Lavanya Ashokkumar, PhD

Lecturer (Teaching faculty)
Department of Atmospheric and Earth Sciences
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Academic qualifications

Postdoctoral Research   2018 - 2021
University of Arizona, USA
Advisor: Dr Christopher Harig

PhD - Glaciology and Remote sensing   2013 – 2017
Swansea University UK
Thesis: Understanding long-term glacier dynamics in the Himalayas using remote sensing.
Advisors: Prof Adrian Luckman, Prof Bernd Kulessa.

Master of Science – Remote sensing   2010 – 2012
College of Engineering Guindy, Anna University Chennai, India
Thesis: Improved band selection and fusion of hyperspectral image.
Advisor: Prof Sanjeevi Shanmugam. CGPA: 9/10

Bachelor's in engineering (Geo-Informatics)   2003 – 2007
College of Engineering Guindy, Anna University Chennai, India
Thesis: Location based services: An open-source approach for GIS
Advisor: Prof Thirumalaivasan. CGPA: 8.5/10

Awards and grants

- Polar Science Early Career Community Office (PSECCO) Conference Travel Grant for AGU Fall Meeting 2022. ($**670**)
- Women in Data science – Tucson, University of Arizona. April 2021. Third place.
- Postdoc speed talk competition, University of Arizona. First place. March 2020 (**$2000**).
- Travel support by NASA and UW (**$1500**) for ICESat-2 Cryospheric Science Hackweek, University of Washington, Seattle, July 2019.
- Chevening Scholarship for dissertation writing and support – 2015 (**$10000**)
- **Commonwealth Scholarship and Fellowship** for PhD in Remote sensing, Commonwealth commission at the UK and MHRD, India (2012–2016). Funding for 3.5 years. (**$20000** annually)
- Travel Grant (**£750**) by the International Glaciological society for the International Glaciological Symposium in High Mountain Asia, Nepal, March 2015.
- Travel Grant for Young Scientist (~ **$1000**) awarded by the Council of Scientific and Industrial Research (CSIR), Government of India for the Conference 'AI in Space: Intelligence beyond planet earth', Spain, June 2011.

- Master Research funded by Indian space Research organization (ISRO- DOS), PLANEX for the project "Developing tools and techniques for lunar information extraction using multi-sensor image fusion". (Funding for 1 year).

Publications

8. Yuvaraj, D., Jayachandran, K and **Ashokkumar**, L (2022). Performance of spectral indices for soil properties: a case study from Redland farm, south Florida. *Modeling Earth Systems and Environment*. doi: https://doi.org/10.1007/s40808-022-01371-0
7. **Ashokkumar, L**., Luckman, A, Harig, C., Kulessa, B, Bevan, S and Greene, C (2021). Contrasting patterns of dynamic response to climate, inferred from 145 glaciers in the Himalayas. *Frontiers in Remote sensing*. (In Progress).
6. **Ashokkumar**, Lavanya and Harig, Christopher (2020). 21st century estimates of mass loss rates from glaciers in the Gulf of Alaska and Canadian Archipelago using a GRACE constrained glacier model. *The Cryosphere*. https://www.the-cryosphere-discuss.net/tc-2019-325 (revise and submit).
5. **Ashokkumar**, Lavanya (2017). PhD thesis. Recent variability in Himalayan glacier dynamics using remote sensing. Swansea University, UK.
4. **Ashokkumar**, L., & Shanmugam, S. (2014). Hyperspectral band selection and classification of Hyperion image of Bhitarkanika mangrove ecosystem, eastern India. Proceedings Volume 9239, Remote Sensing for Agriculture, Ecosystems, and Hydrology XVI; 923914. https://doi.org/10.1117/12.2067483
3. **Lavanya, A**., & Sanjeevi, S. (2013). An improved band selection technique for hyperspectral data using factor analysis. Journal of the Indian Society of Remote Sensing, 41(2), 199-211. http://dx.doi.org/10.1007/s12524-012-0214-7
2. Suresh Kumar R., **Lavanya A.,** Vani K. and Sanjeevi S. (2012). Fusion based approach for automatic lunar-crater detection. Acta Futura: Journal of Advanced Concepts, 5, 163–172. http://dx.doi.org/10.2420/AF05.2012.163
1. Tamililakkiya, V, Vani K, **Lavanya A**, Anto M, (2011). Linear and non-linear feature extraction algorithms for lunar images. Signal & Image Processing. http://dx.doi.org/10.5121/sipij.2011.2414

Publications – In progress

- **Ashokkumar**, Lavanya and Harig, Christopher (2021). Global glacier mass loss rates under CMIP6 climate scenarios. (*In progress*)
- **Ashokkumar**, Lavanya., Harig, Chris and Holt, Jack (2021). Assessing the future mass loss rates from tidewater glaciers in Alaska using laser altimetry. AGU Earth surface. (*In progress*).

Non-peer reviewed proceedings

- **Ashokkumar,** L, Weinberg L, Zachary L, Schreiber E, Taitt, A and Dryak M (2022). "Progress and challenges by early career polar scientists (USAPECS) in addressing inclusivity, diversity, equity, and accessibility." AGU Fall Meeting 2022 (Oral).
- **Ashokkumar** (2021). Future projections of global sea-level estimates. Grace Anne Stewart Speaker Series, University of Alberta. Dec 2021. (Oral – Invited).
- **Ashokkumar** (2021). Global estimates of sea-level rates from glaciers. Women in Data Science -Tucson, University of Arizona. April 2021. (Oral - Invited).

- **Ashokkumar** (2021). Global estimates of glacier mass balance. Seminar series by the International Glaciological Society. March 2021. (Oral).
- **Ashokkumar,** Luckman, Harig, Kulessa and Bevan (2020). Contrasting response pattern between glacier dynamics and climate in the Himalayas. Northwest Glaciologists Meeting, University of Montana, Oct 2020. (Oral)
- **Ashokkumar** and Harig (2019). Regionally variable mass loss rates in Alaska and Canadian Archipelago under recent climate scenarios. Northwest Glaciologists Meeting, Oregon State University, Oct 2019. (Oral)
- **Ashokkumar** and Harig (2018). Regionally variable mass loss rates in Greenland estimated from GRACE and their link to observed and modelled climate. AGU Fall Meeting, Washington DC, Dec 10 – 14, 2018.
- **Ashokkumar**, Lavanya; Luckman, Adrian and Kulessa, Bernd (2015). Glacier dynamics in the Himalayas over the last four decades using satellite remote sensing. International Symposium on Glaciology in High-Mountain Asia. March 2015. (Oral)
- **Lavanya Ashokkumar**, Adrian Luckman and Bernd Kulessa (2014). Spatial and temporal dynamic change in Karakoram glaciers, IGS British branch meeting, Bristol, 2014.
- **Lavanya Ashokkumar**, Adrian Luckman and Bernd Kulessa (2013). Analysis of glacier velocities across Karakoram Himalayas over the past decade using Landsat 7– 8, IGS British branch meeting 2013, Loughborough UK.
- **Lavanya.A,** Sanjeevi.S and Vani. K. (2012). "Dimensionality Reduction of lunar hyperspectral data using Band Index and separability measures". Proceedings of National Symposium on Signal and Image Processing. Gandhigram Rural University. (Oral)
- **Lavanya, A**., Sanjeevi, S. and Vani, K. (2011). Hyperspectral Data Mining – A Feature Selection Technique for Mineral Abundance Mapping on the Lunar Surface. AI in Space: Intelligence beyond planet earth, IJCAI 2011, Spain.
- Suresh Kumar, R., **Lavanya, A**., Vani, K. and Sanjeevi, S. (2011). Texture Based Automatic Lunar-crater Detection and Mapping in Chandrayaan - 1, Image Data. AI in Space; Intelligence beyond planet earth, IJCAI 2011, Spain.
- Lavanya, A., & Suganya, B. (2006). "Hurricane Mapping and Damage Assessment". 9th International Conference and Exhibition on Geographical Information, Technology and Applications. Map India 2006, India (Oral).
- **Lavanya, A**., & Suganya, B. (2005). "Rehabilitation of wastelands in a drought prone area using remote sensing"**.** *AGNI 2005*. Awarded the Best Student paper. Anna University, India. (Oral).

Work experience

Lecturer   Sept 2022 - present
University of Alabama Huntsville
Courses taught: AES 103: Environmental Earth Science
AES 313: Intro to GIS.
AES 414/514: Applications in Geospatial technologies
AES 415/515: Advanced topics in GIS

Postdoctoral Research Associate   2018 – 2021
University of Arizona, Tucson AZ
Modeling the mass balance of glaciers using GRACE satellite
gravimetry.

Postdoctoral Researcher (Visitor status)   June 2017 – Feb 2018
Department of Geography, College of Science, Swansea University SA2 8P, UK
Time series analysis of glacier surge mechanism using Sentinel-1
dataset.

Research Associate   Nov 2012 – May 2017
Swansea University SA2 8P, UK

Teaching assistant   Oct 2016 – Dec 2016
GEG236: The Earth from Space: Monitoring Global Environmental Change
GEG208: Introduction to Geographic Information Systems
GEG111: Geographical Writing Skills and Personal Development Planning
GEG236: Approaches to Physical Geography – Talk about preparing for the undergrad
dissertation

Lecturer   June 2012 – Oct 2012
Sree Sastha Institute of Engineering and technology, Chennai, India
Courses taught: Basic civil engineering, engineering mechanics, computer programming and
surveying laboratory.

Junior Research Fellow   2010 – 2011
Anna University, Chennai 600025, India
- Worked on the project titled 'Feature extraction of lunar features using multi-sensor image fusion approaches', funded by the **Space application centre (ISRO, India)**.
- Major task included algorithm development for image fusion for better spatial interpretability and extraction of lunar features
- Processing of hyperspectral image dataset.

Software developer   2007 –2008
Cognizant technology solutions, Chennai, India

GIS Intern   2006 – 2007
Red planet consulting, Chennai, India
Developed a stand-alone mobile application using open-source GIS application
Efficient use of Dijkstra's algorithm to provide shortest path to the nearest hospital.

<u>Professional Membership</u>

Member of Geological Society of America   2020 - present
Member of American Geophysical Union   2018 – present
Member of International Glaciological Society, UK   2013 – 2017
Member of Indian Society of Remote Sensing   2011 - 2012

<u>Science outreach, leadership and service</u>

2022 - present   Co-chair at USAPCES (US Association of Polar Early Career Scientists)
ARCUS – Judge for Travel award for ECR.

2020 - 2021   SARSEF – Judge for Special Science category award for high school category, Tucson - invited
ARCUS – Judge for Travel award for ECR.

2019 - present	Mentorship co-coordinator of Association of Women Geoscientists, Southern Arizona Chapter.
	Board member of USAPECS
	Board member of IARPC Early Career group
	SARSEF – High School category judge in Earth science.
	Sam Hughes Elementary School – Judge/ organizer for the selection of best science projects.
2012 – 2017	PhD Commonwealth Scholar, Wales regional network member.
2006 – 2008	Member of Geoinformatics Engineer, Anna University.

Outreach grants and talk

a. Commission of Status of women, 2021 (**$1406**) – University of Arizona.

b. E-zen grant award for outreach activities, 2020 (**$1500**) – Geological Society of America.

c. Presentation, Science talks, active participation and member of Commonwealth Wales Regional Networks, UK (2012 – 2016).

d. Talk on 'Mass balance and glacier velocities in the Himalayas', College of Science Lecture series, Swansea University. March 2016. (Oral)

e. Talk on 'Tracking the dynamic nature of the Himalayan glaciers using Remote sensing' at Postgraduate Research Conference, Cardiff University, June 2014. (Oral)

f. Seminar on 'Recent techniques in remote sensing and GIS' at B.S. Abdur Rahman Crescent University, Chennai (2012) (Invited).