Agenda

Workshop on the Hydrological Ensemble Prediction Experiment (HEPEX)
ECMWF, March 8-10, 2004

Monday 8 March

0830 Registration

Session 1 0915-1045 – Introduction

Chair: Roberto Buizza

0915 Welcome – Philippe Bougeault – ECMWF
0925 Logistics – Roberto Buizza and John Schaake
0935 Introductions – all
0945 Workshop Objectives – John Schaake and Roberto Buizza
1000 Introduction to HEPEX – Soroosh Sorooshian

1030 Break

Session 2 1100-1230 - User Perspectives

Chair: Jim Wallace

1100 Ad De Roo
1110 Paolo Reggaini
1120 Martin Best
1130 California – Rob Hartman
1140 Hydropower Industry – Chuck Howard
1150 NYPA – Richard Mueller
1200 BC Hydro – Eric Weiss
1210 Hydro Quebec – Noël Dacruz Evora
1220 Hydropower generation in France – Pierre Bernard

1230 Lunch

Session 3 1400-1500 - Organizational Perspectives

Chair: Soroosh Sorooshian

Very brief statements concerning possible organizational interest in HEPEX

GEWEX – Soroosh Sorooshian
European Union – TBA
IAHS/PUB – Jim Wallace
IAHS/GEWEX/WRAP – Alan Hall
GEWEX/GAPP – Jin Huang
WMO – Wolfgang Grabs
ECWMF – Philippe Bougeault
NASA – Christa Peters-Lidard
NOAA/NWS/NCEP – Zoltan Toth
NOAA/NWS/AHPS – John Schaake
Canadian WMIG – Richard Mueller
CUASHI – Rick Hooper
THORPEX/WWRP – Zoltan Toth
USWRP – Bob Gall

Session 4 1500-1830 - Weather and Climate Ensemble Prediction

Chair: Philippe Bougeault

1500 Introduction to Ensemble Forecasting – Tom Hamill

1530 Break

1600 Flood prediction with the ECMWF EPS – Roberto Buizza
1615 NCEP Ensemble Prediction – Zoltan Toth
1630 Met Office – Brian Golding
1645 SMHI – Per Kallberg
1700 Assessment of Ensemble Forecasts – Steve Mullen
1715 Ensemble forecasts in the European Flood Alert System – Ad de Roo
1730 COSMO-LEPS Ensemble Prediction System – Chiara Marsigli
1745 Precipitation verification – Anna Ghelli
1800 Parameterization of moist processes – Glenn Shutts
1815 Canada's Meteorological Ensemble Prediction System – Gilbert Brunet
1830 Operational short-term flood forecasting for Bangladesh – Tim Palmer
1845 Adjourn

1845 Reception

Tuesday 9 March

Session 5 0915-1230 – Hydrological Ensemble Prediction

Chair – Eric Wood

Introduction

0915 Operational Hydrologic Ensemble Forecasting – Rob Hartman

Hydrological Ensemble Forecasting

0945 Results of the EFFS Project – Paolo Reggiani
1000 CEH Ensemble hydrological forecasting – Bob Moore

Hydrological Models

1015 Hydrologic forecast model uncertainty issues – Hoshin Gupta

Data Assimilation

1030 GSFC's land data assimilation systems – Christa Peters-Lidard
1045 Land data assimilation at NCEP – Dag Lohmann

1100 Break

Case Studies

1130 Seasonal hydrological forecast system for the Western U.S. – Andy Wood
1145 Case studies of the August 2002 Danube flood – Gabor Balint
1200 Ensemble forecasts for the Po Basin Flood of 2000 – Pedro Viterbo

Verification

1215 Ensemble forecast verification – Allen Bradley

1230 Lunch

Session 6 1400–1800 - Break-out Groups (1)

Chair: John Schaake and Roberto Buizza

(Break @ 1530)

Group 1 Meteorological Aspects of Ensemble Prediction

Co-leaders: Tom Hamill and Ken Mylne

What are the requirements for meteorological ensemble forecasts to support hydrological ensemble prediction? Do meteorological ensemble forecasts account for important meteorological and climatological uncertainties? What are the scientific issues or questions that need to be addressed to meet these requirements? What is the role for operational forecasters? How do long-range Ocean-Atmosphere phenomena (i.e. El Niño) affect short- medium- and long-range hydrological forecasting?

Include the following brief presentation:

Daniel Shertzer - Quantifying EPS forecast skill

Group 2 Hydrological Aspects of Ensemble Prediction

Co-leaders: Sanja Perica and Bob Moore

How to measure (validate) performance of ensemble forecasts at different time and space scales? How can hydrological uncertainty be accounted for? What are the requirements for hydrological ensemble forecasts to support water management, emergency services and other users? What are the scientific issues or questions that need to be addressed to meet these requirements? How does the uncertainty in weather forecasts translate into hydrological uncertainty? What is the relative role of weather and climate forecasts vs initial hydrological conditions in affecting the skill of hydrological forecasts? What is the role for operational forecasters? What interface is needed for forecasters to control the operation of a hydrological ensemble forecast system? How to post process ensemble predictions?

Include the following brief presentations:

Barbro Johansson - Hydrological ensemble prediction plans at the SMHI
Emmanuel Roulin - Hydrological ensemble forecasts for Belgium
Peter Krahe - Use of ensemble forecasts for flood warning in Central Europe
Günter Blöschl - Operational flood forecasting system in Lower Austria
Kristie Franz – Ensemble forecast verification
Ezio Todini - Bayesian combination of analogs and ensemble forecasts
Jost von Hardenberg - Evaluation of uncertainty propagation

Group 3 Data Assimilation

Co-leaders: Christa Peters-Lidard and Per Kallberg

What is the role of data assimilation in hydrological ensemble prediction? How can LDAS projects contribute to HEPEX? What are the opportunities to assimilate satellite data? How to account for uncertainty in initial conditions? Is there a role for ensemble precipitation analysis (PQPE)?

Group 4 Hydrological Modeling
Co-leaders: Hoshin Gupta and Gabor Balint

What are the sources of uncertainty in hydrological models? What are the implications of hydrological models being imperfect representations of real hydrological systems? How can hydrologic uncertainty be quantified? What are the hydrological modeling science issues that are important for HEPEX to consider? How can uncertainties in hydrological models, model parameters and hydrological initial conditions be represented in hydrological ensemble prediction?

Include the following brief presentations:

Praveen Kumar – Identification of parameter dominance
Eric Gaume - Choice of rainfall-runoff
Michele Ferri - Geomorphologic – MonteCarlo models of hydrologic response
Florence Habets - Monitoring of the water budget over France
Thian Yew Gan - Short-Term Climatic and Hydrologic
Paolo Reggiani – Representative elementary watershed modeling

1700 – 1800 Plenary reports from break-out groups and discussion
Group 1 - Tom Hamill and Ken Mylne
Group 2 - Sanja Perica and Bob Moore
Group 3 - Christa Peters-Lidard and Per Kallberg
Group 4 - Hoshin Gupta and Gabor Balint

1800 Adjourn

Wednesday 10 March

Session 7 Plenary
Chair: John Schaake

0915 USWRP and HEPEX – Bob Gall

Session 8 0930–1230 - Break-out Groups (2)
Chair: John Schaake and Roberto Buizza

(Break @ 1100)

Group 5 User Roles in HEPEX
Co-leaders: Wolfgang Grabs and Richard Mueller

What are user perspectives of HEPEX? How can users participate in HEPEX? What must be done to demonstrate credibility of ensemble hydrological predictions? How can weather and climate information, including ensemble forecasts, be used reliably? What are operational forecast requirements? How can hydrological ensemble forecasts be verified, and what can be done to gain confidence that a given forecast system is reliable?

Group 6 Community Hydrologic Prediction System (CHPS)
Co-leaders: Dag Lohmann and Eric Gaume

How can the space and time scale properties of weather and climate forcing together with space and time scale properties of hydrological systems be best integrated in a hydrological ensemble prediction system? Is there a role for a Community Hydrological Prediction System to integrate contributions to HEPEX and to accelerate infusion of new science into operational forecast systems? What are the main components of a CHPS? What needs to be done to organize and develop a CHPS?

Group 7 Organizational Framework for HEPEX
Co-leaders: Zoltan Toth and Jim Wallace

What are the roles of the various 'groups' (basically meteorological and seasonal climate prediction centers and university/research center investigators). Ideas → plans → research money → results/implementation? How should the HEPEX steering group be organized and how should it function? Is there a role for HEPEX sub-projects? How can HEPEX maintain affiliation with many different groups?

1130 – 1230 Plenary reports from break-out groups and discussion

Group 5 - Wolfgang Grabs and Richard Mueller
Group 6 - Dag Lohmann and Eric Gaume
Group 7 - Zoltan Toth and Jim Wallace

Lunch 1230

Session 8 1400–1530 - Break-out Groups (2 contd)
Chair: John Schaake and Roberto Buizza

Break 1530

Group 8 Contributions & Future Activities
Co-leaders: Alan Hall and Steve Mullen

What kinds of contributions should HEPEX aspire to produce? Is there a role for future "test beds" and case studies? If so what are they? What role should HEPEX play in developing a CHPS?

Group 9 Science & Implementation Strategy
Co-leaders: Eric Wood and Martin Best

What are the key elements of the science and implementation strategies for HEPEX? What are the key science questions that need to be addressed by the HEPEX science plan?

Group 10 Education/User Applications/Product Development
Co-leaders: Chuck Howard and Ad de Roo

What needs to be done to be sure that HEPEX results are useful? What should be done to help users to use probabilistic products? What needs to be done to facilitate product development?

1600 – 1700 Plenary reports from break-out groups and discussion

Group 8 - Alan Hall and Steve Mullen
Group 9 - Eric Wood and Martin Best
Group 10 - Chuck Howard and Ad de Roo

1700 – 1800 Workshop summary and discussion

1800 Adjourn