MUHAMMAD BILAL

[Jiangsu Distinguished Professor]

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Profile: I earned my Ph.D. degree in 2014 from the Hong Kong Polytechnic University (PolyU), Hong Kong. I have the honor to be the first Pakistani (out of 300 applicants from Pakistan) who was selected for the prestigious Hong Kong Ph.D. Fellowship in the pioneer batch of 2010. From 2014 to 2017, I worked as a Postdoctoral Fellow at PolyU, Hong Kong. In October 2017, I joined Nanjing University of Information Science and Technology as a Professor. In October 2018, the Jiangsu Provincial Education Department conferred me the special title of "Distinguished Professor" based on my outstanding research achievements. I have developed three robust methods, i.e., (i) **Simplified Aerosol Retrieval Algorithm (SARA)**, (ii) **Simplified Merge Scheme (SMS)**, and (iii) **Simplified and Robust Surface Reflectance Estimation Method (SREM)**. For more detail, please visit my following Research Profiles:

https://publons.com/researcher/1093783/muhammad-bilal/

https://www.researchgate.net/profile/Muhammad_Bilal_phd

https://orcid.org/0000-0003-1022-3999

Education

✳ **Ph.D. [Remote Sensing]:** The Hong Kong Polytechnic University, Hong Kong [07/2010–01/2014]
Thesis Title: Monitoring of fine particulates in Hong Kong and Pearl River Delta region using Remote Sensing.

✳ **MS [Meteorology & Remote Sensing]:** COMSATS University Islamabad, Pakistan [09/2008–04/2010]
Thesis Title: Monitoring of fine particulates in Hong Kong and Pearl River Delta region using Remote Sensing.

✳ **BSc (Hons.) [Space Science]:** University of the Punjab (PU), Lahore, Pakistan [01/2004–02/2008]

Research Interests

✳ Aerosol Remote Sensing
✳ Estimation of $PM_{2.5}$ and PM_{10}
✳ Dust Storm Monitoring and Air Quality Modeling
✳ Snow Cover Mapping

✳ Aerosol Optical Depth Inversion
✳ Atmospheric Correction
✳ Water Quality Monitoring
✳ Snowmelt Runoff Model (SRM)

Distinctions & Awards

Awards	Organization	Month/Year
✳ Jiangsu Distinguished Professor	Jiangsu Provincial Department of Education, China	[06/2018]
✳ Top Peer Reviewer	Publons – is part of Web of Science Group	[09/2017, 2018]

✳ Hong Kong Ph.D. Fellowship	Research Grants Council (RGC), Hong Kong	[07/2010–07/2013]
✳ Excellent Poster Award	Chinese University of Hong Kong	[10/2013]
✳ MS Merit Scholarship	COMSATS University Islamabad, Pakistan	[SEP 2008-MAR 2010]
✳ BSc (Hons) Merit Scholarship	University of the Punjab, Lahore, Pakistan	[03/2005, 2006, 2007]

Research Projects

	Role	Title	Grant No.	Funds	Period
✳	PI	Special project of Jiangsu Distinguished Professor	1421061801003	1M ChineseRMB	[2018-2021]
✳	Co-PI	Research Capability Grant of King Khalid University	RGP2/54/40	190K Saudi Riyal	[2018-2019]

Work Experience

	Title	Employer	Period
✳	Distinguished Professor	Jiangsu Provincial Department of Education, China	[06/2018–Present]
✳	Professor	Nanjing University of Information Science & Technology, China	[10/2017–Present]
✳	Postdoctoral Fellow	The Hong Kong Polytechnic University (PolyU), Hong Kong	[03/2014–09/2017]
✳	Research Assistant	The Hong Kong Polytechnic University (PolyU), Hong Kong	[10/2013–01/2014]
✳	Research Associate	The Hong Kong Polytechnic University (PolyU), Hong Kong	[08/2013]

Research Responsibilities

	Responsibility	Unit	Period
✳	AERONET Site Manager	PolyU Aerosol Robotic Network (AERONET)	[06/2014–05/2017]
✳	Linux Server Administrator	Weather Research & Forecasting Model (WRF–ARW)	(02/2012–05/2017)
✳	AERONET Site Operator	PolyU Aerosol Robotic Network (AERONET)	[01/2011–12/2012]
✳	Aerosol Lidar Site Operator	PolyU Aerosol Lidar	[01/2011–12/2012]

Publications

	Role	No. of Publications	Impact Factor	H-index	Citations
✳	First Author	[12]	[55.00]		
✳	Correspoding Author	[04]	[13.32]	[15]	[761]
✳	Co-Author	[27]	[101.73]		
✳	**Total**	**[43]**	**[170.05]**		

First Author:

1. Bilal et al. (2019). A Simplified and Robust Surface Reflectance Estimation Method (SREM) for Use over Diverse Land Surfaces Using Multi-Sensor Data. *Remote Sensing*, *11*, 1344.
2. Bilal et a. (2019). Evaluation of Terra-MODIS C6 and C6.1 Aerosol Products against Beijing, XiangHe, and Xinglong AERONET Sites in China during 2004-2014. *Remote Sensing*, 11, 486.
3. Bilal et at. (2018). Global Validation of MODIS C6 and C6.1 Merged Aerosol Products over Diverse Vegetated Surfaces. *Remote Sensing*, DOI: 10.3390/rs10030475.
4. Bilal et al. (2018). A New MODIS C6 Dark Target and Deep Blue Merged Aerosol Product at 3 km Spatial Resolution. *Remote Sensing*, DOI: 10.3390/rs10030463.

5. Bilal et al. (2017). New customized methods for improvement of the MODIS C6 Dark Target and Deep Blue merged aerosol product. *Remote Sensing of Environment*, *197, 115-124.* DOI: 10.1016/j.rse.2017.05.028.

6. Bilal and Nichol (2017). Evaluation of the NDVI–based pixel selection criteria of the MODIS C6 Dark Target and Deep Blue combined aerosol product. *IEEE JSTARS,* DOI: 10.1109/JSTARS.2017.2693289*.*

7. Bilal et al. (2017). Validation of MODIS and VIIRS derived aerosol optical depth over complex coastal waters. *Atmospheric Research,* 186, 43-50*. doi:* 10.1016/j.atmosres.2016.11.009.

8. Bilal et al. (2017). A New Approach for Estimation of Fine Particulate Concentrations Using Satellite Aerosol Optical Depth and Binning of Meteorological Variables, *Aerosol and Air Quality Research, 17, 356–367, doi:* 10.4209/aaqr.2016.03.0097

9. Bilal et al. (2016). Validation of Aqua–MODIS C051 and C006 Operational Aerosol Products Using AERONET Measurements Over Pakistan, *IEEE JSTARS, 9(5), 2074-2080, doi:* 10.1109/JSTARS.2015.2481460.

10. Bilal and Nichol (2015). Evaluation of MODIS aerosol retrieval algorithms over the Beijing–Tianjin–Hebei region during low to very high pollution events, *Journal of Geophysical Research-Atmosphere*, 120, 7941–7957, doi: 10.1002/2015JD023082.

11. Bilal et al. (2014). Validation and accuracy assessment of a Simplified Aerosol Retrieval Algorithm (SARA) over Beijing under low and high aerosol loadings and dust storms, *Remote Sensing of Environment,* 153, 50–60, doi: 10.1016/j.rse.2014.07.015.

12. Bilal et al. (2013). A Simplified high resolution MODIS Aerosol Retrieval Algorithm (SARA) for use over mixed surfaces, *Remote Sensing of Environment,* 136, 135–145, doi: 10.1016/j.rse.2013.04.014.

Corresponding Author:

1. Zhang et al. (2019). Evaluation of the Aqua-MODIS C6 and C6.1 Aerosol Optical Depth Products in the Yellow River Basin, China. *Atmosphere* 2019, *10*, 426.

2. Xie et al. (2019). Mapping daily $PM_{2.5}$ at 500 m resolution over Beijing with improved hazy day performance. *Science of The Total Environment,* 659, 410-418.

3. HJ Chu and Bilal (2019). $PM_{2.5}$ mapping using integrated geographically temporally weighted regression (GTWR) and random sample consensus (RANSAC) models. *Environmental Science and Pollution Research*, 26 (2), 1902-1910.

4. Nazeer and Bilal (2018). Evaluation of Ordinary Least Square (OLS) and Geographically Weighted Regression (GWR) for water quality monitoring: a case study for the estimation of Salinity. *Journal of Ocean University of China*, 17 (2), 305-310.

Co-Author:

1. Sun et al. (2019). Synoptic relationships to estimate phytoplankton communities specific to sizes and species from satellite observations in coastal waters. *Optics Express*, 27, A1156-A1172.

2. Rupakheti et al. (2019). Aerosol optical depth climatology over Central Asian countries based on Aqua-MODIS Collection 6.1 data: Aerosol variations and sources. *Atmospheric Environment,* 207, 205-214.

3. Tang et al. (2019) Variability of the Suspended Particle Cross-Sectional Area in the Bohai Sea and Yellow Sea. *Remote Sensing, 11*, 1187.

4. Karimi et al. (2019). Evaluation and modification of SARA high-resolution AOD retrieval algorithm during high dust loading conditions over bright desert surfaces. *Atmospheric Pollution Research, doi: 10.1016/j.apr.2019.01.008*

5. Shen et al. (2019). Long-term spatiotemporal variations of aerosol optical depth over Yellow and Bohai Sea. *Environmental Science and Pollution Research, doi: 10.1007/s11356-019-04203-4.*

6. Wei et al. (2018). An improved high-spatial-resolution aerosol retrieval algorithm for MODIS images over land. ***Journal of Geophysical Research: Atmospheres***, doi: 10.1029/2017JD027795

7. Qiu et al. (2018). Automatic method to monitor floating macroalgae blooms based on multilayer perceptron: case study of Yellow Sea using GOCI images, ***Optics Express***, 26 (21), 26810-26829.

8. Qin et al. (2018). Estimating PM1 concentrations from MODIS over Yangtze River Delta of China during 2014–2017, ***Atmospheric Environment***, doi: 10.1016/j.atmosenv.2018.09.054.

9. Qin et al. (2018). Characteristic and Driving Factors of Aerosol Optical Depth over Mainland China during 1980–2017, ***Remote Sensing,*** 10 (7), 1064.

10. Qin et al. (2018). Improving the Estimation of Daily Aerosol Optical Depth and Aerosol Radiative Effect Using an Optimized Artificial Neural Network, ***Remote Sensing*** 10 (7), 1022.

11. Chen et al. (2018). Multilevel Cloud Detection for High-Resolution Remote Sensing Imagery Using Multiple Convolutional Neural Networks. ***ISPRS International Journal of Geo-Information*** 7 (5).

12. Mao et al. (2018) Variations of transparency derived from GOCI in the Bohai Sea and the Yellow Sea. ***Optics Express*** 26 (9), 12191-12209.

13. Ho et al. (2018). Influences of socioeconomic vulnerability and intra-urban air pollution exposure on short-term mortality during extreme dust events. ***Environmental Pollution***, 235, 155-162, doi: 10.1016/j.envpol.2017.12.047.

14. Shen et al. (2018). Validation of MODIS C6 Dark Target Aerosol Products at 3 km and 10 km Spatial Resolutions Over the China Seas and the Eastern Indian Ocean. ***Remote Sensing***, doi: 10.3390/rs10040573.

15. Ho et al. (2018). Spatiotemporal influence of temperature, air quality, and urban environment on cause-specific mortality during hazy days. ***Environment International***, 112, 10-22, doi: 10.1016/j.envint.2017.12.001.

16. Wei et al. (2018). Verification, improvement and application of aerosol optical depths in China part 1: Inter-comparison of NPP-VIIRS and Aqua-MODIS. ***Atmospheric Environment***, doi: 10.1016/j.atmosenv.2017.11.048.

17. He et al. (2018). Performance of the NPP-VIIRS and Aqua-MODIS Aerosol Optical Depth Products over the Yangtze River Basin. ***Remote Sensing***, doi: 10.3390/rs10010117.

18. Zhang et al. (2018). The Characteristics of the Aerosol Optical Depth within the Lowest Aerosol Layer over the Tibetan Plateau from 2007 to 2014, ***Remote Sensing*** 10 (5), 696.

19. Nazeer et al. (2017). Evaluation of Empirical and Machine Learning Algorithms for Estimation of Coastal Water Quality Parameters. ***ISPRS International Journal of Geo-Information,*** 6(11), 360, doi:10.3390/ijgi6110360.

20. He et al. (2017). Aerosol Optical Properties and Associated Direct Radiative Forcing over the Yangtze River Basin during 2001–2015. ***Remote Sensing***, 9 (7), 746.

21. Wei et al. (2017). A simple and universal aerosol retrieval algorithm for Landsat series images over complex surfaces. ***Journal of Geophysical Research: Atmospheres,*** doi: 10.1002/2017JD026922.

22. Wang et al. (2017). Evaporation modeling using different machine learning techniques. ***International Journal of Climatology***, DOI: 10.1002/joc.5064**.**

23. Nichol and Bilal (2016). Validation of MODIS 3 km Resolution Aerosol Optical Depth Retrievals over Asia, ***Remote Sensing, 8(4), 328, doi: 10.3390/rs8040328.***

24. Gong et al. (2016). Land Use Regression Models Using Satellite Aerosol Optical Depth Observations and 3D Building Data from the Central Cities of Liaoning Province, China. ***Polish J. Environ. Stud.***

25. Bin et al. (2016). High–resolution Satellite Mapping of Fine Particulates Based on Geographically Weighted Regression, ***IEEE Geoscience and Remote Sensing Letters, 13(4), 495–499.*** (IF ~ 2.761)

26. Sun et al. (2015). Aerosol Optical Depth Retrieval over Bright Areas using Landsat 8 OLI Images, *Remote Sensing, 8(1), 23.*

27. Butt and Bilal (2011). Application of snowmelt runoff model for water resource management, *Hydrological Processes,* 25, 3735–3747*.*

Conference Proceedings

1. Bilal and Qiu, Z (2018). Aerosol Retrievals over Bright Urban Surfaces Using Landsat 8 Images, *IEEE IGARSS 2018, Valencia* 22-27 July 2018.
2. Bilal et al. (2014). Development and Validation of MODIS High-Resolution Simplified Aerosol retrieval algorithm (SARA). *International Conference on Space,* Islamabad, Pakistan, 12–14 November 2014*.*
3. Nichol and Bilal (2014). Validation of a Simplified Aerosol retrieval Algorithm (SARA) over Beijing. *The 35th Asian Conference on Remote Sensing,* Nay Pyl Taw, 27–31 October 2014*.*
4. Nichol et al. (2014). Retrieval of Aerosol Optical Thickness (AOT) from urban Shadows using fine resolution WorldView-II images, *Remote Sensing and Photogrammetry Society Annual Conference,* Aberystwyth, 02–05 September 2014.
5. Bilal et al. (2012). Retrieving MODIS Aerosol Optical Depth in real time at 500 m resolution: urban–scale evaluation over Hong Kong. *European Aerosol Conference (EAC),* Granada, Spain, 02–07 September.
6. Bilal et al. (2011). MODIS Satellite Sensor Products Used for Snowmelt Runoff Modelling in Support of Water Resource Management, *ISNET/RJGC workshop on Application of Satellite Technology in Water Resources Mangement,* Amman, Jordan, 18–22 September.
7. Wong et al. (2011), Validation of MODIS, MISR, and OMI Aerosol Optical Thickness using ground-based Sunphotometers in Hong Kong, *The Asia Oceania Geosciences Society – Remote Sensing Symposium*, Taipei, Taiwan, 08–12 August.

Peer-reviewer

✳ I am serving as a peer-reviewer for more than 30 SCI/SCIE journals and have provided 138 verified reviews.

Exchange Program

Title	University	Period
Visiting Research Scholar (VRS)	New Mexico State University, New Mexico State, USA	[09/2011–01/2012]
	Center for Global and Regional Environmental Research, University of Iowa, Iowa City, Iowa State,USA	[02/2012]

Professional Trainings & Workshops

Title	Venue	Period
✳ ITARS Summer School on Aerosol Remote Sensing, Processes and Applications	Bucharest, Romania	23/09/-04/10/2013]
✳ Advance training course on Ocean Remote Sensing	Chinese University of Hong Kong, Hong Kong	[21-26/10/2013]
✳ ISNET/RJGC Workshop on Application of Space Technology for Food Security	Cheikh Anta DIOP University and Centre de Suivi Ecologique (CSE), Dakar–Senegal	[09-14/07/2012]
✳ Basics of Weather Research & Forecasting (WRF) Model	National Center for Atmospheric Research (NCAR), USA)	[21-28/01/2012]

| ✳ ISNET/CSE Workshop on Application of Satellite Technology in Water Resource Management | Royal Jordanian Geographic Centre (RJGC), Amman–Jordan. | [18-22/09/2011] |
| ✳ Faculty Development Program – Analysis of Research Data Using SPSS | COMSATS University Islamabad, Pakistan | [23-25/04/200] |

Conducted Training Courses

Course Title	Venue	Period
✳ MODIS Data Processing	Remote Sensing and GIS Lab, Department of Space Science, University of the Punjab, Lahore, Pakistan	**[12–13/02/ 2014]**