

USA PUB Workshop

Towards a community action plan for the hydrological sciences

Oct 16-19, 2006

LaSells Stewart Center

Oregon State University

Sponsored by NSF, CUAHSI, IAHS and the OSU IWW

Draft Final Program

Sunday

15 October

6:00-7:00 pm

Registration, Hilton Garden Inn

7:00 - 9:00 pm

Welcome Reception

OSU Room

Hilton Garden Inn

Monday

16 October

7:30

Registration, LaSells Stewart Center

8:30

Opening, LaSells Stewart Center, Construction and Engineering Room

Welcome by OSU President, Ed Ray (tentative)

Welcome by Director, OSU Inst. Water and Watersheds, Michael Campana

Workshop Goals: Jeff McDonnell, OSU

Plenary Session: The PUB Movement

Chaired by Michael Campana, OSU

8:45

The IAHS PUB movement: Past, present and future

Jeff McDonnell, OSU

9:15

CUAHSI and PUB: Towards a community science agenda for the USA

Rick Hooper, CUAHSI

9:45

PUB and vision for a new science of hydrology

Siva Sivapalan, University of Illinois

10:15

Coffee

Plenary Session: Watershed Classification

Chaired by Chris Duffy, Penn State

10:45

Towards a typology of catchments

Ross Woods, NIWA New Zealand

- 11:15 The new USGS watershed classification system
Dave Wolock, USGS Kansas
- 11:45 Geology as destiny at the large watershed scale
Gordon Grant, USFS Corvallis
- 12:15 **Lunch (Memorial Union and Marketplace West)**
- Plenary Session:** Conceptualization Of Process Heterogeneity
Chaired by Siva Sivapalan, University of Illinois
- 2:30 Seeing through process heterogeneity in the subsurface: Coupled hydrological systems
Henry Lin, Penn State University
- 3:00 Thresholds as a characteristic form of nonlinearity in hydrogeomorphic systems
Jonathan Phillips, University of Kentucky
- 3:30 From landscape heterogeneity to terrain-based scaling rules
Peter Troch, University of Arizona
- 4:00 **Beer (or coffee) and Poster Session**
Chaired by Jeff McDonnell
Posters will remain "up" for the duration of the conference in the coffee area
- 6:00 **End of Sessions**
- 6:30 **PUB at the pub: Squirrels Tavern, 100 SW 2nd St, Corvallis (beer and food),
*Pub crawl back to OSU to follow.....***

**Tuesday
17 October**

- Plenary Session:** Uncertainty Estimation and Model Diagnostics
Chaired by Larry Band, UNC
- 8:30 Bayesian uncertainty estimation approaches
Jim Freer, Lancaster University
- 9:00 Towards an uncertainty framework
Thorsten Wagener, Penn State University
- 9:30 Scaling in hydro-geomorphology and its use in modeling and prediction
Efi Foufoula-Georgiou, University of Minnesota
- 10:00 **Coffee**
- Plenary Session:** Development and Use of New Data Collection Approaches
Chaired by Rick Hooper, CUAHSI
- 10:30 Field based mass spectrometers for real time water cycle tracing
Carol Kendall, USGS
- 11:00 On the need for new radar technologies
Witold Krajewski, University of Iowa

- 11:30 Fibre optic hydrology
John Selker, OSU
- 12:00 **Lunch (Memorial Union and Marketplace West)**
- 1:30 **Breakout Session: Towards USA community science questions: **Where are the gaps?****
Goal of these breakout groups
- Build on talks and posters to discuss, in a highly interdisciplinary way:
What the current state of the art?
What are the current gaps in the state of the art?
- (1) Watershed classification
Chair: Gordon Grant
- (2) Conceptualization of process heterogeneity
Chair: Larry Band
- (3) Uncertainty estimation and model diagnostics
Chair: Rick Hooper
- (4) New data collection approaches
Chair: Ty Ferre
- (5) New hydrological theory and modeling
Chair: Siva Sivapalan
- 3:30 **Coffee**
- Plenary Session: New Hydrological Theory**
Chaired by Praveen Kumar, University of Illinois
- 4:00 New theory derived from systems theory
Hoshin Gupta, U. Arizona
- 4:30 Self-similarity and a new hydrology
Chris Duffy, Penn State University
- 5:00 It's not that we need physically based models—it's what physics do we use in our models?
Jim Kirchner, UC Berkeley
- 5:30 **End of Discussions**
- 6:30 **Conference Dinner, OSU Alumni Center**
Dinner music by John Bliss Xtet;
Dinner Speaker: Robert Glennon, Morris K. Udall Professor of Law and Public Policy,
Rogers College of Law, University of Arizona (book signing to follow)
Tales of Bottled Water and French Fries:
The Environmental Consequences of Groundwater Pumping

Wednesday
18 October

Plenary Session: New Modeling Approaches

Chaired by Chris Duffy, Penn State

8:30

TopDown modelling

David Post, CSIRO Townsville

9:00

Large scale models of ungauged basins

Upmanu Lall, Columbia University

9:30

Ecologically-based models

Marc Stieglitz, Georgia Tech University

10:00

Coffee

10:30

Breakout Session: Towards USA community science questions: **Filling in the gaps**

Goal of these breakout groups

- Build on talks, posters and previous day's discussion to address:

Where do we want to be in 10 yrs?

What do we need to do to get there?

What science can be done with today's infrastructure?

What science cannot be done with today's infrastructure?

(1) Watershed classification

Chair: Gordon Grant

(2) Conceptualization of process heterogeneity

Chair: Larry Band

(3) Uncertainty estimation and model diagnostics

Chair: Rick Hooper

(4) New data collection approaches

Chair: Ty Ferre

(5) New hydrological theory and modeling

Chair: Siva Sivapalan

12:30

Lunch (Memorial Union and Marketplace West)

Plenary Session: PUB Implementation

Chaired by Siva Sivapalan, U. Illinois

1:30

International PUB Implementation

Ian Littlewood, CEH Wallingford

2:00

CUAHSI HIS and PUB

David Tarboton, Utah State U.

2:30 Remote sensing, Hydroclimatology modelling and PUB
Praveen Kumar, University of Illinois

3:00 **Coffee**

3:30 What type of facilities do we need?
Larry Band, University of North Carolina

4:00 Detailed Reports back to the group from break-out group chairs

6:00 End of Sessions, Evening on your own

Thursday
19 October

8:30 **Breakout Session:** Towards USA community science questions: **Recommendations**
Goal of these breakout groups

- Build on previous breakout group discussions to address cross-cutting issues:
What cannot be done in the current funding model?
What do we want to recommend to NSF (for new rfp's, program solicitations, etc)

(1) Infomatics and Cyber-infrastructure

Chair: Dave Tarboton

(2) Field data and data collection (sensors, remote sensing and beyond)

Chair: John Selker

(3) Community facilities

Chair: Larry Band

(4) Barriers to including the human dimension

Chair: Rick Hooper

(5) Education and Outreach: How to engage beyond NSF funding

Chair: Ian Littlewood

Coffee break on a group-by-group basis as needed

11:30 **Reports back to the group by discussion chairs**

12:00 **Plenary Discussion:** Summary, Synthesis and Way Forward
Jeff McDonnell, OSU

12:30 **End of Conference – Lunch**