Deepika Swami
(PhD, IIT Bombay)

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Address: IIT Bombay, Mumbai, India

Research Interests:

Climate variability (Monsoon and temperature variability), Climate change impact assessment, Vulnerability and adaptation to climate change, Hazard and risk mapping, Disaster management, Energy and environmental management, Econometric analysis

Educational background:

- Ph.D. in *Climate Studies*, Indian Institute of Technology Bombay (IIT Bombay) (2014-2019)
- M.Tech in *Energy and environmental management* (2011-2013), Kurukshetra University
- B.E in *Biotechnology* (2006-2010), Deenbandhu Chhotu Ram University of Science and Technology

Key Skills:

Statistical modeling, Econometric techniques, Time series analysis, Machine learning, Multivariate statistical analysis, Structural equation modeling, Factor analysis, Causal effect analysis Survey design and public participation: questionnaire formulation, participatory rural appraisal, focused group discussion, Scientific and technical writing for publications and reports, MATLAB, R, ArcGIS, SPSS

Research Experience:

1. PhD Scholar: Supervisor Prof. Devanathan Parthasarathy (Head, Climate Studies, IIT Bombay)

The PhD project focuses on following aspects:

- **Climate variability:** Project required multivariate statistical data analysis to study the regional aspects of climate variability (monsoon and temperature variability) from 1951-2013. Project employed of MATLAB and ArcGIS

- **Risk assessment:** A new index was developed at regional scale for risk assessment which helped in ranking districts of Maharashtra according to their susceptibility to climate variability. It required use of SEM, Factor analysis, MATLAB and R
- **Vulnerability assessment:** Project required handling of around multiple variables to assess regional scale vulnerability for India from 1966-2012. It required extensive use of statistical techniques, MATLAB and ArcGIS
- **Behavioral modeling:** Project assessed and modeled the behavior of farmers and labors using econometric tools and R
- **Monitoring and assessment:** Examining the knowledge gaps and adaptation barriers to environmental management and climate change

2. Research fellow: Supervisor Prof. Satish Kumar (Head, Pulp and Paper division, IIT Roorkee)

- Waste water treatment using bacteria and fungi at IIT Roorkee from August, 2013 to November, 2013
- Analysis of Environmental management system for different industries

Work Experience:

- ***Senior Associate: Research and Content (Data Science and Algorithmic trading)*** from July, 2019-Present:
    - Designing and creating content covering Data science, Algorithmic trading & quantitative finance for participants across 30+ countries from leading global firms
    - Enhancing the content/pedagogy of the curriculum by developing newer and more relevant courses
    - Supervising and consulting with students on their project work (research oriented as well as empirically oriented) and assignments

Projects Undertaken:

1. National Communications to UNFCCC (NATCOM):

- *Adaptation to Climate change :*

Project involved identification of hot-spots through secondary data, then assessment of adaptation options for farmers, agricultural labors via field survey conducted in 21 villages of Maharashtra

2. Ministry of Science and Technology, India:

- *Climate variability and its impacts on livelihood :*
  - Regional scale assessment of monsoon variability across different regions of India
  - Crop-wise assessment of temperature variability across different regions of India
  - Evaluated the impacts of monsoon variability on employment, wages, health, literacy rate and suicide rate of farmers and agricultural labors etc.
- *Developmental initiative: Policy formulation for climate change and agriculture*
  - Extensive analysis of central and state level policies
  - Identified loopholes in existing policies and challenges in formulation and effective implementation of policies at ground level
  - Suggestion on developmental plans for the regions showing high monsoon variability and vulnerability

Teaching Experience:

- Delivered lecture at Indira Gandhi Institute of Development and Research (IGIDR), Mumbai
- Delivered lecture at Azim Prem Ji University, Bangalore
- Academic and environment related lectures to students of government school in Akola, Buldhana and Parbhani districts of Maharashtra during December, 2018
- Conducted tutorials on “Vulnerability to climate change” to students of summer school and workshop organized by IDP in Climate Studies, IIT Bombay during July, 2016, 2017 and 2018
- Conducted tutorials on “Adaptation and mitigation to climate change” for the course CM-803 during September 2016, and 2017
- Delivered lectures on climate change to students of North-Eastern region for “Ishan-Vikas program” of government of India at IIT Bombay during October, 2015
- Conducted a three months course on “Environment and related concepts” at IIT Roorkee from July to September, 2013
- Weekend classes for vulnerable section of society consisting of children of slum dwellers and

migrant laborers

Position of Responsibilities:

- Part of organizing team for workshop on Democracy, Devolution and Climate Policy, IIT Bombay, 2nd-4th October, 2018
- Part of organizing team on summer school at IDP in Climate Studies, IIT Bombay, 2nd-6th July, 2018
- Part of organizing team on International conference of the commission on Legal Pluralism, IIT Bombay, 14th-16th December, 2015
- Part of coordinating team for seminar on "Waste water treatment and its sustainable solutions" from 10th -14th September, 2013 at IIT Roorkee

Awards and recognition:

- Fellowship from Indian Society of Ecological Economics, November, 2019
- **DAAD fellowship** (Indo-German Collaboration) for presenting the work on Environmental Policy, Scope and Challenges for Local Regulation, September 2019
- Fellowship from IIT Bombay to attend European Geophysical Union, Vienna, Austria, April 2018
- Fellowship from Indian Society of Ecological Economics (INSEE), Kerala, November 2017
- **Berkner travel fellowship** from American Geophysical Union (AGU), 2016
- Fellowship from Indo-European SAHYOG summer school , Tezpur, July 2014
- University Gold-medalist (Top Rank holder) during Masters' degree, 2013

Papers and Conferences:

Journal Publications:

- Swami, D., Dave, P., & Parthasarathy, D., (2018), Agricultural susceptibility to monsoon variability: A district level analysis of Maharashtra, India. *Science of the Total Environment, 619*, 559-577
- Temperature variability and crop diversification for Maharashtra, India *(Global Environmental Change: under review)*
- Agriculture vulnerability to climate change at district scale for Maharashtra, India *(World Development: under review)*
- Determinants of adaptation for farmers in Vidarbha and Marathwada regions of

Maharashtra, India *(Journal of Environmental management: under review)*

Work in Proceedings:

- Swami, D., Parthasarathy, D. (2017), Determinants of adaptation to Climate Variability for Vidarbha region of Maharashtra, India, presented at Indian Society of Ecological Economics, Thrissur, Kerala, 8-10 November
- Swami, D., Parthasarathy, D. (2017), Increasing Water Vulnerability of Indian Megacity, Mumbai: Interconnected web of Politics and Policies, presented at Indian Society of Ecological Economics, Thrissur, Kerala, 8-10 November

Conferences and Workshops:

- Swami, D., Parthasarathy, D. (2019), Decentralization vs National and State action plan on climate change, presented at Workshop on Environmental Policy: Scope and Challenges for Local Regulation, Matheran, 9-11th September, 2019
- Swami, D., Parthasarathy, D. (2019), Climate change: local vs global challenges, presented at World Conference on Disaster Management, IIT Bombay, 28-31st January, 2019
- Swami, D., Parthasarathy, D. (2018), Climate change adaptation in Maharashtra: Household level perspectives on agricultural, governance and sociological dynamics, presented at Workshop on Democracy, Devolution and Climate Policy, IIT Bombay, 2-4 October, 2018
- Swami, D., Parthasarathy, D., & Dave. P. (2018), Spatio-temporal temperature variability and agricultural vulnerability: District scale analysis for Maharashtra, India, Abstract EGU2018-16004 presented at 2018, European Geosciences Union, Vienna, Austria, 8-13 April
- Swami, D., Parthasarathy, D. (2018), Vulnerability of Mumbai megacity: Socio-economic challenges and water scarcity, presented at Livable cities: transforming sustainability and its challenges, New Delhi, 5-7 February
- Swami, D., Parthasarathy, D. (2018), Water Crisis in Maharashtra, India, presented at Livable cities: transforming sustainability and its challenges, New Delhi, 5-7 February.
- Swami, D., Parthasarathy, D., & Dave. P. (2016), Regional agricultural susceptibility to climate variability: a district level analysis of Maharashtra, India, Abstract GC53E-

1340 presented at 2016 fall meeting, Fall Meeting, AGU, San Francisco, Calif., 11-15 December

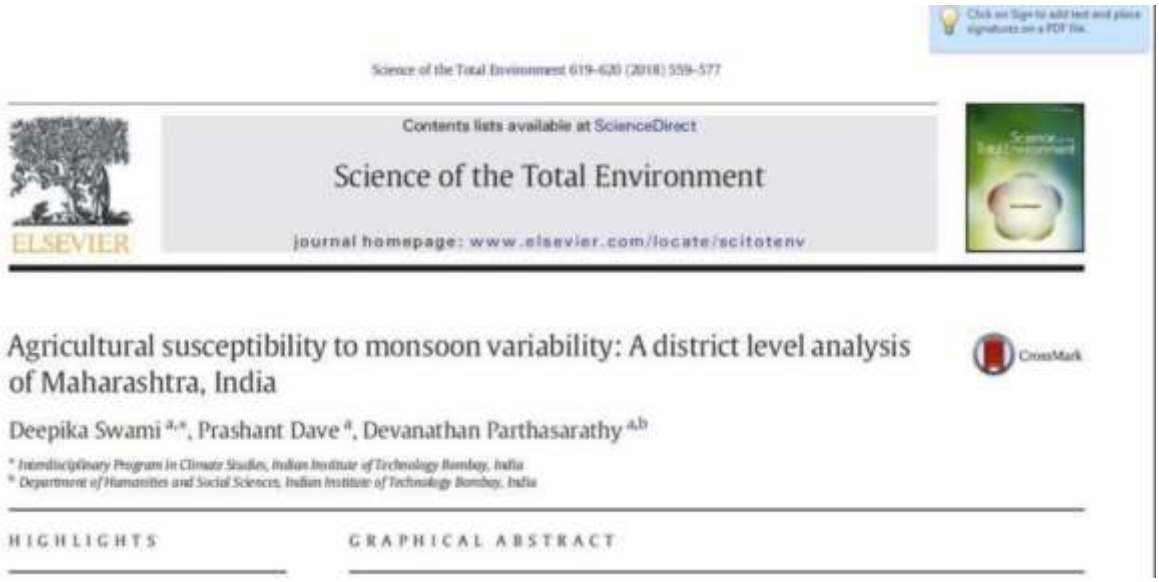
- Swami, D., Parthasarathy, D., & Dave. P. (2016), Improving preparedness of farmers to Climate Variability: A case study of Vidarbha region of Maharashtra, India, Abstract PA14 B-06 presented at 2016 fall meeting, Fall Meeting, AGU, San Francisco, Calif., 11-15 December
- Swami, D., Parthasarathy, D. (2016), Freak weather phenomenon: A district level analysis of Maharashtra, India, presented at 9th International Geographical Union, New Delhi, 18-20 March
- Swami, D., Parthasarathy, D. (2015), Workshop on Strengthening knowledge base for measuring, monitoring and evaluating Climate change adaptation, 22-24 January
- Swami, D. (2014), Barriers to biomass and its challenges, presented at SAHYOG (Strengthening Network on Biomass Research and Bio-waste conversion-Biotechnology for Europe-India Integration) summer school, Tezpur, 20-26 July
- Participated in Summer school on "Climate Science and Policy" organized by Interdisciplinary Program in Climate Studies, IIT Bombay from July 7- 11th , 2014
- Participated in workshop on "Climate Science and Policy" organized by Interdisciplinary Program in Climate Studies, IIT Bombay from 6-7 March, 2014

References:

- Prof. Devanathan Parthasarathy (Professor, Department of Humanities and Social Science, IIT Bombay; Email: dp@hss.iitb.ac.in)
- Prof. K. Narayanan (Professor, Department of Humanities and Social Science, IIT Bombay; E-mail: knn8381@gmail.com)
- Prof. Subimal Ghosh (Professor, Department of Civil Engineering, IIT Bombay; E-mail: subimal@civil.iitb.ac.in)

Proof of Publication

Paper 1: Science of the Total Environment



Science of the Total Environment 619-620 (2018) 559-577

Contents lists available at ScienceDirect

Science of the Total Environment

journal homepage: www.elsevier.com/locate/scitotenv

Agricultural susceptibility to monsoon variability: A district level analysis of Maharashtra, India

Deepika Swami [a,*], Prashant Dave [a], Devanathan Parthasarathy [a,b]

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HIGHLIGHTS GRAPHICAL ABSTRACT

Paper 2: World Development

WORLD DEVELOPMENT

Submissions Being Processed for Author Deepika Swami, Ph.D

Action	Manuscript Number	Title	Initial Date Submitted	Status Date	Current Status
View Submission	WD-14235	Long-term trend analysis of district-scale agriculture vulnerability to climate variability for Maharashtra, India	14 Jul 2019	01 Oct 2019	Under Review

Paper 3: Global Environmental Change

Global Environmental Change
HUMAN AND POLICY DIMENSIONS

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My Submissions with Journal (1)

Determinants of adaptation for farming community in Vidarbha and Marathwada regions of Maharashtra, India

GEC_2019_1197

Current status: Decision Pending (14/Oct/2019)

Article Type: Research Paper

Initial submission : 08/Oct/2019

View Editor/Reviewer comments

Paper 4: Agriculture, Ecosystems and Environment