

**HUBBARD BROOK ECOSYSTEM STUDY**  
**57<sup>TH</sup> ANNUAL COOPERATORS' MEETING**  
**July 7-9, 2020**  
**On Zoom**

		<b>Day 1: Tuesday, July 7, 2020</b>
17:00		<b>Keynote Session: The Moss Storytelling Hour: Candid stories told by members of the Hubbard Brook Community</b>

		<b>Day 2: Wednesday, July 8, 2020</b>
12:30	Welcome and Announcements: Lindsey Rustad, John Battles, and Pamela Templer	
12:40	Pamela Templer	Introductions
	<b>Session I</b>	<b>Hydropedology Moderator: Pamela Templer</b>
12:55	Bailey, Scott	Building blocks of watersheds-soil and groundwater controls on mineral weathering and solute flux
13:00	Bower, Jenny	Relating soil characteristics and weathering in rock fragments of Watershed 3
13:05	Ross, Don	Charismatic (microscale) bedrock of Watershed 3
13:10	Pennino, Amanda	How does the composition of soil water shift during storm events? Grab a rain jacket and let's head into Watershed 3.
13:14		<b>Questions and Discussion, Session I</b>
	<b>Session II</b>	<b>Hydrometeorology Moderator: Pamela Templer</b>
13:24	Gannon, JP	A suite of web apps to explore Watershed 3 shallow groundwater well data
13:27	Coffey, Tristan & Barton, Chris	Discrete 3-D fracture network and groundwater flow path modeling in bedrock beneath the Mirror Lake watershed
13:30	Woodall, Christopher	What the story of the Frankenlog means for ecologists and foresters
13:35	Evans, Daniel	How the Hubbard Brook flux tower can work for you: Variables, QA/QC, and data availability
13:38	Kelsey, Eric	Hubbard Brook flux tower fundamental measurements & analysis of ET Data
13:43	Green, Mark	An update on changing evapotranspiration at Hubbard Brook
13:46	Norouzi Moghanjoghi, Karim	Integrated hydrology model of Hubbard Brook with Hydrogeosphere
13:51	Campbell, John	FroSen: A low-cost soil frost sensor
13:53		<b>Questions and Discussion, Session II</b>
14:03		<b>Breakout Groups</b>
14:13		<b>Refreshment Break</b>
	<b>Session III</b>	<b>Climate Experiments Moderator: Liz Studer</b>
14:23	Reinmann, Andrew	Climate change across seasons experiment: Summary of forest carbon cycle response
14:28	Caron, Stephen	Trends in soil solution nitrogen at the climate change across seasons experiment (CCASE)
14:31	Minocha, Rakesh	Climate change influences foliar nutrition and metabolism of mature red maple (Acer rubrum) trees in a northern hardwood forest
14:36	Rustad, Lindsey	The Hubbard Brook Ice Storm Experiment: What we learned and next steps
14:41	Fakhraei, Habibollah	Biogeochemical modeling of Hubbard Brook watersheds in response to the ice storm
14:46	Asbjornsen, Heidi	DroughtNet year 6 - recovery from extreme and chronic drought
14:49	Frost, Tanner	Tree growth and response to drought net experiment

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14:54	Templer, Pamela	Changing seasonality and nitrogen oligotrophication in the Northern Hardwood Forest
14:56		<b>Questions and Discussion, Session III</b>
15:06	<b>Discussion and Breakout</b>	<b>Diversity, Equity, Inclusion, &amp; Antiracism at Hubbard Brook: Springboard Discussion</b> Moderators: Anthea Lavallee & Clara Chaisson
	<b>Session IV</b>	<b>Heterotrophs</b> Moderator: John Campbell
15:36	Kaiser, Sara	A forest of opportunity: an undergraduate entry point into field-based bird research at the Hubbard Brook Experimental Forest
15:39	Hao, Lezhi (Stella)	Female plumage traits as signals of competitive ability, mate quality, and stress resilience in the black-throated blue warbler
15:42	Rabinowicz, Sophie	Parental responses to research disturbance and their fitness consequences across a landscape of risk in the black-throated blue warbler
15:45	Kochmaruk, Raisa	Demystifying the bird illustration process: highlights from an undergraduate Artist in Residence
15:48	Forg, Lindsey	Effect of a lengthening green season on the diet breadth of insectivorous birds foraging in green and brown food webs
15:51	Deitsch, John	Effects of artificial light at night on caterpillar predation and parasitism pressures by arthropods
15:54	Rodenhouse, Nick	Long-term trends in insect abundance
15:58		<b>Questions and Discussion, Session IV</b>
	<b>Session V</b>	<b>Resilience and Public Engagement</b> Moderator: Gary Lovett
16:08	Contosta, Alexandra	Leading indicators suggest declining resilience of biology and biogeochemistry in a northern hardwood forest
16:13	Rogers, Shannon	Community resilience in the White Mountains
16:18	Besley, John	Cultures of public engagement at Hubbard Brook and Harvard Forest - Year 2.5 Update
16:23	Garlick, Sarah	Embedding public engagement with science at Hubbard Brook (PES@LTERs): Year 3 of the PES@LTERs project: What have we learned?
16:28	Lavallee, Anthea	News from the Hubbard Brook Research Foundation
16:33	Martin, Mary	Update on Information Management at Hubbard Brook
16:38		<b>Questions and Discussion, Session V</b>
16:48		<b>Broader Discussion and Visioning</b>
17:03		<b>Announcements</b>

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<b>Day 3: Thursday, July 9, 2020</b>		
12:30	Lindsey Rustad: Welcome	
	<b>Session VI</b>	<b>Vegetation</b> <span style="float: right;"><b>Moderator: Jennifer Bower</b></span>
12:40	Teets, Aaron	Improving predictions of tree phenology in ecosystem models
12:45	Cleavitt, Nat	Seeds to seedlings: the 2020 sugar maple cohort in New Hampshire
12:50	Battles, John	Vegetation dynamics in the conifer-hardwood boundary in Hubbard Brook Valley: 1995-2015
12:55	Wentzell-Brehme, Sage	Factors influencing red oak seedling survival at the northern edge of the species range
13:00	Nash, Joe	Grow with the changes: Forest succession and Woody Debris
13:05	Berlinger, Carinai	Progressive Disaster: Rating Beech Bark Disease
13:15	<b>Questions and Discussion, Session VI</b>	
	<b>Session VII</b>	<b>Multiple Element Limitation</b> <span style="float: right;"><b>Moderator: Jackie Matthes</b></span>
13:25	Fisk, Melany	Could co-limitation be caused by different nutrients limiting shoots and roots?
13:30	Fahey, Tim	N-P co-limitation in young northern hardwood forest
13:35	Blumenthal, Noah	Mycorrhizal type and co-limitation of forest productivity
13:40	Rauschendorfer, Denise	Germinants: the next generation
13:45	Paradiso, Eva	Fine dining: root morphology and nutrient amendments
13:50	Mann, Thomas	Litterfall and soil respiration fluxes in the MELNHE study
13:55	Young, Alex	Distinguishing N and P addition from the air using imaging spectroscopy
14:00	<b>Questions and Discussion, Session VII</b>	
14:10	<b>Breakout Groups</b>	
14:20	<b>Refreshment Break</b>	
	<b>Session VIII</b>	<b>Biogeochemistry</b> <span style="float: right;"><b>Moderator: Chris Neill</b></span>
14:30	Berger, Torsten	Long-term changes in soil and soil solution chemistry after Ca- and Al additions to sugar maple stands of the NuPert study
14:35	Ontman, Renata	Research Proposal: An analysis of pH effects on microbial biomass and activity in a northern hardwood forest
14:38	Lovett, Gary	Some key results of the N Bank Project
14:43	Rosi, Emma	Revisiting the SINIC model for understanding stream nitrate export dynamics
14:48	Pardo, Linda	Explaining the unexpected: predicting an extreme nitrate loss event from a forested catchment
14:53	<b>Questions and Discussion, Session VIII</b>	
	<b>Session IX</b>	<b>Denitrification</b> <span style="float: right;"><b>Moderator: Lindsey Rustad</b></span>
15:03	Goodale, Christy	Delving into denitrification
15:06	Uribe, Angelina	Soil nitrogen cycling over two decades following calcium treatment in Hubbard Brook Experimental Forest, NH
15:11	Stewart, Anthony	Nitrogen cycle fluxes across hydrogeological units: hot spots in Watershed 3
15:16	Kreitinger, Liz	Extreme precipitation patterns and environmental controls of denitrification in Hubbard Brook soils
15:21	Mejia, Catalina	How to study the temperature effect on denitrification at HBEF

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15:24	Nevison, Cynthia	Nitrification and denitrification in the Community Land Model: Evaluation of key fluxes and flux ratios against observations at Hubbard Brook
15:29	Groffman, Peter	New frontiers in nitrogen gas research at Hubbard Brook
15:34		<b>Questions and Discussion, Session IX</b>
	<b>Session X</b>	<b>Streams Moderator: Christy Goodale</b>
15:44	Keeton, William	Future Forests - Future Streams: An Update on Project Planning
15:47	Bernhardt, Emily	New tools and ways to explore HBWatER (the long-term stream and precipitation chemistry record)
15:50	Edwards, Tyler	Gather, Share, Teach: The Hubbard Brook Water Record Story
15:53	McDowell, William H.	A tale of two watersheds
15:56	Wilson, Geoff	Spectral absorbance characteristics of the weekly stream collections
16:01	Thellman, Audrey	Shaded and scoured: What limits algal biomass in Hubbard Brook streams?
16:06	Heisler, Ryan	Riding the Toxicity See-Saw: Geology and Acid Rain Influences on Eastern Brook Trout
16:11		<b>Questions and Discussion, Session X</b>
16:21		<b>Broader Discussion and Visioning</b>
16:36		<b>Announcements</b>