Flood Forecasting

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Hydrology – modelling the water cycle on land
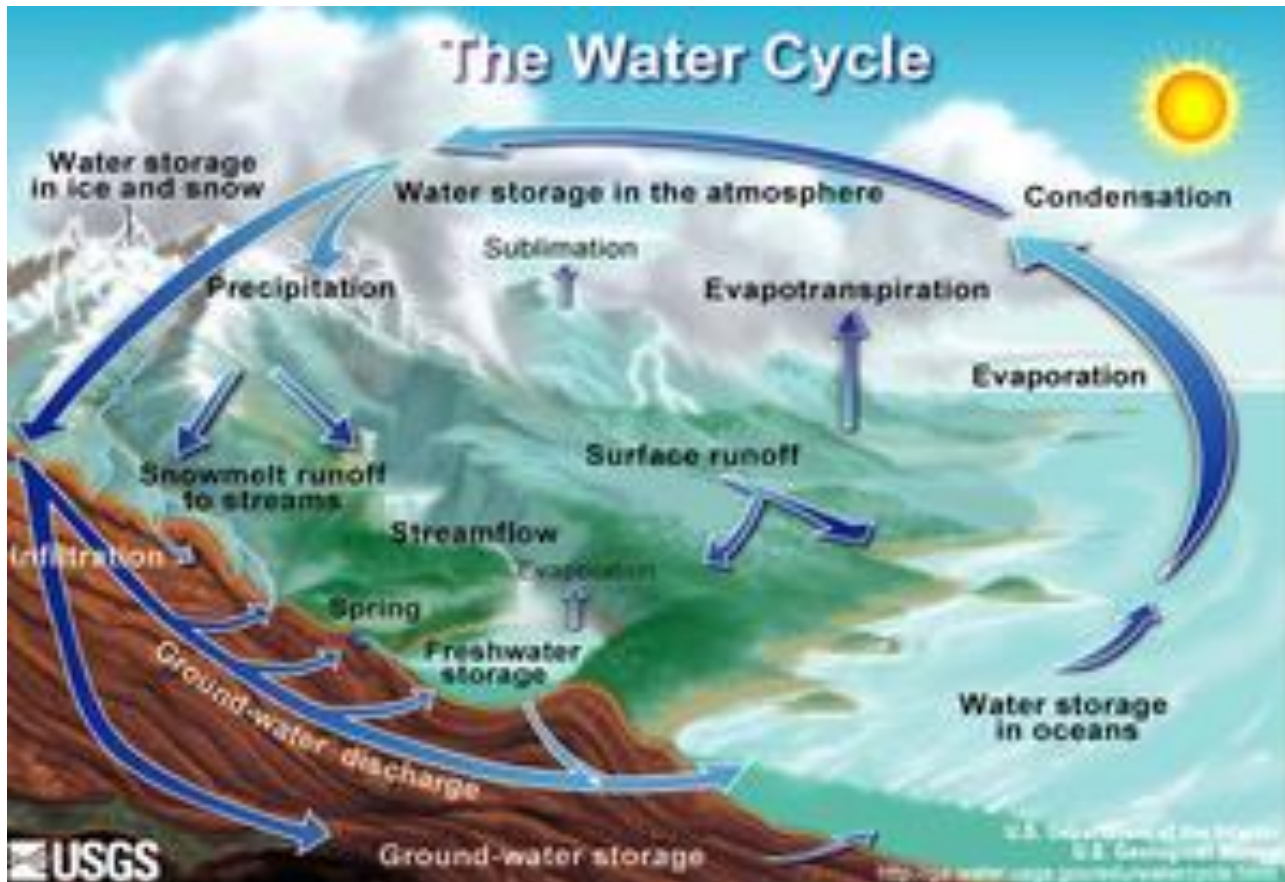
Hydrological modelling
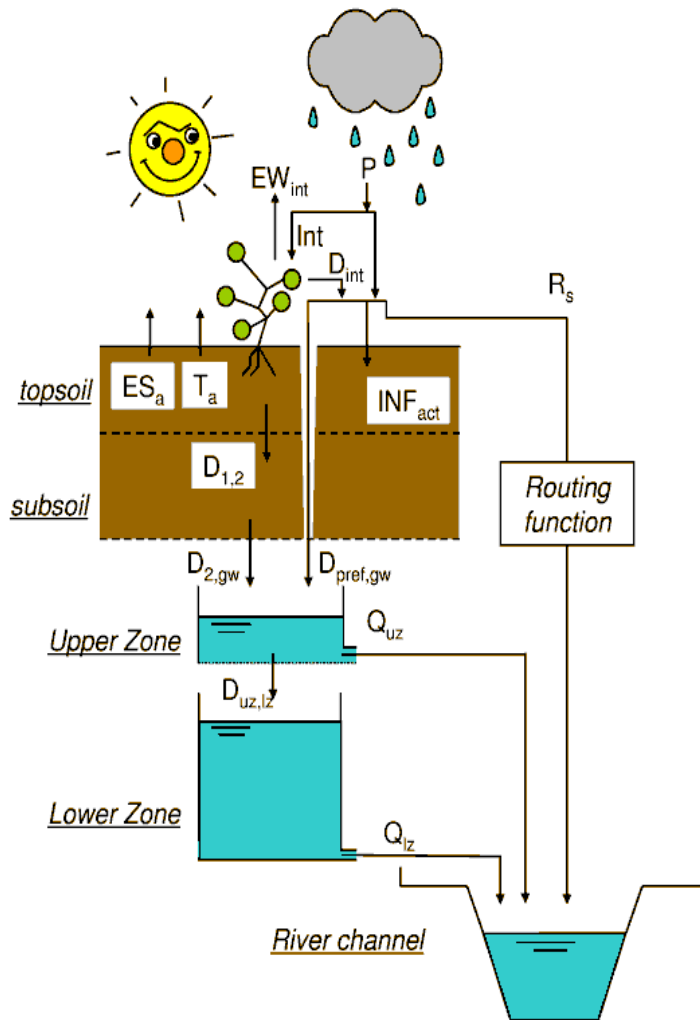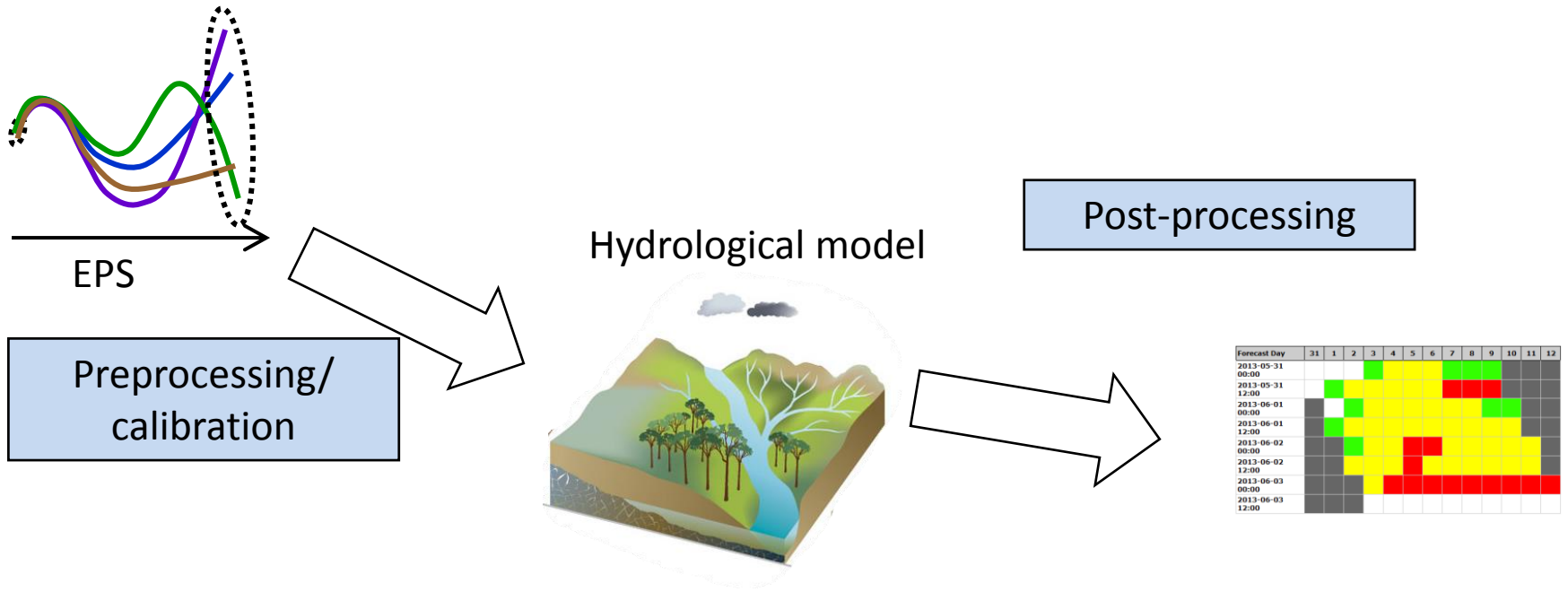

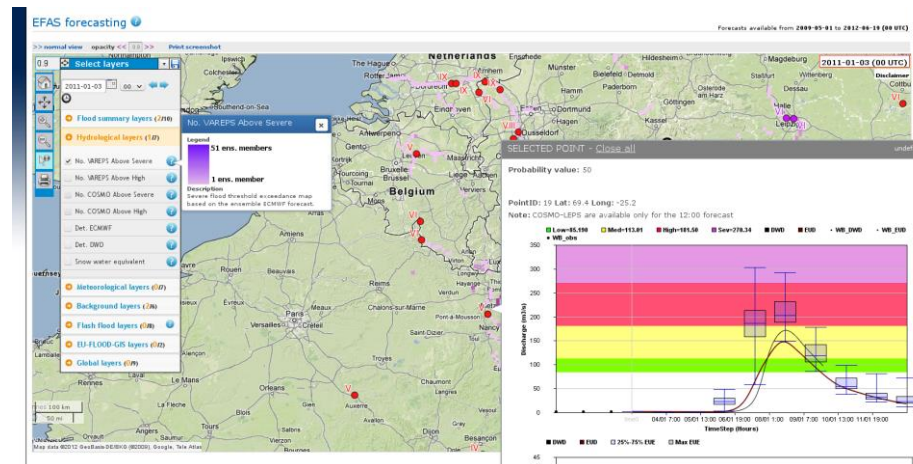**Input:** P, T (ET)

State variables:
Snow, surface water, soil moisture and ground water

Output: River discharge, water levels

Operational flood forecasting chain

EPS

Preprocessing/ calibration

Hydrological model

Post-processing

Flood warning

ECMWF

The European Flood Awareness System (EFAS)

Early probabilistic flood warnings across Europe

Transboundary

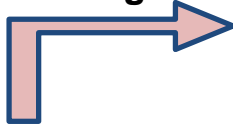>60 partners

Partners provide:
- Observations
- Feedback on warning performance
- Development of decisions

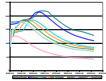EFAS has the largest collection of hydro-meteorological observations in Europe!

ECMWF

How do we actually do flooding prediction? Schematic view
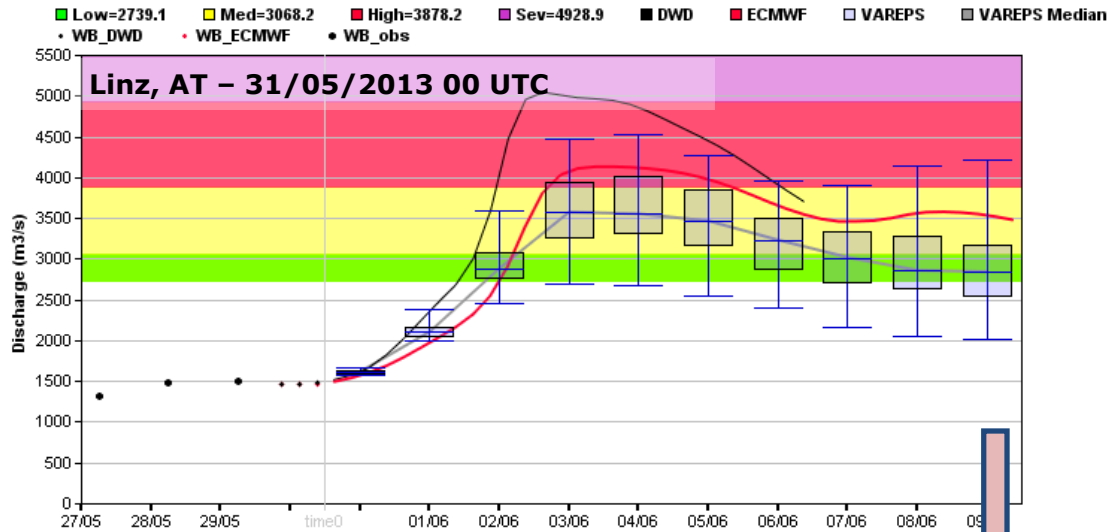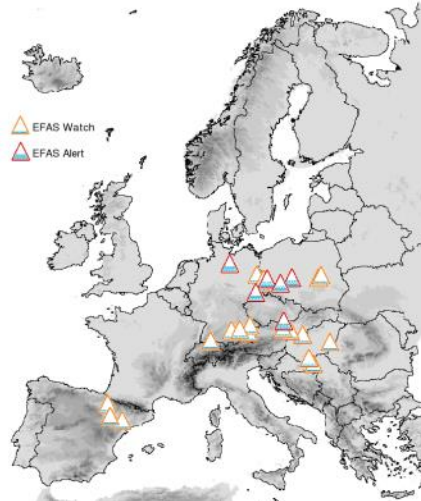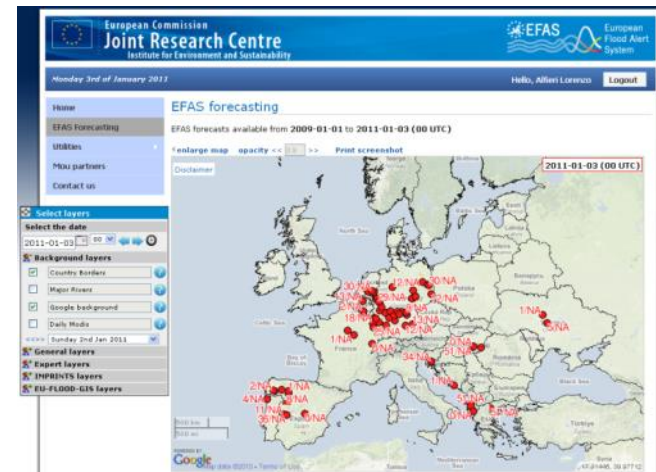
Flood warning for Passau, Germany 30 May 2013

Donau at Passau (DE), 30/5/2013

Although the flood was predicted it was not high enough. Top discharge should have been 10000

Upstream precipitation

Upstream snowmelt

Average temperature

Overview of threshold exceedances

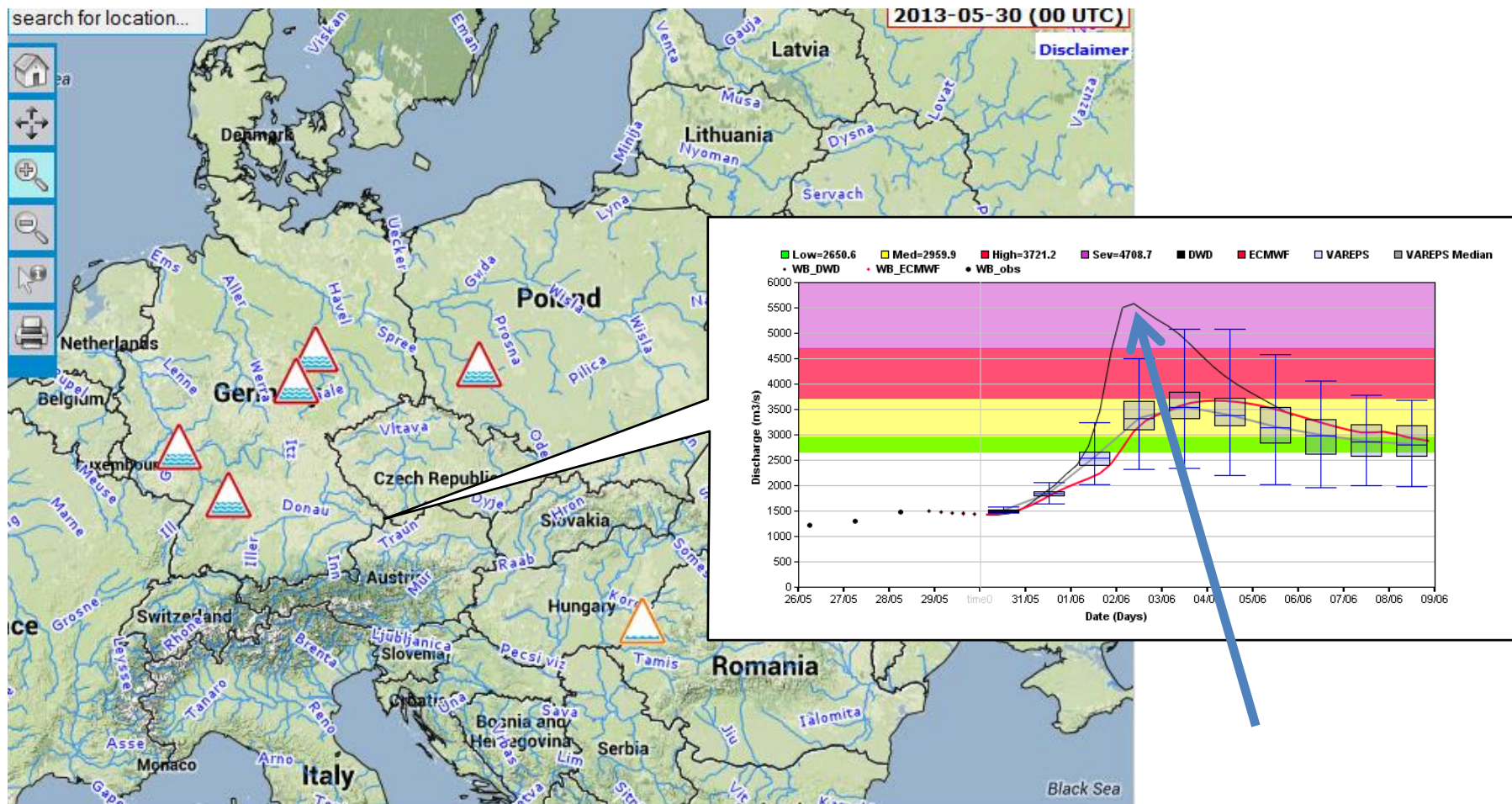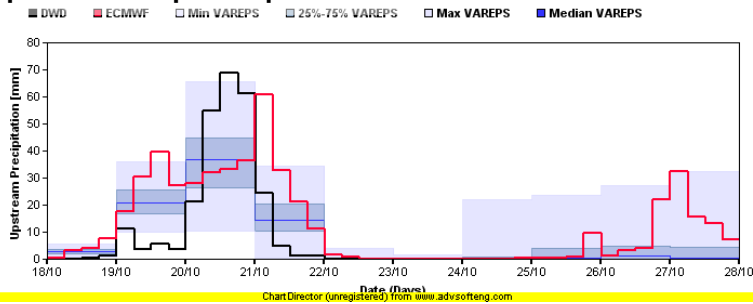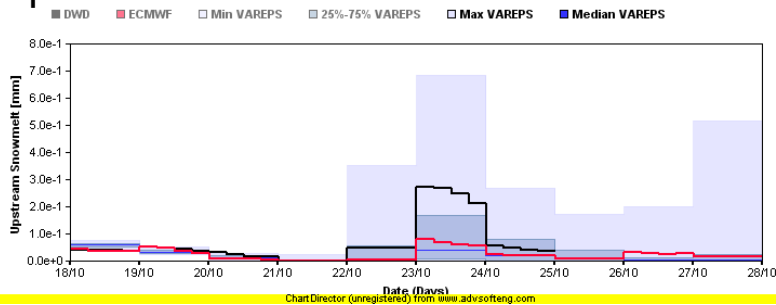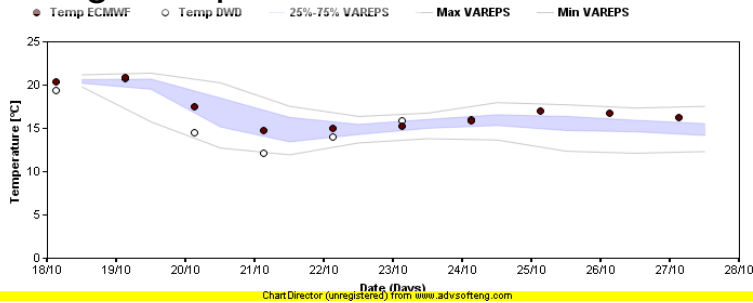| Forecast Type	18	19	20	21	22	23	24	25	26	27
DWD		↑	↑	↑	↑	↑	↑			
EUD		↑	↑	↑	↑	↑	↑	**	↓	↑
EUE > HAL				4	24	37	37	35	20	18
EUE > SAL				2	8	16	12	8	6	6

Persistence diagram

EUE > HAL

Forecast Day	15	16	17	18	19	20	21	22	23	24	25	26	27
2012-10-15 00:00						2	2	8	8	10			
2012-10-15 12:00					2	4	14	25	25	16			
2012-10-16 00:00							6	10	16	12	6		
2012-10-16 12:00							14	29	41	41	31		
2012-10-17 00:00							2	31	43	39	27	18	
2012-10-17 12:00							18	31	35	31	25	16	
2012-10-18 00:00							4	24	37	37	35	20	18
2012-10-18 12:00				MV	MV	MV	MV	MV	MV	MV	MV	MV	MV

COSMO-LEPS
ESP
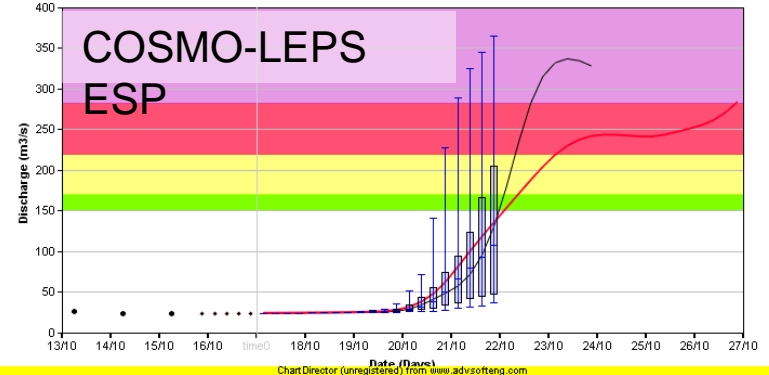
Play the game!

A risk-based decision-making game relevant to water management.

Try it yourself!

2013. This game was prepared by Louise Crochemore (IRSTEA), Florian Pappenberger (ECMWF), Schalk Jan van Andel (UNESCO-IHE), Maria-Helena Ramos (IRSTEA) and Andy Wood (NOAA).

It is intellectual property of the authors. Please kindly inform them if you use it.

Special thanks to Kevin Werner (NWS), a key designer of the original game on which this one is based.

Contact: maria-helena.ramos@irstea.fr

This game is part of HEPEX activities: www.hepex.org

I agree

General instructions: use full screen mode. Always click on the appropriate links in each slide.
Do not use Page Up, Page Down or arrow keys for scrolling.