Ian Bolliger

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Education

University of California, Berkeley

PhD Energy and Resources, expected May 2020

MS Civil and Environmental Engineering (Civil Systems), 2017

MS Energy and Resources, 2016

Graduate Certificate in Geospatial Information Science and Technology (GIST), 2017

Data Science for the 21st Century (DS421) National Science Foundation Research Trainee

Harvard University

AB Applied Mathematics (focus in Geophysical Science), 2011

Magna Cum Laude in Field, High Honors in Field, Spanish Language Citation

Professional Appointments

2019- **Graduate Student Researcher**, UC Berkeley

2014-19 **Berkeley Graduate Fellow**, UC Berkeley

2015-18 **National Defense Science and Engineering Graduate (NDSEG) Fellow**, UC Berkeley

2013-14 **Researcher**, Institute for Health Metrics and Evaluation

2011-13 **Post-Bachelor Fellow**, Institute for Health Metrics and Evaluation

2010 **Teaching Fellow**, Harvard University

Publications

Working Papers and Manuscripts In Review

1. Rolf, E., …, **Bolliger, I.,** et al., "Generalizing Global Observation With Satellite Imagery and Machine Learning." *Under Review*.
2. Almås, I., Auffhammer, M., Bold, T., **Bolliger, I**., et al., "Destructive Behavior, Judgment, and Economic Decision-making under Thermal Stress." Cambridge, MA. *NBER Working Paper*. Retrieved from http://www.nber.org/papers/w25785.pdf.

Peer-reviewed Journal Articles

1. GBD 2016 Healthcare Access and Quality Collaborators (including **Bolliger, I.**), "Measuring performance on the Healthcare Access and Quality Index for 195 countries and territories and selected subnational locations: a systematic analysis from the Global Burden of Disease Study 2016." *The Lancet*, May 2018.
2. Haagsma, J., Graetz, N., **Bolliger, I.**, et al., "The global burden of injury: incidence, mortality, disability-adjusted life years, and time trends from the Global Burden of Disease Study 2013." *Injury Prevention*, Dec. 2015.
3. Murray, C. J. L., …, **Bolliger, I.**, et al., "Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990–2013: quantifying the epidemiological transition." *The Lancet*, Aug. 2015.
4. GBD 2013 Disease and Injury Incidence and Prevalence Collaborators (including **Bolliger, I.**). "Global, regional, and national incidence, prevalence, and YLDs for 301 acute and chronic diseases and injuries for 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013." *The Lancet*, Jun. 2015.

5. Hotez, P. J., Alvarado, M., Basáñez, M., **Bolliger, I.**, et al., "The Global Burden of Disease Study 2010: Interpretation and Implications for the Neglected Tropical Diseases." *PLoS Negl Trop Dis* 8, no. 7, July 24, 2014.
6. Hay, R., Johns, N., Williams, H., **Bolliger, I.**, et al., "The Global Burden of Skin Disease in 2010: An Analysis of the Prevalence and Impact of Skin Conditions." *J Invest Dermatol*, Jun. 2014.
7. 200+ authors (including **Bolliger, I.**), "The state of US health, 1990-2010: Burden of diseases, injuries, and risk factors." *JAMA*, vol. 310, no. 6, pp. 591–608, Aug. 2013.
8. GBD 2010 Country Collaboration (including **Bolliger, I.**), "GBD 2010 country results: a global public good." *The Lancet*, Mar. 2013
9. 200+ authors (including **Bolliger, I.**), "Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010." *The Lancet*, vol. 380, no. 9859, pp. 2095–2128, Dec. 2012.
10. 200+ authors (including **Bolliger, I.**), "Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010." *The Lancet*, vol. 380, no. 9859, pp. 2197–2223, Dec. 2012.
11. 200+ authors (including **Bolliger, I.**), "Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010." *The Lancet*, vol. 380, no. 9859, pp. 2163–2196, Dec. 2012.
12. **Bolliger, I.,** "Analysis of 3D numerical simulations of subsolidus thermal convection: application to Venus and Europa." *THURJ*, vol. 5, no. 1, pp. 10–19, May 2012.

Pre-prints

1. **Bolliger, I.**, et al., "Ground Control to Major Tom: the importance of field surveys in remotely sensed data analysis." Retrieved from https://arxiv.org/abs/1710.09342. Oct. 2017.

Reports

1. Rhodium Group, "Clear, Present and Underpriced: The Physical Risks of Climate Change." Oakland, CA. Mar 2019. Retrieved from https://rhg.com/wp-content/uploads/2019/03/RHG_PhysicalClimateRisk_Report_April_Final.pdf.

Popular Writing

1. Lam, L., **Bolliger, I.**, Chen, J., Liu, A., Yang, J., and Margolis, R. "Chinese Solar Makers' Strategies to Overcome Trade Conflicts." *The Energy Collective*. Web. Nov 9, 2016. http://www.theenergycollective.com.
2. **Bolliger, I.** "Combatting the Growing Environmental and Human Health Hazards of Microplastics." *The Inertia: Mountain*. Web. Oct 13, 2015. https://www.theinertia.com/surf/combatting-the-growing-environmental-and-human-health-hazards-of-microplastics/.
3. **Bolliger, I.** "How to Read Weather Forecasts During Snow Season." *The Inertia: Mountain*. Web. Nov 28, 2014. https://www.theinertia.com/environment/how-to-read-weather-forecasts-during-snow-season/
4. **Bolliger, I.** "Adventuring in an Evolving World." *The Inertia: Mountain*. Web. Sep 4, 2015. https://www.theinertia.com/surf/adventuring-through-an-evolving-world-a-series-on-environmental-change/.
5. **Bolliger, I.** "HIV Positives: Uganda's AIDS Epidemic Over Time." *Solutions Journalism Network*. Web. Aug. 30, 2013. http://solutionsjournalism.org/2013/08/30/hiv-positives-how-the-aids-epidemic-has-dramatically-changed-in-uganda/.
6. **Bolliger, I.** "HIV Positives: Uganda Tackles AIDS." *Solutions Journalism Network*. Web. Aug. 22, 2013. http://solutionsjournalism.org/2013/08/22/hiv-positives-uganda-tackles-aids/.

Research Grants and Fellowships

2019 AGU Celebrate 100 Award

2017 CITRIS Tech for Social Good, Tech Development Award
2016 Student Technology Fund, UC Berkeley
2016 Charles K. Birdsall Fellowship, UC Berkeley
2015 The Green Initiative Fund, UC Berkeley
2015 National Defense Science and Engineering Graduate (NDSEG) Fellowship
2014 Berkeley Fellowship for Graduate Study
2008 Harvard Club of Seattle Summer Community Service Fellowship

Honors and Awards

2017,18 3rd place – Energy and Resource Alternatives Category, Big Ideas @ Berkeley Competition
2017 "People's Choice" – Berkeley Energy and Resources Collaborative Innovation Expo Poster Competition
2016 2nd place – Sacramento Municipal Utility District Off-Grid Tiny House Competition
2016 Semi-Finalist – MIT Climate Co-Lab Competition
2016 3rd place – Patagonia Eco-Innovation Case Competition
2012 Best Manuscript – Spring Issue of *The Harvard Undergraduate Research Journal*

Conference Participation

Panels Organized

1. Primary Convener, Chair. "Advances in remote sensing, machine learning, and economics to improve risk management and evaluate impacts in socio-environmental systems." *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, Dec 2019.
2. Chair. "Protecting Earth's Climate for the Next Centennial." *AGU Fall Meeting*, San Francisco, CA, Dec 2019.
3. Co-Convener, Chair. "Science to Inform Climate Resilience and Adaptation Decision-making and Policy." *AGU Fall Meeting*, Washington, DC, Dec 2018.
4. Primary Convener, Chair. "Estimating the Impacts of Terrestrial Cryospheric Change on Physical, Social and Economic Systems." *AGU Fall Meeting*, New Orleans, LA, Dec 2017.

Work Presented

1. (accepted) **Bolliger, I.** et al., "Estimating Past, Present, and Future Contributions of Climate Change to Economic Losses from Hurricanes in the United States." *AGU Fall Meeting*, Washington, DC, Dec 2019.
2. **Bolliger, I.,** et al., "Estimating Past, Present, and Future Contributions of Climate Change to Economic Losses from Hurricanes in the United States." *Workshop on Risk Analysis for Extremes in the Earth System*, Lawrence Berkeley National Laboratory, Berkeley, CA, July 2019.
3. **Bolliger, I.**, et al., "A probabilistic assessment of climate change-driven economic losses from tropical cyclones and sea level rise in the United States." *AGU Fall Meeting*, Washington, DC, Dec 2018.
4. **Bolliger, I.,** et al., "Convolutions of random patches as a generalizable featurization for multi-domain prediction using remote sensing imagery." *AGU Union Fall Meeting*, Washington, DC, Dec 2018.
5. **Bolliger, I.**, "Spatiotemporal Variability in Topographic and Vegetative Controls on Basin-Wide Snow Distribution in the Tuolumne River Basin." *AGU Fall Meeting*, New Orleans, LA, Dec 2017.
6. **Bolliger, I.**, Siegner, A., and Webster, B., "THIMBY: A Platform for the Development and Testing of Off-grid Home Energy Management Systems." *Berkeley Energy and Resources Collaborative Innovation Expo*, Berkeley, CA, 23 Feb 2017.
7. **Bolliger, I.**, "Modeling our Snowpack with Terrain and Vegetation: Implications for Water Resource Forecasting Under Climate Change." *Graduate Climate Conference*, Marine Biological Laboratory, Woods Hole, MA, 11 Nov 2017.

8. **Bolliger, I.**, "Modeling the Influence of Terrain and Vegetation on Snowpack: Findings and Implications for Water Management in Snowmelt-fed Regions." *Interdisciplinary PhD Workshop on Sustainable Development*, Columbia University, 21 Apr 2017.
9. **Bolliger, I.**, "Quantifying Persistent Spatial Variability in the Influence of Topography and Vegetation on Snow Depth in the Tuolumne River Basin: Implications for Prediction and Process Knowledge." *American Geophysical Union Fall Meeting*, San Francisco, CA, 12 Dec 2016.
10. **Bolliger, I.**, Chen, J., Lam, L., Liu, A., Yang, J., "A review of policy and business strategy approaches to photovoltaic trade barriers in China." *International Youth Photovoltaic Forum, China International Fair for Investment and Trade*, Xiamen, CHN, 9 Sep 2016.
11. **Bolliger, I.**, "Geographically Weighted Regression on large raster images: understanding spatial variability in the influence of topography and vegetation on snow depth in the Tuolumne River Basin." *Workshop on Algorithms for Modern Massive Data Sets,* Berkeley, CA, 23 Jun 2016.
12. **Bolliger, I.**, "Capturing spatiotemporal variability in the influence of topography and vegetation on snow depth in the Tuolomne River Basin using geographically weighted regression." *2016 Western Snow Conference*, Seattle, WA, 19 Apr 2016.
13. **Bolliger, I.**, "Satellites, lasers, and global snowpack models: Leveraging new data and models to track and predict water scarcity in meltwater-dependent regions." *Los Angeles Global Health Conference*, Los Angeles, CA, 06 Feb 2016.
14. **Bolliger, I.**, Siegner, A., and Karmann, C., "Tiny House in My Backyard." *International Alliance of Research Universities Global University Climate Forum*, Paris, France, 05 Dec 2015.
15. **Bolliger, I.** and Siegner, A., "Zero Net Energy Tiny Houses: A Campus Sustainable Housing Solution." *Association for the Advancement of Sustainability in Higher Education 2015 Conference & Expo*, Minneapolis, MN, 26 Oct 2015.
16. **Bolliger, I.**, "Monitoring Disparities in Chronic Conditions: A novel surveillance system to capture county-level data on chronic health conditions, risk factors, and treatment." *SACNAS 2012 National Conference: Creating a Healthy World through Science, Diversity & Technology*. Washington State Convention & Trade Center, Seattle, WA. 11 Oct 2012. Graduate Oral Scientific Symposium.

Teaching Experience

2017 **Graduate Student Instructor,** Spatial Data Analysis, Goldman School of Public Policy, UC Berkeley

2013- **Instructor of Record, Avalanche Level 1**, National Ski Patrol, Truckee, CA

2014 **Lecturer,** Global Burden of Disease (GBD) Technical Training Workshop**,** Institute for Health Metrics and Evaluation, Chania, Greece

2010 **Teaching Fellow**, Mathematical Methods in the Sciences, Harvard University

2008-09 **English as a Second Language Tutor**, Concilio Hispano

Academic Service

American Geophysical Union

2017- Cryosphere Section Executive Committee Member

2017- Liaison between Cryosphere and Societal Impacts and Policy Sciences (SIPS) Sections

Energy and Resources Group

2017-19 Development Committee Student Member

Intergovernmental Panel on Climate Change

2019 Expert Reviewer, First Order Draft, Sixth Assessment Report, Chap 9: Ocean, Cryosphere, and Sea Level Change

2018 Expert Reviewer, Second Order Draft, Special Report on the Ocean and Cryosphere in a Changing Climate

Journal Referee: Computers and Geosciences

Memberships: American Geophysical Union, American Meteorological Society, The International Environmetrics Society, Association of Polar Early Career Scientists

Additional Experience

2019 **NCAR/LDEO CMIP6 Hackathon** National Center for Atmospheric Research (NCAR), Boulde, CO.
Summer Institute for Preparing Future Faculty UC Berkeley, Berkeley, CA.

2017 **International High Performance Computing Summer School** Extreme Science and Engineering Discovery Environment (XSEDE), Boulder, CO.
Advanced Study Program Colloquium NCAR "Interaction of Precipitation with Orography", Boulder, CO.

2015 **Methods in Environmental Data Acquisition** University of New Mexico, 14-21 Jun 2015, La Joya, NM.

Skills

Climate Modeling Experience running NCAR's Weather Research and Forecasting (WRF) Model, experience analyzing CMIP5 and CMIP6 model output

Programming Languages and Tools Python, MATLAB, kubernetes, git, CI tools; introductory skills with C, C++, Fortran, OpenMP, MPI, UPC, CUDA, OpenACC, Spark, Tensorflow, R, Stata, Java, Javascript

Languages Spanish (conversational)

References

Solomon Hsiang, University of California, Berkeley
Daniel Kammen, University of California, Berkeley
Trevor Houser, Rhodium Group
Robert Kopp, Rutgers University