Lavanya Ashokkumar

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Address: Room 523, Gould Simpson building, Department of Geosciences,
University of Arizona, 1040 E. 4th Street Tucson, AZ 85721, USA

Educational qualifications

PhD - Glaciology and Remote sensing 2012 – 2017
Department of Geography, College of Science, Swansea University SA2 8P, UK
Thesis: Understanding long-term glacier dynamics in the Himalayas using satellite remote sensing.
Advisor: Prof Adrian Luckman, Prof Bernd Kulessa.

Master of Science – Remote sensing 2010 – 2012
Department of Civil Engineering, Anna University, Chennai, India
Thesis: Improved band selection and fusion of hyperspectral image data.

Bachelor's in engineering (Geo-Informatics) 2003 – 2007
Department of Civil Engineering, Anna University, Chennai, India

Publications

- **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*. Available for discussion in the Cryosphere. https://www.the-cryosphere-discuss.net/discussion_papers.html
- **Ashokkumar**, Lavanya and Harig, Christopher (2020). Global glacier mass loss rates under CMIP6 climate scenarios. (In progress)
- **Ashokkumar, L**., Harig, C, Luckman, A, Kulessa, B (2020). Long term dynamic observation indicate heterogeneity in the Himalayan glacier between 1991 and 2017. *AGU Geophysical Letters*. (In progress).
- **Ashokkumar**, Lavanya (2017). PhD thesis. Recent variability in Himalayan glacier dynamics using remote sensing. Swansea University, UK.

Before 2013

- **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
- **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.
- 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.
- **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.

Conference proceedings

- **Ashokkumar** and Harig (2018). 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.

Work experience

Postdoctoral Research Associate Mar 2018 – present
University of Arizona, Tucson AZ
Mass balance of ice-sheets and glaciers using GRACE dataset.

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 2012 – 2016
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 (Equivalent to teaching assistant) June 2012 – Oct 2012
Sree Sastha Institute of Engineering and technology, Chennai, India
Teaching instructor: Basic civil engineering, engineering mechanics, computer programming and surveying practical for the undergraduates.

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

Awards and grants

- NASA ROSES for High Mountain Asia (Co-PI with Dr Chris Harig) – Nov 2019 – Declined.
- Travel support by NASA and UW (**$1500**) for ICESat-2 Cryospheric Science Hackweek, University of Washington, Seattle, July 2019.
- **Commonwealth Scholarship and Fellowship** for PhD in Remote sensing, Commonwealth commission at the UK and MHRD, India (2012–2016). Funding for 3.5 years.
- 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).

Work experience

Teaching Oct 2016 – Dec 2016
Lab modules
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 (Equivalent to teaching assistant) June 2012 – Oct 2012
Sree Sastha Institute of Engineering and technology, Chennai 600123, India

- Taught two theory and lab practical which include Basic civil engineering, engineering mechanics, computer programming and surveying practical for the undergraduates.

Junior Research Fellow Oct 2010 – Oct 2011
Department of Information Science and technology, 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.

Programmer May 2007 – May 2008
Cognizant technology solutions, Chennai, India

- Maintenance and production support of Hartford financial system.
- Database management using SQL and front-end development using VB.net

GIS Intern Nov 2006 – April 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.

Professional Membership

Member of American Geophysical Union 2018 – present
Member of International Glaciological Society, UK 2013 - 2017

Science outreach and service

- Member of Arizona Women Geoscientists (March 2018 – present).
- Presentation, Science talks, active participation and member of Commonwealth Wales Regional Networks, UK (2012 – 2016).
- Talk on 'Mass balance and glacier velocities in the Himalayas', College of Science Lecture series, Swansea University. March 2016. (**Oral**) http://cs.swan.ac.uk/~cstneate/CoS_Talks/talks/costalks4.pdf
- Talk on 'Tracking the dynamic nature of the Himalayan glaciers using Remote sensing' at Postgraduate Research Conference, Cardiff University, June 2014. (**Oral**)
- Seminar on 'Recent techniques in remote sensing and GIS' at B.S. Abdur Rahman Crescent University, Chennai (2012) (**Invited**).