Supplementary Material #1 – Table of abbreviations and acronyms

|  |  |
| --- | --- |
| **Abbreviation/****acronym** | **Description** |
| ACOLITE | Multi-mission atmospheric correction software<https://odnature.naturalsciences.be/remsem/acolite-forum/> |
| AERONET-OC | Network of autonomous multispectral radiometers for ocean colour<https://aeronet.gsfc.nasa.gov/new_web/ocean_color.html> |
| AOT | Aerosol Optical Thickness |
| BEFR | Etang de BErre, FRance, a WATERHYPERNET site |
| BRDF  | Bidirectional Reflectance Distribution Function |
| Chl-a  | Chlorophyll *a* concentration |
| CDOM | Coloured Dissolved Organic Matter |
| CSV | Comma Separated variables, a file format |
| CIMEL  | Cimel Electronique, manufacturer of the CE318 SeaPRISM <https://www.cimel.fr/solutions/ce318-t/#specifications> |
| COTS  | Commercial Off The Shelf |
| DESIS  | An imaging spectrometer on the International Space Station<https://www.dlr.de/en/research-and-transfer/projects-and-missions/horizons/desis> |
| Doves  | Constellation of small satellites operated by Planet Labs |
| DSF | Dark Spectrum Fitting, a algorithm variant in the ACOLITE software<https://odnature.naturalsciences.be/remsem/software-and-data/acolite> |
| DSF\_GC | A combination of the Dark Spectrum Fitting algorithm variant with the Glint Correction option in the ACOLITE software |
| EMIT  | An imaging spectrometer on the International Space Station<https://earth.jpl.nasa.gov/emit/> |
| ENMAP  | A spaceborne imaging spectrometer mission<https://www.enmap.org/> |
| FWHM | Full Width Half Maximum |
| GC | Glint Correction, an algorithm option in the ACOLITE software(Vanhellemont 2020) |
| GAIT | Lake Garda, ITaly, a WATERHYPERNET site |
| HYPERNETS  | Network of autonomous multispectral radiometers for water and land surface reflectance<https://hypernets.eu> |
| HYPSTAR® | HYperspectral Pointable System for Terrestrial and Aquatic Radiometry |
| L1C | Level 1C, a HYPERNETS data format with radiance and irradiance measurements |
| L2 | Level 2, a HYPERNETS data format with reflectance measurements |
| LED  | Light Emitting Diode |
| Landsat 8/9  | Two multispectral satellite missionshttps://www.usgs.gov/landsat-missions/landsat-8 |
| LI | “Lubac Index” for *Phaeocystis globosa* defined in (Lubac et al. 2008) |
| LPAR | LA Plata, ARgentina, a WATERHYPERNET site |
| M1999  | Abovewater radiometry measurement method described by (Mobley 1999) |
| M1BE | MOW1, Zeebrugge, BElgium, a WATERHYPERNET site |
| MAFR  | MAgest, Gironde, FRance, a WATERHYPERNET site |
| GOCI-1 and GOCI-2  | Multispectral geostationary ocean colour satellite missions(Ryu et al. 2012) |
| MALH | Modified Astoreca Line Height, a *Phaeocystis globosa* index defined in (Lavigne et al. 2022) |
| MAPD | Mean Absolute Percentage Difference |
| MD | Mean Difference (often called “bias”) |
| MOBY  | Marine Optical BuoY(Brown et al. 2007) |
| MODIS  | A multispectral ocean colour satellite mission<https://modis.gsfc.nasa.gov/> |
| MSG/SEVIRI  | METEOSAT Second Generation/Spinning Enhanced Visible and Infrared Imager<https://www.eumetsat.int/meteosat-second-gen-instruments> |
| MSI | MultiSpectral Instrument |
| MTG/FCI  | METEOSAT Third Generation/Flexible Combined Imagerhttps://www.eumetsat.int/meteosat-third-generation-instruments |
| NIR | Near Infrared |
| NRT | Near Real-Time, e.g. <24 hours between data acquisition and data availability |
| OLCI | A multispectral ocean colour sensor on Sentinel-3 |
| P95 | 95 percentile |
| PACE/OCI | The hyperspectral Ocaen Color Instrument on the Plankton, Aerosol, Cloud ocean Ecosystem spaceborne mission<https://pace.oceansciences.org/oci.htm> |
| PANTHYR | PAN and Tilt Hyperspectral Radiometer system(Vansteenwegen et al, 2019) |
| PI  | Principal Investigator(s) |
| Pléiades | A multispectral satellite mission<https://pleiades.cnes.fr/en/PLEIADES/index.htm> |
| PRISMA | A hyperspectral satellite mission<https://www.asi.it/en/earth-science/prisma/> |
| QC | Quality Control |
| RGB | Red-Green-Blue |
| ROI | Region Of Interest |
| S2, S2A, S2B | Sentinel-2, a multispectral satellite mission with 2 units, -A and -B<https://sentinel.esa.int/web/sentinel/missions/sentinel-2> |
| S3, S3A, S3B | Sentinel-3, a multispectral satellite mission with 2 units, -A and -B<https://sentinel.esa.int/web/sentinel/missions/sentinel-3> |
| SeaBASS  | SeaWiFS Bio-optical Archive and Storage System (SeaBASS), a in situ measurement data archive<https://seabass.gsfc.nasa.gov/> |
| SeaPRISM | A variant of the CE318 photometer adapted for water reflectance measurements |
| Sen2Cor  | An atmospheric correction algorithm for Sentinel-2 data(Main-Knorn et al. 2017) |
| SI | International System of Units |
| SimSpec correction | NIR Similarity Spectrum correction(Ruddick et al. 2005; 2006) |
| SuperDoves  | Constellation of small satellites operated by Planet Labs, |
| TBBE | Thornton Bank, BElgium, a WATERHYPERNET site |
| TOA | Top Of Atmosphere |
| TRIOS/RAMSES  | A hyperspectral in situ radiometer<https://www.trios.de/en/ramses.html> |
| UTC | Coordinated Universal Time |
| VEIT | Acqua Alta Oceanographic Tower, near VEnice, ITaly, a WATERHYPERNET site |
| VIIRS | A multispectral ocean colour satellite mission<https://ncc.nesdis.noaa.gov/VIIRS/> |
| VNIR | Visible and Near Infrared, e.g. 400-900 nm |
| VSWIR | Visible, Near Infrared and Short Wave Infrared, e.g. 400-3000 nm |
| WATERHYPERNET  | Network of autonomous hyperspectral radiometers for water colour |
| WFR | Water Full Resolution, an OLCI product |
| ZENODO | A public repository for measurement data[www.zenodo.org](http://www.zenodo.org) |

**References**

Brown, S.W., S.J. Flora, M.E. Feinholz, M.A. Yarbrough, T. Houlihan, D. Peters, Y.S. Kim, J.L. Mueller, B.C. Johnson, and D.K. Clark. 2007. “The Marine Optical Buoy (MOBY) Radiometric Calibration and Uncertainty Budget for Ocean Color Satellite Sensor Vicarious Calibration.” In , edited by Roland Meynart and Steven P. Neeck. Vol. 67441M. SPIE. https://doi.org/10.1117/12.737400.

Lavigne, H., K. Ruddick, and Q. Vanhellemont. 2022. “Monitoring of High Biomass Phaeocystis Globosa Blooms in the Southern North Sea by in Situ and Future Spaceborne Hyperspectral Radiometry.” *Remote Sensing of Environment* 282 (December): 113270. https://doi.org/10.1016/j.rse.2022.113270.

Lubac, B., H. Loisel, N. Guiselin, R. Astoreca, L.F. Artigas, and X. Mériaux. 2008. “Hyperspectral and Multispectral Ocean Color Inversions to Detect Phaeocystis Globosa Blooms in Coastal Waters.” *Journal of Geophysical Research* 113 (C06026).

Main-Knorn, M., B. Pflug, J. Louis, V. Debaecker, U. Müller-Wilm, and F. Gascon. 2017. “Sen2Cor for Sentinel-2.” In *Image and Signal Processing for Remote Sensing XXIII*, 10427:37–48. SPIE. https://doi.org/10.1117/12.2278218.

Mobley, C.D. 1999. “Estimation of the Remote-Sensing Reflectance from above-Surface Measurements.” *Applied Optics* 38: 7442–55.

Ruddick, K., V.D. Cauwer, and B. Van Mol. 2005. “Use of the near Infrared Similarity Spectrum for the Quality Control of Remote Sensing Data.” In , edited by R.J. Frouin, M. Babin, and S. Sathyendranath. Vol. 5885. SPIE. https://doi.org/10.1117/12.615160.

Ruddick, K., V. De Cauwer, Y. Park, and G. Moore. 2006. “Seaborne Measurements of near Infrared Water-Leaving Reflectance: The Similarity Spectrum for Turbid Waters.” *LIMNOLOGY AND OCEANOGRAPHY* 51 (2): 1167–79.

Ryu, J.-H., H.-J. Han, S. Cho, Y.-J. Park, and Y.-H. Ahn. 2012. “Overview of Geostationary Ocean Color Imager (GOCI) and GOCI Data Processing System (GDPS).” *Ocean Science Journal* 47 (3): 223–33. https://doi.org/10.1007/s12601-012-0024-4.

Vanhellemont, Q. 2020. “Sensitivity Analysis of the Dark Spectrum Fitting Atmospheric Correction for Metre- and Decametre-Scale Satellite Imagery Using Autonomous Hyperspectral Radiometry.” *Optics Express* 28 (September). https://doi.org/10.1364/OE.397456.

———. 2023. “Evaluation of Eight Band SuperDove Imagery for Aquatic Applications.” *Optics Express* 31 (9): 13851–74. https://doi.org/10.1364/OE.483418.

Wang, M., L. Jiang, X. Liu, S. Son, J. Sun, W. Shi, L. Tan, K. Mikelsons, X. Wang, and V. Lance. 2016. “VIIRS Ocean Color Products: A Progress Update.” In , 5848–51. 10.1109/IGARSS.2016.7730528.