



The Hydrological Ensemble Prediction EXperiment

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HEPEX milestones and goal

HEPEX was launched in 2004 (1st WS hosted at ECMWF).

HEPEX 2nd WS was hosted by NOAA in Boulder, in July 2005.

Between March 2004 and now HEPEX has been involved in the organization of sessions at various scientific meetings (e.g. AGU, EGS).

HEPEX goal (revised at WS 2) is:

To bring the international hydrological and meteorological communities together to demonstrate how to produce reliable hydrological ensemble forecasts to make decisions for the benefit of public health and safety, the economy and the environment.



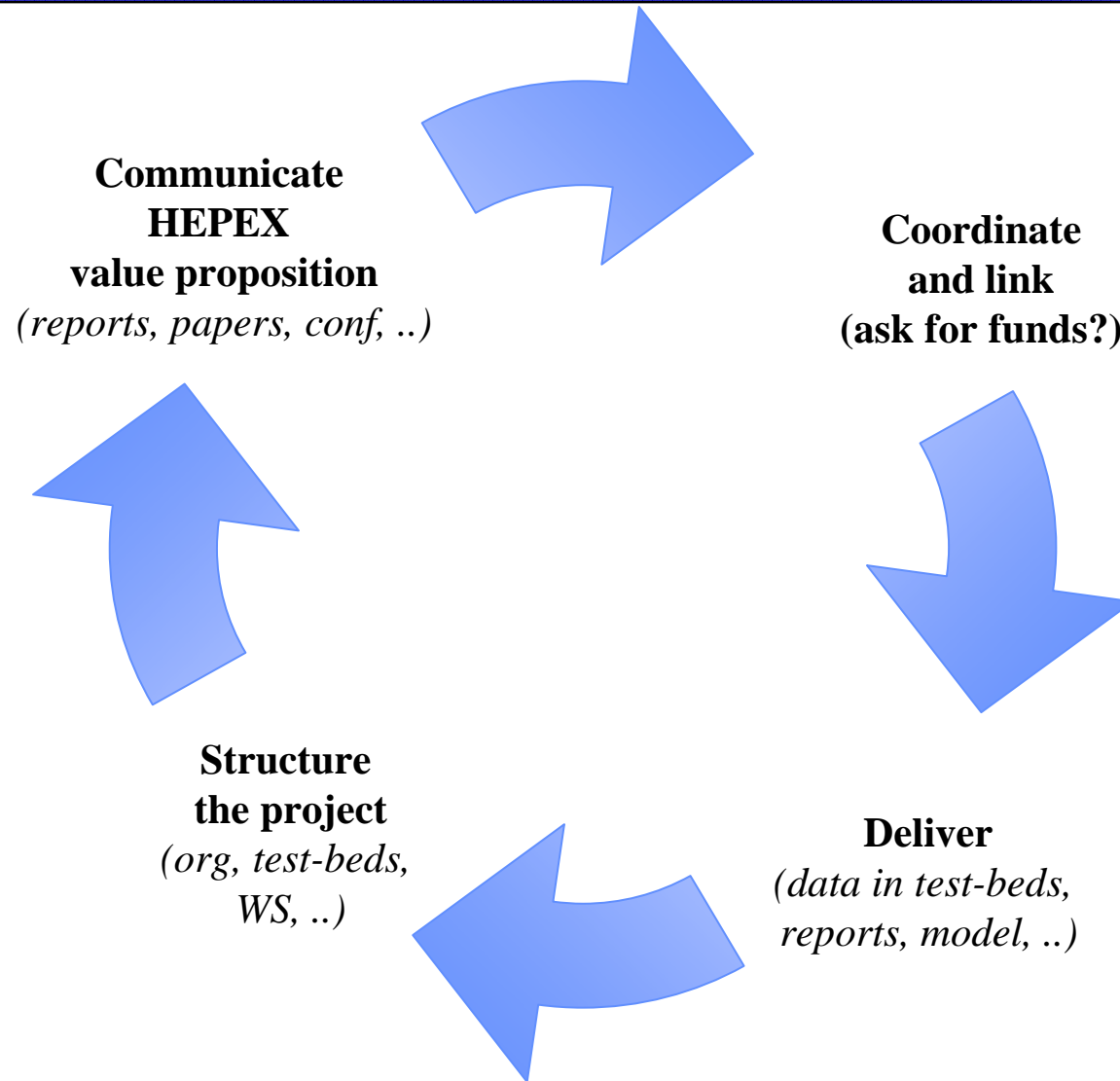
HEPEX participation

HEPEX is an independent, cooperative international scientific activity comprised primarily of researchers, forecasters, water managers and users. Participation is open to the community and anyone wishing to contribute to its objectives.





HEPEX: a four-stage project





What has been achieved so far?

- **Structure** – HEPEX structure seems to have been working so far (WSs has been organized, interaction has been kept and promoted). The idea launched at the 2nd WS to organize HEPEX activity in test-beds seems to be working.
- **Communication** - HEPEX has increased communication between hydrologists and meteorologists. It has created a forum for discussion (the three HEPEX workshops, the test-beds, ..).
- **Coordination/links** – HEPEX has been helping the coordination of test-bed activities, and has been trying to establish links with other international projects (e.g. TIGGE/THORPEX, GEWEX).
- **Deliverables** - A web site (<http://hydis8.eng.uci.edu/hepex/>) has been set. Publications have been completed:
 - *Franz et al*, 2005: HEPEX focuses on reliable forecasts (EOS, 86, 25, p 239)
 - *Wood et al*, 2006: Implementation plan for HEPEX (available from HEPEX web site)
 - *Schaake et al*, 2007: HEPEX. BAMS, in press.
 - Report of the 1st HEPEX WS (2004, available from HEPEX web site)
 - Report of the 2nd HEPEX WS (2005, available from HEPEX web site)
 - HEPEX Test-beds (2006, available from the HEPEX web site)



What should we do next?

- **Structure** - Do we need a more defined organizational structure?
- **Communication** – Has HEPEX informed enough the scientific and users communities? Does HEPEX listen enough to (end-)users' demands? Should HEPEX be involved in education and training of users to increase the use of probabilistic forecasts?
- **Coordination/links** - Should HEPEX apply for funds? Does HEPEX have the right structure to do so? Are the links with other projects stated clearly enough?
- **Deliverables** – The main goal of this WS is to review the status of the test-beds' activities, to assess what has been achieved so far and to discuss how HEPEX can help a successful completion. Should HEPEX aim to build a prototype system (or systems)?



HEPEX 3rd WS

The third workshop will report on the progress of the testbeds and is meant to be interdisciplinary, fostering communication between research meteorologists, hydrologists and end users. Its aim is to further help the hydrologic community to develop hydrologic ensemble prediction systems that can be used with confidence by emergency and water resource managers.

Specific sessions of the workshop address the following subjects:

- HEPEX testbeds, datasets and forecast tools
- Ensemble weather and climate forecast applications
- Hydrologic ensemble processing
- Best practice for analyzing and visualizing uncertainty
- User perspectives

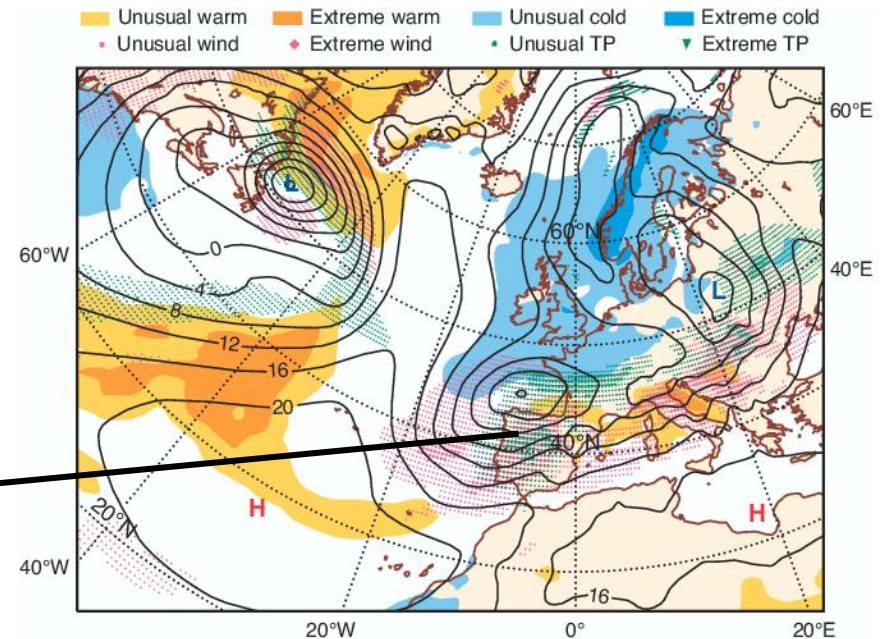
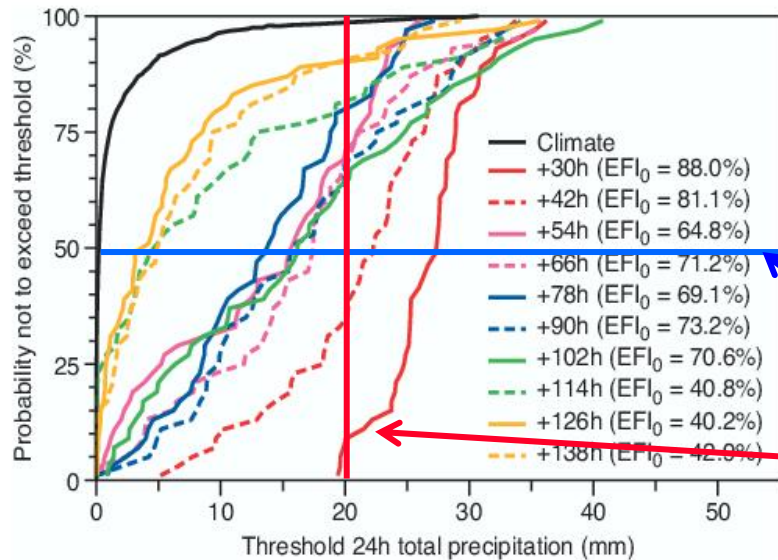
A key question to address: **How can a user act/take a decision using a probabilistic forecast?**



How can users act on the basis of probabilistic forecasts?

Now that probabilistic forecasts [eg in the form of EFI (right) and CPF plots (left)] are common, there is the need to address one of the key questions asked by users of a probabilistic forecasts:

How can I act/take a decision using a probabilistic forecast?



One way to help users could be to translate PDF/CPF fcs into information such as:

- 'the value predicted by at least 50% of the ensemble, compared to the model climate'
- 'the probability that a certain threshold can be reached'