NEHA HUNKA
(maiden name: Neha Joshi)
ASSISTANT RESEARCH PROFESSOR, GEOGRAPHICAL SCIENCES,
UNIVERSITY OF MARYLAND, COLLEGE PARK

Dr. Neha Hunka is an Assistant Research Professor at the University of Maryland (UMD), College Park. She has a PhD from the University of Copenhagen in 2016 on the mapping of tropical forest loss and its spatio-temporal dynamics using radar satellites. At UMD, she coordinates efforts towards the harmonization of space-based forest carbon maps. A core goal of this research is to facilitate the understanding and uptake of such maps by countries for policy reporting within frameworks of the United Nations Framework Convention on Climate Change (UNFCCC). She has also previously been a scientific investigator for numerous European Space Agency (ESA) projects.

Notarization. I have read the following and certify that this *curriculum vitae* is a current and accurate statement of my professional record.

Signature Neha Hunka Date 03-15-2024

Employment

May 2022 – current	Assistant Research Professor	University of Maryland, College Park. 4600 River Road, Riverdale, 20737 MD, USA.
April 2016 – April 2022	Senior Remote Sensing Expert	GISAT s.r.o., Milady Horakove 57, 170 00 Praha 7, Czech Republic
August 2017 – August 2020	Post-doctoral Research Associate (part-time & consultancy-based)	International Institute for Applied Systems Analysis (IIASA), Schlossplatz 1. A-2361 Laxenburg Austria
January 2012 – December 2013	GIS and Remote Sensing Analyst	Ecometrica, Orchard Brae House, Edinburgh EH4 2HS, United Kingdom
September 2011 - December 2012	REDD+ Research Assistant	University of Edinburgh, The King's Buildings, Edinburgh EH9 3BF, United Kingdom

Educational Background

January 2013 – June 2016	PhD in Forest, Nature and Biomass	University of Copenhagen, Denmark
September 2010 – November 2011	Master of Science in Carbon Management	University of Edinburgh, United Kingdom
September 2007 – 4 June 2010	Bachelor of Science in Earth and Space Sciences	Jacobs University Bremen, Germany

Selected project experience

University of Maryland (2022 – current)

- Science-PI on NASA Carbon Monitoring Systems grant: Harmonizing Biomass Maps with Policy Needs: Development of National Prototypes for the Global Stocktake (see https://cce-datasharing.gsfc.nasa.gov/cmsprojects/list/h/0/#current2022)

- Co-I on NASA Earth observation-based restoration and monitoring in Coastal and Forested Protected Areas of West Africa grant (see https://cce.nasa.gov/cgi-bin/bio/pi_list.pl?project_group_id=3863)

- Co-I on NASA Continued Scientific and Data Support of the NASA/ESA Multi-Mission Algorithm and Analysis grant (see https://www.earthdata.nasa.gov/esds/maap)

Private Sector employment (2016 – 2022)

- Technical Project Manager for ESA's Sentinel-1 for Science Amazonas project, with aims to develop, test and validate an operational-level multi-temporal forest change detection algorithm using interferometric SAR time series (http://project.gisat.cz/s14scienceAmazonas/).

- Designing and implementing operational algorithms for the accurate and timely monitoring of agriculture cycles across Europe using Sentinel-1 backscatter and coherence datasets for the ESA SEN4CAP (http://esa-sen4cap.org/) and DROMAS (https://www.czechspace.cz/en/dromas) project.

- Developing methods and the demonstration of a QGIS plugin for the collection of unbiased statistics on cropland areas for the GEOGLAM SIGMA (https://cordis.europa.eu/project/id/603719) project.

- Development of a capacity building plan for training in GIS and remote sensing for urban applications in the ESA EO4SD (http://eo4sd.esa.int/) project.

Workshops and Teaching Activities

February 2022	Capacity building workshops on the use of space-based biomass maps for policy at the USGS SilvaCarbon 2023 CEOS Workshop on Uptaking Global AFOLU Datasets (https://sites.google.com/site/gfoiseasiacapacitybuilding/gistda-silvacarbon-2023-ceos-workshop-on-uptaking-global-afolu-datasets)
July 2018	Course instructor at SPatial LITeracy 2018 on Synthetic Aperature Radar (SAR) for land-cover mapping (https://splitremotesensing.com/split-2018/)
November 2017	Course instructor for Practical Use of SAR technologies at Agresta S. Coop. (https://agresta.org/)
January 2013 – March 2016	Introduction to Radar and LiDAR Remote Sensing course (Bachelors and Masters-level course) at the University of Copenhagen

Publications and Conference Proceedings

Selected peer-reviewed Publications

Neha Hunka, Maurizio Santoro, John Armston, Ralph Dubayah, Ronald McRoberts et al. (2023). On the NASA GEDI and ESA CCI biomass maps: aligning for uptake in the UNFCCC global stocktake. In Environmental Research Letters (Vol. 18, Issue 12, p. 124042).

Neha Joshi, Edward T. A. Mitchard, Matthew Brolly, Johannes Schumacher, Alfredo Fernández-Landa, et al. (2016). Understanding 'saturation' of radar signals over forests. Scientific Reports, 8, 3505.

Neha Joshi, Matthias Baumann, Andrea Ehammer, Rasmus Fensholt, et al. (2016). A Review of the Application of Optical and Radar Remote Sensing Data Fusion to Land Use Mapping and Monitoring. Remote Sensing, 8, 70. Received the **MDPI Remote Sensing 10th Anniversary Best Paper Award** (https://www.mdpi.com/2072-4292/11/15/1790/htm)

Neha Joshi, Edward TA Mitchard, Natalia Woo, Jorge Torres, et al. (2015). Mapping dynamics of deforestation and forest degradation in tropical forests using radar satellite data. Environmental Research Letters, 10 034014.

Neha Joshi, Edward TA Mitchard, Johannes Schumacher, Vivian Kvist Johannsen, et al. (2015). L-Band SAR Backscatter Related to Forest Cover, Height and Aboveground Biomass at Multiple Spatial Scales across Denmark. Remote Sensing, 7, 4442-4472.

Casey M Ryan, Nicholas J Berry, **Neha Joshi**, (2014). Quantifying the causes of deforestation and degradation and creating transparent REDD+ baselines: A method and case study from central Mozambique. Applied Geography, 53, 45-54.

Alasdair JR Rideout, **Neha Joshi**, Karin M Viergever, Mark Huxham, and Robert A Briers (2013). Making predictions of mangrove deforestation: a comparison of two methods in Kenya. Global Change Biology, 19(11).

Public Code Repositories:

Neha Hunka, Paul May and Laura Duncanson (2023) Comparison of NFI-based and EO-based mean forest biomass estimates: Fay-Herriot small area estimation. Zenodo Version 1.0. https://doi.org/10.5281/zenodo.10137632

CEOS Biomass Harmonization:

- Generation of IPCC Tier 1 biomass estimates for natural forests from GEDI and ESA CCI data: https://repo.maap-project.org/lduncanson/biomass_harmonization/-/tree/master/Hunka_2024_NSD
- EO-based biomass estimates for any country: https://repo.maap-project.org/lduncanson/biomass_harmonization/-/tree/master/country_summaries
- Comparison of global biomass maps: https://repo.maap-project.org/lduncanson/biomass_harmonization/-/tree/master/Hunka_2023_ERL

- Integration of NFI data with biomass maps, example of Mexico: https://repo.maap-project.org/lduncanson/biomass_harmonization/-/tree/master/NASA_CMS_2023/Mexico

Published preprints:

Neha Hunka, Laura Duncanson, John Armston, R Dubayah, Sean Healey, Maurizio Santoro, Paul May et al. (in review). Intergovernmental Panel on Climate Change (IPCC) Tier 1 forest biomass estimates from Earth Observation. Submitted to Nature Scientific Data, Pre-print at Authorea, Inc. https://doi.org/10.22541/au.170958900.06861359/v1

Book Chapters

Neha Joshi (2016). Nuts about Gold: Competition for land in Madre de Dios, Peru. Chapter 7 in Niewöhner J, Bruns A, Haberl H, Hostert P, Krüger T, Lauk C, Lutz J, Müller D, Nielsen J (eds) Land use competition. Ecological, economic and social perspectives. Human-Environment Interactions. Springer, Dordrecht (https://link.springer.com/chapter/10.1007/978-3-319-33628-2_7)

Published Project Reports

Sophie Bontemps, **Neha Joshi**, Nicolas Bellemans, Philippe Malcorps, Corrado Avolio, Katja Bajec, Cosmin Cara, Laura de Vendictis et al. (2019). Sen4CAP - Sentinels for Common Agricultural Policy Design Justification File ATBD for L4C agricultural monitoring product (http://esa-sen4cap.org/sites/default/files/Sen4CAP_DDF_v1.2_AgriPractices.pdf)

Conference Proceedings and Refereed Presentations

Inian Moorthy**, Neha Joshi**, Muhammad Zulkarnain, Andree Ekadinata, et al. (2019). Validating maps of land cover and land degradation with citizen science and mobile gaming. In: XXV IUFRO World Congress, 29 September-5 October 2019, Curtitiba, Brazil.

Sophie Bontemps, Pierre Defourny, Nicolas Bellemans, Philippe Malcorps, Corrado Avolio, Katja Bajec, Cosmin Cara, Laura de Vendictis, **Neha Joshi** et al. (2019). Sen4CAP – Supporting the CAP Reform Using Sentinel-1 and -2 For Agriculture Monitoring. From Agriculture Mapping to Monitoring: CAP monitoring (4). In: Living Planet Symposium 2019, Milan, Italy.

Neha Joshi, Edward TA Mitchard (2015). Deforestation and forest degradation in tropical forests using ALOS PALSAR. In: The 2nd PI Workshop for ALOS-2. Tokyo, Japan.

Neha Joshi, Edward TA Mitchard, Johannes Schumacher, Vivian Kvist Johannsen, et al. (2014). Multiple Spatial Scale Analysis Of L-Band SAR Backscatter Relation to Vegetation Cover and Aboveground Biomass. In: IEEE IGARSS & 35th Canadian Symposium on Remote Sensing 2014, Quebec, Canada.

Reviewing Activities for Journals

Special Issue Editor for MDPI Remote Sensing "Forest Biomass and Carbon Observation with Remote Sensing"(https://www.mdpi.com/journal/remotesensing/special_issues/Forest_Biomass_Carbon_Observation)

Scholarships, Research Fellowships and Awards

MDPI Remote Sensing 10th Anniversary Best Paper Award (USD 400)
(https://www.mdpi.com/2072-4292/11/15/1790/htm)

Doctoral research fellowship, University of Copenhagen (USD 540,000)

Post-graduate fellowship grant (USD 7000)

Full-scholarship for Bachelors study, University of Bremen (USD 53,000)

Member of President's List for Academic Excellence, University of Bremen

Full-scholarship for IB Studies, United World College (USD 30,000)