

Balsher Singh Sidhu, PhD

Senior Climate Researcher, Riskthinking.AI, Toronto

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SUMMARY

Quantitative researcher with 8+ years of climate modelling and analytics experience. I build **advanced statistical and machine learning (ML) models using large geospatial databases** to assess climate change risk, adaptation, and mitigation.

EDUCATION

Won **\$425,000+** in *scholarships* over a 7-year period (PhD and MASc)

PhD in Resources, Environment and Sustainability , University of British Columbia	2021
Dissertation: Indian agriculture in a changing climate: A statistical analysis	
Recipient: Vanier Canada Scholarship, UBC 4-Year Fellowship, Slaymaker Environmental Scholarship	
MASc in Civil Engineering , University of Toronto	2016
BTech in Civil Engineering , Indian Institute of Technology Delhi	2013

SKILLS

Software	Specialty	Domain expertise	
R	Inferential statistics	Geospatial analysis	Climate modelling (impact, adaptation, mitigation)
QGIS	Machine learning	Knowledge synthesis	Sustainable agriculture
MS Office	Informatics	Scientific writing	Climate risk analytics
	Web scraping		Net-zero scenario analysis

EXPERIENCE

- Senior Climate Researcher**, Riskthinking.AI, Toronto, Canada 2023 – present
- Leading interdisciplinary teams to develop cutting-edge methodologies for assessing physical and transition risks from climate change at a global scale
 - Collaborating closely with executive leadership to drive impactful climate risk analytics initiatives for clients from diverse sectors including banking, insurance, asset management, and regional & national governments
- Postdoctoral Research Fellow**, IRES, University of British Columbia, Canada 2021 – 2023
- Spatial evaluation of the role biofuels and land use (agriculture and forestry) will play in achieving Canada's net-zero emissions by 2050
 - Taught a course on data analysis in sustainability science to 70+ students
 - Supervised an undergraduate student to build, optimize, validate, and compare multiple ML crop models
- Contributing Author**, IPCC 6th Assessment Report 2022 (Working Group II) 2020 – 2022
- Reviewed and analyzed a wide range of scientific and gray literature for the 2022 report of IPCC, the apex UN body of global climate experts
 - Summarized findings in a [public-facing article](#) for The Conversation, Canada's leading research media outlet
- Short-Term Consultant**, The World Bank, Washington, DC, USA 2019 – 2020
- Acquired and analyzed climate data, and wrote the Climate Change chapter for [Sustainable Development Goals Atlas 2020](#), World Bank's flagship publication based on 1400 indicators from over 220 economies
 - Collaborated with data scientists and graphics editors to create interactive data visualizations that demonstrate global climate change trends and risks through 2100

PhD Researcher, IRES, University of British Columbia, Canada 2016 – 2021

- Built, optimized, and validated advanced statistical and ML models to predict India's crop yields for a range of climate change scenarios through 2100. My models predict up to 20% yield loss, 33% of which can be avoided through irrigation
- Developed 2 case study modules to teach numerical modelling to students across multiple faculties at UBC
- Led a team of 15+ members (including 4 professors) to teach a Climate Change and Energy Futures course to 50+ international students from 10+ countries
- Collaborated on a meta-analysis automation project to alleviate farmers' climate stress in water-scarce areas

MASc Student and Graduate Research Assistant, Civil Engineering, University of Toronto, Canada 2013 – 2016

- Designed, built, maintained, and operated a pilot-scale drinking water treatment plant to investigate advanced technologies that enhanced filter performance by 400%

RECENT PUBLICATIONS (full list available on [Google Scholar](#))

15+ articles in academic journals, newspapers, magazines

40+ conference presentations, workshops, invited lectures, media interviews (including [CBC](#), [Associated Press](#))

Created a [TED-Ed](#) video on water scarcity which has garnered 3 million+ views across various platforms

- **Sidhu BS** (2023). Likely impacts of the 2022 heatwave on India's wheat production. *Environmental Research Letters*, 18(10), 105001.
- **Sidhu BS**, et al. (2023). How can machine learning help in understanding the impact of climate change on crop yields? *Environmental Research Letters*, 18(2), 024008.
- **Sidhu BS**, et al. (2022). On the relative importance of climatic and non-climatic factors in crop yield models. *Climatic Change*, 173(1), 1-21.
- Mehrabi Z, ..., **Sidhu BS**, et al. (2022). Research priorities for global food security under extreme events. *One Earth*, 5(7), 756-766.
- Mukherji A, ..., **Sidhu BS**, et al. (2022). Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report. Working Group II. Chapter 4: Water.
- Ricciardi V, Wane A, **Sidhu BS**, et al. (2020). A scoping review of research funding for small-scale farmers in water scarce regions. *Nature Sustainability*, 3, 836-844.
- **Sidhu BS**, et al. (2020). Power tariffs for groundwater irrigation in India: A comparative analysis of the environmental, equity, and economic tradeoffs. *World Development*, 128, 104836.

SCHOLARSHIPS & AWARDS

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| • Vanier Canada Graduate Scholarship, Government of Canada | 150,000 CAD | 2018 – 2021 |
| • Four Year Doctoral Fellowship, UBC | 107,000 CAD | 2016 – 2020 |
| • Slaymaker Scholarship for Environment, UBC | 10,000 CAD | 2016 |
| • Cities of Tomorrow Competition Winner, Ontario Urban Mayors' Caucus | 10,000 CAD | 2016 |
| • Summer Undergraduate Research Award, IIT Delhi | 20,000 INR | 2011 |
| • National Talent Search Examination Scholarship, Government of India | 36,000 INR | 2007 – 2013 |

LEADERSHIP & SERVICE

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| • Mentor, Project EduAccess | 2022 – present |
| • Mentor, UBC Undergraduate Research Experience Program | 2022 – 2023 |
| • Executive member, UBC Postdoctoral Association | 2022 – 2023 |
| • Student representative, UBC Climate Emergency Fund Advisory Committee | 2021 |
| • Student representative, UBC Graduate Council | 2016 – 2018 |
| • President, Ontario Water Works Association (University of Toronto chapter) | 2014 – 2015 |
| • Institute nominee, IIT Delhi Board for Undergraduate Studies | 2011 – 2012 |
| • Institute nominee, IIT Delhi Co-curricular and Academic Interaction Council | 2011 – 2012 |