**Supplementary Materials**

Table 1 Abbreviation or symbols

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| --- | --- | --- | --- | --- |
| Abbreviation or symbols | | Abbreviation or symbols | | |
| Abpm  ADEOS  ABs  AFAI  AC  BBHR  BPNN  CNKI  COCTS  Chla  CZCS  CDOM  COMS  Cont Shelf Res  CNN-TL  CBI  DOC  DB-SFNet  Earth-Sci Rev  ESTARFM  Environ Res Commun  Environ Sci Pollut Res  ESA  FAC  FLH  GABI  GLI  GLIMR  GOCST  GOCS  HABs  IEEE T-GRS  IGAG  Indian J Geo-Mar Sci | Adsorption Based Productivity Model  Advanced Earth Observation Satellite  Algal blooms  Alternative floating algae index  Assumption of the pure water absorption  Atmospheric correction  Backscattering coefficients  Bio-optical hyperspectral reconstruction  BP neural network  China National Knowledge Infrastructure  Chinese Ocean Color and Temperature Scanner  Chlorophyll a  Coastal Zone Color Scanner  Colored dissolved organic matter  Communication Ocean and Meteorological Satellite  Continental Shelf Research  Convolutional neural network transfer learning model  Cyanobacterial bloom intensity  Diffuse attenuation coefficient  Dissolved organic carbon  Dual-branch sea fog detection network  Earth-Science Reviews  Enhanced spatial and temporal adaptive reflection fusion model  Environmental Research Communications  Environmental Science and Pollution Research  European Space Agency  Floating algae cover  Fluorescence line height  Generalized algal bloom index algorithm  Generation Global Imager  Geostationary Littoral Imaging and Monitoring Radiometer  Geostationary oceancolor satellite  Geostationary oceancolor sensors  Harmful algal blooms  IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING  Index of floating Green Algae for GOCI  Indian Journal of Geo-Marine Sciences | | MUMM  Mar Pollut Bull  MOS  MCC  MERIS  MODIS  MLP  NASA  NIR  NPP  NDVI  NMI  NRTI  OCTS  OSMI  Ocean Sci J  OE  POC  PC  PMRIS  POLDER  RF  RI  RS  RSE  Sci Total Environ  SFDD  SIA  SIT  SSCs  SSS  SeaWiFS  SeaDAS  SDD  SGLI | Management Unit of the North Sea Mathematical Models  Marine Pollution Bulletin  Maritime Observation Satellite  Maximum cross-correlation  Medium Resolution Imaging Spectrometer Instrument  Moderate Resolution Imaging Spectroradiometer  Multi-Layer Perceptron  National Aeronautics and Space Administration  Near-infrared  Net primary production  Normalized difference vegetation index  Normalized mutual information  Normalized red tide index  Ocean Color and Temperature Scanner  Ocean Scanning Multispectral Imager  Ocean Science Journal  Optics EXPRESS  Particulate organic carbon  Phycocyanin  Playful Magnetic Resonance Imaging Simulator  Polarization and Directionality of the Earth's Reflectances  Random forest  Rayleigh-corrected radiance  Red tide index  Remote sensing  Remote Sensing of Environment  Remote sensing reflectance  Science of the Total Environment  Sea fog data set  Sea ice area  Sea ice thickness  Sea surface currents  Sea surface salinity  Sea-viewing Wide Field-of-view Sensor  SeaWiFS Data Analysis System  Secchi disk depth  Second Generation Global Imager |
| ICWs  JAG  Int J Remote Sens  ISPRS  JAXA  J Appl Remote Sens  J Environ Manage  JGR  J Mar Sci Eng  J Mar Sci Tech  J Quant Spectrosc Ra  J Sea Res  Korean J Remote Sens  KOMPSAT-1  Limnol Oceanogr  LCI | Inland and coastal waters  International Journal of Applied Earth Observation and Geoinformation  International Journal of Remote Sensing  ISPRS Journal of Photogrammetry and Remote Sensing  Japan Aerospace Exploration Agency  Journal of Applied Remote Sensing  Journal of Environmental Management  Journal of Geophysical Research-Oceans  Journal of Marine Science and Engineering  Journal of Marine Science and Technology  Journal of Quantitative Spectroscopy & Radiative Transfer  Journal of Sea Research  Korean Journal of Remote Sensing  Korea Multi-Purpose Satellite-1  Limnology and Oceanography  Linear Combination Index | SWIR  SERT  SMAP  SZA  Spat Inf Res  ESOA  SVR  SPM  SCI  GOCI  UV  VIIRS  WR  YRE  YOC | | Shortwave infrared  Simple semi-empirical radiative transfer  Soil Moisture Active Passive  Solar zenith angle  Spatial Information Research  Spectral optimization algorithm  Support vector regression  Suspended particulate matter  Synthetic chlorophyll index  The Geostationary Oceancolor Imager  Ultraviolet  Visible Infrared Imaging Radiometer  Water Research  Yalu River estuary  Yellow and East China Sea Oceancolor |

Table 2 The number of articles published based on GOCI in the past ten years, the country, the study area, and research direction

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Years | | Number of published papers | Country | Study Area | Research Directions |
| 2023  2022  2021  2020  2019  2018  2017  2016  2015  2014  2013  2012  2011  2010 | 1  2  8  1  3  9  1  3  7  3  9  1  1  10  1  8  2  9  2  7  1  1  5  1  4  1  4  1  4  1  1  1  2 | | USA  South Korea  China  USA  South Korea  China  India  South Korea  China  South Korea  China  India  South Korea  China  South Korea  China  South Korea  China  South Korea  China  South Korea  Netherlands  China  USA  China  South Korea  China  China  South Korea  South Korea  France  South Korea  China | /  /  /  Lake Chagan  Hangzhou Bay  Hangzhou Bay  Bohai Sea  The Yangtze  Yellow Sea  /  Lake Taihu  /  Land Surface  /  Bohai Sea  Chaohu Lake  /  Hangzhou Bay  The East China Sea  Turbid Coastal Waters  /  /  /  /  Yellow Sea  /  /  Yellow Sea  The Yangtze  Lake Taihu  Taiwan coastal waters  Yellow Sea  /  Eutrophic Lake  The East China Sea  Turbid water  Turbid water  /  /  Shallow and eutrophic lakes  Turbid Coastal Waters  Lake Taihu  Turbid Coastal Waters  Turbid Coastal Waters  Lake Taihu  Lake Taihu  The East China Sea  /  /  Lake Taihu  Lake Taihu  Yellow Sea  Turbid water  The East China Sea  Bohai Sea  Coastal and inland waters  The Yangtze  Yellow Sea  Jiaozhou Bay  /  East Sea  The Yangtze  Yongjiang Estuary  /  Lake Taihu  Lake Taihu  The Yangtze  Yellow Sea  Bohai Sea/Yellow Sea  /  /  Yellow River  /  Dongping Lake  The Yangtze  The Yangtze  Lake Taihu  Yellow Sea  Yellow Sea/Bohai Sea  Highly turbid waters  Yellow Sea  North-East Asian  /  Lake Taihu  Lake Taihu  Bohai Sea  Bohai Sea  Yellow Sea  /  The East China Sea  The Yangtze  Lake Taihu  Lake Taihu  Inland Waters  Lake Taihu/Dongting Lake  Bohai Sea  /  /  The East China Sea  Bohai Sea  /  Coastal waters  /  Coastal waters  Coastal waters  Yellow River Estuary  Complex waters  /  /  East Sea  Bohai Sea  /  The East China Sea  /  Turbid inland waters  / | DOC  Algal blooms  Red tide  Lake ice  Chla  SPM  SPM  Chla  Chla  Red tide  Algal blooms  Decadal Measurements  Atmospheric reflectivity  Machine learning  Red tide  Chla  Machine learning  SPM  Algal blooms  SPM  NPP  Sea surface salinity  Sea surface currents  Sea fog  Algal blooms  FLH algorithm  Chla  SPM  SPM  POC  SPM  Algal blooms  Sea ice  POC  Kd  Water reflectance  Atmospheric correction  Sea fog  Chla  Water clarity  Water clarity  Atmospheric correction  Atmospheric correction  Chla  Chla  Chla/ Algal blooms  Chla  Chla  SPM  SPM  SPM  Atmospheric correction  Atmospheric correction  Algal blooms  Sea ice  HABs  POC  Sea surface salinity  Review  HABs  Algal blooms  SPM  SPM  SPM  Algal blooms  SPM  SPM  Algal blooms  Water clarity  Green tide  SPM  Turbidity  Literature Review  Chla  Atmospheric correction  CDOM  DOC  Green tide  PC  Sea surface currents  Sea ice  Chla  Turbidity  Chla  TP  SPM  Sea ice  Turbidity  Kd  Algal blooms  Attenuation coefficient  Chla  Algal blooms  Chla  Chla  Sea ice  Turbidity  Literature Review  Algal blooms  Sea ice  Sea surface currents  SPM  Sediment  SPM  Sea surface currents  SPM  Atmospheric correction  Floating Green Alage  Atmospheric correction  CDOM  SPM  Literature review  SPM  Literature review  Chla  Atmospheric correction |