

Package ‘waterquality’

December 19, 2018

Title Satellite Derived Water Quality Detection Algorithms

Version 0.2.2

Description The goal of 'waterquality' is to convert satellite-reflectance imagery to a host of pre-defined water quality algorithms designed for the detection of chlorophyll-a, blue-green algae (Phycocyanin), and turbidity. This package is able to process the following sensor configurations: WorldView-2, Sentinel-2, Landsat-8, MODIS, and MERIS.

Depends R (>= 3.4.0)

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Encoding UTF-8

LazyData true

Imports methods, raster, rgdal

RoxygenNote 6.1.1

Suggests testthat, knitr, tibble, rmarkdown, covr

URL <https://github.com/RAJohansen/waterquality>

BugReports <https://github.com/RAJohansen/waterquality/issues>

VignetteBuilder knitr

NeedsCompilation no

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All0SABI	<i>All0SABI algorithm</i>
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Description

Applies the All0SABI algorithm

Usage

All0SABI(w857, w644, w458, w529)

Arguments

w857	numeric. Value at wavelength of 857 nm
w644	numeric. Value at wavelength of 644 nm
w458	numeric. Value at wavelength of 458 nm
w529	numeric. Value at wavelength of 529 nm

Value

RasterLayer or numeric

References

Alawadi, F. Detection of surface algal blooms using the newly developed algorithm surface algal bloom index (SABI). Proc. SPIE 2010, 7825.

See Also

Other algorithms: [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Am092Bsub

*Am092Bsub algorithm***Description**

Applies the Am092Bsub algorithm

Usage

Am092Bsub(w681, w665)

Arguments

w681	numeric. Value at wavelength of 681 nm
w665	numeric. Value at wavelength of 665 nm

Value

RasterLayer or numeric

References

Amin, R.; Zhou, J.; Gilerson, A.; Gross, B.; Moshary, F.; Ahmed, S. Novel optical techniques for detecting and classifying toxic dinoflagellate *Karenia brevis* blooms using satellite imagery. *Opt. Express* 2009, 17, 9126–9144.

See Also

Other algorithms: [A110SABI](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Am09KBBI	<i>Am09KBBI algorithm</i>
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Description

Applies the Am09KBBI algorithm

Usage

Am09KBBI(w686, w658)

Arguments

w686	numeric. Value at wavelength of 686 nm
w658	numeric. Value at wavelength of 658 nm

Value

RasterLayer or numeric

References

Amin, R.; Zhou, J.; Gilerson, A.; Gross, B.; Moshary, F.; Ahmed, S.; Novel optical techniques for detecting and classifying toxic dinoflagellate *Karenia brevis* blooms using satellite imagery, *Optics Express*, 2009, 17, 11, 1-13.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Be162B643sub629 *Be162B643sub629 algorithm*

Description

Applies the Be162B643sub629 algorithm

Usage

Be162B643sub629(w644, w629)

Arguments

w644	numeric. Value at wavelength of 644 nm
w629	numeric. Value at wavelength of 729 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [Al10SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverVio](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Be162B700sub601	<i>Be162B700sub601 algorithm</i>
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Description

Applies the Be162B700sub601 algorithm

Usage

Be162B700sub601(w700, w601)

Arguments

w700	numeric. Value at wavelength of 700 nm
w601	numeric. Value at wavelength of 601 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [Al10SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

 Be162BsubPhy

Be162BsubPhy algorithm

Description

Applies the Be162BsubPhy algorithm

Usage

Be162BsubPhy(w715, w615)

Arguments

w715 numeric. Value at wavelength of 715 nm

w615 numeric. Value at wavelength of 615 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [Al10SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Be16FLHblue	<i>Be16FLHblue algorithm</i>
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Description

Applies the Be16FLHblue algorithm

Usage

Be16FLHblue(w529, w644, w458)

Arguments

w529	numeric. Value at wavelength of 529 nm
w644	numeric. Value at wavelength of 644 nm
w458	numeric. Value at wavelength of 458 nm

Value

RasterLayer or numeric

References

Beck, R.A. and 22 others; Comparison of satellite reflectance algorithms for estimating chlorophyll-a in a temperate reservoir using coincident hyperspectral aircraft imagery and dense coincident surface observations, *Remote Sens. Environ.*, 2016, 178, 15-30.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Be16FLHBlueRedNIR *Be16FLHBlueRedNIR algorithm*

Description

Applies the Be16FLHBlueRedNIR algorithm

Usage

Be16FLHBlueRedNIR(w658, w857, w458)

Arguments

w658	numeric. Value at wavelength of 658 nm
w857	numeric. Value at wavelength of 857 nm
w458	numeric. Value at wavelength of 458 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverVio](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Be16FLHGreenRedNIR *Be16FLHGreenRedNIR algorithm*

Description

Applies the Be16FLHGreenRedNIR algorithm

Usage

Be16FLHGreenRedNIR(w658, w857, w558)

Arguments

w658	numeric. Value at wavelength of 658 nm
w857	numeric. Value at wavelength of 857 nm
w558	numeric. Value at wavelength of 558 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHViolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverVio](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

 Be16FLHviolet

Be16FLHviolet algorithm

Description

Applies the Be16FLHviolet algorithm

Usage

Be16FLHviolet(w529, w644, w429)

Arguments

w529 numeric. Value at wavelength of 529 nm

w644 numeric. Value at wavelength of 644 nm

w429 numeric. Value at wavelength of 429 nm

Value

RasterLayer or numeric

References

Beck, R.A. and 22 others; Comparison of satellite reflectance algorithms for estimating chlorophyll-a in a temperate reservoir using coincident hyperspectral aircraft imagery and dense coincident surface observations, Remote Sens. Environ., 2016, 178, 15-30.

See Also

Other algorithms: A110SABI, Am092Bsub, Am09KBBI, Be162B643sub629, Be162B700sub601, Be162BsubPhy, Be16FLHBlueRedNIR, Be16FLHGreenRedNIR, Be16FLHvioletRedNIR, Be16FLHblue, Be16MPI, Be16NDPhyI644over615, Be16NDPhyI644over629, Be16NDPhyI, Be16NDTIblue, Be16NDTIviolet, Be16Phy2BDA644over629, Da052BDA, De933BDA, Gi033BDA, Go04MCI, HU103BDA, Kn07KIVU, Ku15PhyCI, Ku15SLH, MI092BDA, MM092BDA, MM12NDCIalt, MM12NDCI, MM143BDAopt, SI052BDA, SM122BDA, SY002BDA, TurbBe16GreenPlusRedBothOverVio, TurbBe16RedOverViolet, TurbBow06RedOverGreen, TurbChip09NIROverGreen, TurbDox02NIRoverRed, TurbFrohn09GreenPlusRedBothOverBlue, TurbHarr92NIR, TurbLath91RedOverBlue, TurbMoore80Red, Wy08CI, Zh10FLH

Be16FLHVioletRedNIR *Be16FLHVioletRedNIR algorithm*

Description

Applies the Be16FLHVioletRedNIR algorithm

Usage

Be16FLHVioletRedNIR(w658, w857, w444)

Arguments

w658	numeric. Value at wavelength of 658 nm
w857	numeric. Value at wavelength of 857 nm
w444	numeric. Value at wavelength of 444 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverVio](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

 Be16MPI

Be16MPI algorithm

Description

Applies the Be16MPI algorithm

Usage

Be16MPI(w615, w601, w644)

Arguments

w615	numeric. Value at wavelength of 615 nm
w601	numeric. Value at wavelength of 601 nm
w644	numeric. Value at wavelength of 644 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Be16NDPhyI	<i>Be16NDPhyI algorithm</i>
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Description

Applies the Be16NDPhyI algorithm

Usage

Be16NDPhyI(w700, w622)

Arguments

w700	numeric. Value at wavelength of 700 nm
w622	numeric. Value at wavelength of 622 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHvioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Be16NDPhyI644over615 *Be16NDPhyI644over615 algorithm*

Description

Applies the Be16NDPhyI644over615 algorithm

Usage

Be16NDPhyI644over615(w644, w615)

Arguments

w644	numeric. Value at wavelength of 644 nm
w615	numeric. Value at wavelength of 615 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverVio](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Be16NDPhyI644over629 *Be16NDPhyI644over629 algorithm*

Description

Applies the Be16NDPhyI644over629 algorithm

Usage

Be16NDPhyI644over629(w644, w629)

Arguments

w644	numeric. Value at wavelength of 644 nm
w629	numeric. Value at wavelength of 629 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [Al10SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverVio](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Be16NDTIblue	<i>Be16NDTIblue algorithm</i>
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Description

Applies the Be16NDTIblue algorithm

Usage

Be16NDTIblue(w658, w458)

Arguments

w658	numeric. Value at wavelength of 658 nm
w458	numeric. Value at wavelength of 458 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [Al10SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHvioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverVio](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Be16NDTIviolet	<i>Be16NDTIviolet algorithm</i>
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Description

Applies the Be16NDTIviolet algorithm

Usage

```
Be16NDTIviolet(w658, w444)
```

Arguments

w658	numeric. Value at wavelength of 658 nm
w444	numeric. Value at wavelength of 444 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [Al10SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHvioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverVio](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Be16Phy2BDA644over629 *Be16Phy2BDA644over629 algorithm*

Description

Applies the Be16Phy2BDA644over629 algorithm

Usage

Be16Phy2BDA644over629(w644, w629)

Arguments

w644	numeric. Value at wavelength of 644 nm
w629	numeric. Value at wavelength of 629 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [Al10SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHvioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverVio](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Da052BDA	<i>Da052BDA algorithm</i>
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Description

Applies the Da052BDA algorithm

Usage

Da052BDA(w714, w672)

Arguments

w714	numeric. Value at wavelength of 714 nm
w672	numeric. Value at wavelength of 672 nm

Value

RasterLayer or numeric

References

Wynne, T. T., Stumpf, R. P., Tomlinson, M. C., Warner, R. A., Tester, P. A., Dyble, J.; Relating spectral shape to cyanobacterial blooms in the Laurentian Great Lakes. *Int. J. Remote Sens.*, 2008, 29, 3665–3672.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

De933BDA	<i>De933BDA algorithm</i>
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Description

Applies the De933BDA algorithm

Usage

De933BDA(w600, w648, w625)

Arguments

w600	numeric. Value at wavelength of 600 nm
w648	numeric. Value at wavelength of 648 nm
w625	numeric. Value at wavelength of 625 nm

Value

RasterLayer or numeric

References

Dekker, A.; Detection of the optical water quality parameters for eutrophic waters by high resolution remote sensing, Ph.D. thesis, 1993, Free University, Amsterdam.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHvioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Gi033BDA	<i>Gi033BDA algorithm</i>
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Description

Applies the Gi033BDA algorithm

Usage

Gi033BDA(w672, w715, w757)

Arguments

w672	numeric. Value at wavelength of 672 nm
w715	numeric. Value at wavelength of 715 nm
w757	numeric. Value at wavelength of 757 nm

Value

RasterLayer or numeric

References

Gitelson, A.A.; U. Gritz, and M. N. Merzlyak.; Relationships between leaf chlorophyll content and spectral reflectance and algorithms for non-destructive chlorophyll assessment in higher plant leaves. J. Plant Phys. 2003, 160, 271-282.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Go04MCI

*Go04MCI algorithm***Description**

Applies the Go04MCI algorithm

Usage

Go04MCI(w709, w681, w753)

Arguments

w709	numeric. Value at wavelength of 709 nm
w681	numeric. Value at wavelength of 681 nm
w753	numeric. Value at wavelength of 753 nm

Value

RasterLayer or numeric

References

Gower, J.F.R.; Brown, L.; Borstad, G.A.; Observation of chlorophyll fluorescence in west coast waters of Canada using the MODIS satellite sensor. *Can. J. Remote Sens.*, 2004, 30 (1), 17–25.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

 HU103BDA

HU103BDA algorithm

Description

Applies the HU103BDA algorithm

Usage

HU103BDA(w615, w600, w725)

Arguments

w615	numeric. Value at wavelength of 615 nm
w600	numeric. Value at wavelength of 600 nm
w725	numeric. Value at wavelength of 725 nm

Value

RasterLayer or numeric

References

Hunter, P.D.; Tyler, A.N.; Willby, N.J.; Gilvear, D.J.; The spatial dynamics of vertical migration by *Microcystis aeruginosa* in a eutrophic shallow lake: A case study using high spatial resolution time-series airborne remote sensing. *Limn. Oceanogr.* 2008, 53, 2391-2406.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

Kn07KIVU	<i>Kn07KIVU algorithm</i>
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Description

Applies the Kn07KIVU algorithm

Usage

Kn07KIVU(w458, w644, w529)

Arguments

w458	numeric. Value at wavelength of 458 nm
w644	numeric. Value at wavelength of 644 nm
w529	numeric. Value at wavelength of 529 nm

Value

RasterLayer or numeric

References

Kneubuhler, M.; Frank T.; Kellenberger, T.W; Pasche N.; Schmid M.; Mapping chlorophyll-a in Lake Kivu with remote sensing methods. 2007, Proceedings of the Envisat Symposium 2007, Montreux, Switzerland 23–27 April 2007 (ESA SP-636, July 2007).

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

 Ku15PhyCI

Ku15PhyCI algorithm

Description

Applies the Ku15PhyCI algorithm

Usage

Ku15PhyCI(w681, w665, w709)

Arguments

w681	numeric. Value at wavelength of 681 nm
w665	numeric. Value at wavelength of 665 nm
w709	numeric. Value at wavelength of 709 nm

Value

RasterLayer or numeric

References

Kudela, R.M., Palacios, S.L., Austerberry, D.C., Accorsi, E.K., Guild, L.S.; Application of hyper-spectral remote sensing to cyanobacterial blooms in inland waters, Torres-Perez, J., 2015, Remote Sens. Environ., 2015, 167, 1-10.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

 Ku15SLH

Ku15SLH algorithm

Description

Applies the Ku15SLH algorithm

Usage

Ku15SLH(w715, w658)

Arguments

w715	numeric. Value at wavelength of 715 nm
w658	numeric. Value at wavelength of 658 nm

Value

RasterLayer or numeric

References

Kudela, R.M., Palacios, S.L., Austerberry, D.C., Accorsi, E.K., Guild, L.S.; Application of hyper-spectral remote sensing to cyanobacterial blooms in inland waters, Torres-Perez, J., 2015, Remote Sens. Environ., 2015, 167, 1-10.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

MI092BDA	<i>MI092BDA algorithm</i>
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Description

Applies the MI092BDA algorithm

Usage

MI092BDA(w700, w600)

Arguments

w700	numeric. Value at wavelength of 700 nm
w600	numeric. Value at wavelength of 600 nm

Value

RasterLayer or numeric

References

Mishra, S.; Mishra, D.R.; Schluchter, W. M., A novel algorithm for predicting PC concentrations in cyanobacteria: A proximal hyperspectral remote sensing approach. *Remote Sens.*, 2009, 1, 758–775.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

MM092BDA

*MM092BDA algorithm***Description**

Applies the MM092BDA algorithm

Usage

MM092BDA(w724, w600)

Arguments

w724	numeric. Value at wavelength of 724 nm
w600	numeric. Value at wavelength of 600 nm

Value

RasterLayer or numeric

References

Mishra, S.; Mishra, D.R.; Schluchter, W. M., A novel algorithm for predicting PC concentrations in cyanobacteria: A proximal hyperspectral remote sensing approach. *Remote Sens.*, 2009, 1, 758–775.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

MM12NDCI	<i>MM12NDCI algorithm</i>
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Description

Applies the MM12NDCI algorithm

Usage

MM12NDCI(w715, w686)

Arguments

w715	numeric. Value at wavelength of 714 nm
w686	numeric. Value at wavelength of 686 nm

Value

RasterLayer or numeric

References

Mishra, S.; and Mishra, D.R. Normalized difference chlorophyll index: A novel model for remote estimation of chlorophyll-a concentration in turbid productive waters, *Remote Sens. Environ.*, 2012, 117, 394-406.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

MM12NDCIalt

MM12NDCIalt algorithm

Description

Applies the MM12NDCIalt algorithm

Usage

MM12NDCIalt(w700, w658)

Arguments

w700	numeric. Value at wavelength of 700 nm
w658	numeric. Value at wavelength of 658 nm

Value

RasterLayer or numeric

References

Mishra, S.; Mishra, D.R.; A novel remote sensing algorithm to quantify phycocyanin in cyanobacterial algal blooms, *Env. Res. Lett.*, 2014, 9 (11), DOI:10.1088/1748-9326/9/11/114003

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHvioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTblue](#), [Be16NDTiviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBoth0V](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

MM143BDAopt

MM143BDAopt algorithm

Description

Applies the MM143BDAopt algorithm

Usage

MM143BDAopt(w629, w659, w724)

Arguments

w629	numeric. Value at wavelength of 629 nm
w659	numeric. Value at wavelength of 659 nm
w724	numeric. Value at wavelength of 724 nm

Value

RasterLayer or numeric

References

Mishra, S.; Mishra, D.R.; A novel remote sensing algorithm to quantify phycocyanin in cyanobacterial algal blooms, *Env. Res. Lett.*, 2014, 9 (11), DOI:10.1088/1748-9326/9/11/114003

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

 SI052BDA

SI052BDA algorithm

Description

Applies the SI052BDA algorithm

Usage

SI052BDA(w709, w620)

Arguments

w709	numeric. Value at wavelength of 709 nm
w620	numeric. Value at wavelength of 620 nm

Value

RasterLayer or numeric

References

Simis, S. G. H.; Peters, S.W. M.; Gons, H. J.; Remote sensing of the cyanobacteria pigment phycocyanin in turbid inland water. *Limn. Oceanogr.*, 2005, 50, 237–245.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

SM122BDA

SM122BDA algorithm

Description

Applies the SM122BDA algorithm

Usage

SM122BDA(w709, w600)

Arguments

w709 numeric. Value at wavelength of 709 nm

w600 numeric. Value at wavelength of 600 nm

Value

RasterLayer or numeric

References

Mishra, S. Remote sensing of cyanobacteria in turbid productive waters, PhD Dissertation. Mississippi State University, USA. 2012.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

SY002BDA

*SY002BDA algorithm***Description**

Applies the SY002BDA algorithm

Usage

SY002BDA(w650, w625)

Arguments

w650	numeric. Value at wavelength of 650 nm
w625	numeric. Value at wavelength of 625 nm

Value

RasterLayer or numeric

References

Schalles, J.; Yacobi, Y. Remote detection and seasonal patterns of phycocyanin, carotenoid and chlorophyll-a pigments in eutrophic waters. *Archiv fur Hydrobiologie, Special Issues Advances in Limnology*, 2000, 55,153–168.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

TurbBe16GreenPlusRedBothOverViolet

TurbBe16GreenPlusRedBothOverViolet algorithm

Description

Applies the TurbBe16GreenPlusRedBothOverViolet algorithm

Usage

TurbBe16GreenPlusRedBothOverViolet(w558, w658, w444)

Arguments

w558	numeric. Value at wavelength of 558 nm
w658	numeric. Value at wavelength of 658 nm
w444	numeric. Value at wavelength of 444 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [Al10SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

TurbBe16RedOverViolet *TurbBe16RedOverViolet algorithm*

Description

Applies the TurbBe16RedOverViolet algorithm

Usage

TurbBe16RedOverViolet(w658, w444)

Arguments

w658	numeric. Value at wavelength of 658 nm
w444	numeric. Value at wavelength of 444 nm

Value

RasterLayer or numeric

References

Beck, R.; Xu, M.; Zhan, S.; Liu, H.; Johansen, R.A.; Tong, S.; Yang, B.; Shu, S.; Wu, Q.; Wang, S.; Berling, K.; Murray, A.; Emery, E.; Reif, M.; Harwood, J.; Young, J.; Martin, M.; Stillings, G.; Stumpf, R.; Su, H.; Ye, Z.; Huang, Y. Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sens.* 2017, 9, 538.

See Also

Other algorithms: [Al10SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHViolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

TurbBow06RedOverGreen *TurbBow06RedOverGreen algorithm*

Description

Applies the TurbBow06RedOverGreen algorithm

Usage

TurbBow06RedOverGreen(w658, w558)

Arguments

w658	numeric. Value at wavelength of 658 nm
w558	numeric. Value at wavelength of 558 nm

Value

RasterLayer or numeric

References

Bowers, D. G., and C. E. Binding. 2006. "The Optical Properties of Mineral Suspended Particles: A Review and Synthesis." *Estuarine Coastal and Shelf Science* 67 (1–2): 219–230. doi:10.1016/j.ecss.2005.11.010.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

TurbChip09NIROverGreen

TurbChip09NIROverGreen algorithm

Description

Applies the TurbChip09NIROverGreen algorithm

Usage

TurbChip09NIROverGreen(w857, w558)

Arguments

w857	numeric. Value at wavelength of 857 nm
w558	numeric. Value at wavelength of 558 nm

Value

RasterLayer or numeric

References

Chipman, J. W.; Olmanson, L.G.; Gitelson, A.A.; Remote sensing methods for lake management: A guide for resource managers and decision-makers. 2009, Developed by the North American Lake Management Society in collaboration with Dartmouth College, University of Minnesota, and University of Nebraska for the United States Environmental Protection Agency.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

TurbDox02NIRoverRed *TurbDox02NIRoverRed algorithm*

Description

Applies the TurbDox02NIRoverRed algorithm

Usage

TurbDox02NIRoverRed(w857, w658)

Arguments

w857	numeric. Value at wavelength of 857 nm
w658	numeric. Value at wavelength of 658 nm

Value

RasterLayer or numeric

References

Doxaran, D., Froidefond, J.-M.; Castaing, P. ; A reflectance band ratio used to estimate suspended matter concentrations in sediment-dominated coastal waters, *Remote Sens.*, 2002, 23, 5079-5085.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHvioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

TurbFrohn09GreenPlusRedBothOverBlue

TurbFrohn09GreenPlusRedBothOverBlue algorithm

Description

Applies the TurbFrohn09GreenPlusRedBothOverBlue algorithm

Usage

TurbFrohn09GreenPlusRedBothOverBlue(w558, w658, w458)

Arguments

w558	numeric. Value at wavelength of 558 nm
w658	numeric. Value at wavelength of 658 nm
w458	numeric. Value at wavelength of 458 nm

Value

RasterLayer or numeric

References

Frohn, R. C., & Autrey, B. C. (2009). Water quality assessment in the Ohio River using new indices for turbidity and chlorophyll-a with Landsat-7 Imagery. Draft Internal Report, U.S. Environmental Protection Agency.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

TurbHarr92NIR

TurbHarr92NIR algorithm

Description

Applies the TurbHarr92NIR algorithm

Usage

TurbHarr92NIR(w857)

Arguments

w857 numeric. Value at wavelength of 857 nm

Value

RasterLayer or numeric

References

Schiebe F.R., Harrington J.A., Ritchie J.C. Remote-Sensing of Suspended Sediments—the Lake Chicot, Arkansas Project. *Int. J. Remote Sens.* 1992;13:1487–1509.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

TurbLath91RedOverBlue *TurbLath91RedOverBlue algorithm*

Description

Applies the TurbLath91RedOverBlue algorithm

Usage

TurbLath91RedOverBlue(w658, w458)

Arguments

w658	numeric. Value at wavelength of 658 nm
w458	numeric. Value at wavelength of 458 nm

Value

RasterLayer or numeric

References

Lathrop, R. G., Jr., T. M. Lillesand, and B. S. Yandell, 1991. Testing the utility of simple multi-date Thematic Mapper calibration algorithms for monitoring turbid inland waters. *International Journal of Remote Sensing*

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHvioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbMoore80Red](#), [Wy08CI](#), [Zh10FLH](#)

TurbMoore80Red	<i>TurbMoore80Red algorithm</i>
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Description

Applies the TurbMoore80Red algorithm

Usage

TurbMoore80Red(w658)

Arguments

w658 numeric. Value at wavelength of 658 nm

Value

RasterLayer or numeric

References

Moore, G.K., Satellite remote sensing of water turbidity, *Hydrological Sciences*, 1980, 25, 4, 407-422.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHvioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [Wy08CI](#), [Zh10FLH](#)

wq_algorithms	<i>wq_algorithms database</i>
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Description

A dataset containing the information about the water quality algorithms

Usage

wq_algorithms

Format

A tibble with 91 rows and 4 variables:

- name: algorithm name
- funs: algorithm function
- satellite: satellite/instrument name ("worldview2", "sentinel2", "landsat8", "modis", or "meris")
- bands: list of the bands used from the given satellite/instrument

wq_calc	<i>Water quality calculation</i>
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Description

Calculates a set of water quality indices

Usage

```
wq_calc(raster_stack, alg = "all", sat, ...)
```

Arguments

raster_stack	RasterStack containing a satellite data
alg	Name (e.g. <code>Am09KBBI()</code>) or type of the algorithm ("chlorophyll", "phycocyanin", "turbidity") or "all"
sat	Name of the satellite or instrument ("worldview2", "sentinel2", "landsat8", "modis", or "meris")
...	Other arguments passed on to <code>stack()</code>

Value

RasterLayer

Examples

```
library(raster)

# sentinel2 example
s2 = stack(system.file("raster/S2_Harsha.tif", package = "waterquality"))
s2_A110SABI = wq_calc(s2, alg = "A110SABI", sat = "sentinel2")
s2_two_alg = wq_calc(s2, alg = c("TurbChip09NIROverGreen", "Am092Bsub"), sat = "sentinel2")

## Not run: (
s2_wq = wq_calc(s2, alg = "all", sat = "sentinel2")

# landsat8 example
l8 = stack(system.file("raster/L8_Taylorville.tif", package = "waterquality"))
l8_wq = wq_calc(s2, alg = "all", sat = "landsat8")
)
## End(Not run)
```

Wy08CI	<i>Wy08CI algorithm</i>
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Description

Applies the Wy08CI algorithm

Usage

Wy08CI(w686, w672, w715)

Arguments

w686	numeric. Value at wavelength of 686 nm
w672	numeric. Value at wavelength of 672 nm
w715	numeric. Value at wavelength of 715 nm

Value

RasterLayer or numeric

References

Wynne, T. T., Stumpf, R. P., Tomlinson, M. C., Warner, R. A., Tester, P. A., Dyble, J.; Relating spectral shape to cyanobacterial blooms in the Laurentian Great Lakes. *Int. J. Remote Sens.*, 2008, 29, 3665–3672.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIviolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Zh10FLH](#)

Zh10FLH

*Zh10FLH algorithm***Description**

Applies the Zh10FLH algorithm

Usage

Zh10FLH(w686, w715, w672)

Arguments

w686	numeric. Value at wavelength of 686 nm
w715	numeric. Value at wavelength of 715 nm
w672	numeric. Value at wavelength of 672 nm

Value

RasterLayer or numeric

References

Zhao, D.Z.; Xing, X.G.; Liu, Y.G.; Yang, J.H.; Wang, L. The relation of chlorophyll-a concentration with the reflectance peak near 700 nm in algae-dominated waters and sensitivity of fluorescence algorithms for detecting algal bloom. *Int. J. Remote Sens.* 2010, 31, 39-48.

See Also

Other algorithms: [A110SABI](#), [Am092Bsub](#), [Am09KBBI](#), [Be162B643sub629](#), [Be162B700sub601](#), [Be162BsubPhy](#), [Be16FLHBlueRedNIR](#), [Be16FLHGreenRedNIR](#), [Be16FLHVioletRedNIR](#), [Be16FLHblue](#), [Be16FLHviolet](#), [Be16MPI](#), [Be16NDPhyI644over615](#), [Be16NDPhyI644over629](#), [Be16NDPhyI](#), [Be16NDTIblue](#), [Be16NDTIViolet](#), [Be16Phy2BDA644over629](#), [Da052BDA](#), [De933BDA](#), [Gi033BDA](#), [Go04MCI](#), [HU103BDA](#), [Kn07KIVU](#), [Ku15PhyCI](#), [Ku15SLH](#), [MI092BDA](#), [MM092BDA](#), [MM12NDCIalt](#), [MM12NDCI](#), [MM143BDAopt](#), [SI052BDA](#), [SM122BDA](#), [SY002BDA](#), [TurbBe16GreenPlusRedBothOverViolet](#), [TurbBe16RedOverViolet](#), [TurbBow06RedOverGreen](#), [TurbChip09NIROverGreen](#), [TurbDox02NIRoverRed](#), [TurbFrohn09GreenPlusRedBothOverBlue](#), [TurbHarr92NIR](#), [TurbLath91RedOverBlue](#), [TurbMoore80Red](#), [Wy08CI](#)

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