
US-Japan Joint Seminar on Responses of Catchment Hydrology and Forest Biogeochemistry to Climatic and Environmental Change

Sponsored by:

**The Japan Society for the Promotion of Science
The US National Science Foundation
The Virginia Water Resources Research Center, Virginia Tech**

4-7 March 2013

**Hawaii Imin International Conference Center at Jefferson Hall
East-West Center**

**1601 East West Road
Honolulu, Hawaii 96848**

On the campus of the University of Hawaii – Manoa

Co-conveners:

Emily Elliott, University of Pittsburgh

Takashi Gomi, Tokyo University of Agriculture & Technology

Mark Green, Plymouth State University

Nobuhito Ohte, University of Tokyo

Kevin McGuire, Virginia Tech

Brian McGlynn, Duke University

Stephen Sebestyen, USDA Forest Service

Naoko Tokuchi, Kyoto University

Student organizers:

Jon Duncan, University of North Carolina

JP Gannon, Virginia Tech

Marino Hiraoka, Tokyo University of Agriculture & Technology

Lucy Rose, University of Pittsburgh



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The conference facility opens at 7:45 AM. We must vacate the rooms by 4:45 PM.

2nd FLOOR LAYOUT OF THE IMIN CONFERENCE CENTER

RHAMIN SEJONG

RM.

coffee & snacks

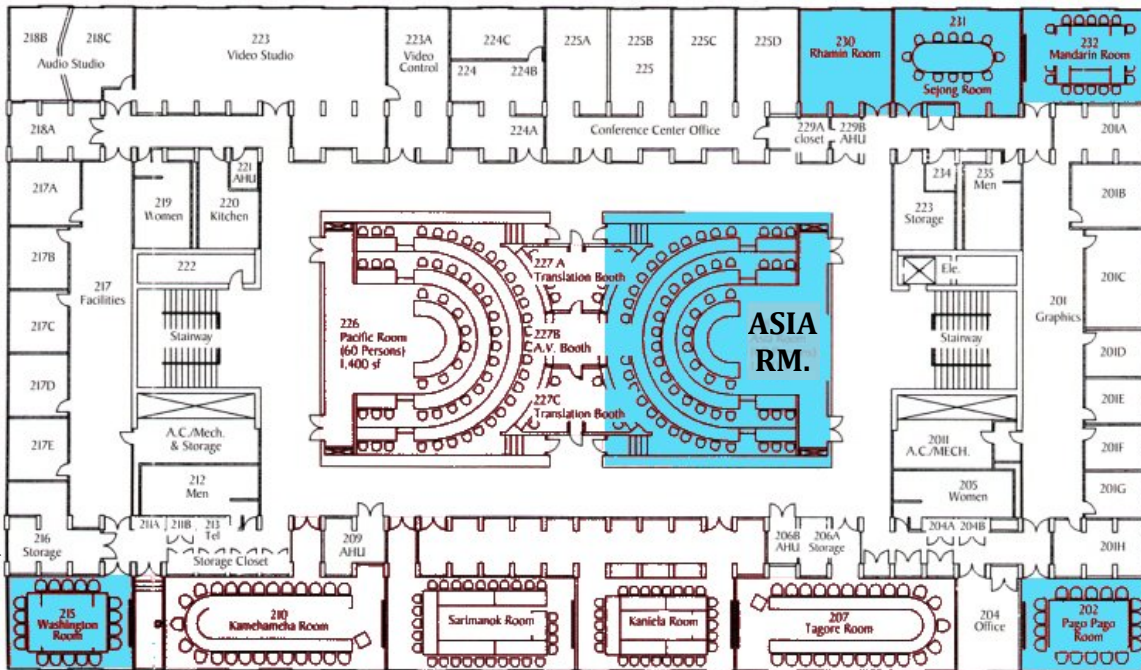
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breakout sessions

MANDARIN

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breakout sessions



PAGO PAGO

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breakout sessions

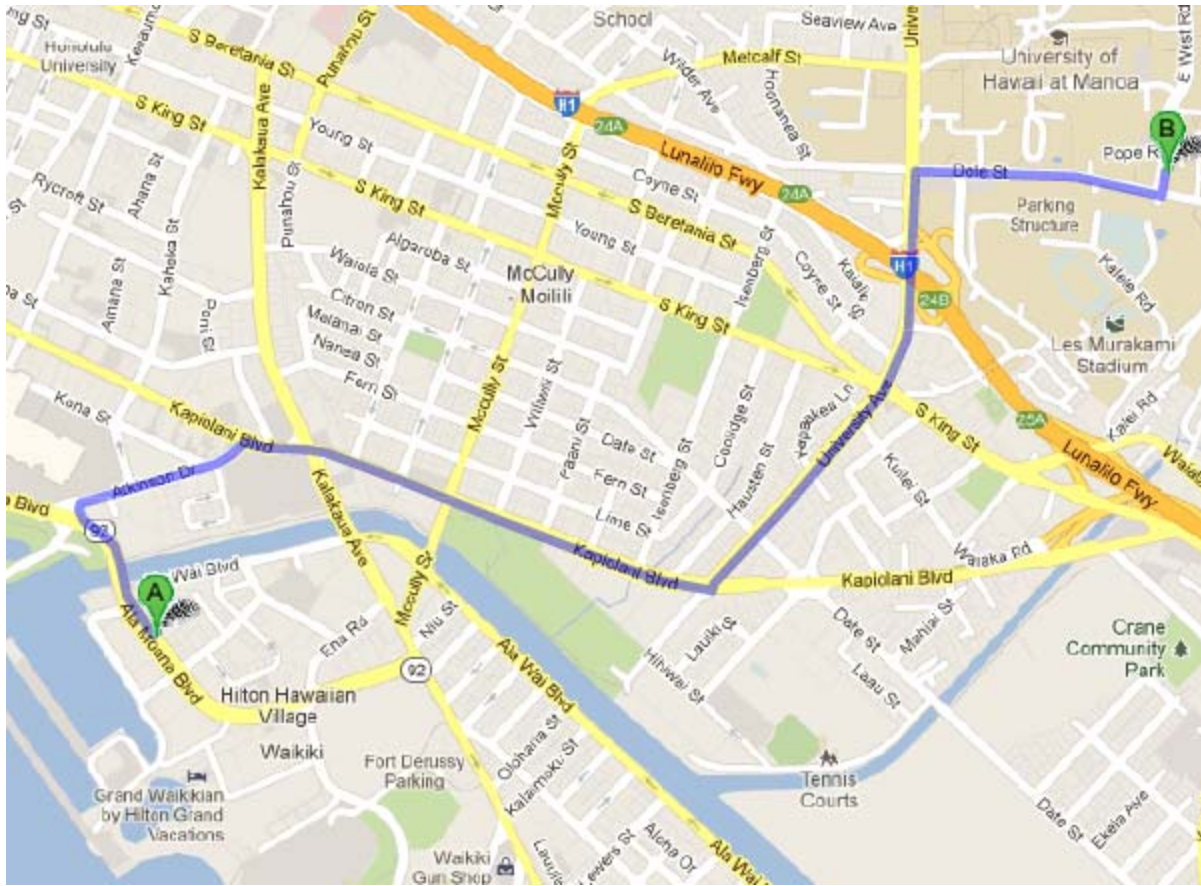
WASHINGTON

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breakout sessions



MAP SHOWING THE EQUUS HOTEL AND EAST-WEST CENTER LOCATIONS



MAP SHOWING THE WALK FROM THE IMIN CONFERENCE CENTER TO THE UNIVERSITY OF HAWAII CAMPUS CENTER (LUNCH)



Sunday, March 3: Arrival and check in at Equus and other Hotels

6:00 - ??? **Dinner and mixer:** We will determine a location after arriving. Check your email on Sunday afternoon for an update that will announce a location to meet.

Monday, March 4: Sessions I and II.

7:30 - 8:00 **Shuttles from Equus Hotel to East - West Center.** Each morning a shuttle bus will leave from the Equus Hotel. This shuttle will have a capacity of 25 passengers/shuttle run. Two trips will be adequate to accommodate all attendees. Plan to leave at either 7:30 or 7:50.

8:00 - 8:30 Asia Room. **Continental breakfast and welcome.**

Breakfast menu: Served in the Rahman Room. The menu is the same on following days:

Coffee/decaffeinated coffee/tea/juice/bottled water; Assorted pastries/large fruit tray.

Bottled water will be available throughout the day.

Announcements: Kevin McGuire, Nobu Ohte, Stephen Sebestyen.

Informal comments on the last US-Japan Joint Seminar by previous attendees: Rick, Hooper, Nobu Ohte, Jeff McDonnell, Brian McGlynn.

Introduction of all participants: your name, your institution, a one-sentence description of your research interests, and a one-sentence statement about your vision for goals or products of the workshop.

Student spotlight and survey results: Jon Duncan, JP Gannon, Marino Hiraoka, Lucy Rose.

Open comments from all participants.

Session I: Insights from process studies of stream flow generation.

Discussion leaders: Brian McGlynn (Duke University) and Takashi Gomi (Tokyo University of Agriculture and Technology)

8:30 - 10:00 Asia Room. **Session I**, 20 minute talks with 10 minutes for discussion.

8:30-9:00 Kelsey Jensco, "Hillslopes, thresholds, and space time variability of watershed runoff."



9:00-9:30 Yuko Asano, "Effects of topography on the timing of peak flows in mountainous headwater catchment."

9:30-10:00 Maki Tsujimura, "Role of bedrock groundwater in rainfall-runoff processes in headwater catchments underlain by different lithology."

10:00 - 10:15 **Break:** coffee/tea and breakfast items, served in the Rahman Room.

10:15 - 10:45 Asia Room. **Session I**, 20 minute talk with 10 minutes for discussion.

10:45-11:15 Ken'ichirou Kosugi, "Intensive observations of stream flow and bedrock groundwater in headwater catchments with steep topography."

Session II: Insights from process studies of biogeochemistry.

Discussion leaders: Nobu Ohte (University Tokyo) and Stephen Sebestyen (USFS)

10:45 - 11:45 Asia Room. **Session I**, 20 minute talks with 10 minutes for discussion.

10:45-11:15 Kyungsoo Yoo, "Geochemical evolution of soils in actively eroding catchments: geomorphological vs. hydrological controls."

11:15-11:45 Kazuo Isobe, "Microbial ecology and N cycling in forest soils."

11:45 - 12:45 **Lunch:** University of Hawaii Campus Center food court, 7 minute walk from East - West Center, <http://www.uhmdining.com/ccd.htm>

12:45 - 1:45 Asia Room. **Session II**, 20 minute talks with 10 minutes for discussion.

12:45-1:15 Nobu Ohte, "Spatial distribution of nitrate sources of rivers in the Lake Biwa watershed, Japan: Controlling factors revealed by nitrogen and oxygen isotopes of nitrate."

1:15-1:45 Ken'ichi Osaka, "Hydrological influence on interaction between internal nitrogen cycle and nitrogen input/output in small forested catchment."

1:45 - 3:30 Wailana Room. **Poster Session I**, sodas/juices, cookies.

Yutaka Abe, "Transfer of ^{134}Cs and ^{137}Cs from forested headwater catchment as solute, coarse organic matters and suspended solids after Fukushima dai-ichi nuclear power plant accident."

Izuki Endo, "Diffusion and export dynamics of ^{137}Cs deposited on the forested area in Fukushima after the nuclear power plant accident in March 2011: Current status and study plan."

Jonathan M. Duncan, "Examining the mechanistic basis of summer nitrate peaks: a coupled biogeochemical and hydrological approach."



John (JP) Gannon, "Hydropedology at Hubbard Brook: An integration of hydrology and soil science to better understand streamflow generation and catchment outflow chemistry."

Takashi Gomi, "Scaling effects of catchment runoff responses due to forest harvesting in headwaters."

Marino Hiraoka, "Spatial distributions of infiltration capacity on forest floor: Patterns and controlling factors."

Akiko Hirata, "Changes in rainfall interception and stable isotopic compositions of throughfall after stripe thinning in a Japanese cypress plantation."

Shreeram Inamdar, "Extreme storms and runoff carbon."

Brian McGlynn, "Catchment storage and connectivity as mediated by topography and vegetation."

Cristobal Padilla, "Characterization of groundwater response to rainfall and its interaction with catchment runoff on a hillslope with fractured bedrock by creep deformation."

Lucy Rose, "Biogenic and anthropogenic NO_x contributions to precipitation nitrate."

Stephen Sebestyen, "Effects of nitrate source variation on interpretations of concentration-discharge hysteresis loops to decipher catchment processes."

Maggie Zimmer, "Fine scale variations of surface water chemistry in an ephemeral to perennial drainage network in the Hubbard Brook Experimental Forest, NH, USA."

3:30 - 4:15 Asia Room. **Keynote speaker:** Jeff McDonnell (Oregon State and University Saskatchewan), co - chair of the 2000 Joint US - Japan Meeting: "An assessment of forest hydrology and biogeochemistry a decade later." 30 minute talk with 15 minutes for discussion.

4:15 - 4:30 Asia Room. **Review of the day, synthesis, and wrap up.**

4:30 - 4:45 **Announcements and shuttles to Equus hotel**, 25 passengers/shuttle run. Two trips will be adequate to accommodate all attendees.

Dinner and socializing, no formal plan.



Tuesday, March 5, Session III and field trip.

7:30 - 8:00 **Shuttles to East - West Center.**

8:00 - 8:15 Asia Room. **Continental breakfast and announcements**, breakfast served in the Rahman Room.

Session III: Merging hydrologic connectivity and biogeochemical processing.

Discussion leaders: Emily Elliott (University Pittsburgh) and Naoko Tokuchi (Kyoto University).

8:15 - 10:15 Asia Room. **Session III**, 20 minute talks with 10 minutes for discussion.

8:15-8:45 Todd Scanlon, "Integration of land-atmosphere interaction with catchment hydrology and biogeochemistry."

8:45-9:15 Masayuki Itoh, "Hydrobiogeochemical influences on water chemistry and methane production in a temperate forested wetland in central Japan."

9:15-9:45 Steve Sebestyen, "Processes driving long-term trends of dissolved organic matter efflux from peatland catchments: climatic or atmospheric drivers?"

9:45-10:15 Naoko Tokuchi, "Interecosystem connection between forest and river: Nutrient linkages."

10:15-10:45 University of Hawaii Campus Center food court, pick up boxed lunches for field trip.

10:45-11:00 E-W Center parking lot, board buses for field trip.

11:00 - 5:00 **Field trip** led by Thomas Giambelluca (University of Hawaii – Manoa) to visit with the Honolulu Board of Water Supply,

Waihe'e Tunnel, Halawa Shaft, and Pali Lookout

<http://www.boardofwatersupply.com/cssweb/display.cfm?sid=1084>.

Bring clothing that is appropriate for wet and muddy conditions. *There is a short hike, about 1 km. Inside the tunnel, you will walk in water that is 2-5 cm deep. You must wear shoes, boots, or sandals (no bare feet).*

See also,

http://www.staradvertiser.com/news/20100726_Tunnel_funnels_millions_of_gallons_of_water.html?id=99220519

5:15 - 5:30 **Review of the day, synthesis, announcements, and wrap up on the bus. Return to Equus hotel.**

Dinner and socializing, no formal plan.



Wednesday, March 6, Session IV.

7:30 - 8:00 **Shuttles to East - West Center.**

8:00 - 8:15 Asia Room. **Continental breakfast and announcements**, breakfast served in the Rahman Room.

8:15 - 9:00 Asia Room. **Keynote speaker:** Keisuke Koba University of Agriculture and Technology: "Nitrogen dynamics in subtropical and temperate forests elucidated by stable isotope techniques." 30 minute talk with 15 minutes for discussion.

Session IV: Understanding Catchment Vulnerability and Resilience in the Face of Change.

Discussion leaders: Mark Green (Plymouth State), Kevin McGuire (Virginia Tech), and Tomoki Oda (University of Tokyo).

9:00 - 10:00 Asia Room. **Session IV**, 20 minute talks with 10 minutes for discussion.

9:00-9:30 Masanori Katsuyama, "Evaluations on influences of forest disturbances based on the long-term hydrobiogeochemical observation."

9:30-10:00 Ryan Emanuel, "Spatial variability of vegetation water stress and implications for catchment-scale water and carbon fluxes."

10:00 - 10:15 **Break:** coffee/tea and breakfast items, served in the Rahman Room.

10:15 - 11:45 Asia Room. **Session IV**, 20 minute talks with 10 minutes for discussion.

10:15-10:45 Taro Uchida, "On hillslope scale hydrologic connectivity."

10:45-11:15 Tomoki Oda, "The effect of hydrological processes on the persistence of high stream nitrate discharge after clear-cutting of forested catchment."

11:15-11:45 Sarah Godsey, "Snow, wind, and fire: vulnerability and resilience of Arctic hillslopes."

11:45 - 12:30 **Lunch:** University of Hawaii Campus Center food court.

12:30 - 1:30 Asia Room. **Session IV**, 20 minute talks with 10 minutes for discussion.

12:30-1:00 Shreeram Inamdar, "Extreme storms and runoff carbon: Are we entering uncharted waters?"

1:00-1:30 Christina (Naomi) Tague, "Eco-hydrology in snow-dominated mountains of the Western US – Integrating models and measurements."



1:30 - 3:30 Wailana Room. **Poster Session II**, sodas/juices, cookies.

Masamitsu Fujimoto, "Effects of bedrock groundwater spring on hydrological processes in a mountainous footslope."

Mariko Furukawa, "'Groundwater and surface water flow system in semi-arid watersheds, northeast Tunisia'."

Mark Green, "Conceptualizing hydrologic resilience in temperate forested catchments."

Richard P. Hooper, "Sharing catchment data with CUAHSI HIS."

Sho Iwagami, "Role of entrapped pore air in rainfall-runoff process in a small headwater catchment underlain by volcanic rock."

Brian McGlynn, "Shallow groundwater dynamics across complex terrain: Influences of landscape position and climate."

Tomoki Oda, "Estimating mean transit time of runoff water during storm flow using the step shift of chloride input following forest cutting at a headwater catchment in Japan."

Nobu Ohte, "Whole story of episodic high nitrate discharge due to the partial dieback of a pine forest in Japan: runoff generation processes control seasonality."

Stephen Sebestyen, "Spruce-Peatland Responses Under Climatic and Environmental Change: An *in situ* warming by CO₂ manipulation of a forest bog in northern Minnesota."

Stephen Sebestyen, "StreamChemDB: A web-accessible stream chemistry database."

Xinchao Sun, "The influence of strip thinning on canopy interception in Japanese cypress plantation."

Rieko Urakawa, "Effects of freeze-thaw cycles by winter climate changes on soil nitrogen dynamics in ten temperate forest ecosystems throughout Japanese archipelago."

Ma Wenchao, "Estimation of mean transit time and transit time distribution in mesoscale catchments using lumped hydrological model with isotopic tracers."

3:30 - 4:15 Asia Room. **Keynote speaker**: Rick Hooper (CUAHSI): "Transcending the uniqueness of place: Challenges and opportunities for catchment science."

4:15 - 4:30 Asia Room. **Review of the day, synthesis, and wrap up.**

4:30 - 4:45 **Announcements.**

4:45 - 6:00 **Break, relocate to the banquet facility, and happy hour.** Remain near the Imin Conference Center, a shuttle will circulate between there and the Tea House with 15 passengers/shuttle run.



6:00 - 8:30 **Dinner at Natsunoya Tea House**, fixed-price dinner, see menu B at [http://www.natsunoyahawaii.com/banquet - menus/dinner - buffet - selection/](http://www.natsunoyahawaii.com/banquet-menu/dinner-buffet-selection/). There will a vegetarian/vegans options. We will provide our own alcohol.

8:30 - 9:00 **Shuttles to Equus hotel**, 15 passengers/shuttle run.

Socializing, no formal plan.



Thursday, March 7, Small Group Discussion

7:30 - 8:00 **Shuttles to East - West Center.**

8:00 - 8:15 Asia Room. **Continental breakfast and announcements.**

Brainstorming sessions: Questions will be developed after each session by discussion leaders. The workshop organizers will refine questions that will be used to stimulate discussion for small groups. Our goal is to define potential synthesis projects and ideas for collaborative research. Interaction of all participants is encouraged and expected. Discussion leaders will facilitate discussions, but not dominate or drive the agenda. This schedule is very flexible – the listed times are provided as a starting point.

8:15 - 9:00 Asia Room. **Large group discussion:** Overarching question: What product can we develop from the workshop?

9:00 - 10:00 Mandarin, Washington, Pago Pago, and Sejong Rooms. **Breakout group discussions.** Possible topics are:

Data analysis planning.

Collaborative research and proposal development.

Manuscript ideas.

Ad hoc ideas stemming from discussions.

10:00 - 10:15 **Break:** coffee/tea and breakfast items served in the Rahman Room.

10:15 - 10:45 Asia Room. **Large group discussion:** Report back from small group discussions and task identification/assignment.

10:45 - 11:45 Mandarin, Washington, Pago Pago, and Sejong Rooms. **Breakout group discussions:** Further refine planning and task assignment.

11:45 - 12:30 **Lunch:** University of Hawaii Campus Center food court.

12:30 - 2:00 **Large group (Asia Room) and breakout group discussions (Mandarin, Washington, Pago Pago, and Sejong Rooms):** continue detailed discussion on topics areas from morning; plan follow - up including timelines and milestones; *etc.*

2:00 - 2:15 **Break:** coffee/tea and breakfast items served in the Rahman Room

2:15 - 4:15 **Large group (Asia Room) and breakout group discussions (Mandarin, Washington, Pago Pago, and Sejong Rooms).**

4:15 - 4:30 Asia Room. **Review of the day, synthesis, and wrap up.**

4:30 - 4:45 **Announcements and shuttles to Equus hotel.**

Dinner and socializing, no formal plan.



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