# Piyush Srivastava

DM-08, CoEDMM, IIT Roorkee, Roorkee, Uttarakhand, INDIA - 247667

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## Research Interests

- Improving the parameterization schemes in numerical weather prediction and climate models.
- Improving the ability to simulate and predict Arctic sea-ice and atmospheric conditions over melting ice.

## Education

**Ph.D. Atmospheric Sciences** **January 2012 - May 2018**

*Indian Institute of Technology Delhi* *Delhi, India*

- **Dissertation**: Modelling and Analysis of Surface Layer Processes for their Representation in Atmospheric Models

**M.Sc. Mathematics** **July 2008 - June 2010**

*Indian Institute of Technology Roorkee* *Roorkee, India*

## Work Experience

**Assistant Professor** **May 2022 - till date**

*Centre of Excellence in Disaster Mitigation and Management*

Indian Institute of Technology Roorkee, Roorkee, Uttarakhand, India

**Visiting Researcher** **January 2021 - till date**

*School of Earth and Environment*

University of Leeds, United Kingdom

**INSPIRE Faculty** **January 2021 - May 2022**

*Centre of Excellence in Disaster Mitigation and Management*

Indian Institute of Technology Roorkee, Roorkee, Uttarakhand, India

**Post-Doctoral Research Fellow** **February 2019 - January 2021**

*School of Earth and Environment*

University of Leeds, United Kingdom

**Project Scientist** **May 2018 - February 2019**

*Centre for Atmospheric Sciences*

Indian Institute of Technology Delhi, Delhi, India

## Awards and Honours

* Early Career Scientist Travel Grant to attend the **GEWEX-OSC 2024** held in Hokkaido, Japan, from 07–12 July 2024.
* Awarded the **DST-INSPIRE Faculty Fellowship (2019)** in April 2020.
* Received the **Prof. M. P. Singh Award** for outstanding research at CAS, IIT Delhi, in 2018.
* Awarded Senior Research Fellowship (**UGC-SRF**) from January 2014 to December 2016 by the University Grants Commission (UGC), India.
* Qualified National Eligibility Test (NET) for Lectureship and Junior Research Fellowship (**UGC-JRF**) in 2011, organized by the Council of Scientific and Industrial Research (CSIR) and UGC, India.
* Received Early Career Scientist Travel Award for participating in an interdisciplinary field course held in the Russian Siberian gateway to the Arctic (2020).

* Received Student Travel Award from the American Geophysical Union (AGU) for presenting a paper at the 2017 AGU Fall Meeting, New Orleans, Louisiana.
* Selected for the Faculty Alumni Network (**FAN**) Symposium 2016 organized by the Indian Institute of Technology Bombay, Mumbai, India.
* Awarded financial assistance from the Science and Engineering Research Board, Department of Science and Technology (**SERB-DST**), India, for presenting a paper at the AGU Fall Meeting (2015).

## Teaching Experience

- **Course Instructor, CoEDMM, IIT Roorkee**
  1. DMO - 102, Introduction to Climate Change
  2. DML - 505, Climate and Weather Modelling
  3. DML - 514, Industrial/Manmade Disasters and Safety
  4. DMS - 501, Climate Change and Sustainable Development
  5. DMC - 507, Climate Change: Impact, Adaptation and Mitigation
  6. DMN - 502, Natural Hazards and Impact Assessment
  7. DMN - 608,508, Climate Change Impacts
  8. DMN - 602, Climate Change and Sustainable Development
  9. DMN - 601, Hazard Monitoring, Prediction and Microzonation
  10. DMN - 606, Application of Geospatial Data for Disaster Mitigation
- **Teaching Assistant, IIT Delhi**
  1. Dynamic Meteorology[2012-2017]

## Referred Journal Publications

1. Kacker, K., **Srivastava, P.**, Mukherjee, M. (2025). Personalized heat stress early warning system for an urban area. ***Environment International***, 199, 109507. https://doi.org/10.1016/J.ENVINT.2025.109507

2. Singh, S., **Srivastava, P.** Dhiman, A. (2025). Modelling and analysis of extreme weather-induced disasters in Indian North-West Himalayas. ***Natural Hazards***. https://doi.org/10.1007/s11069-025-07311-2

3. Yunus, A.P., Sajinkumar, K., Gopinath, G.....**Srivastava, P.** et al. Chronicle of destruction: the Wayanad landslide of July 30, 2024. Landslides 22, 1891–1908 (2025). https://doi.org/10.1007/s10346-025-02494-y

4. Prabhakaran, A. **Srivastava, P.** (2024). Analysis of prevailing atmospheric conditions during wildfire events in the Indian Himalayan region. ***Quarterly Journal of the Royal Meteorological Society***, 1–15. https://doi.org/10.1002/qj.4918

5. Namdev, P., Sharan, M., **Srivastava, P.**, and Mishra, S. K. (2024). An updated parameterization of the unstable atmospheric surface layer in the Weather Research and Forecasting (WRF) modeling system. ***Geoscientific Model Development***, 17, 8093–8114. https://doi.org/10.5194/gmd-17-8093-2024

6. **Srivastava, P.**, Brooks, I. M., Prytherch, J., Salisbury, D. J., Renfrew, I. A., Elvidge, A. D., Yelland, M. J. (2024). Turbulent Heat Fluxes over Arctic Sea Ice: Measurements and Evaluation of Recent Parameterizations. ***Boundary-Layer Meteorology***, 190(11). https://doi.org/10.1007/s10546-024-00887-5

7. Kacker, K., **Srivastava, P.**, Mukherjee, M. (2024). Heat stress risk at an intra-urban level: A case study of Delhi, India. ***Building and Environment***, 264. https://doi.org/10.1016/j.buildenv.2024.111897

8. Namdev, P., **Srivastava, P.**, Sharan, M., Mishra, S. K. (2024). An update to WRF surface layer parameterization over an Indian region. ***Dynamics of Atmospheres and Oceans***, 105. https://doi.org/10.1016/j.dynatmoce.2023.101414

9. Dixit, S., Siva Subramanian, S., **Srivastava, P.**, Yunus, A. P., Martha, T. R., Sen, S. (2024). Numerical-model-derived intensity-duration thresholds for early warning of rainfall-induced debris flows in a Himalayan catchment. ***Natural Hazards and Earth System Sciences***, 24(2). https://doi.org/10.5194/nhess-24-465-2024

10. Elvidge, A. D., Renfrew, I. A., Edwards, J. M., Brooks, I. M., **Srivastava, P.**, Weiss, A. I. (2023). Improved Simulation of the Polar Atmospheric Boundary Layer by Accounting for Aerodynamic Roughness in the Parameterization of Surface Scalar Exchange Over Sea Ice. ***Journal of Advances in Modeling Earth Systems***, 15(3). https://doi.org/10.1029/2022MS003305

11. **Srivastava, P.**, Brooks, I. M., Prytherch, J., Salisbury, D. J., Elvidge, A., Renfrew, I. A., and Yelland, M. J. (2022). Ship-based estimates of momentum transfer coefficient over sea ice and recommendations for its parameterization. ***Atmospheric Chemistry and Physics***, 22, 4763–4778.

12. **Srivastava, P.**, Namdev, P., Singh, P. K. (2022). 7 February Chamoli (Uttarakhand, India) Rock-Ice Avalanche Disaster: Model-Simulated Prevailing Meteorological Conditions. ***Atmosphere***, 13, 267.

13. **Srivastava, P.**, Sharan, M., and Kumar, M. (2021). Evaluation of Surface Layer Parameterizations in the Weather Research and Forecast Model. ***Dynamics of Atmospheres and Oceans***, 96, 101259.

14. Elvidge, A., Renfrew, I. A., Brooks, I. M., **Srivastava, P.**, Prytherch, J., and Yelland, M. J. (2021). Surface heat and moisture exchange in the marginal ice zone: Observations and a new parameterization scheme for weather and climate models. ***Journal of Geophysical Research: Atmospheres***, 126, e2021JD034827.

15. **Srivastava, P.** and Sharan, M. (2021). Uncertainty in the Parametrization of Surface Fluxes under Unstable Conditions. ***Journal of the Atmospheric Sciences***, 78(7), 2237–2247.

16. **Srivastava, P.**, Sharan, M., and Kumar, M. (2020). Development of Observation-based Parameterizations of Standard Deviation of Wind Velocity Fluctuations over an Indian Region. ***Theoretical and Applied Climatology***, 139, 1057–1077.

17. **Srivastava, P.**, Sharan, M., Kumar, M., and Dhuriya, A. (2020). On Stability Correction Functions over the Indian Region Under Stable Conditions. ***Meteorological Applications***, 27(1), e1880.

18. **Srivastava, P.** and Sharan, M. (2019). Analysis of Dual Nature of Heat Flux Predicted by Monin-Obukhov Similarity Theory: An Impact of Non-linear Stability Correction Functions. ***Journal of Geophysical Research: Atmospheres***, 124(7), 3627–3646.

19. **Srivastava, P.** and Sharan, M. (2017). An analytical formulation of the Obukhov Stability Parameter in the Atmospheric Surface Layer under Unstable Conditions. ***Boundary-Layer Meteorology***, 165(2), 371–384.

20. Sharan, M. and **Srivastava, P.** (2016). Characteristics of Heat Flux in the Unstable Atmospheric Surface Layer. ***Journal of the Atmospheric Sciences***, 73(11), 4519–4529.

21. **Srivastava, P.** and Sharan, M. (2015). Characteristics of Drag Coefficient over a Tropical Environment in Convective Conditions. ***Journal of the Atmospheric Sciences***, 72(12), 4903–4913.

## Published Datasets

1. Brooks, I.M., Prytherch, J., **Srivastava, P.** (2022). CANDIFLOS: Surface fluxes from ACSE measurement campaign on icebreaker Oden, 2014. ***NERC EDS Centre for Environmental Data Analysis***, 05 April 2022.
https://doi.org/10.5285/c6f1b1ff16f8407386e2d643bc5b916a

2. Brooks, I.M., Prytherch, J., **Srivastava, P.** (2022). CANDIFLOS: Surface fluxes from AO2016 measurement campaign on icebreaker Oden, 2016. ***NERC EDS Centre for Environmental Data Analysis***, 05 April 2022.
https://doi.org/10.5285/614752d35dc147a598d5421443fb50e8

## Conference Presentation

- Kacker, K., Mukherjee, M., **Srivastava, P**., 2024. Assessment of heat stress hazard at an intra-urban level: A case of Delhi, India. In A. W. Barbara Widera, Marta Rudnicka-Bogusz, Jakub Onyszkiewicz (Ed.), Proceedings of 37th PLEA Conference (pp. 464–469). PLEA.
- Prabhakaran, A., **Srivastava, P.**, and Pai, A.: Atmospheric Conditions Conducive to Forest Fire Events in the Greater Himalayan Region, *EGU General Assembly 2023*, Vienna, Austria, 24–28 Apr 2023, EGU23-1004, https://doi.org/10.5194/egusphere-egu23-1004
- Pai, A., **Srivastava, P.**, and Prabhakaran, A.: A Meteorological Perspective of the 6th August 2020 Kerala and the 7th February 2021 Uttarakhand Disasters, *EGU General Assembly 2023*, Vienna, Austria, 24–28 Apr 2023, EGU23-642, https://doi.org/10.5194/egusphere-egu23-642
- Siva Subramanian, S., **Srivastava, P.**, Sen, S., and Yunus, Ali. P.: Physically-based model derived thresholds of sediment disasters for impact-based rainfall forecasts, *EGU General Assembly 2023*, Vienna, Austria, 24–28 Apr 2023, EGU23-8674, https://doi.org/10.5194/egusphere-egu23-8674

- Siva Subramanian, S., **Srivastava, P.**, Sen, S. (2022). Numerical weather prediction model outputs define intensity-duration thresholds of extreme precipitation-induced sediment disasters. *EGU General Assembly 2022*, EGU22-7804, https://doi.org/10.5194/EGUSPHERE-EGU22-7804
- **Srivastava, P.**, Namdev, P., Singh, P. K.: 7th February 2021 Chamoli (Uttarakhand, India) Rock-ice Avalanche: Numerical Model Simulated Prevailing Meteorological Conditions. *EGU General Assembly 2022*, EGU22-2476, https://doi.org/10.5194/EGUSPHERE-EGU22-2476
- **Srivastava, P.**, and Sen, S.: (2021), 'Simulation of Extreme Rainfall Events Over Indian Himalayan Region using WRFv4 model'. *American Geophysical Union Fall Meeting 2021*, New Orleans, Louisiana.
- Namdev, P., **Srivastava, P.**, Sharan, M., and Mishra, S. K.: (2021), 'Evaluation of Newly Developed Similarity Functions under Stable Condition with a Mesoscale Model over the Indian Region'. *American Geophysical Union Fall Meeting 2021*, New Orleans, Louisiana.
- **Srivastava, P.**, Brooks, I. M., Prytherch, J., Salisbury, D. J., Elvidge, A., Renfrew, I. A., and Yelland, M. J.: (2021), 'Ship-based estimates of surface exchange coefficients over sea ice'. 22nd Conference on Air-Sea Interaction 2021 in 101st *AMS Annual Meeting* (virtual), USA.
- Persson, P. O. G., Blomquist, B. W., Fairall, C. W., Grachev, A. A., Brooks, I. M., Prytherch, J., **Srivastava, P.**, Cox, C. J., and Shupe, M. D.: (2021), 'Turbulent Fluxes over New Ice in the New Arctic'. 22nd Conference on Air-Sea Interaction 2021 in 101st *AMS Annual Meeting* (virtual), USA.
- Elvidge, A., Renfrew, I. A., Brooks, I. M., **Srivastava, P.**, Prytherch, J., and Yelland, M. J.: (2021), 'Observations of Surface Heat and Moisture Exchange over the Marginal Ice Zone and Implications for Model Parameterization'. 22nd Conference on Air-Sea Interaction 2021 in 101st *AMS Annual Meeting* (virtual), USA.
- **Srivastava, P.**, and Sharan, M.: (2017), 'Assessment of WRF surface layer formulations over complex terrain in a tropical region'. *American Geophysical Union Fall Meeting 2017*, New Orleans, Louisiana.
- **Srivastava, P.**, and Sharan, M.: (2016), 'Characteristics of Heat Flux in Atmospheric Surface Layer.' 22nd Symposium on Boundary Layers and Turbulence, Salt Lake City, Utah.
- **Srivastava, P.**, and Sharan, M.: (2015), 'Dual Nature of Heat Flux in Stable Atmospheric Surface Layer.' *American Geophysical Union Fall Meeting 2015*, San Francisco, CA.
- **Srivastava, P.**, and Sharan, M.: (2012), 'Observed Surface Layer Characteristics over a Tropical Region.' Future Directions for Weather and Climate Research in the Tropics 2012, Indian Institute of Technology Delhi, India.

## Webpage links

1. Research Group Website: **www.weatherxplorers.com**
2. Official Website : **https://bit.ly/3CZqBXa**
3. ResearchGate Profile: **http://bit.ly/3Wpa6L5**
4. Google Scholar Profile : **http://bit.ly/3CXzxwb**

## References


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