

# Transdisciplinary Climate Services to Prepare for Climate Changes

## Overview

Climate variability and human-caused changes to the Earth's climate system are changing the nature of the impacts of weather on society and the environment. Increases in the Earth's temperature have profoundly altered ice-covered areas in the Northern Hemisphere, destabilized ice sheets in the Southern Hemisphere, and caused sea level to rise at rapid and unprecedented rates. These distant changes have been accompanied by the alteration and amplification of storm tracks, the strength and intensity of monsoon circulations, and the capacity of storm systems to carry moisture. Such changes influence the hydrologic cycle, and are manifested in changes to mountain snowpack, the timing of snowmelt, increased evapotranspiration, and decreased soil moisture—all of which influence the length and severity of droughts, and make water supplies less reliable. The direct effects of increasing temperatures include increased severity and length of episodes of extreme heat, especially in urban areas. In addition, there are indirect effects, such as changes in the timing and magnitude of floods, changes to agricultural crop yields, increased vulnerability of many forest types to disease, insect pests, and die-off, and alteration of the migration, abundance, and types of disease carried by mosquitoes and other insects. Although projected impacts may seem like a ceaseless litany of doom and gloom, natural resource managers, urban planners, public health officials, emergency managers and others decision-makers, throughout the world, are working to reduce risks by working with local populations to address vulnerabilities and plan creatively for the future.

The historic agreement among nations, in the December, 2015 Convening of the Parties, in Paris, underscores the interest and need for climate change planning, including adaptation planning to increase the abilities of communities, cities, and states to prepare for and respond adequately and appropriately to projected climate changes. Moreover, in April, 2016, The World Bank announced that it is making a fundamental shift in its efforts to ease global poverty, by focusing on tackling climate change. The kind of planning needed to address these concerns must (a) cut across economic and natural resource management sectors, (b) integrate sectoral initiatives, in order to avoid maladaptive approaches, (c) connect strongly with stakeholders' needs and concerns, (d) foster social learning, and (e) offer methods that allow for flexible and adaptive planning.


The course will address fundamental topics related to climate change adaptation planning, through a series of inter-related lectures and highly interactive discussion and exercises. Participants will also be assigned readings and web-related materials to prepare for and participate in each session. Dr. Gregg Garfin, a nationally renowned climate impacts and adaptation researcher, with an expanding international repertoire of interactions with developing and developed nations, will deliver the course material. The course will be planned and offered according to the norms promoted by the World Meteorological Organization's Global Framework for Climate Services.


## Objectives

The primary objectives of the course are as follows:

- i) Expose participants to the fundamental assumptions and evidence of observed and projected global and regional climate variability and change
- ii) Expose participants to the principles and practices of climate change adaptation planning, and work at the boundary between researchers, practitioners, and citizens
- iii) Develop an understanding of tools and methods used in assessing vulnerability to climate change, developing adaptation options, and planning for adaptation to current and future changes
- iv) Provide hands-on exercises in key climate planning tools, such as vulnerability assessment and scenario planning
- v) Develop confidence and capability amongst the participants in the development of basic climate services to enhance information flows, connection with stakeholders, and resilience to potential climate effects.

<b>COURSE DETAILS</b>	
<b>MODULE A: PLANNING FOR CLIMATE CHANGE</b>	<p><i>Observed and Projected Climate Changes: The IPCC process and projections, Impacts and adaptation, Global and regional examples; Discussion: What does this mean for Bihar?</i></p> <p><i>Climate Adaptation Principles: Adaptation basics and general principles, Avoiding maladaptation, Case studies; Discussion: What can organizations and citizens do, in Bihar?</i></p> <p><i>Scenario Planning for Adaption to Climate Change: Climate change challenges, Other uncertainties, Scenario planning basics, Related methods, Case studies; Discussion: What does this mean for Bihar?</i></p>
<b>MODULE B: ADAPTATION AND RESILIENCE</b>	<p><i>Urban Adaptation and Resilience: Urban climate challenges, Systems and holistic thinking, Social learning and communities of practice, Case studies; Discussion: What is being done in Patna? What should be done in Patna?</i></p> <p><i>Water Sustainability and Adaptation: Climate-related challenges, Water uses and climate trends, Water security, Adaptive capacity, Case studies; Discussion: What is being done in Patna? What should be done in Patna?</i></p> <p><i>Boundary Organizations for Climate Services and Adaptation: The climate service challenge, Boundary organization basics, Putting climate in context, Case studies; Discussion: What does this mean for India? What does this mean for Bihar? What does this mean for Patna? What does this mean for NIT Patna?</i></p>
<b>MODULE C: INTEGRATING CULTURAL RELEVANCE</b>	<p><i>Climate, Compassion, Art and the Environment: How do the power and possibilities of compassion and art intersect with climate and environmental change? Paradigms for the 21st Century: Anthropocene, Planetary, Boundaries; Discussion 1: What does being compassionate to the environment mean to you? Discussion 2: How do you express compassion for the environment? How does art and culture address these issues? Case studies; Discussion 3: What should we do? Who should do it?</i></p>

<b>The Faculty</b>	
 <p data-bbox="123 1612 331 1642">Dr. Gregg M Garfin</p>	<p><b>Titles</b></p> <ul style="list-style-type: none"> <li>• Associate Professor and Associate Extension Specialist in Climate, Natural Resources and Policy, in the University of Arizona’s School of Natural Resources and the Environment</li> <li>• Deputy Director for Science Translation and Outreach, in the University of Arizona’s Institute of the Environment</li> <li>• Director, Water, Society and Policy Masters of Science Program</li> </ul>
	<p><b>Research</b></p> <p>Dr. Garfin's research focuses on climate variability and change, drought, and adaptation to a changing climate. Geographic interests include semi-arid regions, transboundary regions, and monsoon climates. His research and extension activities are focused on climate variability, drought, wildfire impacts, urban climate planning and adaptation to a changing climate. His latest work examines the need to prepare for complex and intersecting hazards, such as large fires and post-fire floods, and the intersection of drought, heat waves, power outages, and public health risks.</p> <p>Dr. Garfin was co-convening lead author for the Southwest chapter in the 2014 United States National Climate Assessment (<a href="http://nca2014.globalchange.gov/report/regions/southwest">http://nca2014.globalchange.gov/report/regions/southwest</a>), and executive editor of <i>Assessment of Climate Change in the Southwest United States</i> (<a href="http://swcarr.arizona.edu">http://swcarr.arizona.edu</a>), the definitive study of climate change, its impacts, and solutions for the region. In November, 2016 he was selected as chapter lead author for</p>

	<p>the Southwest chapter in the 2018 United States National Climate Assessment. He recently co-edited <i>Climate in Context: Science and Society Partnering for Adaptation</i> (<a href="http://www.wiley.com/WileyCDA/WileyTitle/productCd-1118474791.html">http://www.wiley.com/WileyCDA/WileyTitle/productCd-1118474791.html</a>), a book on NOAA's Regional Integrated Sciences and Assessments (RISA) Program – an exemplar of climate services and climate adaptation research and extension. For his work on connecting climate research and information with resource management decision-makers, Dr. Garfin has received awards from the University of Arizona (2013 – Service), the Association of Natural Resources Extension Professionals (2012 – Innovative Program in Climate and Natural Resources), American Water Resources Association (2009 – Boggess Award for Innovative Publication), California Department of Water Resources (2007 – Climate Science Service Award), Arizona Research Laboratories (2005 – Arbas Award for Collegial Innovation and Management), and the National Predictive Services Group (2005 – Honor Award for Collaboration on Climate and Wildfire Prediction and Management).</p>
 <p>Ar. Shailendra K. Mandal</p>	<p>Shailendra K. Mandal is an Assistant Professor at Department of Architecture at National Institute of Technology Patna. His professional and academic works focus in examining the linkage between water sustainability, city adaptation, urban resilience, sustainable development and role of local community to address it. He has been awarded Fulbright-Nehru Doctoral and Professional Research Fellowships to work on 'Water Sustainability and Climate Change Adaptation' at University of Arizona, Tucson, US. As a research scholar, he examines Impact of Climate Change on Water Availability in Urban Areas and suggests measures for the Sustainable Development of the city.</p>
<p><b>Course Coordinator</b></p>	<p>Ar. Shailendra Kumar Mandal  Course Coordinator  Department of Architecture  National Institute of Technology Patna, Bihar  Mob.: +91-94316-25553  Email: shailendra@nitp.ac.in  Mob.: +91-94-S-K-MANDAL  Email: ar.skmandal@gmail.com</p>

<p>You should attend if</p>	<ul style="list-style-type: none"> <li>• <i>Students at all levels (B.Arch/B.Plan/BTech/MSc/MTech/MURP/MCP/M.Arch/M.Plan/PhD) and Faculty from reputed academic Institutions and technical Institutions.</i></li> </ul> <p><i>Architects, Engineers, Planners and staff from service and government organizations, in-cluding state, urban, and community-level planning, sustainability, and risk management, and climate and weather services.</i></p>
<p>Fees</p>	<p><b>Participants from abroad: US \$500</b>  <b>Industry/ Research Organizations: Rs. 3000/-</b>  <b>Academic Institutions (Faculty/Students): Rs. 1000/-</b></p> <p><i>* The above fee includes all materials, computer use for tutorials, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.</i></p>
<p>Duration</p>	<p><b>December 17 – December 21, 2018 ( 5 days )</b></p>
<p>Venue</p>	<p><b>National Institute of Technology Patna</b></p>

MHRD sponsored GIAN course  
On  
**Transdisciplinary Climate Services to Prepare for Climate  
Changes**  
December 17 - 21, 2018

REGISTRATION FORM

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Department: \_\_\_\_\_

Organisation: \_\_\_\_\_

Academic Degree: \_\_\_\_\_

Address for correspondence: \_\_\_\_\_

Payment Details:  
(should be attached with this form)

Amount Transferred: \_\_\_\_\_,  
( To the account number 50399114681)

Reference ID: \_\_\_\_\_,

Dated: \_\_\_\_\_

I agree to attend the course for the entire  
duration.

Phone:

E-mail: \_\_\_\_\_

Signature of the applicant

Category of participant:  
Faculty/Student/Research Scholar of NITP  
Faculty/Student/Research Scholar of  
other Institutes  
Industry  
Participant Foreign  
Participant

Signature of the  
sponsoring authority with  
Seal (if any)

Fees Receipt

Received with thanks from \_\_\_\_\_ a sum of  
Rs. \_\_\_\_\_ towards the registration fee for the GIAN course on “ Transdisciplinary  
Climate Services to Prepare for Climate Changes” organized by NIT Patna during December 17-21,  
2018.

Ar. Shailendra K. Mandal  
Course Coordinator

**Course Fee:**

The participation fees for taking the course is as

follows: Participants from abroad: US \$500

Industry/ Research Organizations: Rs. 3000/-

Academic Institutions (Faculty/Students): Rs. 1000/-

The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges. The participants will be provided with accommodation on payment basis.

Mode of Payment: Electronic Fund Transfer or Demand Draft

Name of the Bank	Allahabad Bank
Address of the Bank	NIT Patna Campus, NIT Patna, Patna – 800005
Account Name	NIT PATNA GIAN PHASE II
Account No.	50399114681
IFSC code	ALLA0212286

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