

## Curriculum Vitae

*Nachiketa Acharya, Ph.D*

*Research Scientist III*

*Cooperative Institute for Research in Environmental Sciences (CIRES)  
at the University of Colorado, Boulder, CO and NOAA Physical  
Sciences Laboratory, USA.*

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Website: <https://psl.noaa.gov/people/nachiketa.acharya/>

Mobile: +1-845-633-2726



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### Education:

**PhD (Statistics)**, Department of Statistics, Utkal University, Orissa, India, 2014.

Dissertation – “*Statistical Techniques for Monthly to Seasonal scale rainfall prediction over India using results from General Circulation Models*”.

**M.Sc (Statistics)**, Department of Statistics, Visva-Bharati University, West Bengal, India, 2008.

**B.Sc (Statistics)**, Department of Statistics, Calcutta University, West Bengal, India, 2006.

### Research Interests:

- Application of Machine Learning and statistical modeling in Climate/Atmospheric Sciences.
- Sub-seasonal to seasonal (S2S) ensemble climate predictions.
- Prediction and Predictability study of Monsoon: South Asia, East Asiana and African Monsoon.
- Model Output Statistics: Diagnostic/Evaluation, Bias correction and Multi-model Ensemble (MME), Prediction and Statistical downscaling of General Circulation Models (GCM's) products.
- Verification methods for prediction skills.
- Uncertainty in climate forecast: Probabilistic Ensemble Prediction (parametric and non-parametric) based on GCM.
- Impact of climate change in hydrometeorology: Stochastic weather generator.
- Prediction of Extreme events using Extreme Value analysis.
- Building the capacities of the National Meteorological Services for the S2S forecast

### **Professional Positions held:**

- April, 2022-till date: **Research Scientist III**, Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado, Boulder, CO and NOAA Physical Sciences Laboratory, Boulder, CO., USA.
- April, 2021-March 2022: **Assistant Research Professor**, Center for Earth System Modeling, Analysis, and Data (ESMAD), Department of Meteorology and Atmospheric Science, Pennsylvania State University, NY, USA.
- September,2017-April,2021: **Associate Research Scientist**, International Research Institute for Climate and Society, Columbia University, NY, USA.
- September,2016-August,2017: **Post-Doctoral Research Scientist**, International Research Institute for Climate and Society, Columbia University, NY, USA.
- December,2014-August,2016: **Post-Doctoral Research Scientist**, Institute for Sustainable Cities, Hunter College, City University of New York, NY, USA.
- April,2014-December,2014: **Project Scientist-C**, National Centre for Medium Range Weather Forecasting, Ministry of Earth Sciences, Govt. of India, NOIDA, U.P, India.
- November,2013-March,2014: **Senior Project Scientist**, School of Earth, Ocean and Climate, Sciences, Indian Institute of Technology Bhubaneswar, Odisha, India.
- July,2013- October, 2013: **Project Scientist**, School of Earth, Ocean and Climate, Sciences, Indian Institute of Technology Bhubaneswar, Odisha, India.
- July,2012-September,2012: **Visiting young Scientist**, APEC Climate Center (APCC), Busan, Korea.
- December,2012-March,2013: **Project Scientist**, Centre for Atmospheric Sciences, Indian Institute of Technology Delhi, New Delhi, India.
- April,2010-December,2012: **Project Associate**, Centre for Atmospheric Sciences, Indian Institute of Technology Delhi, New Delhi, India.
- November,2008-April,2010: **Junior Research Fellow**, Centre for Atmospheric Sciences, Indian Institute of Technology Delhi, New Delhi, India.

### **Professional Membership:**

- Founding Member of South Asian Forum on Agriculture Meteorology (SAFOAM).
- Indian Meteorological Society, India (Life member).
- Alumni of United Nation University Capacity Development Course Association, Tokyo, Japan.
- American Geophysical Union.
- American Meteorological Society.

- Asia Oceania Geosciences Society (AOGS).
- The New York Academy of Sciences.

### **Academic Awards/ Recognitions/Achievements:**

- Co-leading the Building Block-3 (Prediction with a focus on the seasonal to decadal timescales), Regional Information for Society (RifS), World Climate Research Program, World Meteorological Organization.
- Session Chair for the “Machine Learning in Weather, Climatological and Hydrological Analysis, Predictions and Applications” at the 18th Annual Meeting of the Asia Oceania Geosciences Society.
- Awarded Travel grant from National Science Foundation, USA, to attend “*Rosbypalooza 2016*” held at Department of the Geophysical Sciences, University of Chicago, USA (2016).
- Awarded Travel grant from National Science Foundation, USA, to attend “*The 5<sup>th</sup> International Workshop on Climate Informatics*” held at National Center for atmospheric Research (NCAR), Boulder, Colorado, USA (2015).
- Received Gold medal for best poster presentation award for “*Prediction of Winter Monsoon using Artificial Neural Network based Multi-Model Ensemble schemes*” at the International Tropical Meteorology Symposium (INTROMET), held in SRM University, Chennai, India (2014).
- Working as visiting Scientist at APEC Climate Center (APCC), Busan, Korea in "Young Scientist Support Program 2012" for three months from July to September, 2012. Fully sponsored by APCC (2012).
- Stood third in SERC school on "Dynamics and Forecasting of Indian Summer Monsoon" sponsored by Department of Science and Technology, Govt. of India (2011).
- Awarded Travel grant from Department of Science and Technology, Govt. of India, to attend workshop and conference in United Nation University, Tokyo, Japan (2011).
- Stood First class second in Master degree (Statistics) of Visva-Bharati University, West Bengal, India (2008).

### **Grants:**

- **Round 3 of Research to Operation (R2O) initiative call by NOAA Testbeds:**  
 “Development and evaluation of new statistical calibration methods for multi-model ensemble week 3-4 probabilistic forecasts”  
 Amount: \$377,187.  
 Role: Co-PI

- **The Institute for Computational and Data Sciences (Penn State University) Seed Grant 2022-23 competition:** “Learning to reconstruct the ocean’s great conveyor belt”  
Amount: \$47,649.  
Role: Co-PI

**Technical skill:**

- Environments: UNIX, LINUX, WINDOWS, MAC, GITHUB.
- Programming Languages: MATLAB, R, Python, Jupyter Notebook.
- Graphical Packages: GrADS, MATLAB, R, Python, ArcGIS

**Publications Details:**

Paper published in peer reviewed journals	: <b>38.</b>
Book Chapters/ Technical Report	: <b>8.</b>
Peer reviewed Conference proceedings.	: <b>5</b>
Total Citation	: <b>665</b> (as of Jan, 2022 by Google Scholar).
i-10 Index	: <b>20</b> (as of Jan, 2022 by Google Scholar).
h- Index	: <b>15</b> (as of Jan, 2022 by Google Scholar).
Google Scholar link	: <a href="https://scholar.google.com/citations?user=AwwCwHcAAAAJ&amp;hl=en">https://scholar.google.com/citations?user=AwwCwHcAAAAJ&amp;hl=en</a>
Research-gate Profile	: <a href="https://www.researchgate.net/profile/Nachiketa_Acharya2">https://www.researchgate.net/profile/Nachiketa_Acharya2</a>

**List of Publications:**

➤ ***Peer Reviewed Journals:***

1. **Acharya N**, Mason SJ, Montes C, Hassan SMQ, Muñoz AG, Krupnik TJ, Sultana R, Rashid MB Mannan AM, and Krupnik T.J (2022): Calibrated Multi-Model Ensemble Seasonal Prediction of Bangladesh Summer Monsoon Rainfall. ***International Journal of Climatology*** (under review).
2. Singh M, **Acharya N**, Jamshidi S, Jiao J, Yang ZL, Coudert M, Baumer Z and Niyogi D (2022): Urban precipitation downscaling using deep learning: a smart city application over Austin, Texas, USA. ***Environmental Data Science*** (under review).
3. Montes C, **Acharya N**, Hossain R, Babu A, and Krupnik T.J (2022): Developing climate services for aquaculture in Bangladesh: towards a seasonal early warning system for high temperatures and intense rainfall events, ***Climate Services*** (accepted).
4. Sabeerali CT, Sreejith OP, **Acharya N**, Surendran DE, Pai DS (2022): Seasonal Forecasting of Tropical Cyclones over the Bay of Bengal using a Hybrid Statistical/Dynamical Model. ***International Journal of Climatology*** (accepted).

5. Teshome A, Zhang J, Ma Q, Zebiak S.E, Demissie T, Dinku T, Siebert A, Seid J and **Acharya N** (2022): Skill Assessment of North American Multi-Models Ensemble (NMME) for June-September (JJAS) Seasonal Rainfall over Ethiopia, *Atmospheric and Climate Sciences*, 12, 54-73, DOI: 10.4236/acs.2022.121005.
6. **Acharya N**, Ehsan MA, Admasu A, Teshome A and Hall, K.J.C (2021): On the Next Generation (NextGen) Seasonal Prediction System to enhance Climate Services over Ethiopia, *Climate Services* <https://doi.org/10.1016/j.cliser.2021.100272>
7. **Acharya N**, and Bennett, E. Characteristic of the Regional Rainy Season Onset over Vietnam: Tailoring to Agricultural Application (2021). *Atmosphere*, 12, 198. <https://doi.org/10.3390/atmos12020198>
8. Montes C, **Acharya N**, Kelley C, Stiller-Reeve MA and Hassan QSM (2021): Interannual variability of monsoon onset and withdrawal in Bangladesh. *Atmosphere Science Letter* <https://doi.org/10.1002/asl.1069>.
9. White, C. J., Domeisen, D.I.V, **Acharya N** and others (2021): Advances in the application and utility of subseasonal-to-seasonal predictions. *Bulletin of the American Meteorological Society* <https://doi.org/10.1175/BAMS-D-20-0224.1>
10. **Acharya N**, R. Faniriantsoa, B. Rashid, R. Sultana, Montes C., S.M.Q. Hassan and T. Dinku, 2021: Developing High-resolution Gridded Rainfall and Temperature Data for Bangladesh: the ENACTS-BMD dataset, *Dew-Drop*, 7 (1), 155-164.
11. Montes C., **Acharya N**, S.M.Q. Hassan 2021: Assessing the performance of satellite-based products for monitoring extreme rainfall events in Bangladesh, *Dew-Drop*, 7 (1), 70-81.
12. Ehsan MA, Tippett MK, Robertson AW, Almazroui M, Ismail MS; Dinku T, **Acharya N**, Siebert A, Ahmed JS; Teshome A (2021): Predictability and Skill of Ethiopian Kiremt Rainfall in ECMWF's fifth generation seasonal forecast system, *Climate Dynamics* <https://doi.org/10.1007/s00382-021-05855-0>.
13. Montes C, **Acharya N**, Hassan QSM and Krupnik T.J (2021): Intense precipitation events during the monsoon season in Bangladesh as captured by satellite-based products, *Journal of Hydrometeorology* <https://doi.org/10.1175/JHM-D-20-0287.1>
14. Kelley C, **Acharya N**, Montes C, Krupnik T.J, Md. Mannan A, Hassan QSM (2020): Exploring the predictability of within-season rainfall statistics of the Bangladesh monsoon using North American Multimodel Ensemble outputs. *Theoretical and Applied Climatology* <https://doi.org/10.1007/s00704-020-03202-7>.
15. Robertson Andrew W., **Acharya N**, Goddard, L., Pattanaik, D. R., Sahai, A. K., Singh, K. K., et al. (2019): Subseasonal forecasts of the 2018 Indian summer monsoon over Bihar. *Journal of Geophysical Research: Atmosphere*. <https://doi.org/10.1029/2019JD031374>.
16. Robertson Andrew W, Moron Vincent, Vigaud Nicolas, **Acharya N**, Green M. Arther (2019): Multi-scale variability and predictability of Indian summer monsoon rainfall. *MAUSAM*, 70, 2 (April 2019), 277-292. [https://metnet.imd.gov.in/mausamdocs/17025\\_F.pdf](https://metnet.imd.gov.in/mausamdocs/17025_F.pdf)
17. Vigaud Nicolas, Tippett Michael K, Yuan Jing, Robertson Andrew W and **Acharya N** (2020): Spatial Correction of Multimodel Ensemble Subseasonal Precipitation Forecasts

- over North America Using Local Laplacian Eigenfunctions. *Monthly Weather Review* 148 (2), 523-539. doi: 10.1175/MWR-D-19-0134.1.
18. Vigaud Nicolas, Tippet Michael K, Yuan Jing, Robertson Andrew W and **Acharya N** (2019): Probabilistic skill of subseasonal surface temperature forecasts over North America. *Weather and Forecasting* 34 (6), 1789-1806. doi:10.1175/WAF-D-19-0117.1.
  19. Mukundan R, **Acharya N**, Gelda R., Frei A., Owens E.M. (2019): Modeling streamflow sensitivity to climate change in New York City water supply streams using a stochastic weather generator. *Journal of Hydrology: Regional Studies*, 147–158, <https://doi.org/10.1016/j.ejrh.2019.01.001>.
  20. Vigaud Nicolas, Robertson Andrew W, Tippet, Michael K, **Acharya N**, (2017): Subseasonal predictability of boreal summer monsoon rainfall from ensemble forecasts; *Frontiers in Environmental Science*. <https://doi.org/10.3389/fenvs.2017.00067>
  21. **Acharya N**, Frei A., Chen J., DeCristofaro L. and Owens E.M. (2016): Evaluating Stochastic Precipitation Generators for Climate Change Impact Studies of New York City's Primary Water Supply. *Journal of Hydrometeorology* 18(3):879-896.
  22. K. Ghosh, A. Singh, U.C. Mohanty, **Acharya N**, R.K. Pal, K.K. Singh and S. Pasupalak (2015): Development of a rice yield prediction system over Bhubaneswar, India: combination of extended range forecast and CERES-rice model. *Meteorological Application* doi: 10.1002/met.1483.
  23. **Acharya N**, Srivastava N.A., Panigrahi B.K. and Mohanty U.C. (2014): Development of an artificial neural network based multi-model ensemble to estimate the northeast monsoon rainfall over south peninsular India: an application of extreme learning machine. *Climate Dynamics*. 43(5):1303-1310.
  24. **Acharya N**, Chattopadhyay S., Mohanty U.C. and Sahoo L.N (2014): Prediction of Indian Summer Monsoon Rainfall: a weighted multi-model ensemble to enhance probabilistic forecast skills *Meteorological Application*. 21 (3),724-732.
  25. **Acharya N**, M.A. Kulkarni, U.C. Mohanty and Ankita Singh (2014): Comparative evaluation of Performances of two versions of NCEP Climate Forecast System in predicting Indian summer monsoon rainfall. *Acta Geophysica*.62 (1):199-219.
  26. **Acharya N**, Chattopadhyay S., Mohanty U.C., Dash S K and Sahoo L.N (2013): On the bias correction of General Circulation Model output for Indian Summer Monsoon. *Meteorological Applications*. 20 (3):349–356.
  27. **Acharya N**, Ankita Singh, Archana Nair, U.C. Mohanty, Chattopadhyay S (2013): Performance of General Circulation Models and their ensembles for prediction of drought indices over India during summer monsoon *Natural Hazards* 66 (2):851–871.
  28. **Acharya N**, Mohanty U.C, L N Sahoo (2013): Probabilistic Multi-Model Ensemble Prediction of Indian Summer Monsoon Rainfall using General Circulation Models: A non-parametric approach. *Comptes Rendus Geoscience*. 345 (3):126–135.
  29. Nair A., Mohanty U.C. and **Acharya N** (2013): Monthly prediction of rainfall over India and its homogeneous zones during monsoon season: a supervised principal component

- regression approach on general circulation model products. *Theoretical and Applied Climatology* 111 (1-2):327-339.
30. Singh A, **Acharya N**, U. C. Mohanty and G Mishra (2013). Performance of Multi Model Canonical Correlation Analysis (MMCCA) for prediction of Indian Summer Monsoon Rainfall using GCMs output *Comptes Rendus Geoscience*. 345(2): 62–72.
  31. Nair A., **Acharya N**, Ankita Singh, U.C. Mohanty and T.C. Panda (2013): On the predictability of northeast monsoon rainfall over south peninsular India in General Circulation Models *Pure and applied Geophysics*. 170 (11):1945-1967.
  32. U.C. Mohanty, **Acharya N**, Ankita Singh, Archana Nair, M.A. Kulkarni, S.K. Dash, S.C. Kar, A.W. Robertson, A.K. Mitra, L.S. Rathore, K.K. Singh, D.R. Pattanaik, Dalip Singh, Surajit Chattopadhyay, R.K. Rai, M.M.N Rao, P.Sinha, A.K. Mishra and R.K. Pal. (2013): Real-time Experimental Extended Range Forecast System (ERFS) for Indian summer Monsoon Rainfall: A case study for Monsoon 2011. *Current Science*. 104 (7):856-870.
  33. **Acharya N**, Chattopadhyay S., Kulkarni M.A., Mohanty U.C., (2012): A neurocomputing approach to predict monsoon rainfall in monthly scale using SST anomaly as predictor, *Acta Geophysica*. 60 (1):260-279.
  34. Kar S.C., **Acharya N**, Mohanty U.C., Kulkarni M.A. (2012): Skill of Monthly Rainfall forecasts over India using Multi-Model Ensemble Schemes, *International Journal of Climatology*, 32 (8): 1271–1286.
  35. Makarand A. Kulkarni; **Acharya N**, Kar S.C; U.C. Mohanty; Michael K. Tippett; Andrew W. Robertson; Jing-Jia Luo; Toshio Yamagata (2012): Probabilistic prediction of Indian Summer Monsoon Rainfall using Global Climate Models, *Theoretical and Applied Climatology* 107 (3-4):441–450.
  36. Chattopadhyay S., **Acharya N**, Chattopadhyay G, Kiran Prasad S and Mohanty UC (2012): Markov chain model to study the occurrence of pre-monsoon thunderstorms over Bhubaneswar, India. *Comptes Rendus Geoscience* . 344 (10):473–482.
  37. A.Singh, **Acharya N**, Mohanty, U. C., A.W. Robertson, G. Mishra (2012). On the predictability of Indian Summer Monsoon Rainfall in general circulation model at different lead time. *Dynamics of Atmospheres and Oceans* 58:108– 127.
  38. **Acharya N**, Kar S.C., Mohanty U.C., Kulkarni M.A., Dash S K (2011): Performance of GCMs for seasonal prediction over India- A case study for 2009 monsoon, *Theoretical and Applied Climatology* 105 (3-4):505–520.
  39. **Acharya N**, Kar S.C., Kulkarni M.A., Mohanty U.C., Sahoo L.N; (2011): Multi-Model Ensemble Schemes for predicting Northeast Monsoon Rainfall over Peninsular India, *Journal of Earth System Science*. 120 (5):795–805.
- **Peer Reviewed Conference Proceedings:**
1. **Acharya N**, and Hall, K.J.C (2021): PyELM-MME: A Python platform for Extreme learning machine based Multi-Model Ensemble, Proceedings of the 2021 Improving

- Scientific Software Conference (No. NCAR/TN-567+PROC). doi:10.26024/p6mv-en77  
<https://opensky.ucar.edu/islandora/object/technotes%3A589/datastream/PDF/view>
2. **Acharya N** (2021): Does Machine Learning-Based Multi-Model Ensemble Methods Add Value Over Existing Methods? *Climate Prediction S&T Digest*, 25. [https://www.nws.noaa.gov/ost/STIClimateBulletin/CDPWDigest/45CDPW\\_Digest\\_IR.pdf](https://www.nws.noaa.gov/ost/STIClimateBulletin/CDPWDigest/45CDPW_Digest_IR.pdf)
  3. **Acharya N**, Mason J, Hassan S. M. Q (2021): On the next generation (NextGen) seasonal prediction system for Bangladesh. *Climate Prediction S&T Digest*, 33. [https://www.nws.noaa.gov/ost/STIClimateBulletin/CDPWDigest/45CDPW\\_Digest\\_IR.pdf](https://www.nws.noaa.gov/ost/STIClimateBulletin/CDPWDigest/45CDPW_Digest_IR.pdf)
  4. **Acharya N** (2018): Calibration of Probabilistic Ensemble Forecasts for Indian Summer Monsoon Rainfall: A Non-gaussian Approach. *Proceedings of the 8th International Workshop on Climate Informatics: CI 2018. NCAR Technical Note NCAR/TN-550+PROC*, 151 pp, doi:10.5065/D6BZ64XQ <https://opensky.ucar.edu/islandora/object/technotes:571>.
  5. **Acharya N**, Frei A, Owens EM (2015): Analysis of Weather Generators: Extreme events. *Proceedings of the 5<sup>th</sup> International Workshop on Climate Informatics: CI 2015*. <https://www2.cisl.ucar.edu/sites/default/files/3-%20Acharya.pdf>

➤ **Book Chapter/ Reports:**

1. Lisa Goddard, Carmen González Romero, Ángel G. Muñoz, **Acharya N**, et al. (2020): Climate Services Ecosystems in times of COVID-19. **World Meteorological Organization's Bulletin Vol 69 (2)-2020**. *Published by WMO*  
<https://public.wmo.int/en/resources/bulletin/climate-services-ecosystems-times-of-covid-19>
2. Ángel G. Muñoz, **Acharya N**, Carmen González Romero, Diego Pons and A.W. Robertson (2020): **Subseasonal real-time forecasts for food security**. *Published by Subseasonal-to-Seasonal(S2S) prediction project newsletter*  
[http://s2sprediction.net/file/newsletter/S2S\\_Newsletter14\\_July\\_2020.pdf](http://s2sprediction.net/file/newsletter/S2S_Newsletter14_July_2020.pdf)
3. **Acharya N**, Michael Bell, Remi Cousin, John DelCorral, Colin Kelley, Igor Khomyakov, Andrew Kruczkiwicz, Daniel Osgood, Bristol Powell, Andrew Robertson, Asher Siebert, Yohana Tesfamariam Tekeste, Jeffrey Turmelle, Audrey Vadillo (2019): IRI's Contributions to Forecast Based Finance Efforts in Southern Africa.
4. **Acharya N** (2016): Evaluation of Stochastic Weather Generators for use in Simulating Precipitation. **Multi-Tiered Water Quality Modeling Program Annual Status Report 2016**. *Published by New York City Department of Environmental Protection Bureau of Water Supply*
5. U. C. Mohanty, P. Sinha, M. A. Kulkarni, **Acharya N**, A. Nair, A. Singh, M. N. Rao., (2011): A Brief Review on Extended Range Prediction System of Indian Summer Monsoon; **Monsoon Monograph (2<sup>nd</sup> edition)** *Published by India Meteorological Department*.



6. Lee M.K, Son K.H, Nyunt C.T, Sanchez P.A.J, Mahavik N and Acharya N (2011). Flood. **Report on training modules and pilot programme on Climate Change Projections Downscaling: Approaches and Applications**. Published by United Nations University Institute for Sustainability and Peace, Tokyo, Japan.
7. Acharya N and Young-Mi Min (2013): Assessment of Seasonal Prediction of Indian Summer Monsoon Rainfall Based on the APCC Multi-Model System. **APEC Climate Center (APCC)'s Young Scientist Support Program (YSSP) Final Report 2012**. Published by APEC Climate Center, Busan, Republic of Korea.

➤ **Book Review:**

Radhika Iyengar and Acharya N (2021): Book Reviews: Rethinking Readiness: A Brief Guide to Twenty-First Century Megadisasters by Jeff Schlegelmilch. *Comparative Education Review* <https://doi.org/10.1086/712180>

**Media Coverage of my research work:**

- “Due To Climate Change And Corona, Demand For Weather...”
- ( <https://www.bhaskar.com/local/delhi-ncr/news/due-to-climate-change-and-corona-demand-for-weather-future-speakers-is-increasing-on-the-lines-of-hedge-fund-now-water-fund-managers-will-be-128435781.html> )
- “Improved three-week weather forecasts could save lives from disaster” (<https://www.sciencenews.org/article/climate-weather-forecast-three-week-disaster-storms>)
- “Subseasonal Forecasting for the Indian Monsoon” published on Columbia Earth Institute blog (<https://blogs.ei.columbia.edu/2019/12/10/subseasonal-forecasting-indian-monsoon/?fbclid=IwAR0fH5xLqCji05b9MH5aCOGqYfg8yMqlhHSnTB-QFjAUndct1gfu10BvgAY> ).
- “Research will examine climate change and water supply” at “BWS Tributary Volume 3 Issue 3 July 2015” by New York City Department of Environmental Protection, USA.
- “What’s in the forecast and how do we know?” published on Columbia Earth Institute blog (<http://blogs.ei.columbia.edu/2017/07/12/whats-in-the-forecast-and-how-do-we-know/>).
- “Monsoon Rains Are Already a Disaster For Rohingya Refugee Camps” published on Earther (<https://earther.com/monsoon-rains-are-already-a-disaster-for-rohingya-refug-1826866595>)
- Several Indian media report (“Hindustan”, “Dainik Jagoron”) on My 'Training of Trainers' for the Farmer Field School’s at Bihar, India.
- “Leverage improved forecast to deal with disasters” published on Mongabay (<https://india.mongabay.com/2020/06/leverage-improved-forecast-to-deal-with-disasters/>)
- “Mapping a Way Forward for Localized Climate Information in India”( <https://iri.columbia.edu/news/mapping-a-way-forward-for-localized-climate-information-in-india/> )

## **Additional Synergetic Experience:**

### Editor in Journals

- Guest Associate Editor in *Frontiers in Climate* in the special issue “[Machine Learning for Climate Predictions and Projections](#)”.
- Guest Associate Editor in *Frontiers in Climate* in the special issue “[How Climate Predictions From Days to Decades Ahead Can Contribute to a More Sustainable Society](#)”

### Reviewer in Journals:

More than 60 research paper has been reviewed in various international journals such as Theoretical and Applied Climatology, Comptes Rendus Geoscience, Stochastic Environmental Research and Risk Assessment, Journal of Geophysical Research-Atmosphere, International Journal of Climatology, Climate Dynamics, Journal of Hydrologic, Journal of Hydrologic Engineering, Acta Geophysica, Journal of Climate, Meteorology and Atmospheric Physics and more, Nature: Scientific Report, Nature Partner Journal and more.

Publons profile for reviewer: <https://publons.com/researcher/459025/nachiketa-acharya/metrics/>

### Reviewer of Technical Report:

Reviewed a Technical Report entitled 'A Technical Note on the Analysis of Modern Meteorological Gridded datasets using Python' has been prepared by Officers of Climate Research and Services, India Meteorological Department.

### Reviewer of Book:

Reviewed a book entitled “Rethinking Readiness: A Brief Guide to Twenty-First-Century Mega disasters” by Jeff Schlegelmilch. This book review is published in *Comparative Education Review* <https://doi.org/10.1086/712180>

### Teaching and Mentorship Experience:

- Teaching at online workshop on "Recent Advances in AI & ML for Climate Sciences" during 13-15 November 2021 organized by Technology Innovation Hub (TIH), Indian Statistical Institute (ISI), in association with the Institute of Electrical and Electronics Engineers, the Geoscience and Remote Sensing Society (GRSS), Kolkata Chapter.
- Teaching at virtual summer school on “Forecast verification” in the Mathematics of Planet Earth center for Doctoral Training at the Imperial College London, University of Reading on June 21-25, 202.
- Mentor of “Research Experiences for Undergraduates in Climate Science” (<https://sites.psu.edu/reuclimate/>)
- Mentor of Master’s student in MA Climate and Society program at Columbia Climate School, Columbia University, <https://climatesociety.ei.columbia.edu/>
- Jury member for AGU’s Outstanding Student Presentation Award (OSPA).

- Actively engaged in the capacity in building the capacities of the National Meteorological Services of India, Bangladesh, Vietnam, Ethiopia, Rwanda and other countries through trainings on “next generation” sub-seasonal to seasonal forecasting methods based on IRI’s Climate Predictability Tool (CPT).
- Gave trainings on NextGEN seasonal forecast system to scientists from Bangladesh Meteorological Department. It includes training on PyCPT and theoretical background of seasonal forecasting using Climate Prediction Tool at Dhaka, Bangladesh, Sep 26 to Oct 06,2019.
- Gave trainings on NextGEN seasonal forecast system to scientists from Bangladesh Meteorological Department. It includes training on PyCPT and theoretical background of seasonal forecasting using Climate Prediction Tool at Dhaka, Bangladesh, Sep 26 to Oct 06,2019.
- Gave trainings on NextGEN seasonal forecast system to scientists from Bangladesh Meteorological Department. It includes training on PyCPT and theoretical background of seasonal forecasting using Climate Prediction Tool at Dhaka, Bangladesh, Sep 26 to Oct 06,2019.
- Gave trainings on NextGEN seasonal forecast system to scientists from National Meteorology Agency. It includes training on PyCPT and theoretical background of seasonal forecasting using Climate Prediction Tool at Addis Ababa, Ethiopia, Oct-7-18,2019.
- Gave trainings on NextGEN seasonal forecast system to scientists from Meteo. Rwanda. It includes training on PyCPT and theoretical background of seasonal forecasting using Climate Prediction Tool at Kigali, Rwanda, October 18-Nov 3,2019.
- Gave three days of training on the Climate Predictability Tool to scientists from several south Asian countries at South Asian Climate Outlook Forum (SASCOF)-12 organized by the World Meteorological Organization and the India Meteorological Department at Pune, April 15-20, 2018.
- Gave training to Scientists of Bangladesh Meteorological Department and Department of Agriculture Extension in March,2018 at
- Gave training to Scientists of Bangladesh Meteorological Department in October, 2017 and January 2018 at Dhaka, Bangladesh.
- Teaches one semester class on Multivariate Statistics using R software to the Undergraduate and Graduate students of the Department of Geography, Hunter College, City University of New York, India during August to October, 2016.
- Teaches one semester class on Probability Distribution to the M.Sc students of the Department of Statistics, Utkal University, India during August, 2013 to March, 2014.
- Taking 2 days “UGC Refresher Course on the Mathematical Sciences: Statistics and Application” class to the lecturers and professors from several University of Odisha on “Problem with traditional Regression Approach” during 2-4 March, 2014.
- Delivered lecture and took hands on classes on “Probabilistic prediction” in BIMSTEC Centre for Weather and Climate held in NCMRWF, NOIDA from 26<sup>th</sup> August to 1<sup>st</sup> September, 2014.

### Service and Organizational activities:

- Served as expert panel member in various Regional Climate Outlook Forum (RCOFs) I also trained the forecasters in these countries in the Pre-COF training sessions. by Climate Services Branch in World Meteorological Organization. I also trained climate forecasters in various National Meteorological Services in the Pre-COF forum.
- (Association of Southeast Asian Nations Climate Outlook Forum (ASEANCOF), South Asian Climate Outlook Forum (SASCOF), Greater Horn of Africa Climate Outlook Forum (GHACOF) and Mediterranean Climate Outlook Forum (MedCOF).

### **Paper presented/ Invited talk at the International Conferences:**

- Delivered talk on "Sub-Seasonal Probabilistic Precipitation Forecasting using Extreme Learning Machine" at the Machine Learning Workshop (MAELSTROM-2022) organized by The European Centre for Medium-Range Weather Forecasts (ECMWF) on March 30,2022.  
Link: <https://events.ecmwf.int/event/294/>
- Delivered invited talk on “A Machine Learning Approach for Probabilistic Multi-Model Ensemble Predictions of Indian Summer Monsoon Rainfall" at the 7th International Monsoon Workshop (IWM),a major quadrennial symposia series under the World Weather Research Programme (WWRP) of the World Meteorological Organization and organized by India Meteorological Department on March 26,2022.  
Link <https://mausam.imd.gov.in/IWM7/>
- Delivered keynote talk on "Machine Learning for Climate Forecast" at The 3rd International Conference On Innovative Trends in Information Technology" organized by IIT Kottayam on Feb 12, 2022.  
Link: <http://icitiit22.iitkottayam.ac.in/>
- Delivered keynote talk on "Statistical Learning for Climate Forecast" in the webinar series at the Department of Geography Vidyasagar University, India on Jan 28, 2022.
- Presented a paper on “Predicting Indian Monsoon Onset in S2S Scale: A Machine Learning Framework” at the 102<sup>nd</sup> annual meeting AMS 2022 on Jan 24,2022.
  - Link: <https://ams.confex.com/ams/102ANNUAL/meetingapp.cgi/Paper/399439>
- Presented a paper on “Generative Adversarial Networks based multisite weather generator (GAN-MulWG)” at the AGU fall meeting 2021 on Dec 13, 2021.
  - Link: <https://agu.confex.com/agu/fm21/meetingapp.cgi/Paper/996440>
- Delivered keynote talk on "Machine Learning Framework for the Prediction of Bangladesh Summer Monsoon" at the "International Conference on Meteorology and Climate Science 2021” on Dec 10,2021 organized by organized by the Department of Meteorology University of Dhaka and Bangladesh Meteorological Department

- Link: <https://met.du.ac.bd/conference/>
- Presented a paper on "Generative Adversarial Networks based multisite weather generator (GAN-MulWG)" at 3rd NOAA Workshop on Leveraging AI in Environmental Sciences on 15 September 2021.
  - Link: <https://2021noaaaiworkshop.sched.com/>
- Delivered an invited talk at the series of Distinguished Lectures organized by CropIn (<https://www.cropin.com/>) which is an Earth Observation (EO) & AI-led AgTech organization on “Developing agro-advisory using sub-seasonal forecast for Bihar, India”, Nov 19,2021.
- Delivered an invited talk at the 18th Annual Meeting of the Asia Oceania Geosciences Society on "Machine Learning-Based Multi-model Ensemble" on 2 Aug,2021 (virtually).
- Delivered an invited talk at the webinar on “S2S forecast and its applications in South Asia” on 28 July 2021 at Indian Institute of Tropical Meteorology (IITM), Pune organized by IITM in association with the WMO S2S Working Group and International CLIVAR Monsoon Project Office (ICMPO).
- Presented a paper on “PyELM-MME: A Python platform for Extreme learning machine based Multi-Model Ensemble” at the Improving Scientific Software Conference organized by National Center for Atmospheric Research on 24 March, 2021.
  - Link: <https://sea.ucar.edu/conference/2021>
- Delivered an Invited Talk on “On the Deep-Learning based Multi-Model Ensemble” under the theme “Artificial Intelligence, Machine Learning, and Deep Learning in Weather and Climate Research and Services” at the TROPMET-2010, organized by the Indian Meteorological Society on December 16, 2020.
- Presented a paper on "On the Next Generation (NextGen) Seasonal Prediction System for Bangladesh” at the International Conference on Meteorology and Climate Science 2020 organized by the Dhaka University, Bangladesh on December 11, 2020.
  - Link: <http://met.du.ac.bd/conference/>
- Presented a paper on “A Next Generation (NextGen) Approach to Improve the Seasonal Prediction System in East Africa” at the AGU fall meeting 2020 on December 11, 2020.
  - Link: <https://www.essoar.org/doi/10.1002/essoar.10504989.1>
- Presented a paper on “Point-Biserial Correlation-Based Skill Scores for Probabilistic Forecasts” in the around-the-clock International Verification Methods Workshop Online (2020-IVMW-O) organized by World Weather Research Programme (WWRP) by World Meteorological Organization on November 19, 2020.
  - Link:[https://www.univie.ac.at/imgwien/jwgfvr/MetaVerif/2020111900/Acharya\\_2020IVMWO\\_MetaVerif\\_19Nov00UTC.pdf](https://www.univie.ac.at/imgwien/jwgfvr/MetaVerif/2020111900/Acharya_2020IVMWO_MetaVerif_19Nov00UTC.pdf)
- Delivered an Invited Talk on “A Non-stationary Generalized Extreme Value Modeling for Climate Change Impact Studies of New York City’s Primary Water Supply” at the "International Web Conference on the Mathematical Methods and Models in Applied Sciences" organized by the Department of Mathematics, Amity Institute of Applied Sciences on November 7, 2020.

- Presented a paper on "Does Machine Learning Based Multi-Model Ensemble Methods Add Value over Existing Methods?" in the virtual oral session at 45th Annual Climate Diagnostics and Prediction Workshop organized by NOAA's Climate Prediction Center on October 20, 2020. Also presented two more papers in the virtual poster session. The titles of the papers are "Does Non-Gaussian Calibration Improve Multi-Model Seasonal Forecasts?" and "On the Next Generation (NextGen) Seasonal Prediction System for Bangladesh".
  - Link:[https://www.cpc.ncep.noaa.gov/products/outreach/CDPW/45/sessions/presentations/Session2\\_Talk4.pdf](https://www.cpc.ncep.noaa.gov/products/outreach/CDPW/45/sessions/presentations/Session2_Talk4.pdf)
- Delivered a talk on "Does the Machine Learning-based Multi-Model Ensemble Method improve the skill of the seasonal prediction?" in the "Stochastic Modeling and Computational Statistics (SMAC)" organized by Department of Statistics, Penn State University on October 23, 2020.
- Delivered a talk on "Does Non-Gaussian Calibration Improve Multi-Model Seasonal Forecasts?" in the "Climate and Global Dynamics seminar series" organized by National Center for Atmospheric Research on October 13, 2020.
- Delivered a talk on "Extreme Rainfall Events of Bangladesh: How are they changing over time and are they predictable?" in the "Sea Level Rise Seminar" organized by NASA Goddard Institute for Space Studies on August 18, 2020.
- Presented a paper entitled "Experimental Real-time Sub-seasonal to Seasonal (S2S) Forecast for Indian Summer Monsoon 2018 over Bihar: A Forecast Application for Risk Management in Agriculture" at AGU Fall Meeting 2019, San Francisco, CA, December 9 – 13, 2019.
- Presented a paper entitled "Evaluating a new calibration method for seasonal probabilistic prediction for Indian summer monsoon" at "Second International Conference on Subseasonal to Decadal Prediction" held at the National Center for Atmospheric Research, Boulder, CO, September 17-22, 2018.
- Presented a paper entitled "Calibration of probabilistic ensemble forecasts for Indian summer monsoon rainfall: a non-gaussian approach" at "8th International Workshop on Climate Informatics" held at the National Center for Atmospheric Research, Boulder, CO, September 20-22, 2018.
- Presented a paper entitled "Advances in Real-time Probabilistic Seasonal forecasting at The International Research Institute for Climate and Society (IRI)" at North American Multi-Model Ensemble (NMME) and Subseasonal Experiment (SubX) Science Meeting at the NOAA Center for Weather and Climate Prediction in College Park MD during September 13 - 15, 2017.
- Presented a paper entitled "Application of Stochastic Weather Generators for Climate Change Impact Study over the Catskill Mountain Watersheds" at 13<sup>th</sup> Catskill Environmental Research and Monitoring (CERM) Conference, Belleayre Ski Center, Highmount, New York during October 27 - 28, 2016.
- Presented a paper entitled "Inter-comparison of stochastic weather generators for the

- simulation of basin-scale extreme precipitation in the Catskill Mountains, New York State, U.S.” at 13<sup>th</sup> International Meeting on Statistical Climatology (IMSC) Canmore, Alberta, Canada during June 6 - 10, 2016.
- Presented a paper entitled “Evaluation of Stochastic Weather Generators for Capturing the Statistics of Extreme Precipitation Events in Catskill Mountain Watersheds, New York ” at American Geophysical Union Fall Meeting, San Francisco, California, USA during December 14-18,2015.
  - Presented a paper entitled “Analysis of Weather Generators: Extreme Events ” at *the 5<sup>th</sup> International Workshop on Climate Informatics* held at National Center for atmospheric Research (NCAR), Boluder, Colorado, USA during September 24-25,2015.
  - Presented a paper entitled “Performance Assessment of Stochastic Weather Generators for precipitation over Catskill Mountain watersheds, New York, USA ” at *Watershed Science and Technical Conference*, held at Thayer Hotel, West Point, New York, USA during 9 September, 2015.
  - Presented a paper entitled "Prediction of Winter Monsoon using Artificial Neural Network based Multi-Model Ensemble schemes" at *The International Tropical Meteorology Symposium (INTROMET)*, in SRM University, Chennai, India during 21-25 February, 2014.
  - Presented a paper entitled "Comparison of the parametric and non-parametric methods for Probabilistic Multi-Model Ensemble (PMME) Prediction to predict Indian Summer Monsoon Rainfall" at *The International Tropical Meteorology Symposium (INTROMET)*, in SRM University, Chennai, India during 21-25 February, 2014.
  - Presented a paper entitled “Winter Monsoon Prediction using Artificial Neural Network based Multi-Model Ensemble scheme ” at *India-EU workshop II Monsoon and ocean variability, climate change and sea level variations*, in Nansen Environmental Research Centre India (NERCI), Kochi, India during 11-13 November, 2013.
  - Presented a paper entitled “Prediction of drought indices over India using Multi- Model Ensemble” at *International Conference on Climate,Water and Policy (ICCWP)* in Busan, Republic of Korea during 11-13 September, 2012.
  - Presented a paper entitled “Probabilistic Multi-Model Ensemble Prediction of Indian Summer Monsoon Rainfall using General Circulation Models”, at *IITM Golden Jubilee International Conference on Opportunities and Challenges in Monsoon Prediction in a Changing Climate (OCHAMP)* in IITM, Pune, India during 21-25 February 2012.
  - Presented a paper entitled “Seasonal prediction of monsoon rainfall with statistical down-scaling of Global Model Outputs for Clime Risk Management in Agriculture”, at *5th UN-CECAR International Conference* in Tokyo, United Nation University, Japan on 15<sup>th</sup> November, 2011.
  - Presented a paper entitled “Skill of Multi-Model (MME) Prediction schemes for July rainfall over India”, at *TROPMET-2010*, Indian Meteorological Society, Kolkata, India during 19-21 October, 2010.

- Presented a paper entitled “Performance of Multi-Model Ensemble (MME) Prediction schemes for Northeast Monsoon Rainfall over Peninsular India”, at *Indian Northeast Monsoon - Recent Advances and Evolving Concepts (INEMREC)*, Indian Meteorological Society, Chennai, India during 24-25 February, 2011.
- Presented a paper entitled “Experimental Extended Range Forecast System (ERFS) for Indian summer Monsoon: A case study for Monsoon 2011”, at *TROPMET-2011*, in Indian Meteorological Society, Hyderabad, India during 14-16 December, 2011.
- Presented a paper entitled “Performance of different non-parametric method for Probabilistic Multi-Model Ensemble (PMME) to predict Indian Summer Monsoon Rainfall using General Circulation Models”, at *TROPMET-2012*, in Indian Meteorological Society, Dehradun, India during 20-22 November, 2012 .
- Presented a paper entitled “Markov chain model to study the occurrence of pre-monsoon thunderstorms over Bhubaneswar, India”, at *Challenges, Developments and Opportunities in Nowcasting* in Indian Meteorological Department, New Delhi, India during 27-31 January, 2012.
- Presented a paper entitled “Seasonal Prediction of Indian summer Monsoon rainfall for Agricultural Planning: Statistical approaches on Dynamical model’s outputs”, at *National Conference on Application of Statistics in Industry and Planning*, in Department of Statistics, Visva Bharati University, Santiniketan, West Bengal India during Feb 25-27 February, 2012.