

The 6th International Workshop on Catchment Hydrological Modeling and Data Assimilation
(CAHMDA-VI)

The 3rd International Workshop on Data Assimilation for Operational Hydrology and Water
Management of the Hydrologic Ensemble Prediction Experiment (HEPEX-DAFOH III)

2014 PROGRAM

06 Sept (Sat.)		Training Course on DART
07 Sept (Sun.)		Training Course on OpenDA
		Onsite Registration
08 Sept (Mon.)	Morning	Session 1: <u>Extreme Events: Detection</u>
	Afternoon	Session 2: <u>Extreme Events: Modeling</u>
09 Sept (Tue.)	Morning	Session 3: <u>Extreme Events: Predictability</u>
	Afternoon	Session 4: <u>Utilization of Multi-source Observations</u>
10 Sept (Wed.)	Morning	Session 5: <u>Data Assimilation Development and Evaluation</u>
	Afternoon	Discussion and Summary
	Evening	Banquet
11 Sept (Thu.)	Morning	Session 6: <u>Developing Synergism with Operational Hydrology</u>
	Afternoon	Session 7: <u>Advancing Data Assimilation Science for Operational Hydrology</u>
12 Sept (Fri.)	Morning	Session 8: <u>Real-world Applications of Data Assimilation in Operational Hydrology</u>
	Afternoon	Discussion and Closing Remarks
13 Sept (Sat.)		Excursion



BUREAU OF
ECONOMIC
GEOLOGY



THE UNIVERSITY OF TEXAS AT AUSTIN

CIESS

CENTER FOR INTEGRATED EARTH SYSTEM SCIENCE



Friday-Saturday, 5-6 September, 2014

Data assimilation training course on DART

Location: The Bureau of Economic Geology Auditorium (PRC 130), Pickle Research Campus
<http://www.utexas.edu/maps/prc/buildings/beg.html>

Note that the students will need Matlab and that they should visit
http://www.image.ucar.edu/DAReS/tutorial_CAHMDA_2014/ in preparation for the tutorial.

05 Sept. (Fri.)

17:00 – 19:00 Pre-workshop evaluation of participants’
laptops: software, wifi, etc.

06 Sept. (Sat.)

09:00 – 10:30 Data assimilation with DART – Part 1
Dr. Tim Hoar, NCAR, USA
10:30 – 10:45 Coffee / Tea Break
10:45 – 13:00 Data assimilation with DART – Part 2
Dr. Tim Hoar, NCAR, USA
13:00 – 14:00 Lunch
14:00 – 15:30 Data assimilation with DART – Part 3
Dr. Tim Hoar, NCAR, USA
15:30 – 15:45 Coffee / Tea Break
15:45 – 17:30 Data assimilation with DART – Part 4
Dr. Tim Hoar, NCAR, USA

Sunday, 7 September, 2014

Data assimilation training course on OpenDA

Location: The Bureau of Economic Geology Auditorium (PRC 130), Pickle Research Campus
<http://www.utexas.edu/maps/prc/buildings/beg.html>

- 09:00 – 10:30 Data assimilation with OpenDA – Part 1
Dr. Albrecht Weerts, Deltares, The Netherlands.
- 10:30 – 10:45 Coffee / Tea Break
- 10:45 – 13:00 Data assimilation with OpenDA – Part 2
Dr. Albrecht Weerts, Deltares, The Netherlands.
- 13:00 – 14:00 Lunch
- 14:00 – 15:30 Data assimilation with OpenDA – Part 3
Dr. Albrecht Weerts, Deltares, The Netherlands.
- 15:30 – 15:45 Coffee / Tea Break
- 15:45 – 17:30 Data assimilation with OpenDA – Part 4
Dr. Albrecht Weerts, Deltares, The Netherlands.

Monday, 8 September, 2014

Opening for CAHMDA VI

Location: Etter-Harbin Alumni Center, The University of Texas at Austin, Austin, Texas, USA (<http://www.utexas.edu/maps/main/buildings/utx.html>)

08:45 – 09:00 Welcome words by:
Zong-Liang Yang, The University of Texas at Austin, Workshop Co-Chair
Sharon Mosher, Dean, Jackson School of Geosciences, The University of Texas at Austin, USA

Session 1: Extreme events: detection

Location: Etter-Harbin Alumni Center

Chair: Bob Su, The University of Twente, The Netherlands

Keynote presentations

09:00 – 09:45 Matthew Rodell, NASA Goddard Space Flight Center, USA: “Detection of Extreme Events with GRACE and Data Assimilation”
09:45 – 10:30 John Nielsen-Gammon, Texas A&M University, USA: “Detection of Drought at High Spatial Resolution Using Bias-Adjusted Stage IV Precipitation”
10:30 – 11:00 Coffee / Tea Break

Oral presentations

11:00 – 11:20 David Arctur, The University of Texas at Austin, USA: “Advancing Flood Detection and Preparedness Through GEOSS Water Services”
11:20 – 11:40 Xingang Dai, IAP/Chinese Academy of Sciences, China: “Climate Change Adaptation Involving Land Use Management and Grazing Strategies by Use of Social Survey, Statistics, and Numerical Modeling”

Poster presentations

11:40 – 12:10 Short (1 Slide Each) Presentations for Posters (Sessions 1 & 2)
12:10 – 12:40 Poster View / Discussions / Coffee / Tea Break
12:40 – 14:00 Lunch /
Presentation: Wayne Tschirhart, PE, PMP, CFM,
Watershed Engineering, San Antonio River Authority, USA

Session 2: Extreme events: modeling

Location: Etter-Harbin Alumni Center

Chair: John Nielsen-Gammon, Texas A&M University, USA

Keynote presentations

14:00 – 14:45 Barton Forman, University of Maryland, USA: “Towards Multi-sensor Snow Assimilation: A Simultaneous Radiometric and Gravimetric Framework”
14:45 – 15:30 David Maidment, The University of Texas at Austin, USA: “National Flood Interoperability Experiment”
15:30 – 15:50 Coffee / Tea Break

Oral presentations

- 15:50 – 16:10 Zhicong Yin, Beijing Meteorological Bureau, China: “Numerical Simulation of Urban Ponding and Its Application in Beijing”
- 16:10 – 16:30 Li Dan, IAP/Chinese Academy of Sciences, China: “Hydrological Projections over the 3H Region of China Using Climate Change Scenarios”
- 16:30 – 16:50 Yong-Fei Zhang, The University of Texas at Austin, USA: “Assimilation of MODIS Snow Cover and GRACE Terrestrial Water Storage Data through DART/CLM4”
- 16:50 – 17:10 Peirong Lin, The University of Texas at Austin, USA: “Implementing a vector-based river routing scheme within the WRF-Hydro modeling system”

Poster presentations

- 17:10 – 17:30 Poster View / Discussions / Coffee / Tea Break

Tuesday, 9 September, 2014

Session 3: Extreme events: predictability

Location: Etter-Harbin Alumni Center

Chair: Paul Dirmeyer, George Mason University and COLA, USA

Keynote presentations

- 09:00 – 09:45 Gianpaolo Balsamo, ECMWF, UK: “Earth Surface Modelling Advances at ECMWF and Their Connection with Extreme Events Prediction”
- 09:45 – 10:30 Michael Ek, NCEP, USA: “Land Data Assimilation Systems at NCEP: Predicting Extreme Hydrometeorological Events”
- 10:30 – 11:00 Coffee / Tea Break

Oral presentations

- 11:00 – 11:20 Ervin Zsoter, ECMWF, UK: “Discharge Modelling Experiments with the TIGGE Archive”
- 11:20 – 11:40 Abdul Wahid Mohamed Rasmy, The University of Tokyo, Japan: “Application of Multi-Frequency Passive Microwave Observations and Data Assimilation Strategies for Improving Numerical Weather Forecasting in the Developing Regions”

Poster presentations

- 11:40 – 12:10 Short (1 Slide Each) Presentations for Posters (Sessions 3 & 4)
- 12:10 – 12:40 Poster View / Discussions / Coffee / Tea Break
- 12:40 – 14:00 Lunch / Presentation: Nick Z. Fang, Civil Engineering Department, The University of Texas at Arlington, USA

Session 4: Utilization of multi-source observations

Location: Etter-Harbin Alumni Center

Chair: Xin Li, CAREERI/Chinese Academy of Sciences, Lanzhou, China

Keynote presentations

- 14:00 – 14:45 Rolf Reichle, NASA, USA: “Towards Multivariate Land Data Assimilation in the NASA GEOS-5 System”
- 14:45 – 15:30 Paul Houser, George Mason University, USA: “Towards a Hyper-Resolution Integrated Water Observation and Prediction System”
- 15:30 – 16:00 Coffee / Tea Break

Oral presentations

- 16:00 – 16:20 Kinya Toride, The University of Tokyo, Japan: “Development of an Algorithm for Soil Moisture with High Spatial- and Temporal- Resolution”
- 16:20 – 16:40 J. M. Bergeron, Université Sherbrooke, Canada: “Using Multivariate Data Assimilation to Improve Streamflow Predictions for a Mountainous Watershed”

Poster presentations

- 16:40 – 17:30 Poster View / Discussions / Coffee / Tea Break

Wednesday, 10 September, 2014

Session 5: Data assimilation development and evaluation

Location: Etter-Harbin Alumni Center

Chair: Omar Ghattas, The University of Texas at Austin, USA

Keynote presentations

09:00 – 09:45 Leila Farhadi, The George Washington University, USA: “Development of Data Assimilation Techniques for Hydrological Applications”

09:45 – 10:30 Jasper Vrugt, University of California, Irvine, USA: “Particle Markov Chain Monte Carlo Simulation: Theory, Practical Implementation, and Limitations”

10:30 – 11:00 Coffee / Tea Break

Oral presentations

11:00 – 11:20 Kun Yang, ITP/Chinese Academy of Sciences, Beijing, China: “Microwave Data Assimilation Practice in the Tibetan Plateau and Its Implication for Land Hydrological Modeling”

11:20 – 11:40 Sujay V Kumar, NASA GSFC/SAIC, USA: “Multivariate Assimilation of Satellite-derived Remote Sensing Datasets in the North American Land Data Assimilation System (NLDAS)”

11:40 – 12:00 Feng Huang, China Agricultural University, China: “Investigating Crop Water Productivity by Using Remotely Sensed Approach for Summer Maize at Hebei Plain in North China”

12:00 – 12:30 Short (1 Slide Each) Presentations for Posters (Session 5)

12:30 – 13:00 Poster View / Discussions / Coffee / Tea Break

13:00 – 14:00 Lunch / Todd G. Caldwell, Bureau of Economic Geology, University of Texas at Austin, USA

Discussion/Summary for CAHMDA-VI

Location: Etter-Harbin Alumni Center

Chair: Zong-Liang Yang, The University of Texas at Austin, USA

Keynote presentations

14:00 – 14:30 Omar Ghattas, The University of Texas at Austin, USA
Summary and discussion for session 5

14:30 – 15:00 Bob Su, University of Twente, The Netherlands
Summary and discussion for session 1

15:00 – 15:30 Tim Hoar, NCAR, USA
Summary and discussion for session 2

15:30 – 16:00 **Group photo** and Coffee / Tea Break

16:00 – 16:30 Gianpaolo Balsamo, ECMWF, UK and Michael Ek, NCEP, USA
Summary and discussion for session 3

16:30 – 17:00 Xin Li, CAREERI/Chinese Academy of Sciences, China
Summary and discussion for session 4

17:00 – 19:00 **Banquet** / Presentation: Robert Mace, Deputy Executive Administrator, Texas Water Development Board, Texas, USA

Thursday, 11 September, 2014

Opening for HEPEX-DAFOH III

Location: Etter-Harbin Alumni Center

- 09:00 – 09:15 Welcome words by:
Dong-Jun Seo, The University of Texas at Arlington, Workshop Co-Chair
Jean-Pierre Bardet, Director of Urban Water Institute, The University of Texas at Arlington, USA

Session 6: Developing synergism with operational hydrology

Location: Etter-Harbin Alumni Center

Chair: Yuqiong Liu, NASA and The University of Maryland, USA

Keynote presentation

- 09:15 – 09:45 Soroosh Sorooshian, University of California, Irvine, USA: “Challenges and Limitations of Hydroclimatological Forecasting and the Relative Role of Its Three Pillars: Models, Observations and Parameterization”
- 09:45 – 10:15 Yuqiong Liu, NASA and The University of Maryland, USA: “Toward Improving Operational Streamflow Forecasting at Regional and Continental Scales by Assimilating Satellite-Based Snow Observations Using the NASA Land Information System”

Oral presentations

- 10:15 – 10:30 Dong-Jun Seo, The University of Texas at Arlington, USA: “High-resolution Flash Flood Forecasting for the Dallas-Fort Worth Metroplex (DFW)”
- 10:30 – 11:00 Coffee / Tea Break
- 11:00 – 11:15 Harrie-Jan Hendricks-Franssen, Agrosphere (IBG-3), Forschungszentrum Julich, Germany: “Real-time Control of Irrigation by Assimilating Measured Soil Moisture Contents into CLM: A Case Study in Spain”
- 11:15 – 11:30 Ahmad Tavakoly, The University of Texas at Austin, USA: “Extension of Regional River Flow Modeling to the Continental Scale of the Mississippi River Basin by Using High Resolution River Data from NHDPlus Dataset”
- 11:30 – 11:45 Narendra N. Das, Jet Propulsion Laboratory (JPL), USA “SMAP High Resolution Data for Assimilation in Geophysical Applications”
- 11:45 – 12:15 Short (1 Slide Each) Presentations for Posters (Sessions 6, 7, and 8)
- 12:15 – 14:00 Poster View / Lunch
Presentation: Mike Sterling, Chief of Water Resources Division , USACE Fort Worth, USA

Session 7: Advancing data assimilation science for operational hydrology

Location: Etter-Harbin Alumni Center

Chair: Hamid Moradkhani, Portland State University, USA

Keynote presentations

- 14:00 – 14:30 Milija Zupanski, CIRA, USA: “Advancing Data Assimilation Science for Operational Hydrology: Methodology, Computation, and Algorithms”
- 14:30 – 15:00 Hamid Moradkhani, Portland State University, USA: “Combined Data Assimilation and Multimodeling for Seasonal Hydrologic Forecasting- A more Complete Characterization of Uncertainty”

Oral presentations

- 15:00 – 15:15 Seong Jin Noh, Korea Institute of Construction Technology, Korea:
“Impacts of State Updating of Combined Hydrologic and Hydraulic Models
for Streamflow Forecasting via Data Assimilation”
- 15:15 – 15:30 Yohei Sawada, The University of Tokyo, Japan: “Improving the
Performance of an Eco-Hydrological Model to Estimate Soil Moisture and
Vegetation Dynamics by Assimilating Microwave Signal”
- 15:30 – 16:00 Coffee / Tea Break
- 16:00 – 16:15 Kyunghyun Kim, National Institute of Environmental Research, S. Korea:
“Ensemble Data Assimilation of Water Quality Variables”
- 16:15 – 16:30 Arezoo Rafieei Nasab, The University of Texas at Arlington, USA:
“Comparative Evaluation of EnKF and MLEF for Assimilation
of Streamflow Data into NWS Operational Hydrologic Models”
- 16:30 – 16:45 Ripendra Awal, Prairie View A&M University, USA: “Analysis of
Streamflow Trends in San Jacinto River Basin, Texas”

Poster presentations

- 16:45 – 17:30 Poster View / Discussions / Coffee / Tea Break

Friday, 12 September, 2014

Session 8: Real-world applications of data assimilation in operational hydrology

Location: Etter-Harbin Alumni Center

Chair: Albrecht Weerts, Deltares, The Netherlands

Keynote presentations

- 09:00 – 09:30 Robert Hartman, NWS Office of Hydrologic Development, USA:
“Operational Data Assimilation at NWS River Forecast Centers”
- 09:30 – 10:00 Albrecht Weerts, Deltares, The Netherlands: “Towards Operationalizing
Ensemble Data Assimilation in Hydrologic Forecasting”

Oral presentations

- 10:00 – 10:15 Anthony J. Anderson, NWS-Arkansas-Red Basin River Forecast Center,
USA: “Developments in Water Supply Forecasting: Combining New
Methods and Existing Models”
- 10:15 – 10:45 Coffee / Tea Break
- 10:45 – 11:00 Sunghee Kim, The University of Texas at Arlington, USA: “Data Assimilation
for Operational Watershed Water Quality Forecasting at the National Institute
of Environmental Research in Korea”
- 11:00 – 11:15 Changmin Shin, National Institute of Environmental Research, Korea:
“Operational Water Quality Forecasting Using Ensemble Data Assimilation
for EFDC and HSPF Model”
- 11:15 – 13:00 Poster Viewing and Lunch
Presentation: Bob Joseph, Director, The Texas Water Science Center, USA

Discussion/Summary for HEPEX-DAFOH III

Location: Etter-Harbin Alumni Center

Chair: Dong-Jun Seo, The University of Texas at Arlington, USA

Keynote presentations

- 13:00 – 13:30 Yuqiong Liu, NASA and The University of Maryland, USA
Summary and discussion for session 6
- 13:30 – 14:00 Hamid Moradkhani, Portland State University, USA
Summary and discussion for session 7
- 14:00 – 14:30 Albrecht Weerts, Deltares, The Netherlands
Summary and discussion for session 8
- 14:30 – 15:00 **Best Poster Awards & Closing of The Joint Workshop**

Saturday, 13 September, 2014

- 07:30 – 17:00 **Excursion**
Enchanted Rock
Llano – Cooper’s BBQ for lunch
Fall Creek Vineyards in Tow/Lake Buchanan