

Bharat Rastogi

Email: bharat.rastogi@colorado.edu
bharat.rastogi@noaa.gov
Phone: +1 707-567-8793
Address: 2D-126 David Skaggs
Research Center
Boulder CO: 80305

EDUCATION

- Oregon State University** Corvallis, USA
Ph.D. in Forest Ecosystems and Society, Advisor: Christopher Still 2013–2018
– Dissertation: “Ecosystem Photosynthesis and Forest-Atmosphere Interactions Inferred from Carbonyl Sulfide ”
- University of California, Santa Barbara** Santa Barbara, USA
M.A. in Geography, Advisor: Christopher Still 2011–2013
– Thesis: “Characterizing the Spatial and Temporal Patterns of Cloud cover and Fog Inundation for the Northern Channel Islands of California”
- University of East Anglia** Norwich, U.K.
M.Sc. in Environmental Sciences, Advisor: Nikolai Pedentchouk 2009–2010
– Thesis: “Molecular and Carbon Specific Isotope Analysis of *n-alkanes* from a Marine Sediment as a Proxy for Glaciation During the Last Quaternary in the Gulf of Corinth, Greece”
- St. Stephen’s College, University of Delhi** Delhi, India
B.Sc. (Hons.) in Chemistry 2006–2009

EXPERIENCE

- University of Colorado Boulder/NOAA Global Monitoring Laboratory** Boulder, USA
Postdoctoral Associate in Carbon Cycle Greenhouse Gases 2019–present
– Evaluate bias in satellite retrievals of total column CO_2 from OCO-2 over North America.
– Incorporate space-based XCO_2 in a regional inverse model.
– Regional modeling of $\delta^{13}CO_2$ to characterize biome-scale plant water stress.
- Oregon State University** Corvallis, USA
Postdoctoral Scholar with Christopher Still and John Kim August 2018–January 2019
– Characterizing spatial and temporal patterns of near-surface clouds in the Pacific Northwestern US by analysing cloud data from satellites, airport records and radiosondes.

PUBLICATIONS

- [1] **Rastogi, B.**, J. B. Miller, M. Trudeau, A. E. Andrews, L. Hu, M. Mountain, T. Nehrkorn, B. Baier, K. McKain, J. Mund, K. Guan, and C. B. Alden, “Evaluating consistency between total column CO_2 retrievals from OCO-2 and the in-situ network over North America: Implications for carbon flux estimation”, *Atmospheric Chemistry and Physics*, vol. 21, no. 18, pp. 14 385–14 401, 2021.

- [2] C. J. Still, **B. Rastogi**, G. F. Page, D. M. Griffith, A. Sibley, M. Schulze, L. Hawkins, S. Pau, M. Detto, and B. R. Helliker, “Imaging canopy temperature: Shedding (thermal) light on ecosystem processes”, *New Phytologist*, 2021.
- [3] A. W. Dye, **B. Rastogi**, R. E. Clemesha, J. B. Kim, R. M. Samelson, C. J. Still, and A. P. Williams, “Spatial patterns and trends of summertime low cloudiness for the Pacific Northwest, 1996–2017”, *Geophysical Research Letters*, vol. 47, no. 16, e2020GL088121, 2020.
- [4] Y. Jiang, C. J. Still, **B. Rastogi**, G. F. Page, S. Wharton, F. C. Meinzer, S. Voelker, and J. B. Kim, “Trends and controls on water-use efficiency of an old-growth coniferous forest in the Pacific Northwest”, *Environmental Research Letters*, vol. 14, no. 7, p. 074 029, 2019.
- [5] **B. Rastogi**, M. Berkelhammer, S. Wharton, M. E. Whelan, M. S. Itter, J. B. Leen, M. X. Gupta, D. C. Noone, and C. J. Still, “Large uptake of atmospheric *OCS* observed at a moist old growth forest: Controls and implications for carbon cycle applications”, *Journal of Geophysical Research: Biogeosciences*, vol. 123, no. 11, pp. 3424–3438, 2018.
- [6] **B. Rastogi**, M. Berkelhammer, S. Wharton, M. E. Whelan, F. C. Meinzer, D. Noone, and C. J. Still, “Ecosystem fluxes of carbonyl sulfide in an old-growth forest: Temporal dynamics and responses to diffuse radiation and heat waves”, *Biogeosciences*, vol. 15, no. 23, pp. 7127–7139, 2018.
- [7] M. E. Whelan, S. T. Lennartz, T. E. Gimeno, R. Wehr, G. Wohlfahrt, Y. Wang, L. M. Kooijmans, T. W. Hilton, S. Belviso, P. Peylin, and others including **B. Rastogi**, “Reviews and syntheses: Carbonyl sulfide as a multi-scale tracer for carbon and water cycles”, *Biogeosciences*, vol. 15, no. 12, pp. 3625–3657, 2018.
- [8] C. Still and **B. Rastogi**, “Commentary: What drives carbon isotope fractionation by the terrestrial biosphere?”, *Journal of Geophysical Research: Biogeosciences*, vol. 122, no. 11, pp. 3108–3110, 2017.
- [9] **B. Rastogi**, A. P. Williams, D. T. Fischer, S. F. Iacobellis, K. McEachern, L. Carvalho, C. Jones, S. A. Baguskas, and C. J. Still, “Spatial and temporal patterns of cloud cover and fog inundation in coastal california: Ecological implications”, *Earth Interactions*, vol. 20, no. 15, pp. 1–19, 2016.

MANUSCRIPTS- OTHER

- 1. C.J. Still, G.F.M. Page, **B. Rastogi**, *et al.*, “No evidence of canopy-scale leaf thermoregulation to cool leaves below air temperature across a range of forest ecosystems”, *in-review: Proceedings of the National Academy of Sciences*
- 2. **B. Rastogi**, A Schmidt, M Berkelhammer, D.C. Noone, F.C. Meinzer, J. Kim, and C.J. Still, “Enhanced photosynthesis and transpiration in a moist coniferous old growth forest due to wildfire smoke”, *in review: Geophysical Research Letters*
- 3. M.Gordon, S.J. Miller, C.J.Still and **B. Rastogi**, “Large nocturnal uptake of carbonyl sulfide is dominated by epiphytes in an old-growth forest”, *in-prep*
- 4. **B. Rastogi**, F.Mauro, F.C. Meinzer, M.E. Whelan, M Berkelhammer, D.C. Noone, J. Kim, and C.J. Still, “Underestimation of photosynthesis by CO_2 flux measurements in an old growth coniferous forest”, *in-prep*
- 5. **B. Rastogi**, C.B. Alden and J.B. Miller, “High resolution regional inverse modeling of $\delta^{13}C$ of land biosphere CO_2 fluxes”, *in-prep*

SELECTED ORAL PRESENTATIONS

- Constraints on OCO-2 retrievals to provide robust NEE estimates over North America
American Geophysical Union Fall Meeting 2021
- *Evaluating consistencies between total column CO_2 retrievals from OCO-2 and the in-situ network over North America: Implications for Carbon flux estimation
Dept. of Atmospheric Sciences and Physics, Dalhousie University, Canada 2021
- *Evaluating consistencies between total column CO_2 retrievals from OCO-2 and the in-situ network over North America: Implications for Carbon flux estimation
Jet Propulsion Laboratory, NASA 2021
- *An atmospheric tracer sheds new light on terrestrial photosynthesis: Insights from an old- growth forest
Center for Ecological Sciences, Indian Institute of Science, India 2018
- *An atmospheric tracer sheds new light on terrestrial photosynthesis: Insights from an old- growth forest
The Academy for Conservation Science and Sustainability Studies, Ashoka Trust for Research in Ecology and the Environment, India 2018
- *,**Long-term, calibrated *in-situ* observations are an essential component of a Carbon Emission Monitoring System
President's Council of Advisors on Science and Technology (PCAST) meeting on Greenhouse Emission Monitoring, The White House 2022

*Invited, **Co-Author

TEACHING

- **Guest Lecturer** at City University of New York October 15, 2020
A primer on climate change and carbon, and impacts of COVID-19
- **Teaching Assistant** at Oregon State University Spring 2015 and 2017
Scientific Methods for Analyzing Natural Resource Problems (FES 399/NR 325)
- **Teaching Assistant** at University of California, Santa Barbara Spring 2013
California's Channel Islands (Geog 149/ Environmental Studies 111)
- **Teaching Assistant** at University of California, Santa Barbara Fall 2011 and 2012, Winter 2012 and 2013
Oceans and Atmosphere (Geog 3A)
- **Teaching Assistant** at University of California, Santa Barbara Spring 2012
Land, water and life (Geog 3B)

SCHOLARSHIPS AND AWARDS

- Postdoctoral Association of Colorado Travel Award 2021
- Student Sustainability Initiative, Oregon State University 2013 –2017
- Richardson Graduate student fellowship
Oregon State University 2013

- Provost's Distinguished Graduate Student Scholarship
Oregon State University 2013
- Faculty of Science International Student Fund Award
University of East Anglia, 2009
- Science Meritorious Scholarship
University of Delhi 2007

PROFESSIONAL SERVICE

- **Proposal reviewer:** US-Israel Binational Science foundation
- **Journal Reviewer:** Biogeosciences, Tellus-B, Agricultural and Forest Meteorology, New Phytologist, European Journal of Remote Sensing, Carbon Balance and Management. Co-reviewed manuscripts for Nature Geoscience and Science
- **Judge for student presentations:** North American Carbon Program meeting, Summer Internship Research Program at UCAR, Boulder, AGU Fall meeting

WORKSHOPS AND PROFESSIONAL COURSES

- NEON: Integrated Carbon and Water for Ecological and Biochemical synthesis 2017
Stevenson, WA
- Flux Course 2015
Mountain Research Station, University of Colorado, Boulder
- Conservation ethics workshop 2014
Oregon State University
- Pacific Coastal Fog Workshop 2012
USGS: Menlo Park, California

SKILLS

- Measurement and Analyses of eddy covariance, trace gases, stable isotopes, ecophysiological and environmental data
- Probabilistic and Bayesian statistical modeling
- Analyses of large scale remote sensing data
- Supercomputing systems (NASA HECC, NOAA)

LANGUAGES

- **Python:** Proficient
- **Matlab:** Proficient
- **R:** Proficient
- **bash:** Intermediate
- **L^AT_EX:** Advanced
- **ArcGIS:** Proficient

REFERENCES

- **Christopher J Still**- PhD Advisor
Professor, Forest Ecosystems and Society
Oregon State University
Phone: 805-450-3070
chris.still@oregonstate.edu
- **John B Miller**- NOAA Science Advisor
Deputy Group Lead, Carbon Cycle Greenhouse Gases Division
Global Monitoring Laboratory, NOAA
Phone: 720-427-6209
john.b.miller@noaa.gov
- **Caroline B Alden**- Postdoctoral Advisor
Research Scientist II, Cooperative Institute for Research in Environmental Sciences, and
Co-Founder Longpath Technologies
Phone: 719-930-5281
caroline.alden@longpathtech.com
- **Lori M.P. Bruhwiler**
Physical Scientist, Carbon Cycle Greenhouse Gases Division
Global Monitoring Laboratory, NOAA
Phone: 720-217-6326
lori.bruhwiler@noaa.gov
- **Frederick C Meinzer**- PhD Committee Member
Emeritus Research Ecologist
Forest Sciences Laboratory, Pacific Northwest Station
U.S. Forest Service
Phone: 541-758-7798
rick.meinzer@oregonstate.edu