

KARTHIKEYAN LANKA

Phone: (+91) 22 2576-7665
Email: karthikl@iitb.ac.in

Centre of Studies in Resources
Engineering,
IIT Bombay Powai
Mumbai, Maharashtra 400076

WORK EXPERIENCE

Assistant Professor Centre of Studies in Resources Engineering, IIT Bombay Powai, Mumbai	2019-Present
Post Doctoral Researcher (on leave at IIT Bombay) Glenn Department of Civil Engineering, Clemson University, Clemson, SC, USA 29634	Feb 2019-Jul 2019
Research Associate Department of Civil Engineering, Indian Institute of Science, Bangalore, India	Mar 2018-Dec 2018

EDUCATION

PhD Department of Civil Engineering, Indian Institute of Science, Bangalore, India Thesis Title: Retrieval of Land Surface Variables using Microwave Remote Sensing <i>Visiting Student Research Collaborator (VSRC) at Princeton University (Sep 2016-Feb 2017)</i>	2013-2018
MSc (Engg.) Department of Civil Engineering, Indian Institute of Science, Bangalore, India Thesis Title: Predictability of nonstationary time series using wavelet and EMD based ARMA models <i>Prof. P.S.Narayana Medal for best MSc(Engg.) Thesis award</i>	2011-2013
BTech Department of Civil Engineering, SASTRA University, Thanjavur, India Thesis Title: Prediction of Ground Water Levels in the Uplands of a Tropical Coastal Riparian Wetland using Artificial Neural Networks	2007-2011

HONORS AND AWARDS

- Outstanding Reviewer 2020 - Journal of Remote Sensing
- Outstanding Reviewer 2018 - ASCE Journal of Hydrologic Engineering
- Awarded "Fulbright-Nehru Doctoral Research Fellowship" in 2016-17. Carried out part of doctoral research for six months at the Department of Civil and Environmental Engineering, Princeton University, New Jersey, USA.
- Recipient of Prof. P.S.Narayana Medal for best M.Sc. (Engg.) Thesis award in the Department of Civil Engineering, Indian Institute of Science in 2012-13. Medal awarded in 2015.
- Second rank holder in the B.Tech Civil Engineering batch of 2007-11 at SASTRA University.

- Merit scholarship holder of SASTRA University for 2010-11 for being in the top 2% (Dean's List) in the university.
- Merit scholarship holder of SASTRA University for 2009-10 for being in the top 2% (Dean's List) in the university.
- Lord Renganatha Swamy Award of SASTRA University, Thanjavur for securing highest marks in GATE-2010 (93 percentile) among the final and pre-final year B.Tech Civil Engineering students.
- Merit scholarship holder of SASTRA University for 2008-09 for being in the top 2% (Dean's List) in the university.
- Merit scholarship holder of SASTRA University for 2007-08 for being in the top 3-10% (Dean's List) in the university.

TRAVEL FELLOWSHIPS

- Awarded "AGU Student Travel Grant" to attend the American Geophysical Union (AGU) Fall Meeting held between -15 December, 2017 at New Orleans, Louisiana, USA
- Awarded "Council of Scientific & Industrial Research (CSIR) Travel Grant" to attend the AGU Fall Meeting, 2017
- Awarded "Department of Science and Technology (DST) International Travel Grant" to attend ESA's SMOS Training Session and 2nd SMOS conference held between 18-22 May, 2015 and 25-29 May, 2015 respectively at Madrid, Spain.
- Awarded "Indian Society of Remote Sensing (ISRS) Travel Grant" to attend ISPRS Technical Commission VIII Symposium, 09 – 12 December 2014, Hyderabad, India.

PUBLICATIONS

Journals

Beck, H. E., Pan, M., Miralles, D. G., Reichle, R. H., Dorigo, W. A., Hahn, S., Sheffield, J., Karthikeyan, L., Balsamo, G., Parinussa, R. M., Van Dijk, A. I., Du, J., Kimball, J. S., Vergopolan, N., Wood, E. F. (2021). Evaluation of 18 satellite-and model-based soil moisture products using in situ measurements from 826 sensors. *Hydrology and Earth System Sciences*, 25(1), 17-40. doi: <https://doi.org/10.5194/hess-25-17-2021>

Karthikeyan, L., Chawla, I., & Mishra, A. K. (2020). A review of remote sensing applications in agriculture for food security: Crop growth and yield, irrigation, and crop losses. *Journal of Hydrology*, 586, 124905. doi: <https://doi.org/10.1016/j.jhydrol.2020.124905>

Chawla, I., Karthikeyan, L., & Mishra, A. K. (2020). A review of remote sensing applications for water security: Quantity, quality, and extremes. *Journal of Hydrology*, 585, 124826. doi: <https://doi.org/10.1016/j.jhydrol.2020.124826>

Karthikeyan, L., Pan, M., Nagesh Kumar, D., & Wood, E. F. (2020). Effect of Structural Uncertainty in Passive Microwave Soil Moisture Retrieval Algorithm. *Sensors*, 20(4), 1225. doi: <https://doi.org/10.3390/s20041225>

Karthikeyan, L., Pan, M., Konings, A. G., Piles, M., Fernandez-Moran, R., Nagesh Kumar, D., & Wood, E. F. (2019). Simultaneous retrieval of global scale Vegetation Optical Depth, surface roughness, and soil moisture using X-band AMSR-E

observations. *Remote Sensing of Environment*, 234, 111473. doi: <https://doi.org/10.1016/j.rse.2019.111473>

Karthikeyan, L., Pan, M., Wanders, N., Nagesh Kumar, D., & Wood, E. F. (2017). Four Decades of Microwave Satellite Soil Moisture Observations: Part 1. A Review of Retrieval Algorithms. *Advances in Water Resources*, 109, 106-120. doi: <https://doi.org/10.1016/j.advwatres.2017.09.006>

Karthikeyan, L., Pan, M., Wanders, N., Nagesh Kumar, D., & Wood, E. F. (2017). Four Decades of Microwave Satellite Soil Moisture Observations: Part 2. Product validation and inter-satellite comparisons. *Advances in Water Resources*, 109, 236-252. doi: <https://doi.org/10.1016/j.advwatres.2017.09.010>

Karthikeyan, L., & Nagesh Kumar, D. (2016). A novel approach to validate satellite soil moisture retrievals using precipitation data. *Journal of Geophysical Research: Atmospheres*, 121(19). doi: <https://doi.org/10.1002/2016JD024829>

Karthikeyan, L., & Nagesh Kumar, D. (2013). Predictability of nonstationary time series using wavelet and EMD based ARMA models. *Journal of Hydrology*, 502, 103-119. doi: <https://doi.org/10.1016/j.jhydrol.2013.08.030>

Karthikeyan, L., Nagesh Kumar, D., Graillet, D., & Gaur, S. (2013). Prediction of Ground Water Levels in the Uplands of a Tropical Coastal Riparian Wetland using Artificial Neural Networks. *Water Resources Management*, 27(3), 871-883. doi: <https://doi.org/10.1007/s11269-012-0220-0>

Conferences

Karthikeyan, L., & Mishra, A. K., (2019, September 24-27). Development of high resolution multi-layer soil moisture information. *Water Future Conference*, Bangalore.

Karthikeyan, L., Pan, M., Wanders, N., Nagesh Kumar, D., & Wood, E. F. (2017, December 11-15). Four Decades of Microwave Satellite Soil Moisture Observations: Product validation and inter-satellite comparisons. *AGU Fall Meeting*, New Orleans, Louisiana, 261123, H51R-02

Karthikeyan, L., Pan, M., Konings, A., Piles, M., Nagesh Kumar, D., & Wood, E.F. (2017, April 23-28). Global Scale Simultaneous Retrieval of Smoothed Vegetation Optical Depth and Surface Roughness Parameter using AMSR-E X-band Observations. *EGU General Assembly Conference Abstracts*, Vienna, Austria (Vol. 19, p. 9553)

Karthikeyan, L., & Nagesh Kumar, D. (2015, May 25-29) Validation of Satellite Soil Moisture Retrievals with Precipitation Data using Copula based Mutual Information Measure. *2nd SMOS Conference*, ESA Madrid, Spain, 25-29 May, 2015, Abstract: 95167

Karthikeyan, L., & Nagesh Kumar, D. (2014, December 9-12). Validation of Satellite Soil Moisture Retrievals using Precipitation Records in India. *ISPRS-International*

Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences,
1, 367-370.

ACADEMIC WORKSHOPS/TRAINING COURSES ATTENDED

- SMOS Training Session, 18-22 May, 2015, jointly organised by ESA, CNES, SMOS-MODEESA-ESAC, Villafranca del Castillo, Spain.
- Polarimetric SAR Data Processing and Applications, Pre-symposium Tutorial, 7-8 December, 2014, organised by National Remote Sensing Centre, ISRO, Hyderabad, as a part of ISRS Technical Commission VIII Mid-Term Symposium.

TEACHING (CSRE, IIT BOMBAY)

- GNR621 – Natural Resources: Hydrosphere, Cryosphere and Atmosphere
- GNR653 – Data Analysis Methods for Geospatial Applications
- GNR641 – Remote Sensing in Water Resources and River Basin Management
- GNR640 – Geospatial statistics (new elective introduced)
- GNR644 – Remote Sensing in Surface Water Resources (new elective introduced)

PROFESSIONAL SERVICES

Editorial Board

Frontiers Water and Build Environment

Reviewer

Remote Sensing of Environment
IEEE Transactions of Geoscience and Remote Sensing
Climate Risk Management
Science of Total Environment
Hydrology Earth System Sciences
Journal of Climate – AMS
Journal of Hydrology – JoH
Journal of Hydrologic Engineering – ASCE
Journal of Earth System Science – JESS
Applied Computational Intelligence and Soft Computing – HINDAWI
Sadhana - Academy Proceedings in Engineering Science
Journal of Remote Sensing