SHUN BI 毕顺

My research interests encompass optical water classification, bio-geo-optical modeling, ocean color parameter retrieval, in situ optical measurements, neural network algorithms, and atmospheric correction. Notably, I developed a precise bio-geo-optical model (Bi et al., 2023) to estimate the inherent optical properties of water components from their constituent concentrations. This forward model has recently been utilized to create a comprehensive optical water type classification framework that includes inland, coastal, and oceanic waters (Bi and Hieronymi, 2024). These models support my ongoing studies on improving the retrieval of optically active substances in water, aiding in the macroscopic and systematic observation and understanding of aquatic ecosystems.

WORK EXPERIENCE

2024 | Now

Nanjing Institute of Geography and Limnology Chinese Academy of Sciences
Assistant Researcher — Nanjing, China

State Key Laboratory of Lake and Watershed Science for Water Security

2022 | 2024

Helmholtz-Zentrum Hereon
Post-doc — Geesthacht, Germany

Optical Oceanography, Institute of Carbon Cycles

2021 | 2021

Helmholtz-Zentrum Hereon
Post-doc — Geesthacht, Germany

Optical Oceanography, Institute of Coastal Ocean Dynamics

EDUCATION AND TRAINING EVENTS

2016 | 2021

Nanjing Normal University
Ph.D in Remote Sensing of Geo-Environment — Nanjing, China

Thesis: Remote Sensing of Column-integrated Algal Biomass for Inland Waters Based on Soft Classification
(Qualified for the Successive Master-Doctor Program in 2018)

2012 | 2016

Jiangsu Normal University
B.S. in Remote Sensing Science and Technology — Xuzhou, China

Thesis: Analysis of Spatiotemporal Characteristics of Drought in Qinghai-Tibet Region Based on Meteorological Drought Composite Index

Contact Info

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github.com/bishun945
Shun_Bi
bishun945

For more information, please contact me via email.

Skills

Experienced in optical water classification, atmospheric correction, and Chla algorithm

Full experience in remote sensing image processing.

R, Python, IDL, MATLAB, HydroLight, SeaDAS, SNAP, Ubuntu, macOS.

Languages

Mandarin (native), English

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Last updated on 2025-03-18

PROFESSIONAL SERVICE

2023 | Now

IOCCG scientific working group
Classification of Optical Water Types in Aquatic Radiometry

SELECTED PUBLICATIONS

2024

Holistic optical water type classification for ocean, coastal, and inland waters
Limnology and Oceanography, **IF 4.5**
Bi S and Hieronymi M

2023

Bio-geo-optical modelling of natural waters
Frontiers in Marine Science, **IF 5.247**
Bi S, Hieronymi M, Röttgers R

2023

A transfer model to determine the above-water remote-sensing reflectance from the underwater remote-sensing ratio
Optics Express, **IF 3.833**
Bi S, Röttgers R, Hieronymi M

2021

Assessment of algorithms for estimating chlorophyll-a concentration in inland waters: A round-robin scoring method based on the optically fuzzy clustering
IEEE Transactions on Geoscience and Remote Sensing, *60*, 1-17, **IF 5.855**
Bi S, Li Y, Liu G, Song K, Xu J, Dong X, Cai X, Mu M, Miao S, Lyu H

2019

Optical classification of inland waters based on an improved Fuzzy C-Means method
Optics Express, *27*(24), 34838–34856, **IF 3.669**
Bi S, Li Y, Xu J, Liu G, Song K, Mu M, Lyu H, Miao S, Xu J

2019

Quantifying spatiotemporal dynamics of the column-integrated algal biomass in nonbloom conditions based on OLCI data: a case study of Lake Dianchi, China
IEEE Transactions on Geoscience and Remote Sensing, *57*(10), 7447–7459, **IF 5.855**
Bi S, Li Y, Lyu H, Mu M, Xu J, Lei S, Miao S, Hong T, Zhou L

2018

Inland water atmospheric correction based on turbidity classification using OLCI and SLSTR synergistic observations
Remote Sensing, *10*(7), 1002, **IF 4.118**
Bi S, Li Y, Wang Q, Lyu H, Liu G, Zheng Z, Du C, Mu M, Xu J, Lei S

2018 **Estimation of chlorophyll-a concentration in Lake Erhai based on OLCI data**
Journal Lake Science, *30*(3), 701–712 (*in Chinese*), **IF 1.445**
Bi S, Li Y, Lu H, Zhu L, Mu M, Lei S, Wen S, Ding X

2023 **Spatial and temporal distribution analysis of dominant algae in Lake Taihu based on ocean and land color instrument data**
Ecological Indicators
Zhu Y, Li Y, **Bi S**, Lyu H, Cai X, Wang H, Li J, li J, Xu J

2023 **Ocean color atmospheric correction methods in view of usability for different optical water types**
Frontiers in Marine Science, *10*, 1129876.
Hieronymi M, **Bi S**, Müller D, Schütt Eike, Behr D, Brockmann C, Lebreton C, Steinmetz F, Stelzer K, Vanhellemont Q.

2022 **Utilization of GOCI data to evaluate the diurnal vertical migration of Microcystis aeruginosa and the underlying driving factors**
Journal of Environmental Management, *310*, 114734, **IF 8.91**
Li J, Li Y, **Bi S**, Xu J, Guo F, Lyu H, Dong X, Cai X

2022 **Recognition of aquatic vegetation above water using shortwave infrared baseline and phenological features**
Ecological Indicators, *136*, 108607, **IF 6.263**
Wang H, Li Y, Zeng S, Cai X, **Bi S**, Liu H, Mu M, Dong X, Li J, Xu J, & others

2021 **Simultaneous inversion of concentrations of POC and its endmembers in lakes: A novel remote sensing strategy**
Science of the Total Environment, *770*, 145249, **IF 6.551**
Xu J, Li Y, Lyu H, Lei S, Mu M, **Bi S**, Xu J, Xu X, Miao S, Li L, & others

2021 **Characteristics of the chromophoric dissolved organic matter of urban black-odor rivers using fluorescence and UV-visible spectroscopy**
Environmental Pollution, *268*, 115763, **IF 6.793**
Miao S, Lyu H, Xu J, **Bi S**, Guo H, Mu M, Lei S, Zeng S, Liu H

2021 **Urban Water Quality Assessment Based on Remote Sensing Reflectance Optical Classification**
Remote Sensing, *13*(20), 4047, **IF 4.118**
Cai X, Li Y, **Bi S**, Lei S, Xu J, Wang H, Dong X, Li J, Zeng S, Lyu H

2020 **Tracking spatio-temporal dynamics of POC sources in eutrophic lakes by remote sensing**
Water Research, *168*, 115162, **IF 9.13**
Xu J, Lei S, **Bi S**, Li Y, Lyu H, Xu J, Xu X, Mu M, Miao S, Zeng S & others

2020 **An OLCI-based algorithm for semi-empirically partitioning absorption coefficient and estimating chlorophyll a concentration in various turbid case-2 waters**
Remote Sensing of Environment, *239*, 111648, **IF 9.085**
Liu G, Li L, Song K, Li Y, Lyu H, Wen Z, Fang C, **Bi S**, Sun X, Wang Z & others

R PACKAGES

2024 **pyOWT: python library for Optical Water Type classification**
Version 0.40
Bi S

2023 **IOPmodel: Model inherent optical properties from component concentrations**
Version 0.1
Bi S

2023 **RrsTrans: R package for transferring remote-sensing ratio (rrs) to remote-sensing reflectance (Rrs)**
Version 0.1
Bi S

2021 **FCMm: Water spectra fuzzy-clustering, algorithm assessment, and blending**
Version 0.11.1
Bi S, Li Y, Liu G

2021 **DAMATO: Data Management Toolbox**
Version 0.0.8
Bi S, Li Y, Cheng X

2021 **Algal Game: Solver of the reaction-diffusion-taxis model of phytoplankton, nutrients, and light in water column**
Version 0.1
Bi S, Li Y, Li J

2020 **seadasr: Running seadas with R**
Version 0.0.1 (*private*)
Bi S, Liu G, Li Y

2019 **TSSIM: Time-Series-based Spatial Interpolation Method**
Version 0.0.2 (*private*)
Bi S, Li Y

AWARDS AND HONORS

2017 **the Third Prize of 2017 NNU Graduate Mathematical Modeling Competition**
Title: Research on Feature Selection and Classifier Algorithm in Intrusion Detection (*in Chinese*)
Bi S, Chen B, Ding X

2017 **the Second Prize of 2017 National Graduate Mathematical Modeling Competition**
Title: Foreground target extraction based on surveillance video (*in Chinese*)
Bi S, Chen B, Ding X

2018 **ESA-MOST China Dragon 4 Cooperation: BEST POSTER AWARD**
Title: Inland water atmospheric correction based on turbidity classification using OLCI and SLSTR synergistic observations

2018 **the Third Prize of the 6th Sharing Cup College Student Science and Technology Resources sharing serveice innovation competition**
Title: Evaluation of atmospheric correction methods for inland lakes based on Sentinel-3 OLCI data (*in Chinese*)
Bi S, Hong T, Zhou L

2019 **the First Prize of the 1st Hyerspectral Imagery Processing Competition - Orbit Cup**
Title: Evaluation of the application of ZH-1 data in remote sensing of water color in inland lakes (*in Chinese*)
Bi S, Hong T, Li L

2021 **Outstanding Graduate in Nanjing Normal University**

GRANTS AND FELLOWSHIPS

2018 **Postgraduate Research & Practice Innovation Program of Jiangsu province, China**
Project title: Research on the three-dimensional spatiotemporal pattern of the total biomass of cyanobacteria in Taihu Lake based on remote sensing technology (*in Chinese*)

2020 **China National Scholarship**
Funded by Ministry of Education of the People's Republic of China

2019 **Scholarship of Saiteng Fenghui**
Funded by Suzhou Secote Precision Electronic Co., Ltd.

2017 | 2020 **the First Prize Scholarship**
Funded by Nanjing Normal University

2016 **the Second Prize Scholarship**
Funded by Nanjing Normal University

CRUISE, CONFERENCES AND PRESENTATIONS

2024 **FICE-2024: A Training Event on In situ Ocean Colour Above-Water Radiometry towards Satellite Validation in Acqua Alta Oceanographic Tower and Venice**
Venice, Italy

2024 **KC-seminar: Bio-geo-optical modeling of natural waters (oral presentation)**
Geesthacht, Germany

2023 **8th S3VT meeting (oral presentation)**
Darmstadt, Germany

2023 **AL597: cruise in the Baltic Sea**
Kiel, Germany

2023 **2023 International Ocean Colour Science Meeting (poster)**
St. Petersburg, USA

2023 **HYPERNETS Science conference (oral presentation)**
Tervuren, Belgium

2022 **Ocean Optics XXV (oral presentation)**
Quy Nhon, Vietnam

2022 **2022 IOCCG Summer Lecture Series**
Laboratoire d'Océanographie de Villefranche (LOV), France

2022 **Living planet symposium 2022 (poster)**
Bonn, Germany

2022 **Ocean Carbon from Space workshop (poster)**
Online

2021 **Looking back on my PhD**
Nanjing, China

2020 **ALGAL GAME**
Nanjing, China

2020 **National Forum for Doctoral Students in Geographic Information Science**
Online

2020 **the 2nd Wetland Remote Sensing Conference in China**
Online

2019 **the 19th Water Color Remote Sensing Conference in China**
Sanya, China

2019 **the 1st Wetland Remote Sensing Conference in China**
Changchung, China

2018 **the 18th Water Color Remote Sensing Conference in China**
Zhanjiang, China

2018 **National Forum for Doctoral Students in Geographic Information Science**
Nanjing, China

2018 **ESA-MOST DRAGON 4 PROGRAMME - Advanced Training Course in Ocean & Coastal Remote Sensing**
Shenzhen, China

2018 **Jiangsu University Geography Postgradutae Forum**
Nanjing, China

2017 **the 1st China Plateau Lake Forum**
Kunming, China

2017 **the 5th Graduate Forum of Jiangsu Society of Oceanology and Lomnology**
Nanjing, China

2017 **Jiangsu University Geography Postgradutae Forum**
Nanjing, China