Prakhar Misra

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Keywords: Remote sensing applications, Land-use change, Urbanization and emission inventory, Biomass burning, Urban air pollution, Social sensing, Low-cost portable sensors, Deep learning, Google Earth Engine, Open data

Experience

2020/3 - present **Research Institute of Humanity and Nature**, *Researcher*.
'Interdisciplinary study towards clean air, public health and sustainable agriculutre: case of crop residue burning in India.'

2019/10 - 2020/3 **Institute of Industrial Science, The University of Tokyo**, *Specially Appointed Assistant Professor*.

2018/08 - 2019/10 **Institute of Industrial Science, The University of Tokyo**, *Project Researcher*.
Researching agromet cross comparison and validation for rice crop outlook in Thailand.

2015/10 - 2016/12 **Sony Computer Science Laboratories**, Tokyo, Japan, *Research Assistant*.
Analyzed energy exchange efficiency in *'Open Energy System'* for decentralized PV grid.

2013/09 - 2015/02 **Inductis**, New Delhi, India, *Consultant*.
Predictive modelling of unsecuritized credit risk. Awarded 'Best Team'and 'Star Performer'.

2011/05 - 2011/06 **Bharat Petroleum Corporation Limited**, Mumbai, India, *Internship*.
Performed energy audit and feasibility study for solar-wind powered renewable energy plant.

Education

2015–2018 **PhD, Civil Engineering (Remote Sensing), The University of Tokyo, Japan**,
Title: Analyzing Impact of Socio-economic Growth and Land-use Change on Urban Air Quality in India, GPA 3.7/4. Advisor: Dr. Wataru Takeuchi.

2008–2013 **B.Tech-M.Tech, Civil Engineering (Geoinformatics), Indian Institute of Technology Kanpur (IIT Kanpur), India**,
Title: Multi-resolution Segmentation Based Classification of Polarimetric SAR Imagery,
MTech CPI 8.8/10, BTech CPI 6.7/10. Advisor: Dr. Onkar Dikshit.

Peer-reviewed publications

1. Misra P., Imasu R., Hayashida S., Ardhi A., Takeuchi W.; Mapping Brick Kilns to support Environmental Impact Studies around Delhi using Sentinel-2. *ISPRS International Journal of Geo-Information* under 2nd review.
2. Rahman M.M., Avtar R., Ahmed S., Inostroza L., Misra P., Kumar P., Takeuchi W., Surjan A., Saito O.; Does Building Development in Dhaka Comply Land Use Zoning? Analysis Using Nighttime Light and Digital Building Heights. *Sustainability Science* under review.
3. Dhaka S.K., Chetna, Kumar V., Panwar V., Dimri A.P., Singh N., Patra P.K., Matsumi Y., Takigawa M., Nakayama T., Yamaji K., Kajino M., Misra P., Hayashida S.; PM2.5 diminution and mist events over Delhi during the COVID-19 lockdown period: an interplay between the baseline pollution and meteorology. *Scientific Reports*.
4. Rahman M.M., Avtar R., Yunus A.P., Dou J., Misra P., Takeuchi W., Sahu N., Kumar P., Johnson B.A., Dasgupta R., Kharrazi A., Chakraborty S., Agustiono K.T.; Assessing Monitoring Effect of Spatial Growth on Land Surface Temperature in Dhaka. *Remote Sensing*, Vol 12(7), 2020.
5. Misra P., Takeuchi W.; Assessing Population Sensitivity to Urban Air Pollution Using Google Trends and Remote Sensing Datasets. *Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci.*, XLII-3/W11, 2020.
6. Misra P., Imasu R., Takeuchi W.; Impact of Urban Growth on Air Quality in Indian Cities Using Hierarchical Bayesian Approach. *Atmosphere*, Vol 10(9), 2019.

7. Minh H.V.T., Avtar R., Mohan G., Misra P., Kurasaki M.; Monitoring and Mapping of Rice Cropping Pattern in Flooding Area in the Vietnamese Mekong Delta Using Sentinel-1A Data: A Case of An Giang Province. *ISPRS International Journal of Geo-Information*, Vol 8(5), 2019.
8. Misra P., Avtar R., Takeuchi W.; Comparison of digital building height models extracted from AW3D, TanDEM-X, ASTER and SRTM digital surface model over Yangon city. *Remote Sensing*, Vol 10(12), 2018.
9. Misra P., Fujikawa A., Takeuchi W.; Novel Decomposition Scheme for Characterizing Urban Air Quality with MODIS. *Remote Sensing*, Vol 9(8), 2017.
10. Misra P., Takeuchi W.; Air Quality Analysis Using Nighttime Light for Indian Urban Regions. *Malaysian Journal of Remote Sensing and GIS*, Vol 5(2), 2016.

Conference publications

1. Misra P., Takigawa M., Khatri P., Dhaka S.K., Dimri A.P., Yamaji K., Kajino M., Takeuchi W., Imasu R., Patra P.K. Hayashida S.; Detection of significant change in nitrogen oxides concentration and emission during COVID-19 lockdown in North India. *2020 AGU Fall Meeting*, San Francisco, USA, 2020. under review
2. Hayashida S., Misra P., Nitta K., Nguyen T.H., Patra P.K., Takigawa M., Khatri P., Dhaka S.K., Dimri A.P., Yamaji K., Takeuchi W.; Reduction of air pollutants over North-West India observed from space during the Covid-19 lockdown period. *2020 AGU Fall Meeting*, San Francisco, USA, 2020. under review
3. Nguyen T.H., Hayashida S., Misra P., Matsumi Y., Nakayama T., Dhaka S.K., Dimri A.P.; Detection of Change in the Aerosol distribution over North-West India during the Covid-19 Lockdown period. *2020 AGU Fall Meeting*, San Francisco, USA, 2020. under review
4. Misra P., Takeuchi W., Imasu R.; Brick Kiln Detection in North India with Sentinel imagery using Deep Learning of Small Datasets. *40th Asian Conference of Remote Sensing*, Daejeon, South Korea, 2019.
5. Misra P., Takeuchi W.; Assessing population sensitivity to urban air pollution using Google Trends and remote sensing datasets. *40th Pecora21/ISRSE38*, Baltimore, Maryland, USA, 2019.
6. Sovisoth E., Thakur V.B., Nagai K., Misra P., Takeuchi W.; Estimation of the bridge construction year in Cambodia by the analysis of LANDSAT satellite data. *3rd ACF Symposium*, Sapporo, Japan, 2019.
7. Misra P., Takeuchi W.; Use of Google Trends for Assessing Sensitivity of Population to Urban Air Pollution. *26th International Symposium on Remote Sensing*, Taipei, Taiwan, 2019.
8. Arbain A., Imasu R., Misra P., Takeuchi W.; Estimating $PM_{2.5}$ Emission from Brick Kiln Industry over Northern India with Numerical Model and Remote Sensing Observation. *EGU General Assembly*, Vienna, Austria, 2019.
9. Misra P., Takeuchi W.; Analyzing perception of urban air pollution using Google Trends and satellite datasets. *27th Institute of Industrial Science Forum Proceedings*, Tokyo, Japan, 2019.
10. Misra P., Takeuchi W.; A Novel Technique For Estimating Expansion Of Residential, Commercial And Industrial Regions In Indian Megacities. *17th International Symposium on Urban Safety Of Mega Cities In Asia*, Hyderabad, India, 2018.
11. **Best Paper Award Finalist** Misra P., Imasu R., Takeuchi W.; Land-use Change Impacts on Urban Air Quality in India using Hierarchical Bayesian Approach. *39th Asian Conference of Remote Sensing*, Kuala Lumpur, Malaysia, 2018.
12. Ochi S., Misra P., Takeuchi W.; Spatiotemporal Distribution Of Hotspot / Wildfire In Southeast Asia Using Remote Sensing Data. *39th Asian Conference of Remote Sensing*, Kuala Lumpur, Malaysia, 2018.
13. **Best Paper Award** Misra P., Takeuchi W.; Hierarchical Bayesian approach to estimate land-use change impacts on urban air pollution in India. *26th Institute of Industrial Science Forum Proceedings*, Tokyo, Japan, 2018. .
14. Misra P., Takeuchi W.; Digital Surface Model (DSM) datasets for built-height estimation over Indian cities. *24th International Symposium on Remote Sensing*, Nagoya, Japan, 2017.
15. Misra P., Takeuchi W.; Comparison of ASTER and AW3D derived Digital Surface Model datasets for built structure height estimation over Yangon city, Myanmar. *25th Institute of Industrial Science Forum Proceedings*, Tokyo, Japan, 2017.
16. Misra P., Takeuchi W.; Assessing Impact of Economic Activities on Urban Air Quality in India by Nightlight and Atmospheric Measurement Datasets. *37th Asian Conference of Remote Sensing*, Colombo, Sri Lanka, 2016.
17. Misra P., Takeuchi W.; Air Quality Analysis Using Nighttime Light for Indian Urban Regions. *8th IGRSM International Conference and Exhibition on Geospatial & Remote Sensing* , Kuala Lumpur, Malaysia, 2016.
18. Misra P., Takeuchi W.; Analysis Of Air Quality In Indian Cities Using Remote Sensing And Economic Growth Parameters. *36th Asian Conference on Remote Sensing*, Manila, Philippines, 2015.

Reports

- Misra P.; Clean Air and Imagined Sustainability: The case of India. *Aakash Newsletter*, Vol. 1(1) 2020.
- Misra P., Sharma R.; India's GAGAN (GPS-aided GEO augmented navigation) adds a new dimension to navigation. *GIM International*, Vol. 27(2) 2013.

Presentation and seminars

1. *(invited)* Impact of Urban Growth on Air Quality in Indian Cities *FTSP New Normal Webinar, Institut Teknologi Nasional*, Bandung, Indonesia. (2020/06/25)
2. Public interest in air quality and its impact varies with baseline exposure: Google Trends and Remote Sensing based analysis *22nd CEReS Symposium on Environment Remote Sensing, Chiba University*, Chiba, Japan. (2020/02/20)
3. *(invited)* Remote Sensing for Urban Studies Mapping Land-use for Emission Inventories in Developing Countries *Young Sustainability Symposium, Hokkaido University*, Sapporo, Japan. (2020/02/03)
4. *(invited)* Mapping Drivers of Urban Air-pollution in Indian Cities using Remote Sensing *Sakura Science Exchange Program, Shibaura Institute of Technology*, Tokyo, Japan. (2019/11/20)
5. Monitoring Land-use Drivers of Urban Air Pollution and its Response using Remote Sensing and Social Sensing *Data-based Society Creation Symposium 2019*, Tokyo, Japan. (2019/09/01)
6. Brick kiln detection around New Delhi using Sentinel 2 with Deep Learning: Distribution and Drivers *NASA LCLUC SARI International Regional Science Meeting*, Johor Bahru, Malaysia. (2019/07/24)
7. Comparison of Remote Sensing derived KBDI with in-site Soil-moisture in Thailand. *JAXA-GISTDA mini workshop on drought monitoring*, Bangkok, Thailand. (2019/05/17)
8. Observations from Mapping PM2.5 in Indian Cities using Low-cost sensor. *1st IITK-UTokyo Workshop on PM2.5 Mapping using Low-cost Sensors*, Kanpur, India. (2019/02/06)
9. Role of satellite for monitoring urban air quality. *1st IITK-UTokyo Workshop on PM2.5 Mapping using Low-cost Sensors*, Kanpur, India. (2019/02/07)
10. GEE as educational tool in Civil Engineering. *Google Earth Engine Year-end Meetup in Tokyo*, Tokyo, Japan. (2018/12/26)
11. Impact assessment of socio economic development on urban air quality in Indian megacities *NASA LCLUC SARI International Regional Science Meeting*, Chiang Mai,Thailand. (2017/07/17)

Workshops and training organized

2019 *(invited)* ***NASA SARI Remote Sensing Land Use change and Climate Impacts in Coastal Zone Regional Science Training, Phuket, Thailand*** *Blue Carbon Mapping and Coastal Zone studies using GEE (12/17)*

2019 *(invited)* ***5th International Conferences of Indonesian Society for Remote Sensing (ICOIRS), Bandung, Indonesia*** *Cloud based satellite image processing: Introduction to GEE (09/17)*

2019 ***(invited) Suranaree University of Technology, Nakhon Ratchaseema, Thailand*** **Air quality monitoring and mapping with portable devices (05/15)**

2019 **4th Open Science Meeting, Global Land Program, Bern, Switzerland** Hands-on-training session on evaluating three-dimensional urban expansion in mega cities in Asia (04/27)

2019 *(invited)* ***26th International Symposium on Remote Sensing - ISPRS TC-W/8 Tutorial, Taipei, Taiwan*** *Remote Sensing Applications using Google Earth Engine (04/18)*

2019 **1st IITK-UTokyo Workshop on PM$_{2.5}$ Mapping using Low-cost Sensors, IIT Kanpur, India** Citizen science workshop for mapping geolocated individual exposure to PM 2.5 using low-cost devices. (02/05–02/07)

2019 *(invited)* ***27th IIS Forum, The University of Tokyo, Tokyo, Japan*** *Classifying Landsat8 imagery using Google Earth Engine (03/07–03/08)*

2018 **Indian Institute of Technology-BHU, Varanasi, India** Classifying Landsat8 imagery using Google Earth Engine and demonstration of portable PM$_{2.5}$ sensors (06/04)

2018 *(invited)* ***26th IIS Forum, The University of Tokyo, Tokyo, Japan*** *Google Earth Engine for Landsat imagery classification (03/07–03/08)*

Teaching

(*team-teaching, $^{+}$teaching-assistant)

2019, '18, '17 **Remote sensing (3713-089)***, *The University of Tokyo, Tokyo, Japan.*

2019/01 **Satellite Image Processing for Remote Sensing Applications***, *Seoul National University, South Korea.*

2013/01 **Precision Remote Sensing (CE676)**$^{+}$, *IIT Kanpur,India.*

2012/08 **Environmental Quality and Pollution (CE361)**$^{+}$, *IIT Kanpur, India.*

Fellowship and grants

2019 Tateishi Science and Technology Foundation, USD 4000

2019 International research meeting dispatch grant (IIS), USD 3500; (declined)

2015 Japanese Government (MEXT) Scholarship; tuition and stipend

2009 Incentive Scheme for Meritorious Children by State Bank of India; stipend

2006 National Talent Search (NTSE) Scholarship by Government of India; stipend

Technical skills

Programming Python, R, JS, C, SQL, VBA, SAS

Tools Google Earth Engine, QGIS, SNAP, ArcGIS, ENVI, TerraScan, GDAL

Professional service

Guest Editor MDPI Remote Sensing

Reviewer MDPI Remote Sensing; MDPI Atmosphere; T&F International Journal of Remote Sensing, Elsevier Resources Conservation and Recycling; Springer Sustainability Science

Member American Geophysical Union (AGU), Remote Sensing Society of Japan (RSSJ) (applied), Integrated Land Ecosystem-Atmosphere Processes Study Early Career Scientist Network (iLeaps), Global Land Program (GLP)

Social service

2016-'17 Vice-president, University of Tokyo Indian Students' Association

2016/07 Global Health Entrepreneurship Program for improving health in Onagawa, Miyagi

2015/05 Student volunteer, Empowerment Program Ibaraki High School, Mito City

2014–'15 SPOC, NGO for underprivileged Udayan Care, Gurgaon, India

2009-'10 Student guide, Institute Counselling Service, IIT Kanpur

References

Prof. Wataru TAKEUCHI
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Prof. Sachiko HAYASHIDA
Nara Women's University, Nara
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President, Remote Sensing Society of Japan
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