

# Harman Singh

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## Education

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**2021-Present M.S. and Dual-Title Ph.D. in Geography and Climate Science,  
Pennsylvania State University, USA**

**Advisors:** Dr Helen Greatrex, Dr Trevor Birkenhotlz

**2017-2021 B.Sc. in Geography, Pennsylvania State University, USA**

**Minor:** Sustainability Leadership

**Certifications:** Justice, Ethics and Diversity in Space, Geographical Information Systems, Landscapes: Societies, Cultures, and Political Economies

**Advisors:** Dr Helen Greatrex, Dr Trevor Birkenhotlz

## Professional Positions

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**Research Assistant to Dr. Trevor Birkenholtz  
at the Pennsylvania State University, Pennsylvania, USA**

**2019-Present**

*Part-Time*

1) Published a Story Map for the American Institute of Indian Studies by compiling three decades of scholarship data into charts and maps in ArcGIS Online. 2) In a team, created a keyword search to obtain relevant online newspaper data from an academic database called Lexis Nexis on transboundary water sharing in India. 3) Complied techniques to sort and clean the newspaper data such as removing duplicates. 4) Qualitatively coded data in excel and NVivo. 5) Coded a topic model in R Studio to analyze the data.

**Center for Immersive Experiences at the Pennsylvania State University,  
Pennsylvania, USA**

**2019- 2020**

*Part-Time*

Managed and demonstrated virtual reality equipment at Patee library to students and faculty. Assisted students with virtual reality experiments for research purposes.

**EcoReps: Student Educators in Sustainability at the Pennsylvania State University,  
Pennsylvania, USA**

**2019-2021**

*Part-Time*

Organized events, as an individual and a group member, that required public speaking and educating first year students who lived in dorms. Demonstrated long term commitment to environmental sustainability by inspiring the dorm community on campus to lead sustainable lives.

**\*UROC at the Pennsylvania State University, Pennsylvania, USA**

*Research Assistant*

1) Environmental Risks and Hydropower Development in the Indian Himalayas **2019**  
 Created a landslide inventory for the state of Uttarakhand, India. Transferred data into ArcGIS Pro to create landslide zone and location maps. Examined landslides and environmental risks in the Indian Himalayas in relation to hydropower development.

2) Indian Farmers' Perspectives on Rural Life and Agricultural Change: Interview Transcription **2018**  
 Translated and transcribed interviews from Hindi to English. Conducted a literature review that focused on themes such as agricultural change, rural livelihoods, and farmers' struggles to protect their agricultural livelihoods in Dehradun, India.

**Punjab State Human Rights Commission, Chandigarh, India** **2019**

*Internship*

Developed a research topic- "Solid Waste Management in Punjab Region"- that identified a human rights violation; collected, compiled, and analyzed interview data, produced a statistical conclusion, and proposed solutions to resolve the human rights violation.

**\*LEAP at the Pennsylvania State University, Pennsylvania, USA** **2019**

*Part-Time*

Mentored freshmen students in time management, campus resources, interpersonal relationships and academics who were part of the "Severe and Unusual Weather Pride."

## Teaching Assistant

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### Graduate

**The Pennsylvania State University Department of Geography** **2023**  
 GEOG 464: Advanced Spatial Analysis

**The Pennsylvania State University Department of Geography** **2023**  
 GEOG 361: Cartography

**The Pennsylvania State University Department of Geography** **2022 and 2023**  
 GEOG 364: Spatial Analysis

### Undergraduate

**The Pennsylvania State University College of Earth and Mineral Sciences** **2021**  
 EMSC 100S: What is Sustainability?

**The Pennsylvania State University Department of Geography** **2020 and 2021**  
 GEOG 301: Thinking Geographically

**The Pennsylvania State University Department of Geography** **2020**  
 GEOG 364: Spatial Analysis

## Awards & Grants

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<b>The Pennsylvania State University College of Earth and Mineral Sciences</b> *EMS Sustainability Graduate Fellow	<b>2022-2024</b>
<b>The Pennsylvania State University Department of Geography</b> 2023 William and Mary Easterling Outstanding Graduate Research Assistant Award in Geography	<b>2023</b>
<b>The Pennsylvania State University Department of Geography</b> E. Willard Miller Award in Geography for the 2023 Master's Paper: 1 <sup>st</sup> place	<b>2023</b>
<b>*NHERI Education and Community Outreach (ECO) Award #2129782</b> Awarded *NSF travel grant to attend the Natural Hazards Research Submit 2022	<b>2022</b>
<b>The Pennsylvania State University Institute of Computational and Data Science</b> *ICDS Fall 2022 Symposium: Data Science, AI, and a Sustainable, Resilient, and Equitable Future: 1st place (poster)	<b>2022</b>
<b>The Pennsylvania State University Department of Geography</b> E. Willard Miller Award in Geography for the 2022 Master's Proposal: 1 <sup>st</sup> place	<b>2022</b>
<b>The Pennsylvania State University College of Earth and Mineral Sciences</b> Joab and Marly Thomas Graduate Fellowship	<b>2021-2022</b>
<b>The Pennsylvania State University Institute of Computational and Data Science</b> *ICDS Fall 2021 Symposium: The Future of Digital Fairness: 2 <sup>nd</sup> place (poster)	<b>2021</b>
<b>The Pennsylvania State University College of Earth and Mineral Sciences</b> John and Elizabeth Holmes Teas Scholarship Fund	<b>2020-2021</b>
<b>The Pennsylvania State University College of Earth and Mineral Sciences</b> College of *EMS Academy for Global Experience: Fall 2020 Laureate	<b>2020</b>
<b>AIIS: American Institute of Indian Studies</b> Digital Fellowship Award	<b>2020</b>
<b>The Pennsylvania State University Undergraduate Education</b> Rodney A Erickson Discovery Grant	<b>2020</b>
<b>The Pennsylvania State University Department of Geography</b> E. Willard Miller Award in Geography for an Undergraduate Paper	<b>2020</b>
<b>The Pennsylvania State University Sustainability Institute</b> Sustainability Expo at Penn State: 2 <sup>nd</sup> place (poster)	<b>2019</b>

## Scholarship

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### Webpages

Visualizing Three Decades of Scholarship: An AIIS Story Map. (n.d.). Retrieved September 21, 2021, from American Institute of Indian Studies website: <https://www.indiastudies.org/visualizing-three-decades-of-scholarship-an-aiis-story-map/>

### Manuscripts Accepted

**Singh, H.**, Nielsen, M., & Greatrex, H. (2023). Causes, impacts, and mitigation strategies of urban pluvial floods in India: A systematic review. *International Journal of Disaster Risk Reduction*, 103751.

### Manuscripts under Review

**H. Singh**, T. Birkenhotlz, H. Greatrex, “Remotely Capturing Perceptions of Community Gatekeepers on Impactful Floods in Kerala, India”

**H. Singh**, M. Hansen, T. Birkenhotlz, “News Media Coverage of India’s National River Linking Program (2004-2022): A Case Study of the Ken-Betwa Link using Topic Modeling”

## Panelist & Guest Speaker

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### Panel Moderator

**Graduate Student Panel: Lifting the curtain of Academic Publishing in Natural Hazards Research at the Natural Hazards Research Submit 2022, Washington DC, USA** **2022**

- Represented the NHERI graduate student council at the Natural Hazards Research Submit.

### Panelist

**\*SWIG Graduate Student Panel at the Pennsylvania State University, Pennsylvania, USA** **2021**

- Invited as a graduate panel member to answer student’s questions about graduate school research and admissions.

### Guest Speaker

**GEOG 30N: Environment and Society in a Changing World at the Pennsylvania State University, Pennsylvania, USA** **2022 and 2023**

- Invited as a guest speaker to introduce 1<sup>st</sup> year undergraduate students to the field of natural hazards and research.

**EMSC 100S: What is Sustainability? at the Pennsylvania State University, Pennsylvania, USA** **2022**

- Invited to speak to 1<sup>st</sup> year undergraduate students about sustainability initiatives on Penn State campus.

**GRAD 5034: Principles of Disaster Risk Management at Virginia Tech** **2022**

- Invited to speak about a natural language processing project examining news discourse on climate change and severe weather in the Virginia coastal region.

## Conferences

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### 2023

Talk. **H. Singh**; *“Empowering Tomorrow's Leaders: Student-Driven Sustainability Initiatives.”*, Global Sustainable Action: It Starts with Us, Sustainability Institute at Pennsylvania State University, Pennsylvania, November 2023

Poster. **H. Singh**; M. Hansen; T. Birkenholtz; *“News Media Coverage of India's National River Linking Program (2004-2023): Unveiling Discourse on Water Infrastructure through Topic Modeling.”*, College of Earth and Mineral Sciences: Graduate Research Showcase at Pennsylvania State University, Pennsylvania, October 2023

Poster. **H. Singh**; M. Hansen; T. Birkenholtz; *“News Media Coverage of India's National River Linking Program (2004-2022): A Case Study of the Ken-Betwa Link using Topic Modeling.”*, NHERI\* Graduate Student Council Mini Conference, May 2023 (Virtual)

Poster. **H. Singh**; T. White; J. Mayzel; *“Sandy Ridge (PA) Coal Mine Land Cover Restoration.”*, Climate Solutions Symposium at Pennsylvania State University, Pennsylvania, May 2023

Poster. **H. Singh**; M. Hansen; T. Birkenholtz; *“News Media Coverage of India's National River Linking Program (2004-2022): A Case Study of the Ken-Betwa Link using Topic Modeling.”*, Climate Solutions Symposium at Pennsylvania State University, Pennsylvania, May 2023

Oral Presentation. **H. Singh**; M. Hansen; T. Birkenholtz; *“News Media Coverage of India's National River Linking Program (2004-2022): A Case Study of the Ken-Betwa Link using Topic Modeling.”*, American Association of Geographers Annual Conference, Denver, March 2023

### 2022

Poster. **H. Singh**; M. Hansen; T. Birkenholtz; *“News Media Coverage of India's National River Linking Program (2004-2022): A Case Study of the Ken-Betwa Link using Topic Modeling.”*, ICDS Fall 2022 Symposium: Data Science, AI, and a Sustainable, Resilient, and Equitable Future at Pennsylvania State University, Pennsylvania, October 2022

Poster. **H. Singh**; M. Hansen; T. Birkenholtz; *“News Media Coverage of India's National River Linking Program (2004-2022): A Case Study of the Ken-Betwa Link using Topic Modeling.”*, College of Earth and Mineral Sciences: Graduate Research Showcase at Pennsylvania State University, Pennsylvania, October 2022

Oral Presentation. **H. Singh**; T. Birkenholtz; H. Greatrex; *“Competing Flood Histories, A Comparative Analysis of Government Perceptions and Rainfall Data in Kerala, India”*, Annual Graduate Exhibition at Pennsylvania State University, Pennsylvania, March 2022 (Virtual)

Oral Presentation. **H. Singh**; T. Birkenholtz; H. Greatrex; *“Competing Flood Histories, A Comparative Analysis of Government Perceptions and Rainfall Data in Kerala, India”*, American Association of Geographers Annual Conference, February 2022 (Virtual)

### 2021

Poster. **H. Singh**; T. Birkenholtz; H. Greatrex; *“Examining the Nature of Complex Urban Flooding through a Mixed Method Approach: A Case from Kerala, India.”*, ICDS Fall 2021 Symposium: The Future of Digital Fairness at Pennsylvania State University, Pennsylvania, October 2021

Paper presentation. **H. Singh**; T. Birkenholtz; H. Greatrex; *“Examining the Nature of Complex Urban Flooding through a Mixed Method Approach: A Case from Kerala, India.”*, 46th Annual Natural Hazards Researchers Meeting, University of Colorado Boulder, July 2021 (Virtual)

Poster. **H. Singh**; T. Birkenholtz; H. Greatrex; *“Examining the Nature of Complex Urban Flooding through a Mixed Method Approach: A Case from Kerala, India.”*, Celebration of Undergraduate Engagement (CUE) at Pennsylvania State University, Pennsylvania, April 2021 (Virtual)

Poster. **H. Singh**; T. Birkenholtz; H. Greatrex; *“Examining the Nature of Complex Urban Flooding through a Mixed Method Approach: A Case from Kerala, India.”*, Undergraduate Exhibition for Research, Inquiry, and Creative Activity, Pennsylvania, April 2021 (Virtual)

## **2020**

Oral presentation. **H. Singh**; T. Birkenholtz; H. Greatrex; *“The Complex Nature of flooding in Kerala: a mixed method approach.”*, Sustainability Student Leaders Symposium, Southern New Hampshire University, November 2020 (Virtual)

Poster. **H. Singh**; T. Birkenholtz; H. Greatrex; *“The Relationship between flooding and land use land cover in Kochi: a mixed method approach.”*, Celebration of Undergraduate Engagement (CUE) at Pennsylvania State University, Pennsylvania, April 2020 (Virtual)

## **2019**

Poster. R. Kurtz; C. Kizis; **H. Singh**; *“Effects of Urban Growth on Sustainability in the Spring Creek Watershed”*, Sustainability Expo at Pennsylvania State University, Pennsylvania, December 2019

Poster. E. Arndt; **H. Singh**; *“Satellite analysis of the 2018 Kerala floods to study their impact on people, properties and the environment.”*, American Association of Geographers annual conference, Washington DC, April 2019

Poster. E. Arndt; **H. Singh**; *“Satellite analysis of the 2018 Kerala floods to study their impact on people, properties and the environment.”*, Undergraduate Exhibition for Research, Inquiry, and Creative Activity, Pennsylvania, April 2019

## **2018**

Poster. E. Arndt; **H. Singh**; *“Satellite analysis of the 2018 Kerala floods to study their impact on people, properties and the environment.”*, Earth and Mineral Science undergraduate poster competition, Pennsylvania, November 2018

## Workshops

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### 2023

Created and virtually conducted “*Introduction to Diversity, Equity, and Inclusion (DEI) and Cultural Competence in Hazards and Disaster Research*”, \* NHERI Research Experience for Undergraduates Summer Program, The University of Texas at San Antonio, July 2023

Graduate Student Mentor “*Geography Education Networking Initiative for Underrepresented Scholars (GENIUS)*” Department of Geography at the Pennsylvania State University, Pennsylvania, May 2023

Attended “*Spatial Social Network Workshop*” Georgia Tech, Atlanta, GA, May 2023

Virtually attended “*First International Workshop on Geographic Information Extraction from Texts (GeoExT)*” 45th European Conference on Information Retrieval (ECIR 2023), Dublin, April 2023

### 2022

Attended “*Safer People Safer Places Transgender and Gender Inclusion 101 Workshop*” Center for Sexual and Gender Diversity at the Pennsylvania State University, Pennsylvania, October 2022

Attended “*Safer People Safer Places Foundations Workshop*” Center for Sexual and Gender Diversity at the Pennsylvania State University, Pennsylvania, September 2022

Virtually attended “*Changing Climates: Equity and Adaptation in a Warming World*”, 47th Annual Natural Hazards Research and Application Workshop, University of Colorado Boulder, July 2022

Created and virtually conducted “*Introduction to Diversity, Equity, and Inclusion (DEI), Bias, Vulnerability, and Ethical Decision-Making*”, \* NHERI Research Experience for Undergraduates Summer Program, The University of Texas at San Antonio, July 2022

## Student Mentoring

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### **\*UROC Graduate Mentor at the Pennsylvania State University, Pennsylvania, USA**

- Created and submitted a UROC project titled “*Leveraging Flood Disaster Information from Newspapers*.” Mentored Mackenzie Bruns and Jamison Burke who assisted with qualitative coding and data cleaning. **2024**
- Created and submitted a UROC project titled “*Causes, Impacts, and Mitigation Strategies of Urban Floods in India: A Systematic Review*.” Mentored Riley Boag who assisted with database management. **2022**
- Created and submitted a UROC project titled “*Flash Flood Literature Review*.” Mentored Hannah Perrelli who assisted with conducting a systematic literature review in NVivo. **2022**

## Extracurricular Activities

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### **The Penn State Water Council, at the Pennsylvania State University, Pennsylvania, USA** **2023-24**

- Elected as one of two graduate students to serve on the Penn State Water Council which is responsible for working with the Director of the Water Consortium to set a University-wide vision, establish and advance strategic initiatives, and enable and support transdisciplinary research, education, and outreach.

### **The Penn State Association of Water Students (PAWS), at the Pennsylvania State University, Pennsylvania, USA** **2023**

- President of PAWS in 2023 and help maintain a space where students can collaborate and share ideas, network, socialize, engage with the community in relation to water issues and find information on water events and research here at Penn State and the broader water community.

### **Supporting Women in Geography, at the Pennsylvania State University, Pennsylvania, USA** **2023**

- Led efforts to promote the success and empowerment of women in the discipline of geography through professional development opportunities, academic support, and outreach opportunities.

### **Chair of the College of Earth and Mineral Sciences Sustainability Council Student Committee at the Pennsylvania State University, Pennsylvania, USA** **2022-Present**

- Led a team of undergraduate and graduate students to collect agendas to improve sustainability efforts in the college. Organized college level events.
- Created and managed social media accounts and advertising.

### **\*NHERI (NSF) Graduate Student Council Vice-Chair of \*DEI** **2022-Present**

- Supported a diverse community of graduate students, encouraged mentorship, and created an inclusive environment in natural hazard graduate research. Organized talks and workshops on \*DEI.
- Created a diversity resources page for the \*NHERI graduate student council's webpage ([Graduate Student Council - DEI Resources | DesignSafe-CI](#)).
- Created an Inclusivity Statement for NHERI members and speakers ([statement\\_of\\_inclusivity.pdf \(designsafe-ci.org\)](#)).
- Worked with the Chair of DEI to book guest speakers for meeting ([Graduate Student Council - Meetings | DesignSafe-CI](#)).

### **\*UROC Graduate Coordinator at the Pennsylvania State University, Pennsylvania, USA** **2021-Present**

- Promoted and organized the bi-annual \*UROC event. Fostered a platform for graduate students to mentor undergraduate students through research opportunities.

### **Graduate Representative (Department of Geography), at the Pennsylvania State University, Pennsylvania, USA** **2022**

- Supported and voiced concerns especially from graduate students who come from non-academic and international backgrounds.



- Facilitated open communication between faculty and students on issues such as graduate student resources, university accountability, and promoting inclusivity.
- Organized weekly Wednesday meet ups for the graduate community, creating mentorship between incoming and continuing grads in the department, writing diversity, equity, and inclusion letters, hosting events for incoming graduate students during orientation.

**Student Volunteer as an Undergraduate Research Ambassador at the Pennsylvania State University, Pennsylvania, USA** **2020-2021**

- Assisted the University Research and Fellowship Mentoring office at events.
- Mentored students who are interested in getting involved in research at an undergraduate level.

**Geographical Information System Coalition at the Pennsylvania State University, Pennsylvania, USA** **2018-2021**

- Club secretary in 2019 and president for the year of 2020.
- Promoted and organized GIS related activities such as Map-a-Thons, Geo-Caching, and Internship roundtables. Created a community for group learning outside the classroom.

**Student Volunteer for the college of Earth and Mineral Science Sustainability Sub-Committee at the Pennsylvania State University, Pennsylvania, USA** **2020**

- Collaborated with faculty and students to create awareness about sustainability in the college. Compiled ideas to present to the dean regarding changes to implement sustainable infrastructure and measures in college buildings.

**The Green Program: Hawaii** **2018**

- Attended a 10-day program in Hawaii focusing on “Sustainable Community Food Systems and Energy.” Gained hands on practical industry exposure. Presented a Capstone Project idea at the University of Hawaii.

## Memberships

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- Graduate Students in the Department of Geography at Penn State University
- Supporting Women in Geography at Penn State University
- College of Earth and Mineral Science Sustainability Council at Penn State University
- Penn State Association of Water Students at Penn State University
- Associate of the GeoGraphics Lab at Penn State University
- Graduate Women in Science at Penn State University
- Natural Hazards Engineering Research Infrastructure Graduate Student Council
- American Association of Geographers

## Professional Skills

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### Programming

- Proficient in R
- ArcGIS Online, ArcGIS Pro.

- Experience with QGIS and virtual reality technology
- Latex
- NVivo
- Python (Beginner)

**Languages spoken**

- English and Hindi (mother tongue)
- Punjabi (basic spoken)

**Certifications**

Microsoft Certified: Azure AI Fundamentals

CONVERGE Training Module: Training Module: Social Vulnerability and Disasters

CONVERGE Training Module: Broader Ethical Considerations for Hazards and Disaster Researchers

\*DEI: Diversity, Equity, and Inclusion

\*EMS: Earth and Mineral Sciences

\*ICDS: Institute for Computational and Data Sciences

\*LEAP: Learning Education Academic Program

\*NHERI: Natural Hazards Engineering Research Infrastructure

\*NSF: National Science Foundation

\*SWIG: Supporting Women in Geography

\*UROC: Undergraduate Research Opportunities Connections