

Curriculum Vitae – Pinki Mondal

PINKI MONDAL

Department of Ecology, Evolution, and Environmental Biology
Columbia University, New York, NY USA

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Summary:

- **Research Interests:** Land-cover/land-use dynamics, remote sensing and GIS, human-environment interaction, climate variability, agricultural sensitivity, impact of climate change on vulnerable population, protected areas and conservation
- **Teaching Experience:** Physical geography; Remote sensing; Regional geography
- **External funding:** Co-PI on the Indo-US Science and Technology Forum sponsored bilateral workshop (~\$16,000); Co-Investigator on USDA Forest Service (Remote Sensing Steering Committee) sponsored project (\$79,205)
- **Publications:** 10 articles (8 published, 2 in review), 2 edited book chapters

Employment:

Columbia University, the city of New York, New York Jan 2012 – Present

- Postdoctoral Research Scientist: Department of Ecology, Evolution, and Environmental Biology; *Mentor:* Dr. Ruth DeFries

University of Massachusetts - Amherst, Massachusetts Feb 2011 – Dec 2011

- Postdoctoral Research Associate: Department of Environmental Conservation, Family Forest Research Center (FFRC); *Mentors:* Dr. Brett Butler, Dr. Dave Kittredge

Education:

University of Florida, Gainesville, Florida Aug 2006 – May 2011

- Ph.D., Department of Geography, Land Use and Environmental Change Institute (LUECI)
Dissertation: Using Remote Sensing to Measure Protected Area Effectiveness in a Tropical Landscape
Concentration: Land Change Science
Minor: Research Design and Methods in Conservation
Chair: Dr. Jane Southworth
Committee: Dr. Harini Nagendra, Dr. Brian Child, Dr. Tim Fik, Dr. Mel Sunquist

Jadavpur University, Kolkata, India Aug 2002 – Aug 2004

- M.Sc. in Applied Geology
Thesis: Land use/land cover analyses of Sundarbans using remote sensing techniques: a case study in Jharkhali island.

University of Calcutta, Kolkata, India Aug 1999 – Aug 2002

- B.Sc. in Geology (Honors)
Minor: Chemistry and Mathematics

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Research Experience:

- **Post-doctoral research** (2012-present): *Agricultural sensitivity, climate variability, and future food security in South Asia.*

Integrating climate data and socio-economic data with satellite-derived crop cover maps to examine spatial patterns of smallholder vulnerability to climate variability; collaborating with researchers from multiple academic institutions including University of Vermont, Lamont Doherty Earth Observatory, and International Research Institute for Climate and Society; published/submitted results in peer-reviewed journal.

- **Post-doctoral research** (2011-2012): *Spatial characteristics of forest and forest ownership attributes across urban-rural gradients of the United States.*

Analyzed Forest Inventory and Analysis (FIA) data, National Woodland Owner Survey (NWOS) data, National Land Cover Database (NLCD), Environment Protection Agency (EPA) housing density data (current and projected for next 50 years) as a project member on USFS Northern Forest Futures Project; mapped thermal signatures of land uses across urban-rural gradients using satellite-derived thermal data products; collaborated with USFS Remote Sensing Application Center (RSAC) and multiple USFS research stations; published results in peer-reviewed journal.

- **PhD dissertation** (2006-2010): *Using Remote Sensing to Measure Protected Area Effectiveness in a Tropical Landscape.*

Designed and conducted study; analyzed multi-sensor satellite images; collaborated with government officials and NGOs in India; obtained funding for field-trip; organized field-trip and worked with local stakeholders; collected ground-truth data; prepared report for government agency; presented results for funding agency and in national meetings; published results in peer-reviewed journals.

- **Graduate research assistant** (2010): *A global-level study estimating the risk of rising sea level to global population in low elevation coastal zones.*

Analyzed LandScan and GRUMP population data along with global-level elevation data in ArcGIS; quantified the risk of rising sea-level to the global population; estimated uncertainty in using different population datasets; published results in peer-reviewed journal.

- **Short-term research** (2007): *An ethno-ecological study on bird-species in Yucatan, Mexico.*

Worked in an inter-disciplinary setting; helped with questionnaire-based survey and collecting data on birds; collected training samples for remote sensing analysis; pre-processed satellite images; presented research for collaborators and funding agency; contributed in writing the findings.

- **M.Sc. thesis** (2003-2004): *Land use/land cover analyses of Sundarbans using remote sensing techniques: a case study in Jharkhali island.*

Analyzed and interpreted satellite data to examine land-cover/land-use changes in a vulnerable estuarine system; presented results in seminars.

Publications:

- ***Peer-reviewed articles:***

1. **Mondal, P.**, Jain, M., Robertson, A., Galford, G., Small, C., DeFries, R. Winter crop sensitivity to inter-annual climate variability in central India. *Climatic Change*. Submitted.
2. Small, C., Jain, M., **Mondal, P.**, Galford, G., DeFries, R. Periodicities, Trends and Abrupt Changes in the Vegetation Phenology of South Asia. *Remote Sensing of Environment*. In revision.
3. **Mondal, P.**, Jain, M., DeFries, R., Galford, G., Small, C. 2014. Sensitivity of crop cover to climate variability: Insights from two Indian agro-ecoregions. *Journal of Environmental Management*. In Press.
4. Jain, M., **Mondal, P.**, DeFries, R., Small, C., Galford, G. 2013. Mapping cropping intensity of smallholder farms: a comparison of methods using multiple sensors. *Remote Sensing of Environment* 134, 210-223.
5. **Mondal, P.**, Butler, B., Kittredge, D., Moser, W. 2013. How are America's private forests changing? An integrated assessment of forest management, housing pressure, and urban development in alternate emissions scenarios. *Land Use Policy* 32, 230-238.
6. **Mondal, P.**, Tatem, A. 2012. Uncertainties in measuring populations potentially impacted by sea level rise and coastal flooding. *PLoS One*. 7 (10): e48191. doi:10.1371/journal.pone.0048191
7. **Mondal, P.**, Nagendra, H. 2011. Trends of forest dynamics in tiger landscapes across Asia. *Environmental Management*. 48 (4), 781-794.
8. **Mondal, P.** 2011. Quantifying surface gradients with a 2-band Enhanced Vegetation Index (EVI2). *Ecological Indicators*. 11 (3), 918-924.
9. **Mondal, P.**, Southworth, J. 2010. Evaluation of conservation interventions using a cellular automata-Markov model. *Forest Ecology and Management*. 260 (10), 1716-1725.
10. **Mondal, P.**, Southworth, J. 2010. Protection vs. Commercial management: spatial and temporal analysis of land cover changes in the tropical forests of Central India. *Forest Ecology and Management* 259 (5), 1009 -1017.

- ***Edited book chapters:***

1. **Mondal, P.**, Nagendra, H. 2012. Parks and Preserves. In Joel Campbell, Jingjing Liu, & Sony Pellissery (Eds.), *The Encyclopedia of Sustainability*, Vol. 7: *China, India, and East and Southeast Asia: Assessing Sustainability*. Great Barrington, MA: Berkshire Publishing.
2. Nagendra, H., **Mondal, P.**, Adhikari, S., Southworth, J. 2012. Peopled parks: Forest change in India's protected landscapes. In E. S. Brondizio and E. F. Moran (Eds.), *Human-Environment Interactions: current and future directions*, Springer.

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• **Technical reports/Manuscripts:**

1. Housman, I., **Mondal, P.**, Hamilton, R., Fisk, H., Lister, A., Butler, B., Jacobs, D., Lister, T., Salajanu, D. 2013. Percent impervious landcover modeling: Analyzing the impacts of model types, calibration methods, and ecoregions. RSAC-10025-RPT1. Salt Lake City, UT: U.S. Department of Agriculture, Forest Service, Remote Sensing Applications Center. 13 p.
2. **Mondal, P.** 2010. 30 Years of Protection: A Success Story. In: Jha, M. and Joshi, C. 2010. Pench, Maharashtra: The Big Tale of a Small Tiger Reserve, Technical Book No. 3, Pench Tiger Reserve, India and Center for Environment Education, India.
3. **Mondal, P.** 2004. Land use/land cover analysis of Sundarbans using remote sensing techniques: A case study in Jharkhali Island (*Master's thesis*).

Teaching Experience:

- **Physical Geography:** *University of Florida* (Undergraduate lecture course designed and taught by the instructor)
 - Independent instructor
 - Fall 2008 – Enrollment: 129
 - Spring 2008– Enrollment: 62
 - Fall 2007 – Enrollment: 113
- **Global Assessment and Monitoring Using Remote Sensing:** *Columbia University* (Upper level undergraduate/Graduate lecture + lab course)
 - Guest lecture – Fall 2013
- **Remote Sensing:** *University of Florida* (Upper level undergraduate/Graduate lecture + lab course).
 - Guest lecture – Fall 2010
 - Lab manual designer – Fall 2010
- **Regional Geography:** *University of Florida* (Undergraduate lecture course).
 - Guest lecture – Fall 2010

Grants, Awards & Scholarships:

- Indo-US Science and Technology Forum (~\$16,000 – Co-PI): Indo-US Bilateral Workshop on “Adaptation of rural communities to climate change: Bridging the gap between academia and community workers and identifying research needs”, Feb 2014
- USDA Forest Service (Remote Sensing Steering Committee) sponsored project for FY2012 (\$79,205 – Co-I): Oct 2011 – Sep 2012
- Sponsored Student Travel Award, 2011 US Regional Association of the International Association for Landscape Ecology Symposium (\$500): Spring 2011
- NSF “On the Cutting Edge” Professional Development Workshop Stipend (\$200): Summer 2010

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- NASA-MSU Professional Enhancement Award, US Regional Association of the International Association for Landscape Ecology Symposium (\$650): Spring 2010
- Best Paper Award at UF Graduate Student Council Interdisciplinary Research Conference (\$250): Spring 2010
- CLAS Graduate Travel Award, University of Florida (\$250): Spring 2010
- Ryan Poehling Fellowship, University of Florida (\$1,500): Fall 2009
- UF Graduate Student Council Travel Grant (\$250): Fall 2009
- Imagery Grant, GeoEye Foundation, Virginia: Fall 2009
- Best Poster Award at UF Graduate Student Council Interdisciplinary Research Conference (\$250): Spring 2009
- UF Office of Graduate Research and Program Travel Grant (\$300): Spring 2009
- UF Graduate Student Council Travel Grant (\$250): Fall 2008
- Tropical Conservation and Development (TCD) Field Research Grant, University of Florida (\$2,200): Summer 2008
- Alumni Fellowship, University of Florida (Stipend + tuition): 2006 – 2010
- Certificate of merit under National Scholarship Scheme by Government of India: Fall 2002, Fall 1997

Published Abstracts and Presentations (Selected):

- **Mondal, P.**, Jain, M., DeFries, R., Galford, G., Small, C. Climate sensitivity of smallholder farmers across multiple agro-ecological zones in India. *Global Land Project Open Science Meeting*. 19-21 March 2014, Berlin, Germany. Oral Presentation.
- **Mondal, P.**, Jain, M., DeFries, R., Galford, G., Small, C. Impacts of Changing Climate on Agricultural Variability: Implications for Smallholder Farmers in India. *American Geophysical Union Fall Meeting*. 9-13 December 2013, San Francisco, California. Poster Presentation.
- **Mondal, P.**, Jain, M., DeFries, R., Galford, G., Small, C. Agricultural susceptibility to climate variability: Insight from two Indian agro-ecoregions. NASA Land-Cover and Land-Use Change Science Team Meeting. 2-4 April 2013, Rockville, Maryland. Poster Presentation.
- Jain, M., Small, C., **Mondal, P.**, Galford, G., DeFries, R. Mapping Cropped Area of Smallholder Farms in South Asia. NASA Land-Cover and Land-Use Change Science Team Meeting. 2-4 April 2013, Rockville, Maryland. Poster Presentation.
- **Mondal, P.**, DeFries, R., Jain, M., Robertson, A., Galford, G., Small, C. 2012. A multi-sensor approach to identify crop sensitivity related to climate variability in Central India. *American Geophysical Union Fall Meeting*. 3-7 December 2012, San Francisco, California. Poster Presentation.
- Jain, M., **Mondal, P.**, Small, C., Galford, G., DeFries, R. 2012. Mapping cropping intensity of smallholder farms in South Asia: A comparison of MODIS, Landsat, and mixture model

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techniques. *NASA Land-Cover and Land-Use Change Science Team Meeting*. 3-5 April 2012, Rockville, Maryland. Poster Presentation.

- **Mondal, P.**, Butler, B. and Kittredge, D. 2012. Impact of climate and land use change: How are America's private forests changing? *The Association of American Geographers Annual Meeting*. 24-28 February 2012, New York. Oral Presentation.
- **Mondal, P.**, Southworth, J. and Fik, T. 2011. Comparison of ASTER-derived vegetation indices and surface temperature in detecting forest successions. *US Regional Association of the International Association for Landscape Ecology Symposium*. 3-7 April 2011, Portland, Oregon. Oral Presentation.
- **Mondal, P.** and Southworth, J. 2010. Exploring the utility of ASTER thermal bands in measuring protected area effectiveness. *The Association of American Geographers Annual Meeting*. 14-18 April 2010, Washington DC. Oral Presentation.
- **Mondal, P.** 2010. Enhanced Vegetation Index as a fragmentation indicator. *US Regional Association of the International Association for Landscape Ecology Symposium*. 4-8 April 2010, Athens, Georgia. Oral Presentation.
- **Mondal, P.** 2010. Using CA-Markov model to investigate the importance of national level policy in forest conservation. *UF Graduate Student Council Interdisciplinary Research Conference*. 3 February 2010, Gainesville, Florida. Oral Presentation.
- **Mondal, P.** and Southworth, J. 2010. Using CA-Markov model to investigate the importance of national level policy in forest conservation. *Florida Society of Geographers Annual Meeting*. 15-17 January 2010, Tampa, FL. Oral Presentation.
- **Mondal, P.** and Southworth, J. 2009. The role of government policies in protected area management: A case study from Central India. *South Eastern Division of the Association of American Geographers Annual Meeting*. 22-24 November 2009, Knoxville, Tennessee. Oral Presentation.
- **Mondal, P.** 2009. 30 Years of Protection: Examining a Park's Performance in Decreasing Forest Fragmentation in Central India. *US Regional Association of the International Association for Landscape Ecology Symposium*. 12-16 April 2009, Snowbird, Utah. Poster Presentation.
- **Mondal, P.** 2009. Identifying forest cover change in and around Pench Tiger Reserve, India. *The Association of American Geographers Annual Meeting*. 22-27 March 2009, Las Vegas, Nevada. Poster Presentation.
- **Mondal, P.** 2009. 30 years of protection: is Pench Tiger Reserve a success story? *UF Graduate Student Council Interdisciplinary Research Conference*. 12 February 2009, Gainesville, Florida. Poster Presentation.

Workshops and Professional Training:

- Dinamica: Landscape Dynamics Modeling. *University of Vermont*. 20 – 23 August 2013, Burlington, Vermont.
- GIS Tools for Analyzing Dynamic Landscapes. *US Regional Association of the International Association for Landscape Ecology Symposium*. 3 April 2011, Portland, Oregon.
- NSF “*On the Cutting Edge: Preparing for an Academic Career in the Geosciences*” Workshop. 29 July – 1 August 2010, Stanford University, California.

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- Land Surface Phenology. *US Regional Association of the International Association for Landscape Ecology Symposium*. 5 April 2010, Athens, Georgia.
- What is Landscape Ecology up to in the Climate Change Debate? *US Regional Association of the International Association for Landscape Ecology Symposium*. 14 April 2009, Snowbird, Utah.
- Airborne GPS and Inertia in Support of Triangulation and Orientation of Airborne Framing and Push broom Sensors. *American Society for Photogrammetry and Remote Sensing Annual Conference*. 8 May 2007, Tampa, Florida.
- DOEACC A-level professional training in computer applications including programming, problem solving and data structure through C, database management systems, basics of OS, UNIX and Shell programming, object oriented programming and C++ (training equivalent to Post Graduate Diploma in Computer Application), Kolkata, India.

Field Experience:

- Exploratory social survey and remote sensing ground truthing for post-doc project in Madhya Pradesh, India (Winter 2012-13)
- Remote sensing ground truthing and exploratory social survey for PhD project in Pench, Maharashtra, India (Summer 2008)
- Ecological survey and questionnaire-based social survey for a class-project in Yucatan, Mexico (Spring 2008)
- Geological survey in structurally disturbed zones of Singbhum Craton, Jharkhand, India (Spring 2003)
- Geological survey in structurally complex and deformed zones in Maharashtra, India (Fall 2001)

Service Activities:

- PI and co-organizer, Indo-US bilateral workshop (2014)
- Organizing committee member, KPLS symposium (2014)
- Panel reviewer, NASA Terrestrial Ecology (2013)
- Session convener, American Geophysical Union (AGU) fall meeting (2013)
- Graduate Representative, UF Geography (2009-2010)
- Liaison person between Geography and UF Graduate Student Council (2009-2010)
- Co-organizer, departmental participation in several national meetings (2009-2010)
- Co-organizer, new student orientation events (2009)
- Volunteer, Florida Museum of Natural History Fossil Hunt (2006)
- Journal reviewer: *Forest Ecology and Management*; *Remote Sensing*; *Landscape and Urban Planning*; *Ecological Complexity*; *Environmental Management*; *Land Use Policy*; *International Journal of Remote Sensing*; *ISPRS Journal of Photogrammetry and Remote Sensing*; *Landscape Ecology*.

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Professional Membership:

- Association of American Geographers (since 2008)
- United States Regional Association of the International Association for Landscape Ecology (since 2008)
- CHANS-Net: International Network of Research on Coupled Human and Natural Systems (since 2011)
- American Geophysical Union (since 2012)