

# Robert Soden

CURRICULUM VITAE // JUNE 2021

Assistant Professor  
Department of Computer Science, School of the Environment  
University of Toronto

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<http://robertsoden.io>

## RESEARCH AREAS

Crisis Informatics, human-computer interaction (HCI), computer supported cooperative work (CSCW), infrastructure studies, science and technology studies (STS), sustainable HCI, participatory sensing, critical data studies, civic technology

## RESEARCH METHODS

Ethnography, design research, public participation, system building and evaluation

## EDUCATION

**Ph.D.**, Computer Science 2019  
University of Colorado Boulder

Dissertation:

*Crisis Informatics in the Anthropocene: Disasters as Matters of Care & Concern*

Committee:

Leyasia Palen (chair), Lilly Irani, Jed Brubaker, Joe Bryan, Clayton Lewis, Ken Anderson

**Master of Arts**, Natural Resources and Sustainable Development 2007  
American University, Washington DC

**Bachelor of Arts**, Political Science 2003  
**Bachelor of Arts**, History  
University of Illinois Chicago, Chicago, IL

## PROFESSIONAL EXPERIENCE

**University of Toronto** 7/2020 – Present  
Assistant Professor  
Computer Science & School of the Environment

Courses Taught:

*Social Media & Environmentalism*

*Design Theory & Human-Computer Interaction*

**Columbia University** 7/2019 – 6/2020  
Department of Computer Science  
Post-doctoral Researcher  
Teaching Assistant for Advanced Web Design Studio (Fall 2019)

**World Bank** 3/2011 – 6/2020  
Global Facility for Disaster Reduction and Recovery  
Senior Disaster Risk Management Consultant

<b>University of Colorado Boulder</b> Department of Computer Science Graduate Research Assistant Teaching Assistant for Social Computing (Spring 2014)	8/2013 – 5/2019
<b>Stanford University</b> Civil and Environmental Engineering Visiting Adjunct Lecturer	9/2016 – 12/2017
<i>Courses Taught:</i> International Development and Disaster Risk (Fall 2016) Topics in Disaster Resilience Research (Fall 2016, Winter 2017, Spring 2017, Fall 2017)	
<i>Grants Awarded:</i> NSF EAGER (\$100,000), Global Partnership for Sustainable Development (\$250,000)	
<b>Development Seed</b> Lead Software Developer	3/2008 – 12/2010
<b>American University</b> School of International Service Teaching Assistant <i>Course:</i> International Development and the Environment (Online, Summer 2005)	6/2005 – 8/2005
<b>GRANTS, AWARDS AND HONORS</b>	
<b>CONVERGE Researcher Working Group</b> Mutual Aid Response to COVID-19	April 2020
<b>Best Paper Honorable Mention</b> CSCW 2018	November 2018
<b>Visiting Student Researcher</b> University of California, Berkeley Center for Science, Technology, Medicine & Society	January 2018
<b>Global Partnership for Sustainable Development Data Innovation Grant</b> \$250,000 - Machine Learning, Computer Vision, Tech Ethics in Disasters	December 2017
<b>Best Paper Honorable Mention</b> CHI 2017	May 2017
<b>National Science Foundation EAGER Grant</b> \$100,000 – Crowdsourcing for Earthquake Damage Assessment	August 2016
<b>Graduate Certificate in Critical Theory</b> CU Boulder Department of German & Slavic Language & Literature	May 2016
<b>Best Student Paper Nominee</b>	May 2015

ISCRAM 2015

**Best Student Paper**  
ISCRAM 2014

May 2014

**CU Research Assistant Award**  
Department of Computer Science  
University of Colorado Boulder

April 2014

**World Bank Vice Presidential Unit (VPU) Team Award**  
Open Data for Resilience Initiative, Caribbean

April 2014

## PUBLICATIONS

### **Book Chapters**

**Soden, R.** and Palen, L. (2021). The social life of disaster information: Cultivating resources for emergent information infrastructures in Nepal. In Eric Welch (Ed.) *Research Handbook on E-Government*. Edward Elgar. *In Press*.

### **Journal Articles**

Bhattacharjee, G. M.EERI, **Soden, R.**, Barns, K., Loos, S., Lallemand, D. (2021). Factors affecting earthquake responders building damage information needs and use. *Earthquake Spectra*. Earthquake Engineering Research Institute. *In Press*.

Wagenaar, D., Curran, A., Balbi, M., Bhardwaj, A., **Soden, R.**, Hartato, E, Sarica, G.M., Ruangpan, L., Molinario, G., Lallemand, D. (2020). Invited perspectives: How machine learning will change flood risk and impact assessment.

Anderson, J., **Soden, R.**, Keegan, B., Palen, L., Anderson, K. (2018). The Crowd is the Territory: Assessing Quality in Peer-Produced Spatial Data During Disasters. *International Journal of Human Computer Interaction*. Taylor and Francis.

Lallemand, D., **Soden, R.**, Rubinyi, S., Loos, S., Barns, K., Bhattacharjee, G. (2017). Post-disaster damage assessments as catalysts for recovery: A look at the assessments conducted in the wake of the 2015 earthquake in Nepal. *Earthquake Spectra*. Earthquake Engineering Research Institute.

### **Archival, Peer-Reviewed Conference Papers**

**Soden, R.**, Pathak, P., Dogget, O. (2021). What We Speculate About When We Speculate About Sustainable HCI. In Proceedings of the ACM Conference on Computing and Sustainable Societies (COMPASS). *In Press*.

**Soden, R.**, Lallemand, D, Hamel, P., Barns, K. Becoming Interdisciplinary: Fostering Critical Engagement with Disaster Data. In Proceedings of the ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW). *In Press*.

**Soden, R.** Lalone, N., Dailey, D. (2021). A Speculative Patent Application for NEXTGEN Flood Early Warning System. In Proceedings of 2021 ACM Conference on GROUP. *In Press*

- Soden, R.** Hamel P, Lallemand D, Pierce J. (2020) The Disaster and Climate Change Artathon: Staging Art/Science Collaborations in Crisis Informatics. In *Proceedings of the 2020 ACM on Designing Interactive Systems Conference 2020*. **(23% acceptance rate)**
- Soden, R.**, Kauffman, N. (2019). Infrastructuring the Imaginary: How Sea-level Rise Comes to Matter in The San Francisco Bay Area. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. **(23% acceptance rate)**
- Soden, R.**, Lord, A. (2018). Mapping Silences, Reconfiguring Loss: Practices of Damage Assessment & Narratives of Repair in Post-Earthquake Nepal. In *Proceedings of the 21st ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW)*. **Best Paper Honorable Mention. (25% acceptance rate)**.
- Soden R.**, Palen, L. (2018). Informating Crisis: Expanding Critical Perspectives in Crisis Informatics. In *Proceedings of the 21st ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW)*. **(25% acceptance rate)**.
- Dailey, D., **Soden, R.**, Lalone, N. (2018). Crisis Informatics for Everyday Analysts: A Design Fiction Approach to Social Media Best Practices. In *Proceedings of the 2018 International Conference on Supporting Group Work (GROUP)*. ACM.
- Soden, R.**, Sprain, L., Palen, L., (2017). Thin Grey Lines: Confrontations With Risk on Colorado's Front Range. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (pp. 2042-2053). ACM. **Best Paper Honorable Mention. (25% acceptance rate)**.
- Kogan, M., Anderson, J., **Soden, R.**, Anderson, K., Palen, L. (2016). Collaboration in OpenStreetMap: A Network Analysis of Two Humanitarian Events. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (pp. 2783-2795). ACM. **(23% acceptance rate)**.
- Soden, R.**, Palen, L. (2016). Infrastructure in the Wild: What Mapping in Post-Earthquake Nepal Reveals about Infrastructural Emergence. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (pp. 2796-2807). ACM. **(23% acceptance rate)**.
- Anderson, J., **Soden, R.**, Anderson, K., Kogan, M., Palen, L. (2016). EPIC-OSM: A Software Framework for OpenStreetMap Data Analytics. *Proceedings of the Hawaii International Conference on System Sciences (HICSS)*(pp. 5468-5477). IEEE.
- Soden, R.**, Palen, L., Chase, C., Deniz, D., Arneson, E., Sprain, L., Goldstein, B., Liel, A., Javernick-Will, A., Dashti, S. (2015). The Polyvocality of Resilience: Discovering a Research Agenda through Interdisciplinary Investigation and Community Engagement. In *Proceedings of the Information Systems for Crisis Response and Management (ISCRAM)*. **Best Student Paper Nomination**.
- Palen, L., **Soden, R.**, Anderson, J., Barrenechea, M (2015). Success & Scale in a Data-Producing Organization: The Socio-Technical Evolution of OpenStreetMap in Response to Humanitarian Events. In *Proceedings of the ACM 2015 Conference on Human Factors in Computing Systems* (pp, 4113-4122). ACM. **(23% acceptance rate)**.
- Soden, R.**, Palen, L. (2014). From Crowdsourced Mapping to Community Mapping: The Post Earthquake Work of OpenStreetMap Haiti. In *Proceedings of the 11th International*

*Conference on the Design of Cooperative Systems (COOP)* (pp. 311-326). **(34% acceptance rate)**.

**Soden, R.**, Budhathoki, N., Palen, L. (2014). Resilience and Crisis Informatics: Lessons Learned from Open Cities Kathmandu. In *Proceedings of the Conference on Information Systems for Crisis Response and Management (ISCRAM)*. **Best Student Paper Award**.

**Peer Reviewed Workshops Organized**

**Soden, R.**, Devendorf, L., Wong, R., Chilton, L., Light, A., Akama, Y. (2020) *Embracing Uncertainty in HCI*. CHI 2020. Honolulu, HI.

**Soden, R.**, Ribes, D., Jack, M., Sutherland, W., Khovanskaya, V., Avle, S., Sengers, P. and Bødker, S., (2019). *Fostering Historical Research in CSCW & HCI*. CSCW2019. Austin, TX.

**Soden, R.**, Skirpan, M., Fiesler, C., Ashktorab, Z., Baumer, E., Blythe, M., Jones, J. (2019). *CHI4Evil: Creative Speculation On the Negative Impacts of HCI Research*. CHI2019. Glasgow.

**Workshop Papers, Lightly Reviewed Writing, & Non-Archival Conference Presentations**

Palen, L., Anderson, J., Bica, M., Castillos, C., Crowley, J., Díaz, P., Finn, M., Grace, R., Hughes, A., Imran, M., Kogan, M., and **Soden, R.** (2020) Crisis Informatics: Human-Centered Research on Tech & Crises. Guided Bibliography.

Clark-Ginsberg, A., Garriga-Lopez, A., Harris, J., Henderson, J., Kirchoff, C., Owen, E., Slick, J., **Soden, R.**, Stoecker, R., Milstein, D., Tagliacozzo, S., Thaler, T., Wisner, B. (2020) CONVERGE COVID-19 Working Groups for Public Health and Social Sciences Research: Research Agenda-Setting Paper.

**Soden, R.** (2020) Crisis Informatics and Mutual Aid during the Coronavirus Pandemic: A Research Agenda. Posted on *Social Science Research Council (SSRC) Insights from the Social Sciences*. Available at: <https://items.ssrc.org/covid-19-and-the-social-sciences/disaster-studies/crisis-informatics-and-mutual-aid-during-the-coronavirus-pandemic-a-research-agenda/>

**Soden, R.** Wagenaar, D., Luo, D. and Tjiesen, A. (2019). Taking Ethics, Fairness, and Bias Seriously in Machine Learning for Disaster Risk Management. Presented at *NeurIPS 2019 Workshop on Machine Learning for International Development (ML4D)*. Vancouver, BC.

**Soden, R.** (2019) Modes of Uncertainty: Rethinking Flood Risk in Colorado. Posted on *Social Science Research Council (SSRC) Insights from the Social Sciences*. Available at: <https://items.ssrc.org/chancing-the-storm/modes-of-uncertainty-rethinking-flood-risk-in-colorado/>

**Soden, R.** (2019). Modes of Uncertainty: Negotiating Flood Risk Between Engineers, Bureaucrats, and Publics. Presented at *Society for Social Studies of Science (4S)*. New Orleans, LA.

**Soden, R.** (2019). Modes of Uncertainty. Presented at *The Other Uncertainty: Social, Political, and Cultural Forms of Uncertainty in Weather Contexts* at the 2019 Meeting of the American Meteorological Society. Phoenix, AZ.

- Soden, R.** (2018). Toward Disasters as Matters of Care. Presented at *CSCW 2018 Workshop on Sociotechnical Systems of Care*. Jersey City, New Jersey.
- Soden, R., Lord, A.** (2018). Mapping Silences, Reconfiguring Loss: Practices of Damage Assessment & Narratives of Repair in Post-Earthquake Nepal. Presented at *2017 Meeting of the Society for Social Studies of Science (4S)*. Sydney, AU.
- Soden, R., Lord, A.** (2018). Mapping Silences, Reconfiguring Loss: Practices of Damage Assessment & Narratives of Repair in Post-Earthquake Nepal. Presented at *Natural Hazards Workshop*. Boulder, CO.
- Soden, R.** (2018). Crisis Informatics in the Anthropocene: Disasters as Matters of Care & Concern. In Companion of the 2018 ACM Conference on Conference on Human Factors in Computing Systems (CHI Doctoral Colloquium). ACM.
- Soden, R., Lord, A.** (2017). Narrating Disaster, Contesting Reconstruction: Design Notes on Practices of Damage Assessment in the Wake of the 2015 Nepal Earthquake. Presented at *2017 Meeting of the Society for Social Studies of Science (4S)*. Boston, MA.
- Lord, A., **Soden, R.** (2017). Infrastructuring Humanitarian Ignorance in Nepal's Post-Disaster Taskscape. Presented at *2017 Conference on the Changing Political Economy of Risk and Ignorance (CPERI)*. Boston, MA.
- Soden, R.** (2017). Crisis Informatics in the Anthropocene: Disasters as Matters of Care & Concern. In Companion of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW Doctoral Colloquium) (pp. 93-96). ACM. Seattle, WA.
- Soden, R.** (2017). Crisis Informatics in the Anthropocene: Disasters as Matters of Care & Concern. At *2017 Human Computer Interaction Consortium (HCIC)*. Watsonville, CA.
- Soden, R.** (2017). Informating Crisis. At *2016 Workshop on Crisis Informatics & Human Computer Interaction*. Boulder, Colorado.
- Dennis, E., **Soden, R.** (2016). Towards Cartographic Standards for Web-Based Flood Hazard Maps. Presented at *2016 GIS in the Rockies Conference*. Denver, CO.
- Soden, R.** (2016). Reconfiguring Loss: Memory Practice & Participatory Damage Assessment in Post-Earthquake Nepal. Presented at *2016 Human Computer Interaction Consortium (HCIC)*. Watsonville, CA.
- Soden, R., Budhathoki, N.** (2016). Alternate Constructions of Damage: Frictional Design and Disaster Impact Assessment in Post-Earthquake Nepal. Presented at *2016 CHI Workshop on HCI Across Borders*. San Jose, CA.
- Soden, R.** (2015). Ecologies of Risk Information: A Comparative Approach. Presented at *2015 CHI Workshop on Ecological Perspectives in HCI: Promise, Problems, and Potential*. Seoul, South Korea.
- Soden, R.** (2015). OpenStreetMap & Disaster Risk Management: Experiences from the Open Cities Project. Presented at *2015 Conference of the Citizen Science Association*. San Jose, CA.

**Soden, R.** (2015). Information Infrastructure & Disaster Risk: A Comparative Approach. Presented at *2015 Information Systems for Crisis Response and Management (ISCRAM) Doctoral Colloquium*. Kristiansand, Norway.

**Soden, R., Prager, D.** (2005). Broken Promises: Environmental Rights Regimes as Human Rights Guarantees in Latin America and Sub-Saharan Africa. Presented at *2005 International Studies Conference (ISA)*. Honolulu, HI.

### ***Invited Talks & Guest Lectures***

Soden, R., Miles, S. (2021). *Design Research for Science Communication to the Public*. United States National Oceanographic and Atmospheric Association (NOAA).

Soden, R. (2021) Responsible Artificial Intelligence for Disaster Risk Management. *Natural Hazards Center Workshop Researcher's Meeting*.

Soden, R. (2021). *Art/Science and Interdisciplinary Collaboration in Disaster and Climate Change Research*. University of Toronto School of the Environment Lunch Lab.

Soden, R. (2021). *Responsible AI for Disaster Risk Management: A Practitioner Perspective*. University of Toronto Centre for Ethics.

Soden, R. (2020). *Responsible AI for Disaster Risk Management*. Deltares.

Soden, R. (2020). *Human-Centered Design for Hurricane Risk Communication*. United States National Hurricane Center (NHC).

Soden, R. (2020). *Dilemmas in Mutual Aid: Lessons for Crisis Informatics Research*. Natural Hazards Center Converge.

Soden, R. (2020). *Towards a Critical Technical Practice for Disaster Research*. Responsible Engineering, Science and Technology for Disaster Risk Management Working Group.

Soden, R. (2020). *The Social Life of Disaster Data: Lessons from Crisis Informatics*. University of Toronto School of the Environment Graduate Seminar.

Soden, R. (2020). The Emergent Mutual Aid Response to COVID-19. Presented at *Columbia University COVID Research Series*.

Soden, R. (2019). Ethics and Biases in Machine Learning for Disaster Risk Management. Presented at *World Bank Global Facility for Disaster Reduction and Recovery (GFDRR)*, Washington, DC.

Soden, R. (2019). Crisis Informatics in the Anthropocene: Disasters as Matters of Care & Concern Presented at *University of Toronto, Department of Computer Science*. Toronto, ON.

Soden, R. (2019). Crisis Informatics in the Anthropocene: Disasters as Matters of Care & Concern Presented at *Syracuse University, College of Information Science*. Syracuse, NY.

Soden, R. (2019). Crisis Informatics in the Anthropocene: Disasters as Matters of Care & Concern

Presented at *Drexel University, College of Computing and Informatics*. Philadelphia, PA.

Soden, R. (2019). Crisis Informatics in the Anthropocene: Disasters as Matters of Care & Concern Presented at *University of Washington, Department of Human Centered Design & Engineering*. Seattle, WA.

Soden, R. (2019). Crisis Informatics in the Anthropocene: Disasters as Matters of Care & Concern Presented at *University of Colorado, Department of Information Science*. Boulder, CO.

Soden, R. (2019). Crisis Informatics in the Anthropocene: Disasters as Matters of Care & Concern Presented at *AINow*. New York, NY.

Soden, R. (2018). Rethinking Post-Disaster Damage Assessment: Lessons from Critical Data Studies. Presented at *Earth Observatory of Singapore*. National Technical University of Singapore.

Soden, R. (2018). The Social Life of Disaster Data. Presented at *2018 Understanding Risk Forum*. Mexico City, Mexico.

Soden, R., Lallemand, D. (2017). Crowdsourcing Damage Assessment to Improve Response and Recovery Following Natural Disasters. Presented at *Stanford HCI Lunch*. Stanford, CA.

Soden, R. (2016). There's No Such Thing as Raw Crisis Data. At *AAS Workshop on Ethics of Location-Based Data in Crisis Situations*. American Association for the Advancement of Science (AAAS). Washington, D.C.

Soden, R. (2015). Collective Information Infrastructures During Disaster Response: Findings from the 2015 Nepal Earthquake. Presented at *The Role of Crisis Informatics in Disaster Management: The Case of Nepal Earthquake*. Kathmandu, Nepal.

Soden, R. (2015). The Polyvocality of Resilience: Discovering a Research Agenda through Interdisciplinary Investigation and Community Engagement. Presented at *Information Systems for Crisis Response and Management (ISCRAM) Plenary*. Kristiansand, Norway.

Soden, R. (2014). Open Data for Disaster Risk Management. Presented at *2014 Understanding Risk Forum*. London, UK.

Soden, R. (2014). Crowdsourced Mapping, Community Mapping, & Disaster Resilience. Guest Lecture in Leysia Palen's Course on *Social Computing*. Boulder, CO.

Soden, R. (2013). Growing the Global OSM Community: Lessons Learned from the Open Cities Project. Presented at *2013 State of the Map Conference*. Birmingham, UK.

Soden, R. (2011). Crowdsourced Mapping in the 2010 Haiti Earthquake Response. Presented at *2011 Global Platform for Disaster Risk Reduction*. Geneva, CH.

### **Major Professional Publications**

**Soden, R.** Wagenaar, D., Tijssen, A. (2021) Responsible Machine Learning for Disaster Risk Management: Working Group Report. World Bank.

Barns, K., **Soden, R.**, Lallemand, D., Hamel, P. (2020) Understanding Risk Field Lab Toolkit. World Bank.

Deparday, V., Gevaert, C., Giuseppe Molinario, G., **Soden, R.** Balog-Way, S. (2019). Machine learning for disaster risk management. World Bank. Washington, DC.

**Soden, R.** (2017). *Natural Hazard Data: A Practical Guide*. Asian Development Bank Publications.

Haklay, M. E., Antoniou, V., Basiouka, S., **Soden, R.**, & Mooney, P. (2014). *Crowdsourced Geographic Information Use in Government*. World Bank Publications.

Crowley, J., York, D., **Soden, R.**, & Deparday, V. (2014). *Open Data for Resilience Initiative Field Guide*. World Bank Publications.

### ACADEMIC SERVICE

Stanford Urban Resilience Initiative  
Co-Organizer August 2016-  
December 2017

Grand Challenges in Crisis Informatics Workshop  
Organizing Committee May 2016

CU Boulder Reading Group on Science & Technology Studies  
Organizer 2015-2016

Panel Organizer on OpenStreetMap as Citizen Science  
Citizen Science 2015 Conference, San Jose, CA February 2015

Panel Co-Organizer on Critical Geography and OpenStreetMap  
20<sup>th</sup> Annual Critical Geography Conference, Boulder CO February 2014

**Associate Chair** for: 2020-2021  
ACM Conference on Human Factors In Computing Systems (CHI)  
ACM Conference on Computer Supported Cooperative Work (CSCW)  
ACM Conference on Computing & Sustainable Societies (COMPASS)

**Reviewer** for: 2014-2021  
ACM Conference on Human Factors In Computing Systems (CHI)  
ACM Conference on Computer Supported Cooperative Work (CSCW)  
ACM Conference on Supporting Group Work (GROUP)  
Citizen Science: Theory and Practice  
Disasters Journal  
Science as Culture  
MIT Press – Science, Technology, & Society List  
Conference on Information Systems for Crisis Response and Management (ISCRAM)  
Hawaiian International Conference on Systems Sciences (HICSS)  
Journal on Science, Technology, and Human Values (STHV)  
International Journal of Geo-Information (IJGI)

### PROFESSIONAL MEMBERSHIP

Association of Computing Machinery  
Society for the Social Studies of Science  
Information Systems for Crisis Response and Management  
OpenStreetMap Foundation  
Humanitarian OpenStreetMap Team (Founding Board Member & Member)

### **VOLUNTEER EXPERIENCE**

Washington DC Community Emergency Response Team (CERT): 2008-2010  
Board of Directors, Humanitarian OpenStreetMap Team: 2010-2011  
Code for Boulder: 2013-2015  
Boulder County Latino History Project: 2013-2015  
Open Oakland: 2017-2019  
Advisory Board, TechChange: 2011-Present  
Advisory Board, Re+Connect: 2020-Present