

Bedartha Goswami

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BASIC INFORMATION

Date Of Birth 26 August, 1986
Place Of Birth Guwahati, India
Nationality Indian

CURRENT STATUS

Group Leader Jan 2020–ongoing
Junior Research Group “Machine Learning in Climate Science”
Cluster of Excellence “Machine Learning,” University of Tübingen

WORK EXPERIENCE

Post-Doc Sep 2017–May 2020
RD IV Complexity Science, Potsdam Institute for Climate Impact Research

Post-Doc March 2016–Aug 2017
Institute of Geosciences, University of Potsdam

Post-Doc Jan 2015–Dec 2015
RD IV Complexity Science, Potsdam Institute for Climate Impact Research

QUALIFICATION

PhD, Climate Physics May 2015
Potsdam Institute for Climate Impact Research, &
Institute of Physics and Astronomy, University of Potsdam

Master Of Science June 2011
Indian Institute of Science Education and Research, Pune

Bachelor Of Science June 2011
Indian Institute of Science Education and Research, Pune

RESEARCH INTERESTS

Climate data analysis (from reanalysis, satellites, meteorological and hydrological station networks, and paleoclimate proxy archives); interactions between climatic systems; Abrupt transitions in climatic systems; trend changes and distributional changes in climatic records; nonlinear data analysis (recurrence plots, complex networks, uncertainties); irregular time series; statistical inference (inferring structure from noise, detecting hidden structure in data); unsupervised learning (data clustering, stochastic block models); reduced representations of data (PCA, NMF, SOM, VAE, etc.)

**SUPERVISION
EXPERIENCE**

Doctoral Thesis **Sep 2020–ongoing**

Jakob Schlör, University Of Tübingen
Predicting Sea Surface Temperature Patterns In The Pacific Ocean

Doctoral Thesis **Sep 2020–ongoing**

Felix Strand, University Of Tübingen
Analyzing The Global Monsoon System

Master Thesis **Oct 2020–ongoing**

Lea Elsemüller, Department Of Computer Science, University Of Tübingen
Quantifying Wind Convergence At The Intertropical Convergence Zone

Bachelor Thesis **Oct 2020–ongoing**

Markus Deppner, Department Of Computer Science, University Of Tübingen
Impact Of Strong El Niño Events On River Discharge In South America

Master Thesis **Apr 2018–Oct 2019**

Johannes Donath, Institut für Physik, Humboldt-Universität zu Berlin
Estimation of recurrence based measures from probabilistic recurrence plot

Master Thesis **Apr 2018–Apr 2019**

Florian Hahn, Institut für Physik, Humboldt-Universität zu Berlin
Maximum likelihood estimation in time series with uncertainties

**TEACHING &
WORKSHOPS**

Workshop **14-15 Aug 2019**

“Uncertainties in time series analysis” at the Summer School on Speleothem Science (S4), Aug 11–17 2019, Cluj-Napoca, Romania

Workshop **11 Aug 2019**

“Introduction to Python” at the Summer School on Speleothem Science (S4), Aug 11–17 2019, Cluj-Napoca, Romania

Short Course **7 Nov 2018**

"Nonlinear Time Series Analysis using Recurrence Plots" at Faculty of Science and Engineering, University of Waikato, Hamilton

1-Day Workshop **31 Oct 2018**

"An Introduction to Python for Excel Users" at Faculty of Science and Engineering, University of Waikato, Hamilton

1-Day Workshop **26 Jul 2018**

"Python - An Introductory Workshop" at NextGen@Helmholtz 2018, GFZ Potsdam, 25–27 Jul 2018

Short Course **10 Apr 2018**

"Temporal and spatial uncertainties in climate data analysis" at the European Geosciences Union General Assembly, Vienna

Workshop **1–3 Nov 2017**

"Palaeoclimate time series analysis and statistics" at the Potsdam Institute for Climate Impact Research, Potsdam

Block Seminar **3–13 Apr 2017**

"Uncertainties in environmental data" with Dr Aljoscha Rheinwalt at Institute for Earth and Environmental Science, University of Potsdam

Tutorials **Winter Semester 2014–2015**

"40569 Komplexe Netzwerke – Theorie und Anwendungen" at Institut für Physik, Humboldt Universität zu Berlin

COMPUTING SKILLS

Well Versed Python, Matlab

Moderate Expertise C++, Julia, Bash

SOFTWARE PACKAGES

UP-RS-ESP GitHub github.com/UP-RS-ESP

Maintain packages *qreg* (quantile regression), *bpl* (bounded power laws), and *mkt* (Mann-Kendall test) on the GitHub repo of the University of Potsdam - Remote Sensing - Earth Surface Processes Group

NESTool tocsy.pik-potsdam.de/nest.php

Developed Python port of *NESTool*, which allows users to estimate correlations between non-coinciding, irregularly sampled time series

COPRA tocsy.pik-potsdam.de/copra.php

Actively involved in the development of *COPRA*, a Matlab based toolbox that allows users to construct proxy records from age models along with proxy uncertainties

PEER REVIEW

Editorial Board Member of *Scientific Reports* and *Entropy*; refereed articles submitted to *Chaos*, *PLOS ONE*, *Geophysical Research Letters*.

MEMBERSHIPS

American Meteorological Society; American Geoscience Union; European Geosciences Union; European Physical Society; Institute of Physics

SCHOLARSHIP

DAAD WISE **May–Jul 2010**

Summer internship with Prof Jürgen Kurths at the Potsdam Institute for Climate Impact Research, Potsdam

**FUNDING
SECURED**

PI, MUSTEIN 2021–2024

“Modeling and understanding spatiotemporal environmental interactions (MUSTEIN);” mini-graduate school funded by Innovation Fund of the Cluster of Excellence “Machine Learning”

Co-PI, Inductive Bias In Climate 2021–2024

“Inductive bias Of Learning Algorithms In Climate Science;” Individual Project Funded By Innovation Fund Of The Cluster Of Excellence “Machine Learning”

PI, ML In Climate Science 2020–2023

Junior Research Group Funded By Innovation Fund Of The Cluster Of Excellence “Machine Learning”

Co-Investigator, TiPES 2019–2023

“Tipping Points in the Earth System (TiPES);” consortium project funded by the EU Horizon 2020 program call H2020-LC-CLA-2018-2; Grant No 820970

Co-Investigator, IuCliD 2017– 2021

“Impacts of uncertainties in climate data analyses (IuCliD);” Individual project funded by the DFG, Project No. DFG MA4759/8

**LANGUAGE
SKILLS**

Native Assamese

Fluent English, Hindi

Conversational German

Basic Bengali

**HOBBIES &
INTERESTS**

Writing Bash scripts and Python scripts to automate tasks such as journal article database manager; going on long hikes (around 25-30 km) on weekends; continually attempting to build and maintain a herb garden