

# PRADEEP KUMAR RAI

## Ph.D. Research Scholar

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Banaras Hindu University(BHU), Institute of Science, Deptt. of Geophysics Varanasi, India  
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## EDUCATION

Ph.D. in Geophysics(submitted: November, 2019)

**Banaras Hindu University**

📅 Sep 2013 – Nov 2019 📍 Varanasi, India

- Thesis title: Projection of temperature and precipitation over India using a Regional Climate Model (RegCM4)  
Advisor: Prof. G.P. Singh

M.Sc.[Tech.] Geophysics

**Banaras Hindu University**

📅 Jul 2010 – May 2013 📍 Varanasi, India

- Thesis title: Role of a cumulus convection parameterization scheme in numerical simulation of thunderstorm.  
Advisors: Prof. R Bhatla and Dr. Abhijit Sarkar  
Place: NCMRWF, Noida, India

B.Sc.[Hons.] Mathematics

**Banaras Hindu University**

📅 Jul 2007 – Apr 2010 📍 Varanasi, India

- Developed strong background in mathematics subjects  
Ex.: Probability and optimization, Geometry, Mechanics, Programming in C and Numerical Analysis etc..

## RESEARCH EXPERIENCE

Junior Research Fellow

**Banaras Hindu University**

📅 17 Oct 2013 – 31 Jul 2015 📍 Varanasi, India

- work under Department of Science Technology(DST)  
Project title: Projection of climate change over India in time slice experiments

Doctoral Work

**Banaras Hindu University**

📅 Sep 2013 – Nov 2019 📍 Varanasi, India

- Thesis focuses on simulation of the current (reference) climate from 1976-2005 and its projection of the future climate during 2006-2099(mid-future: 2031-2060 and far-future: 2070-2099) using a high resolution Regional Climate Model(RegCM4.3) of ICTP (International Centre for Theoretical Physics) over India in South Asia CORDEX domain under RCP8.5 scenario. This work presents the variety of information like projection of mean, minimum and maximum surface temperature including diurnal range of temperature (DTR). Furthermore, projection of change, trends, and variability in mean precipitation and precipitation extremes at sub-divisional level and homogeneous regions and also country as a whole.

## RESEARCH INTERESTS

- Tropics and midlatitudes climate variability, and their air-sea interactions and teleconnections
- Monsoon Dynamics and predictability
- Variability of Indian Summer monsoon and asymmetric heating
- Changing nature of South Asia precipitation under global warming scenario
- Regional Climate Modelling
- Projection of Climate Change and Climate Extremes
- Characterization, physical mechanism and impact of Extreme precipitation

## SOFT SKILLS

### • Languages

FORTRAN NCL Python MATLAB R  
Shell Scripting

### • Visualization tools

Grads NCL R Python

### • Big data handling tools

CDO NCO

### • OS

Linux Windows Mac

## SEMINAR AND TRAINING

- Presented paper in TROPMET on Multidecadal variability and trend in extremes precipitation over India" organized by IMS at BHU, 24-27 Oct, 2018. **Venue: Varanasi (India)**
- Selected for SERB Workshop on Observational and Computational Tools for Nowcasting (OBSCON 2017) at AFAC Red Fields Coimbatore, 15-26, May 2017 **Venue: Tamilnadu(India).**
- Selected and attended Targeted Training Activity (TTA-2017) on "Monsoons in a Changing Climate" at ICTP, 31 Jul -04 Aug 2017. **Venue: Trieste (Italy)**
- Presented paper on "Projection of Climate change over India" in National Seminar on Research Orientation and Methodologies in Geography and Supporting Science, held at BHU, 02-04 March 2015. **Venue: Varanasi (India)**
- Selected and Participated in ICTP-IITM Targeted Training Activity(TTA) on "Modeling and Prediction of Asian Monsoons: Improving Physical Processes" at IITM, Pune, 09-20, Feb 2015. **Venue: Pune(India)**
- Poster presentation in International Tropical Meteorology (INTROMET) Symposium at SRM University, 21- 24 Feb 2014. **Venue: Chennai(India)**

## ACADEMIC ACHIEVEMENTS

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- JRF Fellowship under DST Sponsored project 2013-2015
- Awarded silver medal for best poster presentation in INTROMET-2014 Symposium under joint MOES and IMS program, SRM University, TamilNadu, India.
- Life Membership of Indian Meteorological Society(IMS), 2013.
- Qualified in JAM M.Sc. IIT Examination in Mathematics, 2010.

## PUBLICATIONS

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- **Rai, P.K.**, Singh, G.P. and Dash, S.K. (2019). Projected changes in extreme precipitation events over various subdivisions of India using RegCM4. **Climate Dynamics**, 1-26. <https://doi.org/10.1007/s00382-019-04997-6>.
- **Rai, P.K.**, Singh G.P. Dash S.K., (2019). "Projected change and variability assessment of Indian summer monsoon precipitation in South Asia CORDEX domain under high emission pathway". **Pure and Applied Geophysics**, <https://doi.org/10.1007/s00024-019-02373-3>.
- Patel. C., Nema, A. K., Singh, R.S., Yadav, M. K., Singh, K.K., Singh, S.K., **Rai, P.K.** and Singh S.M., "Assessment of climate change impact on wheat crop using MarkSim GCM in Varanasi, Uttar Pradesh" *Journal of Agrometeorology*, 20(3): 216-218(Sept 2018).
- **Rai, P.K.**, Singh G.P, Dash S.K., Kripalani R.H., "Down-scaled projected unprecedented warming and variability assessments of temperature over India under RCP8.5 Scenario" (Under Review).

## REFEREES

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### Prof. G.P. Singh

@ Professor, Department of Geophysics,  
Institute of Science, Banaras Hindu University  
Varanasi-221005, India

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Regular Associate: Abdul Salam International Center for  
Theoretical Physics(ICTP), Trieste Italy

Visiting Professor: Pukyong National University, South  
Korea, Chief Scientist: CATER, South Korea

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### Prof. Saroj Kanta Mishra

@ Professor, Centre for Atmospheric Sciences, Indian  
Institute of Technology(IIT), New Delhi-11006, India

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YES BANK Chair for Climate Modeling

Research Faculty: University of Colorado Boulder, USA,

Visiting Scientist: National Center for Atmospheric Re-  
search, Boulder, USA

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### Dr. R.H. Kripalani

@ Senior Scientist, Indian Institute of Tropical Meteorology (IITM), Pune-411008, India

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Regular Visiting Professor, Pukyong and Pusan National  
University, Busan, South Korea

Head Climate Research Unit, APEC Climate Center, Bu-  
san, South Korea (2010)