Dhritiraj Sengupta, Ph.D.

State Key Laboratory of Estuarine and Coastal Research, East China Normal University, 500, DongChuan Road, Shanghai, China. dhritiraj@sklec.ecnu.edu.cn. Website: https://dhritirajsen.github.io/spatially-Enabled/index.html

RESEARCH EXPERIENCE

Postdoctoral Research Fellow, State Key Laboratory of Estuarine and Coastal Research, East China Normal University (2020-present)

- Investigating long term coastal change and habitat loss due to land reclamation in major cities
- Analysis of remote sensing data along with machine learning application for coastal conservation
- Successful accomplishment of research objectives within funding timelines
- Publishing of scientific papers in peer-reviewed journals to support the research program
- Regular attendance and presenting of results at national and international meetings to disseminate and promote the research

PhD Research, School of Geographic Sciences, East China Normal University (2016-2020)

- Understanding the spatial patterns of urban expansion at the coast.
- Mapping spatial patterns and trends of coastal land reclamation at 3 levels viz global, regional and national scales.
- Application of automatic and adaptive thresholding method for mapping long term coastline changes
- Gaining expertise in a broad range of big data and remote sensing application

Research Trainee. Department of Environmental and Geographical Sciences (EGS), University of Cape Town, South Africa. (2018)

- Got trained in academic research writing from Prof. Michael Meadows
- Delivered workshop on “Getting started with Google Earth Engine”
- Participated in 2018 Macalester-Promona-Swarthmore Consortium Field Excursion to Kalahari Trans-boundary national park.

RELEVANT RESEARCH SKILLS

- Time series analysis using Normalized Difference indices in Google Earth Engine
- Statistical analysis using SPSS and MATLAB for significance and trend estimation in long term observation.
- Use of Sentinel-1 SAR data to map off-shore marine objects and coastal land subsidence.
- Use of DJI RTK drone to map coastal structures and retrieve high resolution Digital Elevation Models (DEM)
- Cartographic applications in QGIS and ArcGIS.

AWARDS

- 2016-2020-The Chinese government scholarship (CSC)
- 2020-International Geographical Union Travel Grant (2020) to attend the IGU General Assembly in Istanbul 2021.
- 2018 & 2019- Awarded the ECNU (East China Normal University) Excellent International Student Scholarship Academic Award.
- (2017 and 2018) Full Scholarship to participate in the International Geoinfomatics Summer School, State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, China.

EDUCATION

East China Normal University (2016-2020)
PhD Natural Sciences (Physical Geography): Cities from the sea; Mapping Spatial Patterns and Trends of Coastal Land Reclamation

University of Mysore (2014-2016)
MA (First Class) Geographical Sciences

University of Pune (2011-2014)
BA (First class with distinction) Geography

TEACHING EXPERIENCE

Teaching Assistant, East China Normal University (2020-2022)

- Delivering practical sessions for courses in Coastal Zone Remote Sensing Technology and Application for groups of up to 10 graduate students
- Responsible for prior-assessment of curriculum, development of suitable resources in collaboration with Prof. Bo Tian, organisation and delivery of sessions and coursework marking and feedback.

Mentor/Supervisor, State Key Laboratory of Coastal and Estuarine Studies (2020-2022)

- Training graduate students in practical techniques of geoscience fieldwork.
- Supervising one graduate student on developing new techniques in mapping coastal aquaculture ponds using advanced machine learning techniques on satellite imageries

Facilitator, Jamia Millia Islamia University, New Delhi (2020)

- Capacity building through Geo-spatial Techniques
- Hands-on Training on Google Earth Engine for Earth Observation

ADDITIONAL RELEVANT EXPERIENCE

Guest Lectures, (2020/2021)

- Guest lecture on Geography Theory and Practice', a part of BSc (Hons) Geography, Urban Environments and Climate Change. School of Architecture and Built Environment. The University of Wolverhampton. The United Kingdom.
- Guest lecture on 'Cities from the sea; an introduction to coastal land reclamation. Department of Global & Sociocultural Studies Steven J. Green School of International and Public Affairs Florida International University. USA.

Facilitator, IGU biodiversity and biogeography commission (2020)

- Delivered online webinar on basics of cloud computing for remote sensing applications using Google Earth Engine (https://www.youtube.com/watch?v=xqyUrPyT0QQ)

ADDITIONAL SKILLS & COURSES

51st Short course on MATLAB Recipes for Earth Sciences (University of Potsdam. Germany, 2020) - a one week online course on application of MATLAB in earth science research. This involved making 3D DEMs,

performing statistical equations

International summer school on the governance of socio-ecological systems exploring the land-ocean continuum: coastal zones, river deltas, islands and wetlands. (School of geographical sciences, East China Normal University, Shanghai, China. July, 2019)

International Geoinfomatics Summer School on SAR and DEM image creation; State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, Wuhan. (July 2018)

SCIENTIFIC AND SOCIETAL IMPACT

Fellow: Future Earth Coasts (https://www.futureearthcoasts.org/fellows/)

SC Member: Commission on Coastal System, International Geographical Union (IGU) (http://igu-coast.org/)

Board Member: Young Geographer Working Group (YGWG) Asian Geographical Association (AGA) (http://www.aga-ygwg.com/)

NASA Earth Observatory blog- https://earthobservatory.nasa.gov/images/145968/the-expansion-of-shanghai

Shanghai Garbage Sorting initiative- https://www.shine.cn/news/metro/1906066162/

PUBLICATIONS

2021:- **Sengupta D**, Choi YR, Tian B, Brown S, Li Y, Hackney C, Banerjee A, Chen R, Meadows ME, Zhou Y. Satellite data reveal new patterns of 21st century global coastal land reclamation. In Preparation.

2021:- Zhang, T., Tian, B., **Sengupta, D**. et al. Global offshore wind turbine dataset. Sci Data 8, 191. https://doi.org/10.1038/s41597-021-00982-z

2021:- Duan Y, Tian B, Li X, Liu D, **Sengupta D,** Wang Y, Peng Y, Tracking aquaculture ponds changes on China coast using 30 years of Landsat images. International Journal of Applied Earth Observations and Geoinformation 102. 102383 https://doi.org/10.1016/j.jag.2021.102383

2021 :- Machiwa H, Tian B, **Sengupta D**, Chen Q, Meadows ME, Zhou Y Vegetation dynamics in response to human and climatic factors in the Tanzanian Coast. Frontiers of Earth Science. (Accepted; In press)

2021:- Jia J, Zhang X, Zhou R, Meadows ME, **Sengupta D** and Zhu L Sediment sources of tidal flats in the Zhejiang coastal area of southeast China.Journal of Oceanology and Limnology. 39(4), 1245-1255, https://doi.org/10.1007/s00343-020-0179-2

2021:- Banerjee B, Chen R, Meadows ME, **Sengupta D**, Pathak S, Zilong X and Mal S. Recent climate dynamics of the Third Pole: analysis of topo- climate impacts on snow cover in the central Himalaya (2000-2018) using Google Earth Engine. Journal of Applied Earth Observations and Geoinformation. 103, 1 https://doi.org/10.1016/j.jag.2021.102490

2020:- **Sengupta D**, Chen R, Meadows ME, Banerjee, A. Gaining or losing ground? Tracking Asia's hunger for 'new' coastal land in the era of sea level rise. Science of the Total Environment 732: 13920 https://doi.org/10.1016/j.scitotenv.2020.139290

2020:- Banerjee A, Chen R, Meadows ME, Singh RB, Mal S and **Sengupta D**. A critical appraisal of long-term rainfall variability in Uttarakhand Himalaya using Google Earth Engine. Remote Sensing 12: 709. https://doi.org/10.3390/rs12040709

2019:- Wu, Z., Chen R and Meadows ME and **Sengupta, D** 2019: The change of urban green spaces in Shanghai: trends, drivers and policy implications. Land Use Policy 87: 104080. https://doi.org/10.1016/j.landusepol.2019.104080

2019:- **Sengupta, D**, Chen R, Meadows ME, Choi, YR, Banerjee, A and Xia, Z. Mapping trajectories of coastal land reclamation in nine deltaic megacities using Google Earth Engine. Remote Sensing 11: 2621. https://doi.org/10.3390/rs11222621

2018:- **Sengupta, D**, Meadows ME and Chen R Building beyond land: coastal land reclamation and urban expansion. Applied Geography 90: 229-238. https://doi.org/10.1016/j.apgeog.2017.12.015

Book Chapters

2018:- Das A, Kimoto K, Kumar MR, Umakanth R, **Sengupta D**, Vishwanth HR, Landuse Sustainability of agricultural zones, in Exploring Sustainable Land Use in Monsoon Asia. Springer Geography Publication (103-135).

2018:- Das A, Kimoto K, Jabir K, **Sengupta D**, Shriharsha BS, Ravikumar M . Urban land use land cover change, in sustainability of agricultural zones, in Exploring Sustainable Land Use in Monsoon Asia. Springer Geography Publication (175-189).

CONFERENCE PAPERS

Sengupta. D. Mapping Trajectories of Coastal Land Reclamation in Nine Deltaic Megacities using Google Earth Engine. Virtual International Geographical Union Congress, Istanbul, 16th to 19th August 2021

Sengupta. D. Global coastal land dynamics in the age of sea level rise: gaining ground or losing ground?. Asia Conference on Geography, Sun Yat Sen University, 24th - 26th December 2018.

REFEREES

Prof Michael E Meadows, University of Cape Town, South Africa, michael.meadows@uct.ac.za

Prof. Ruishan Chen, Professor, Shanghai Jiao Tong University, chenrsh04@gmail.com