



**HEPEX Workshop on
Forecasting across spatial scales and time horizons
13-15th September 2023
SMHI, Norrköping, Sweden**

WORKSHOP AGENDA

(update: 07 September 2023)

**All times shown are in the local time zone of the workshop location.*

Day 1: 13 th September 2023 (Wednesday)		
13.00 - 13.30	Registration	
13.30 - 13.40	Welcoming note from SMHI	Ilias Pechlivanidis
13.40 - 13.50	Presentation of HEPEX / EC-HEPEX and workshop aims	Marie-Amélie Boucher
Session 1: Forecasting at different time scales addressing sectoral needs		
Chair: James Bennett		
13.50 - 14.20	Keynote talk #1 Energiforsk - Coordinating the hydropower industry's hydrological research needs	Emma Hagner
14.20 - 14.30	Trends and uncertainty in long inflow predictions for hydropower management	David Horsley
14.30 - 14.40	A continental US testbed for basin-scale S2S climate predictions supporting water management	Andy Wood
14.40 - 14.50	Evaluation of continental-scale ensemble hydrological forecasts from environment and climate change Canada: A comparison with forecasts from the global flood awareness system (GloFAS) (<i>Online</i>)	Étienne Gaborit
14.50 - 15.00	Open Discussion	James Bennett
15.00 - 15.30	Presentation of posters (90 seconds each)	See list of posters
15.30 - 16.10	Coffee break / Poster display / Group photo	



Session 2: AI-enhanced hydrological forecasting across time horizons		
		Chair: Ilias Pechlivanidis
16.10 - 16.20	Enhancing tropical cyclone rainfall forecasts for anticipatory humanitarian action using machine learning	Andrea Ficchi
16.20 - 16.30	A reproducible data-driven workflow for probabilistic seasonal streamflow forecasting over North America (<i>Online</i>)	Louise Arnal
16.30 - 16.40	Enhancing seasonal hydrological forecasting via local data integration and machine learning	Yiheng Du
16.40 - 16.50	Open Discussion	Ilias Pechlivanidis
16.50 - 17.00	A hybrid multi-basin ML flood model driven with seasonal climate forecasts from C3S	Simon Moulds
17.00 - 17.10	Improving the performance of hydrological model forecast using a time-varying multivariate ENKF assimilation	Visweshwaran Ramesh
17.10 - 17.20	The role of earth observations and in situ data assimilation in seasonal hydrological forecasting	Jude L. Musuuza
17.20 - 17.30	Open Discussion	Ilias Pechlivanidis
17.30 - 19.00	Free time Optional: Visit to SMHI (Group 1) - 20' / Frisbee - 60' / Table tennis - 60'	
19.00 - 22.00	Dinner	



Day 2: 14 th September 2023 (Thursday)		
Session 3: Meteorological advancements driving hydrological forecasts at different time scales Chair: Fredrik Wetterhall		
09.00 - 09.10	Challenges of operational weather forecast verification <i>(Online)</i>	Thomas C. Pagano
09.10 - 09.20	Enhancing NMME precipitation forecast accuracy using SM2RAIN-Climate: A case study over Europe	Hamidreza Mosaffa
09.20 - 09.30	Spatial mode-based calibration (SMOC) of forecast precipitation fields from NWP models <i>(Online)</i>	Pengcheng Zhao
09.30 - 09.40	Allowing human expertise on meteorological ensemble forecasts <i>(Online)</i>	Théo Mesure
09.40 - 09.50	Open Discussion	Fredrik Wetterhall
09.50 - 10.00	Short term drought prediction based on stable states between the land and the atmosphere	Joshua K. Roundy
10.00 - 10.10	An evaluation of subseasonal hydrometeorological ensemble forecasts at different time scales <i>(Online)</i>	Wentao Li
10.10 - 10.20	Enhancing sub-seasonal hydrological drought predictions in the European Alpine space using EFAS forecasts	Annie Y.-Y. Chang
10.20 - 10.30	Open Discussion	Fredrik Wetterhall
10.30 - 11.00 Coffee break / Poster display		
Session 4: Recent advances in impact-based forecasting and system evaluations Chair: Louise Slater		
11.00 - 11.30	Keynote talk #2 Forecasting socio-hydrological extremes	Giuliano Di Baldassarre
11.30 - 11.40	Impact-based flood warnings in Sweden using a flood inundation map library approach	Nina Bosshard
11.40 - 11.50	Long range impact-based forecasts for agricultural drought early warning in Australia	Andrew Schepen
11.50 - 12.00	Advances and gaps in the science and practice of impact-based forecasting of droughts	Anastasiya Shyrokaya
12.00 - 12.10	Mediterranean and pan-European forecast and early warning systems against natural hazards: A contribution to the early warnings for all (EW4ALL) initiative	Jürg Luterbacher



12.10 - 12.20	Open Discussion	Louise Slater
12.20 - 12.30	A user centered design approach to co-develop a decision support systems for impact-based flood warnings to improve local flood preparedness	Trine J Hegdahl
12.30 - 12.40	Evaluation of a real-time regional ensemble flow forecasting system in Catalonia of a 2-year term	Xinyu Li
12.40 - 12.50	A skill analysis of the European flood awareness system <i>(Online)</i>	Jesus Casado Rodriguez
12.50 - 13.00	Open Discussion	Louise Slater
13.00 - 14.00	Lunch	
14.00 - 15.30	Breakout group discussions (4 groups) <i>Which are HEPEX's top 5 priorities for (co-)creating forecast systems that add value across spatial scales and time horizons?</i>	
15.30 - 16.00	Coffee break / Poster display	
Session 5: Novelties in modelling, predicting and communicating extreme flood events Chair: Andy Wood		
16.00 - 16.30	Reporting back from the breakout group discussions	
16.30 - 16.40	The Iowa flood center real-time streamflow forecasting system	Felipe Quintero
16.40 - 16.50	SONICS: a novel in-house development system for detection and forecasting potential river floods in Peru <i>(Online)</i>	Harold Llauca
16.50 - 17.00	Regional scale forecasting for surface water floods	Linda Speight
17.00 - 17.10	FLOODGAN 2.0: Dynamic pluvial flood forecasting using deep learning <i>(Online)</i>	Julian Hofmann
17.10 - 17.20	Communicating probabilistic flood forecasts maps to different user groups	Marie-Amélie Boucher
17.20 - 17.30	Open Discussion	Andy Wood
17.30 - 18.00	Keynote talk #3 HEPEXAI	Florian Pappenberger
18.00 - 19.00	Free time	
19.00 - 22.00	Dinner	



Day 3: 15 th September 2023 (Friday)		
Session 6: Enhancing early warnings and hydro-climate services		Chair: Maria-Helena Ramos
09.00 - 09.10	Trended climatology for seasonal streamflow forecasts <i>(Online)</i>	Tristan D. J. Graham
09.10 - 09.20	Testing a Bayesian joint probability modelling approach to bias correct sub-seasonal and seasonal forecasts for drought risk management in Spain	Celia Ramos Sánchez
09.20 - 09.30	Efficient and precise flood inundation predictions using the LSG model <i>(Online)</i>	Niels Fraehr
09.30 - 09.40	Open Discussion	Maria-Helena Ramos
09.40 - 09.50	A brief history of co-creating and the integration of local knowledges, data and needs in climate services	Micha Werner
09.50 - 10.00	Advancing drinking water management with hydro-climate services: the co-generation success story of SMHI Aqua	Carolina Cantone
10.00 - 10.10	Delivering better forecasts: co-developing hydrological status and outlooks systems for increased water security	Katie Facer-Childs
10.10 - 10.20	Jointly verifying and evaluating seasonal forecasts from climate services: experience from the H2020 CLARA project	Louise Crochemore
10.20 - 10.30	Open Discussion	Maria-Helena Ramos
10.30 - 11.00	Coffee break / Poster display	
11.00 - 11.30	Keynote talk #4 Progress and perspectives in hydrometeorological modelling and forecasting	Antara Dasgupta
11.30 - 12.30	Navigating Future Water Challenges: An early-career panel discussion	Early Career (EC-)HEPEX
12.30 - 12.45	Closing - Wrapping up	Ilias Pechlivanidis
12.45 - 14.00	Lunch / Visit to SMHI (Group 2)	
End of workshop		



List of posters

#	Title	First author
1	Developing the post-processing of the European flood awareness system's forecasts	Gwyneth Matthews
2	Evaluation of multi-basin hydrological models in terms of quantile extremes	Yiheng Du
3	Connections between electricity production and climate variability in Europe: A spatial and temporal analysis	Dong An
4	Improving GloFAS rapid inundation mapping products through satellite data assimilation	Antara Dasgupta
5	Making better forecasts: Developing and applying advances in statistical streamflow forecasting techniques across scales	Katie Facer-Childs
6	Sub-seasonal forecasting of shallow groundwater levels in Switzerland	Raoul Collenteur
7	Availability of solar, wind and hydropower across Europe	Anders Wörman
8	Hydro Tasmania's short- to long-range ensemble inflows prediction (SLEIP) system	James C. Bennett
9	Basis for a flood warning system in a fast-flow mediterranean catchment	Rafael Pimentel
10	The hydropower industry's hydrological development programme - HUVA	Emma Hagner
11	Continuous verification to improve forecasters forecasting skill	Maarten Smoorenburg

Support funding: Energiforsk, Swedish energy research centre



Organizing and scientific committee: Louise Arnal (University of Saskatchewan, Canada), James Bennett (CSIRO, Australia), Marie-Amélie Boucher (Université de Sherbrooke, Canada), Rebecca Emerton (ECMWF, UK), Shaun Harrigan (ECMWF, UK), Ilias Pechlivanidis (SMHI, Sweden), Maria-Helena Ramos (INRAE, France), Louise Slater (University of Oxford, UK), Fredrik Wetterhall (ECMWF, UK), Andy Wood (NCAR, US), Massimiliano Zappa (WSL, Switzerland)