOOLS

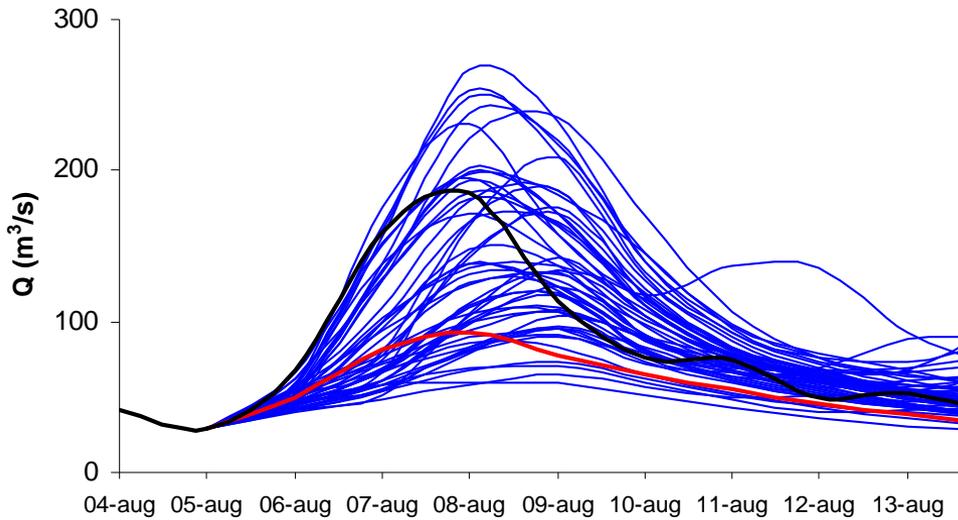
## Automatic hydrological forecasts

- Indicator basins, ca 80 (SMHI's real-time gauges);
- HBV-model computations based on grid data;
- Hydrological EPS (Q-EPS);
- Flood probability maps;
- Real-time web based presentation system (WebHypro);

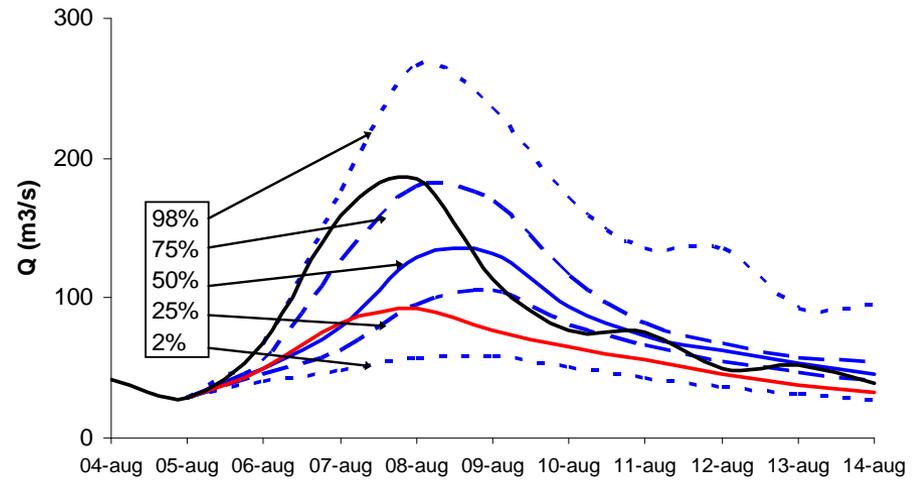


# FORECASTING TOOLS

## Hydrological EPS



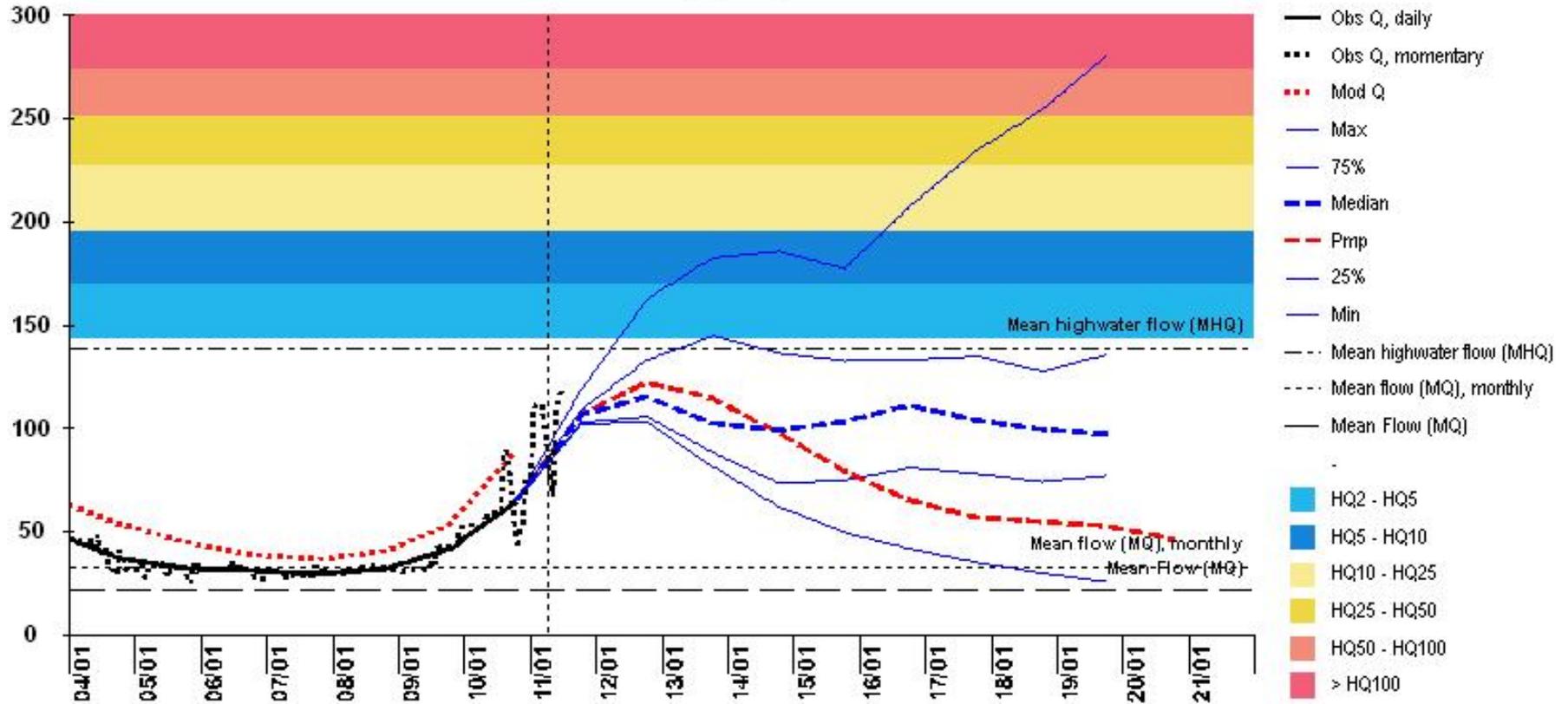
***HBV model run with all EPS-members***



***Presentation of hydrological EPS: median, quartile, min/max***

# Hydrological EPS (Q-EPS)

Munkedal - Discharge (m<sup>3</sup>/s)

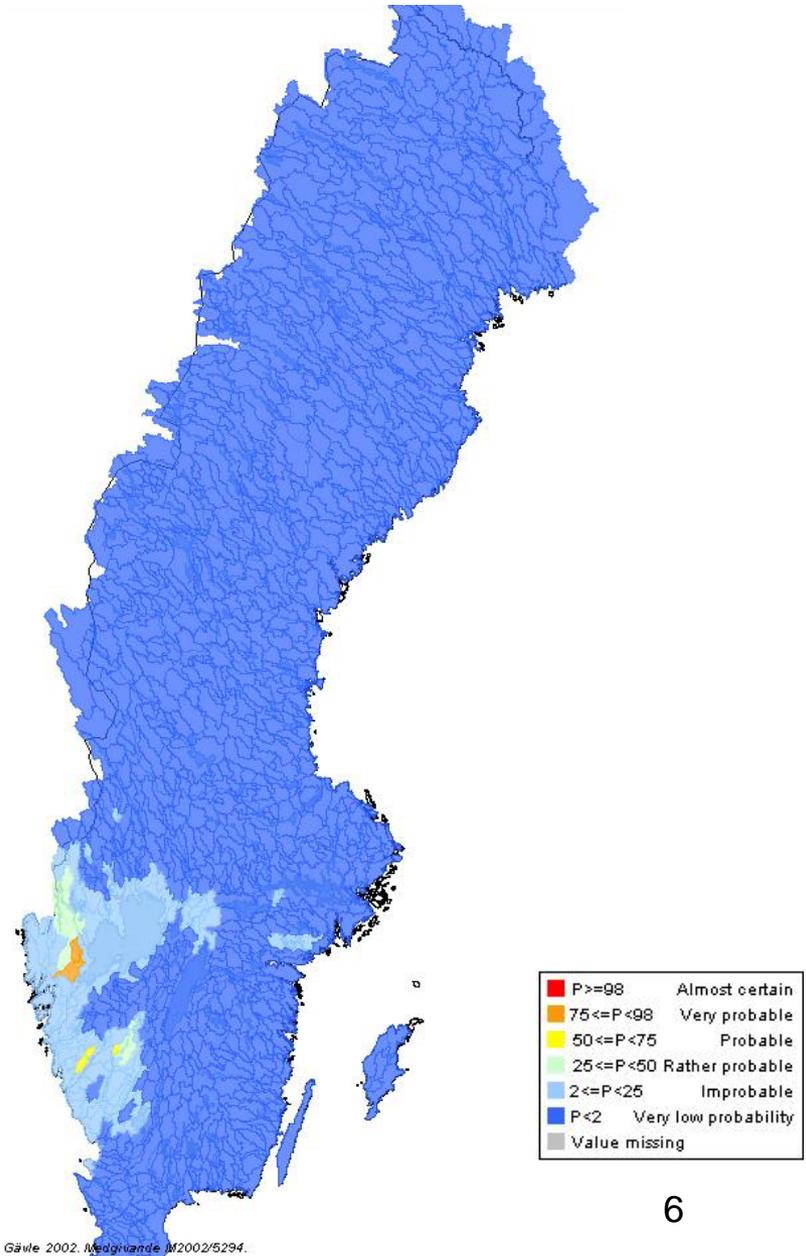


# Operational run of Q-EPS

## Q-EPS

- Made operational during 2004:
  - Set up EPS-runs into the hydrological production platform;
  - Set up surveillance routines;
  - Decides how the result will be presented;
  - Develop and introduce the Q-EPS presentation into the real-time web based presentation system for hydrological products (WebHypro);
  - Information/training to end-users;
- Run in operational mode since then;

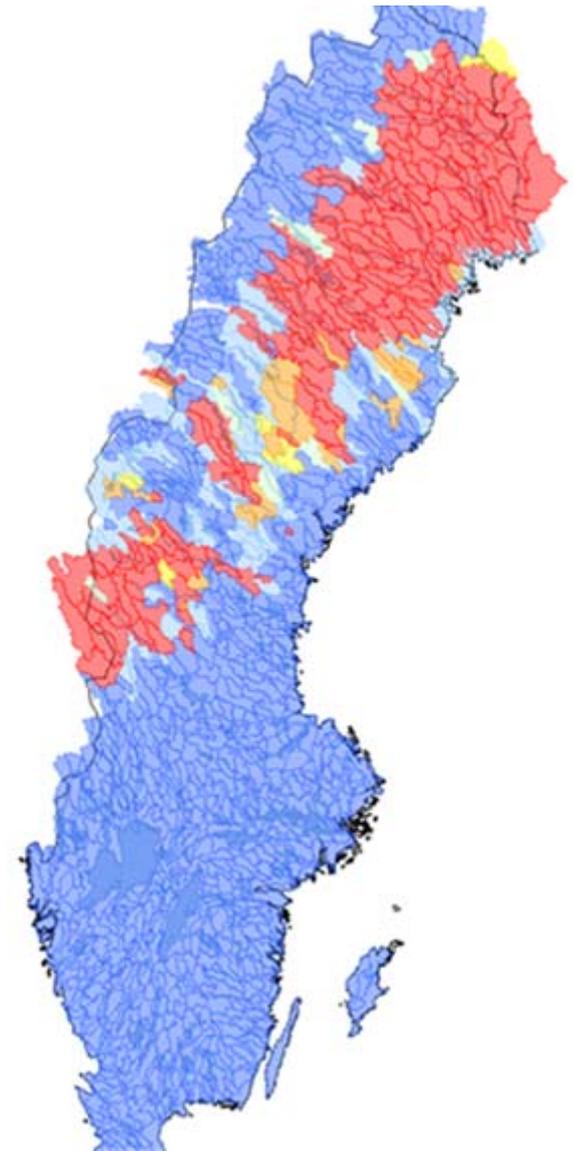
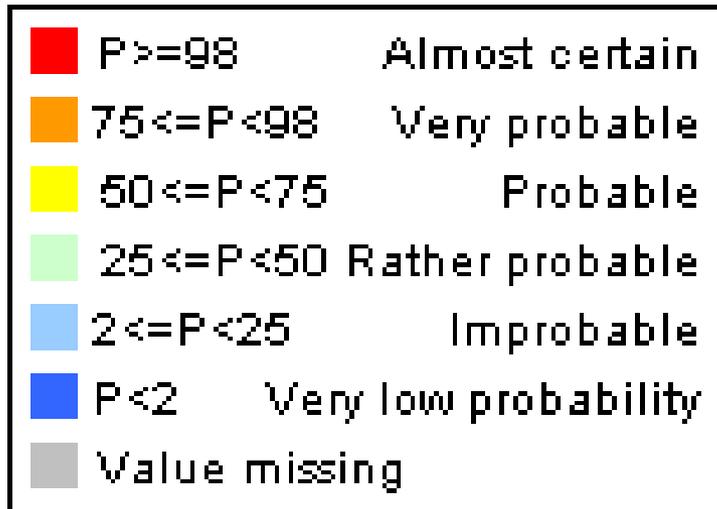
- HBVS<sub>v</sub>**, an HBV-application that covers whole Sweden;
- 1001 sub-basins, 200-700 km<sup>2</sup>;
- hydrological EPS and probabilistic flood forecasting for exceeding a certain warning level for each sub-basin;
- Statistical flood levels calculated for each sub-basin;



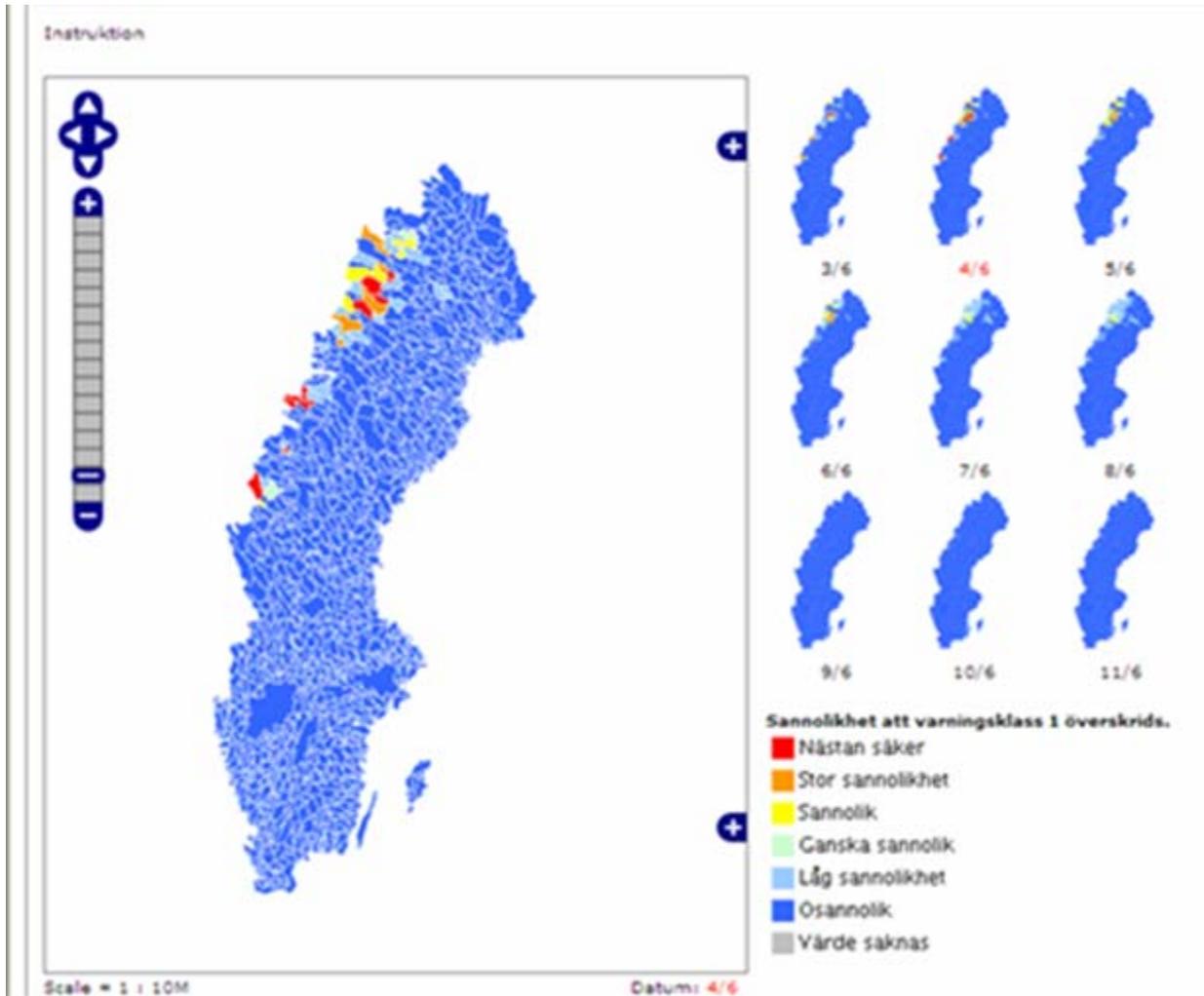
## Flood probability maps for warning level 1, 2 and 3

**Example:**

***Flood probability map for exceeding the flood warning level 1, i.e. flood with return period of 2-10 years; Spring flood, May 2008, Sweden***



# Flood Probability Maps on [www.smhi.se](http://www.smhi.se)



High probability=red,

Low probability=blue

## Operational run of flood probability maps

### Probability maps for exceeding a certain warning level:

- One of the products developed within PREVIEW project (April 2005 – September 2008);
- Operational since October 2007;
- Development during 2006-2007:
  - Develop methodology for hydrological probability forecasts; implementation into hydrological production platform; Set up surveillance routines
  - Calculate statistics for HBVSv;
  - Investigate how the probability forecast will be presented;
  - Develop the existing presentation system to fit the requirements for presentation of probability forecasts;
- Training of end-users;
  - Primary end-users: (forecasting) hydrologists/hydrological forecasting centre;
  - Secondary end-users: receivers of warnings, i.e. Civil Protection, decision makers;