

ABHISHEK KUMAR

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EDUCATION

- **August 2015 – Present**
 - University of Georgia (*Doctoral Degree*), Athens, Georgia, USA
 - Education Major(s): *Geography*
 - Dissertation Topic: An integrated approach to utilize multi-platform data for monitoring cyanobacterial harmful algal blooms in inland and coastal waters.
- **July 2014 – June 2015 (Continuation in UGA)**
 - National Institute of Technology, Rourkela (*Doctoral Degree*), Odisha, India
 - Education Major(s): *Earth and Atmospheric Sciences*
 - Dissertation Topic: Integrated approach of in-situ and satellite remote sensing for long-term monitoring of variability in water quality parameters of Chilika Lagoon, India.
- **August 2012 – June 2014**
 - National Institute of Technology, Rourkela (*Master's Degree*), Odisha, India
 - Education Major(s): *Mining Engineering*
 - Thesis Topic: Monitoring spatial and temporal variation of total suspended sediment in Chilika Lagoon using MODIS/Terra satellite imagery.
- **September 2008-July 2012**
 - NM Institute of Engineering & Technology, Bhubaneswar (*Bachelor's Degree*), Odisha, India
 - Education Major(s): *Electronics & Communication Engineering*
 - Project Topic: Camera based interactive wall display.

RESEARCH INTERESTS

- Application of remote sensing (field, satellite, unmanned aerial vehicle, radar) and geospatial science in water resources, mangrove forests, vegetation, and climate change studies.
- Empirical, semi-analytical, quasi-analytical modelling and algorithm development.
- Short-term and long-term impact assessment of natural hazards (hurricane, rainstorms) on inland and coastal environments.

PEER REVIEWED PUBLICATIONS

- **Kumar, A.**, D.R. Mishra, and N. Ilango. 2020. Landsat 8 virtual orange band for mapping cyanobacterial bloom. *Remote Sensing*, 12(5): 868.
- Mishra, D.R., **A. Kumar**, L. Ramaswamy, V. Bodulla, M. Das, B. Page, and S. Weber. 2020. CyanoTRACKER: A cloud-based integrated multi-platform architecture for global observation of cyanobacterial harmful algal blooms. *Harmful Algae (In Revision)*.
- Miller, P., T.L. Mote, **A. Kumar**, and D.R. Mishra. 2019. Systematic precipitation redistribution following a strong hurricane landfall. *Theoretical and Applied Climatology*, 1-12.
- **Kumar, A.**, C. Cooper, C. Remillard, S. Ghosh, A. Haney, F. Braun, Z. Conner, B. Page, K. Boyd, S. Wilde, and D.R. Mishra. 2019. Spatio-temporal monitoring of hydrilla to aid management actions. *Weed Technology*, 33(3): 518-529.
- Miller, P.W., **A. Kumar**, T.L. Mote, F.D.S. Moraes, and D.R. Mishra. 2019. Persistent hydrological consequences of Hurricane Maria in Puerto Rico. *Geophysical Research Letters*, 46: 1413-1422.
- Shrestha, S., I. Miranda, **A. Kumar**, M. Pardo, S. Dahal, T. Rashid, C. Remillard, and D.R. Mishra. 2019. Identifying and forecasting potential biophysical risk areas within a tropical mangrove ecosystem using multi-sensor data. *International Journal of Applied Earth Observations & Geoinformation*, 74: 281-294.
- Mishra, D.R., L. Ramaswamy, **A. Kumar**, S. Bhandarkar, V. Boddula, and S. Narumalani. 2018. A Multi-

Cloud Cyber Infrastructure for Monitoring Global Proliferation of Cyanobacterial Harmful Algal Blooms. IEEE International Geoscience and Remote Sensing Symposium (**IGARSS 2018**).

- Page, B., **A. Kumar**, and D.R. Mishra. 2018. A novel cross-satellite based assessment of the spatio-temporal development of a cyanobacterial harmful algal bloom. *International Journal of Applied Earth Observation & Geoinformation*. 66: 69-81.
- **Kumar, A.**, P. Stupp, S. Dahal, C. Remillard, R. Bledsoe, A. Stone, C. Cameron, G. Rastogi, R. Samal, and D. R. Mishra. 2017. A multi-sensor approach for assessing mangrove biophysical characteristics in coastal Odisha, India. Special issue of 'Remote Sensing' in *Proceedings of the National Academy of Sciences*, India Section A: Physical Sciences, 1-22
- **Kumar, A.**, D.R. Mishra, S. Equeenuddin, H. J. Cho and G. Rastogi. 2017. Differential Impact of Anniversary Severe Cyclones on the Water Quality of a Tropical Coastal Lagoon. *Estuaries and Coast*. 40(2): 317-342.
- **Kumar, A.**, S. Equeenuddin, D.R. Mishra and B.C. Acharya. 2016. Remote monitoring of sediment dynamics in a coastal lagoon: Long-term spatio-temporal variability of suspended sediment in Chilika. *Estuarine Coastal and Shelf Science*. 170: 155-172.
- Srichandan, S., J.Y. Kim, **A. Kumar**, D.R. Mishra, P. Bhadury, P.R. Muduli, A.K. Pattnaik and G. Rastogi. 2015. Interannual and cyclone-driven variability in phytoplankton communities of a tropical coastal lagoon. *Marine Pollution Bulletin* 101(1): 39-52.

BOOK CHAPTER

- **Kumar, A.**, D. R. Mishra, and Sk. Md. Equeenuddin. 2019. Long-Term Analysis of Water Quality in Chilika Lagoon and Application of Bio-optical Models for Cyclone Impact Assessment. In: C. Max Finlayson, G. Rastogi, M. Suar, D. R. Mishra, and A. Pattnaik (eds.) Ecology, Conservation, and Restoration of Chilika Lagoon, India, **Springer**, Switzerland (<https://www.springer.com/gp/book/9783030334239>).

PRESENT AND PAST PROJECTS

- **August 2015 – Present**
“CyanoTRACKER” a National Science Foundation (NSF) Project: “A multi-cloud framework to integrate community observations and remote sensing measurements for early detection of cyanobacterial harmful algal blooms in inland waterbodies of Georgia”. My responsibility in this project is to process and analyze the remote sensing data for cyanobacterial harmful algal bloom detection, quantification, and monitoring. Also, I maintain CyanoTRACKER official website, and social media platforms.
- **September 2016 – August 2017**
NASA DEVELOP (Eastern India Ecological Forecasting I, II, & III): “A Multi-Sensor Approach to Enhance the Prediction of Mangrove Biophysical Characteristics in Bhitarkanika Wildlife Sanctuary and Chilika Lagoon, Odisha, India”. I was the project lead for this three-term project and the team was able to produce two publications out of this project.
- **September 2017 - November 2017**
NASA DEVELOP (Miami Beach Urban Development): “Utilizing NASA Earth Observations to Assess Sea Level Rise and Develop Optimal Green Infrastructure Plans to Restore Mangrove Habitat and Enhance Coastal Resiliency”. In this project I analyzed 30 years of Landsat data to quantify Mangrove spatial extent near Miami Beach and isolate the impacts of severe weather events such as Hurricanes.
- **June 2016 - August 2016**
NASA DEVELOP (Southeast Ecological Forecasting –III): “Utilizing NASA Earth Observations and Proximal Remote Sensing for Mapping the Spatio-Temporal Distribution of *Hydrilla verticillate*”. I was the only remote sensing team member on this project and successfully completed the project. Recently, the work from this project was published in *Weed Technology*.

CONFERENCE PRESENTATIONS/POSTER

- **Kumar, A.** and D.R. Mishra. 2019. A multi-sensor approach for monitoring cyanobacterial harmful algal blooms in a large subtropical lake. **Coastal and Estuarine Research Federation (CERF)-2019**, November 03-07, 2019, Mobile, Alabama, USA.

- **Kumar, A.**, C. Maniyar, and D.R. Mishra. 2019. A cloud-based approach for continuous monitoring of cyanobacterial harmful algal blooms using Sentinel 3-OLCI data. **ASPRS-PECORA21:ISRE38**, October 06-11, 2019, Baltimore, Maryland, USA.
- Mishra D., **A. Kumar**, G. Rastogi, and S. Narulmalani. 2019. A multi-sensor technique for monitoring cyanobacterial harmful algal blooms in freshwater lake and brackish water lagoon. **IEEE Geoscience and Remote Sensing Society (IGARSS)**, July 28-August 2, 2019, Yokohama, Japan.
- **Kumar A.**, Mishra, D.R., L. Ramaswamy, and V. K. Boddula. 2019. CyanoTRACKER: A multi-cloud cyber infrastructure for monitoring global proliferation of cyanobacterial harmful algal blooms. **AAG Annual Meeting**, April 3-7, 2019, Washington, DC.
- **Kumar, A.**, D.R. Mishra, and B. Page. 2018. Adapting current state of art: A multi-sensor approach for monitoring cyanobacterial harmful algal blooms along freshwater-marine continuum. **Ocean Optics XXIV**, October 7-12, 2018, Dubrovnik, Croatia.
- **Kumar, A.**, D.R. Mishra, B. Lamb, and B. Liu. 2018. Multi-platform sensor data fusion for estimating the inherent and apparent optical properties in Oligo-to-Mesotrophic waters. **Ocean Sciences Meeting**, February 11-16, 2018, Portland, Oregon.
- **Kumar, A.**, D.R. Mishra, R. Bledsoe, C. Cameron, S. Dahal, C. Remillard, A. Stone, and P. Stupp. 2017. A Multi-Sensor Approach to Enhance the Prediction of Mangrove Biophysical Characteristics in Chilika Lagoon and Bhitarkanika Wildlife Sanctuary, Odisha, India. **AGU Fall Meeting**, December 11-15, 2017, New Orleans.
- **Kumar, A.**, C. Cooper, S. Ghosh, A. Haney, F. Braun, Z. Conner, and D.R. Mishra. 2017. Utilizing NASA Earth Observations and Proximal Remote Sensing for Mapping the Spatio-Temporal Distribution of *Hydrilla verticillate*. **AAG Annual Meeting**, April 5-9, 2017, Boston, Massachusetts.
- **Kumar, A.**, D.R. Mishra, S. Equeenuddin, and G. Rastogi. 2016. Tale of two cyclones: Differential Impact of Phailin and Hudhud on Chilika Lagoon. **National Symposium on Tropical Meteorology: Climate Change and Coastal Vulnerability**, Odisha, India, December 18-21, 2016.
- **Kumar, A.**, D. Mishra, and Sk. Equeenuddin. 2016. Differential impact of anniversary severe cyclones on a tropical coastal lagoon. **AAG Annual Meeting**, March 29 – April 2.
- **Kumar, A.**, S. Equeenuddin, D.R. Mishra, and B.C. Acharya. 2014. Variability of total suspended sediment in Chilika Lake during Phailin using MODIS/Terra. **ISPRS TC VIII Mid-Term Symposium on “Operational Remote Sensing Applications: Opportunities, Progress and Challenges”** 9-12 December, 2014-Hyderabad, India.

AWARDS AND SCHOLARSHIPS/FELLOWSHIPS

- Summer Doctoral Research Fellowship-2019 (\$3500): University of Georgia
- AAG-2019 RSSG Student Illustrated Paper award (1st Place) (\$300): AAG-2019, Washington, DC.
- Foreign travel assistance award (\$1200): Ocean Optics conference-2018, Dubrovnik, Croatia.
- Early career scientist travel award (\$500): Ocean Sciences Meeting-2018, Portland, Oregon.
- Selected among 20 students worldwide for Ocean Optics training (Summer-2017), funded by NASA.
- DEVELOPErs of the term (Recognition Award): NASA DEVELOP (Fall-2017) among 102 participants.
- AGU Fall-2017 conference travel award (\$1400): NASA DEVELOP National Program.
- AAG-2017 conference travel award (\$1700): NASA DEVELOP National Program.
- Best Poster Presentation Award (Recognition Award): National Symposium on Tropical Meteorology: Climate Change and Coastal Vulnerability. Bhubaneswar, Odisha, India, December 18-21, 2016.
- Graduate Research Fellowship, Department of Earth and Atmospheric Sciences, National Institute of Technology Rourkela, India (2014).
- Institute Silver Medal (Recognition Award) for being Topper of Master’s batch (2012-14), National Institute of Technology Rourkela, India (2014).
- Graduate Research Fellowship, Department of Mining Engineering, National Institute of Technology Rourkela, India (2012).

ACADEMIC/PROFESSIONAL POSITIONS

- Teaching Assistant, Department of Geography, UGA (August 2018-Present)
- Research Assistant, Department of Geography, UGA (August 2015 – Present).

- Project Lead, *University of Georgia*, *CyanoTRACKER* (<http://cyanotracker.uga.edu/>): NSF project.
- Project Lead, Eastern India Ecological Forecasting Group III, NASA Develop National Program, *University of Georgia* (June 2017 – August 2017).
- Project Lead, Eastern India Ecological Forecasting Group II, NASA Develop National Program, *University of Georgia* (January 2017 – March 2017).
- Project Lead, Eastern India Ecological Forecasting Group I, NASA Develop National Program, *University of Georgia* (August 2016 – November 2016).
- Member Consultant, Southeast US Ecological Forecasting Group III, NASA Develop National Program, *University of Georgia* (June 2016 – August 2016).
- Research Assistant, Department of Earth and Atmospheric Sciences, *National Institute of Technology Rourkela*, Rourkela, India (July 2014 – June 2015).

OTHER ACTIVITIES

- Reviewed manuscripts from various international journals (ISPRS journal of photogrammetry and remote sensing, *Water Research*, *Remote Sensing*, *International Journal of Remote Sensing*, *Remote Sensing Letters*, *Agriculture and Forest Meteorology*). Reviewer profile page link (<https://publons.com/researcher/1316047/abhishek-kumar>).
- Participated in organizing a workshop for creating awareness about harmful algae bloom at Oconee County High School, Watkinsville, Athens, Georgia (September-2016).
- Provided satellite image processing training to NASA DEVELOP participants.
- Volunteered flood mapping using satellite data for Cloud to Street Company.
- Provided materials to NASA related to Cyanobacterial Harmful Algal Blooms to prepare news articles, media highlights, and special issues (<https://landsat.gsfc.nasa.gov/satellites-on-toxic-algae-patrol/>).
- Provided materials to NASA to prepare image of the day map for hydrilla (<https://earthobservatory.nasa.gov/images/89385/mapping-a-tenacious-invader-in-lake-thurmond>).

WEBSITE LINKS

- Google Scholar (<https://scholar.google.com/citations?user=3CurrjUAAAAJ&hl=en>)
- LinkedIn (<https://www.linkedin.com/in/abhishek-kumar-49348b143/>)
- ResearchGate (https://www.researchgate.net/profile/Abhishek_Kumar412)
- Publons (<https://publons.com/researcher/1316047/abhishek-kumar>)
- CyanoTRACKER (<http://cyanotracker.uga.edu/>)
- Geography Department UGA (<https://geography.uga.edu/directory/people/abhishek-kumar-0>)