Package: waterquality (via r-universe)

August 22, 2024

Title Satellite Derived Water Quality Detection Algorithms

Version 1.0.0

Description The main purpose of waterquality is to quickly and easily convert satellite-based reflectance imagery into one or many well-known water quality algorithms designed for the detection of harmful algal blooms or the following pigment proxies: chlorophyll-a, blue-green algae (phycocyanin), and turbidity. Johansen et al. (2019) <doi:10.21079/11681/35053>.

Depends R (>= 3.4.0)

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Encoding UTF-8

LazyData true

Roxygen list(markdown = TRUE)

Imports methods, terra, purrr, caret, magrittr, dplyr

RoxygenNote 7.2.3

Suggests testthat, knitr, tibble, rmarkdown, covr, tmap, tmaptools, sf

URL https://github.com/RAJohansen/waterquality, https://rajohansen.github.io/waterquality/

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

VignetteBuilder knitr

Repository https://rajohansen.r-universe.dev

RemoteUrl https://github.com/rajohansen/waterquality

RemoteRef HEAD

RemoteSha b34598325315eeebdf268e33c53a967a8884df5f

Contents

`Al10SABI` *Al10SABI algorithm*

Description

Applies the Al10SABI algorithm

Usage

```
Al10SABI(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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(, Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS, Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothO, TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`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

SpatRaster 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: Al10SABI(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(, Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS, Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothO, TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Am09KBBI` *Am09KBBI algorithm*

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

SpatRaster 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: Al10SABI(), Am092Bsub(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOv TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOv TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be162B700sub601` *Be162B700sub601 algorithm*

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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(, Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS, Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothO TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOv TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHBlueRedNIR_LS8` *Be16FLHBlueRedNIR_LS8 algorithm*

Description

Applies the Be16FLHBlueRedNIR_LS8 algorithm

Usage

```
Be16FLHBlueRedNIR_LS8(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

SpatRaster 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_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOv, TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

Be16FLHBlueRedNIR_MERIS

Be16FLHBlueRedNIR_MERIS algorithm

Description

Applies the Be16FLHBlueRedNIR_MERIS algorithm

Usage

```
Be16FLHBlueRedNIR_MERIS(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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOv TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHBlueRedNIR_OLCI`

Be16FLHBlueRedNIR_OLCI algorithm

Description

Applies the Be16FLHBlueRedNIR_OLCI algorithm

Usage

```
Be16FLHBlueRedNIR_OLCI(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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOv TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

Be16FLHBlueRedNIR_S2 *Be16FLHBlueRedNIR_S2 algorithm*

Description

Applies the Be16FLHBlueRedNIR_S2 algorithm

Usage

```
Be16FLHBlueRedNIR_S2(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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOv TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

Be16FLHBlueRedNIR_WV2 *Be16FLHBlueRedNIR_WV2 algorithm*

Description

Applies the Be16FLHBlueRedNIR_WV2 algorithm

Usage

```
Be16FLHBlueRedNIR_WV2(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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS, Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothO, TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

Be16FLHblue_LS8 *Be16FLHblue_LS8 algorithm*

Description

Applies the Be16FLHblue_LS8 algorithm

Usage

```
Be16FLHblue_LS8(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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHblue_MERIS` *Be16FLHblue_MERIS algorithm*

Description

Applies the Be16FLHblue_MERIS algorithm

Usage

```
Be16FLHblue_MERIS(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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHblue_OLCI` *Be16FLHblue_OLCI algorithm*

Description

Applies the Be16FLHblue_OLCI algorithm

Usage

```
Be16FLHblue_OLCI(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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHblue_S2` *Be16FLHblue_S2 algorithm*

Description

Applies the Be16FLHblue_S2 algorithm

Usage

```
Be16FLHblue_S2(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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHblue_WV2` *Be16FLHblue_WV2 algorithm*

Description

Applies the Be16FLHblue_WV2 algorithm

Usage

```
Be16FLHblue_WV2(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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHGreenRedNIR_LS8`

Be16FLHGreenRedNIR_LS8 algorithm

Description

Applies the Be16FLHGreenRedNIR_LS8 algorithm

Usage

```
Be16FLHGreenRedNIR_LS8(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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS, Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOv, TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

Be16FLHGreenRedNIR_MERIS

Be16FLHGreenRedNIR_MERIS algorithm

Description

Applies the Be16FLHGreenRedNIR_MERIS algorithm

Usage

```
Be16FLHGreenRedNIR_MERIS(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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS, Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOv TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHGreenRedNIR_OLCI`

Be16FLHGreenRedNIR_OLCI algorithm

Description

Applies the Be16FLHGreenRedNIR_OLCI algorithm

Usage

```
Be16FLHGreenRedNIR_OLCI(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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS, Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOv TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

Be16FLHGreenRedNIR_S2 *Be16FLHGreenRedNIR_S2 algorithm*

Description

Applies the Be16FLHGreenRedNIR_S2 algorithm

Usage

```
Be16FLHGreenRedNIR_S2(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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MER Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothO TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHGreenRedNIR_WV2`

Be16FLHGreenRedNIR_WV2 algorithm

Description

Applies the Be16FLHGreenRedNIR_WV2 algorithm

Usage

```
Be16FLHGreenRedNIR_WV2(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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERI Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothO TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHVioletRedNIR_LS8` *Be16FLHVioletRedNIR_LS8 algorithm*

Description

Applies the Be16FLHVioletRedNIR_LS8 algorithm

Usage

```
Be16FLHVioletRedNIR_LS8(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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_MERIS, Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOv, TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

Be16FLHVioletRedNIR_MERIS

Be16FLHVioletRedNIR_MERIS algorithm

Description

Applies the Be16FLHVioletRedNIR_MERIS algorithm

Usage

```
Be16FLHVioletRedNIR_MERIS(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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOv TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHVioletRedNIR_OLCI`

Be16FLHVioletRedNIR_OLCI algorithm

Description

Applies the Be16FLHVioletRedNIR_OLCI algorithm

Usage

```
Be16FLHVioletRedNIR_OLCI(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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHVioletRedNIR_S2`

Be16FLHVioletRedNIR_S2 algorithm

Description

Applies the Be16FLHVioletRedNIR_S2 algorithm

Usage

```
Be16FLHVioletRedNIR_S2(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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHVioletRedNIR_WV2`

Be16FLHVioletRedNIR_WV2 algorithm

Description

Applies the Be16FLHVioletRedNIR_WV2 algorithm

Usage

```
Be16FLHVioletRedNIR_WV2(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

SpatRaster 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_LS8()`, `Be16FLHBlueRedNIR_MERIS()`, `Be16FLHBlueRedNIR_OLCI()`, `Be16FLHBlueRedNIR_S2()`, `Be16FLHBlueRedNIR_WV2()`, `Be16FLHGreenRedNIR_LS8()`, `Be16FLHGreenRedNIR_MERIS()`, `Be16FLHGreenRedNIR_OLCI()`, `Be16FLHGreenRedNIR_S2()`, `Be16FLHGreenRedNIR_WV2()`, `Be16FLHVioletRedNIR_LS8()`, `Be16FLHVioletRedNIR_MERIS()`, `Be16FLHVioletRedNIR_OLCI()`, `Be16FLHVioletRedNIR_S2()`, `Be16FLHblue_LS8()`, `Be16FLHblue_MERIS()`, `Be16FLHblue_OLCI()`, `Be16FLHblue_S2()`, `Be16FLHblue_WV2()`, `Be16FLHviolet_LS8()`, `Be16FLHviolet_MERIS()`, `Be16FLHviolet_OLCI()`, `Be16FLHviolet_S2()`, `Be16FLHviolet_WV2()`, `Be16NDPhyI644over615()`, `Be16NDPhyI644over629()`, `Be16NDPhyI()`, `Be16NDTIblue()`, `Be16NDTIviolet()`, `Be16Phy2BDA644over629()`, `Da052BDA()`, `De933BDA()`, `Gi033BDA()`, `Go04MCI()`, `HU103BDA()`, `Kn07KIVU()`, `MI092BDA()`, `MM092BDA()`, `MM12NDCIalt()`, `MM12NDCI()`, `MM143BDAopt()`, `SI052BDA()`, `SM122BDA()`, `SY002BDA()`, `TurbBe16GreenPlusRedBothOverViolet()`, `TurbBe16RedOverViolet()`, `TurbBow06RedOverGreen()`, `TurbChip09NIROverGreen()`, `TurbDox02NIRoverRed()`, `TurbFrohn09GreenPlusRedBothOverBlue()`, `TurbHarr92NIR()`, `TurbLath91RedOverBlue()`, `TurbMoore80Red()`, `Wy08CI()`

`Be16FLHviolet_LS8` *Be16FLHviolet_LS8 algorithm*

Description

Applies the Be16FLHviolet_LS8 algorithm

Usage

```
Be16FLHviolet_LS8(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 429 nm

Value

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

Be16FLHviolet_MERIS *Be16FLHviolet_MERIS algorithm*

Description

Applies the Be16FLHviolet_MERIS algorithm

Usage

```
Be16FLHviolet_MERIS(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 429 nm

Value

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHviolet_OLCI` *Be16FLHviolet_OLCI algorithm*

Description

Applies the Be16FLHviolet_OLCI algorithm

Usage

```
Be16FLHviolet_OLCI(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 429 nm

Value

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHviolet_S2` *Be16FLHviolet_S2 algorithm*

Description

Applies the Be16FLHviolet_S2 algorithm

Usage

```
Be16FLHviolet_S2(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 429 nm

Value

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16FLHviolet_WV2` *Be16FLHviolet_WV2 algorithm*

Description

Applies the Be16FLHviolet_WV2 algorithm

Usage

```
Be16FLHviolet_WV2(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 429 nm

Value

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothO TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16NDPhyI` *Be16NDPhyI algorithm*

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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOv TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOv TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Be16NDTIblue` *Be16NDTIblue algorithm*

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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

Be16NDTIviolet *Be16NDTIviolet algorithm*

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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

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

SpatRaster 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_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`Da052BDA` *Da052BDA algorithm*

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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`De933BDA` *De933BDA algorithm*

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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`extract_lm` *Run linear model (lm)*

Description

The function runs a linear model on a single water quality parameter and a water quality algorithm and returns a data frame containing the following: r^2, p-value, slope, and intercept of the model

Usage

```
extract_lm(parameter, algorithm, df)
```

Arguments

`parameter`	A string specifying water quality parameter
`algorithm`	A string specifying water quality algorithm
`df`	data frame containing the values for parameter and algorithm arguments

Value

A data frame of the model results

References

Johansen, Richard; et al. (2018). Evaluating the portability of satellite derived chlorophyll-a algorithms for temperate inland lakes using airborne hyperspectral imagery and dense surface observations. Harmful Algae. 76. 10.1016/j.hal.2018.05.001.

R Core Team (2018). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.

See Also

Other extract_lm: `extract_lm_cv_all()`, `extract_lm_cv_multi()`, `extract_lm_cv()`

`extract_lm_cv` *Run linear model with crossvalidation*

Description

The function runs a linear model on a single water quality parameter and a water quality algorithm and conducts a k-folds cross validation, which returns a data frame containing the following: The r^2, p-value, slope, intercept of the global lm model & average r^2, average RMSE, average MAE from the crossvalidated model

Usage

```
extract_lm_cv(
  parameter,
  algorithm,
  df,
  train_method = "lm",
  control_method = "repeatedcv",
  folds = 3,
  nrepeats = 5
)
```

Arguments

`parameter`	water quality parameter
`algorithm`	water quality algorithm
`df`	data frame containing the values for parameter and algorithm arguments
`train_method`	A string specifying which classification or regression model to use (Default = "lm"). See ?caret::train for more details
`control_method`	A string specifying the resampling method (Default = "repeatedcv"). See ?caret::trainControl for more details
`folds`	the number of folds to be used in the cross validation model
`nrepeats`	the number of iterations to be used in the cross validation model

Value

A data frame of the model results

References

Johansen, Richard; et al. (2018). Evaluating the portability of satellite derived chlorophyll-a algorithms for temperate inland lakes using airborne hyperspectral imagery and dense surface observations. Harmful Algae. 76. 10.1016/j.hal.2018.05.001.

R Core Team (2018). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.

Max Kuhn. Contributions from Jed Wing, Steve Weston, Andre Williams, Chris Keefer, Allan Engelhardt, Tony Cooper, Zachary Mayer, Brenton Kenkel, the R Core Team, Michael Benesty, Reynald Lescarbeau, Andrew Ziem, Luca Scrucca, Yuan Tang, Can Candan and Tyler Hunt. (2018). caret: Classification and Regression Training. R package version 6.0-81. https://CRAN.R-project.org/package=caret

See Also

Other extract_lm: `extract_lm_cv_all()`, `extract_lm_cv_multi()`, `extract_lm()`

`extract_lm_cv_all` *Run linear model with crossvalidation over multiple dependent and all numeric independent variables in a data frame*

Description

The function runs a linear model on a list of x and list of y variables and conducts a k-folds cross validation, which returns a data frame containing the following: The r^2, p-value, slope, intercept of the global lm model & average r^2, average RMSE, average MAE from the crossvalidated model

Usage

```
extract_lm_cv_all(
  parameters,
  df,
  train_method = "lm",
  control_method = "repeatedcv",
  folds = 3,
  nrepeats = 5
)
```

Arguments

`parameters`	the list of dependent variables to be evaluated
`df`	data frame containing the values for parameter and algorithm arguments
`train_method`	A string specifying which classification or regression model to use (Default = "lm"). See ?caret::train for more details
`control_method`	A string specifying the resampling method (Default = "repeatedcv"). See ?caret::trainControl for more details
`folds`	the number of folds to be used in the cross validation model
`nrepeats`	the number of iterations to be used in the cross validation model

Value

A data frame of the model results

References

Johansen, Richard; et al. (2018). Evaluating the portability of satellite derived chlorophyll-a algorithms for temperate inland lakes using airborne hyperspectral imagery and dense surface observations. Harmful Algae. 76. 10.1016/j.hal.2018.05.001.

R Core Team (2018). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.

Max Kuhn. Contributions from Jed Wing, Steve Weston, Andre Williams, Chris Keefer, Allan Engelhardt, Tony Cooper, Zachary Mayer, Brenton Kenkel, the R Core Team, Michael Benesty, Reynald Lescarbeau, Andrew Ziem, Luca Scrucca, Yuan Tang, Can Candan and Tyler Hunt. (2018). caret: Classification and Regression Training. R package version 6.0-81. https://CRAN.R-project.org/package=caret

See Also

Other extract_lm: `extract_lm_cv_multi()`, `extract_lm_cv()`, `extract_lm()`

`extract_lm_cv_multi` *Run linear model with crossvalidation over multiple independent and dependent variables*

Description

The function runs a linear model on a list of x and list of y variables and conducts a k-folds cross validation, which returns a data frame containing the following: The r^2, p-value, slope, intercept of the global lm model & average r^2, average RMSE, average MAE from the crossvalidated model

Usage

```
extract_lm_cv_multi(
  parameters,
  algorithms,
  df,
  train_method = "lm",
  control_method = "repeatedcv",
  folds = 3,
  nrepeats = 5
)
```

Arguments

parameters	the list of a water quality parameters to be evaluated
algorithms	the list of water quality algorithms to be evaluated
df	data frame containing the values for parameters and algorithms arguments
train_method	A string specifying which classification or regression model to use (Default = "lm"). See ?caret::train for more details
control_method	A string specifying the resampling method (Default = "repeatedcv"). See ?caret::trainControl for more details
folds	the number of folds to be used in the cross validation model
nrepeats	the number of iterations to be used in the cross validation model

Value

A data frame of the model results

References

Johansen, Richard; et al. (2018). Evaluating the portability of satellite derived chlorophyll-a algorithms for temperate inland lakes using airborne hyperspectral imagery and dense surface observations. Harmful Algae. 76. 10.1016/j.hal.2018.05.001.

R Core Team (2018). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.

Max Kuhn. Contributions from Jed Wing, Steve Weston, Andre Williams, Chris Keefer, Allan Engelhardt, Tony Cooper, Zachary Mayer, Brenton Kenkel, the R Core Team, Michael Benesty, Reynald Lescarbeau, Andrew Ziem, Luca Scrucca, Yuan Tang, Can Candan and Tyler Hunt. (2018). caret: Classification and Regression Training. R package version 6.0-81. https://CRAN.R-project.org/package=caret

See Also

Other extract_lm: `extract_lm_cv_all()`, `extract_lm_cv()`, `extract_lm()`

Gi033BDA *Gi033BDA algorithm*

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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

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

SpatRaster 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: `Al10SABI()`, `Am092Bsub()`, `Am09KBBI()`, `Be162B643sub629()`, `Be162B700sub601()`, `Be162BsubPhy()`, `Be16FLHBlueRedNIR_LS8()`, `Be16FLHBlueRedNIR_MERIS()`, `Be16FLHBlueRedNIR_OLCI()`, `Be16FLHBlueRedNIR_S2()`, `Be16FLHBlueRedNIR_WV2()`, `Be16FLHGreenRedNIR_LS8()`, `Be16FLHGreenRedNIR_MERIS()`, `Be16FLHGreenRedNIR_OLCI()`, `Be16FLHGreenRedNIR_S2()`, `Be16FLHGreenRedNIR_WV2()`, `Be16FLHVioletRedNIR_LS8()`, `Be16FLHVioletRedNIR_MERIS()`, `Be16FLHVioletRedNIR_OLCI()`, `Be16FLHVioletRedNIR_S2()`, `Be16FLHVioletRedNIR_WV2()`, `Be16FLHblue_LS8()`, `Be16FLHblue_MERIS()`, `Be16FLHblue_OLCI()`, `Be16FLHblue_S2()`, `Be16FLHblue_WV2()`, `Be16FLHviolet_LS8()`, `Be16FLHviolet_MERIS()`, `Be16FLHviolet_OLCI()`, `Be16FLHviolet_S2()`, `Be16FLHviolet_WV2()`, `Be16NDPhyI644over615()`, `Be16NDPhyI644over629()`, `Be16NDPhyI()`, `Be16NDTIblue()`, `Be16NDTIviolet()`, `Be16Phy2BDA644over629()`, `Da052BDA()`, `De933BDA()`, `Gi033BDA()`, `Go04MCI()`, `Kn07KIVU()`, `MI092BDA()`, `MM092BDA()`, `MM12NDCIalt()`, `MM12NDCI()`, `MM143BDAopt()`, `SI052BDA()`, `SM122BDA()`, `SY002BDA()`, `TurbBe16GreenPlusRedBothOverViolet()`, `TurbBe16RedOverViolet()`, `TurbBow06RedOverGreen()`, `TurbChip09NIROverGreen()`, `TurbDox02NIRoverRed()`, `TurbFrohn09GreenPlusRedBothOverBlue()`, `TurbHarr92NIR()`, `TurbLath91RedOverBlue()`, `TurbMoore80Red()`, `Wy08CI()`

`Kn07KIVU` *Kn07KIVU algorithm*

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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

Map_WQ_raster *Create waterquality Map with sampling points and optional histogram*

Description

This function wraps the tmap package to help users generate fast and simple data visualization of their WQ_calc raster output along with optional geospatial objects and histogram

Usage

```
Map_WQ_raster(
  WQ_raster,
  sample_points,
  map_title,
  raster_style = "quantile",
  histogram = TRUE
)
```

Arguments

WQ_raster	Raster file generated from wq_calc or other GeoTiff file
sample_points	geospatial file (.shp or .gpkg) containing sampling locations
map_title	text used to generate title of map
raster_style	method to process the color scale when col is a numeric variable. Please refer to the style argument in the ?tmap::tm_raster() function for more details (Default is "quantile").
histogram	Option to add or remove a histogram of the data values. (Default is TRUE)

Value

A data visualization of the results

MI092BDA *MI092BDA algorithm*

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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

MM12NDCI *MM12NDCI algorithm*

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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`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

SpatRaster 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: `Al10SABI()`, `Am092Bsub()`, `Am09KBBI()`, `Be162B643sub629()`, `Be162B700sub601()`, `Be162BsubPhy()`, `Be16FLHBlueRedNIR_LS8()`, `Be16FLHBlueRedNIR_MERIS()`, `Be16FLHBlueRedNIR_OLCI()`, `Be16FLHBlueRedNIR_S2()`, `Be16FLHBlueRedNIR_WV2()`, `Be16FLHGreenRedNIR_LS8()`, `Be16FLHGreenRedNIR_MERIS()`, `Be16FLHGreenRedNIR_OLCI()`, `Be16FLHGreenRedNIR_S2()`, `Be16FLHGreenRedNIR_WV2()`, `Be16FLHVioletRedNIR_LS8()`, `Be16FLHVioletRedNIR_MERIS()`, `Be16FLHVioletRedNIR_OLCI()`, `Be16FLHVioletRedNIR_S2()`, `Be16FLHVioletRedNIR_WV2()`, `Be16FLHblue_LS8()`, `Be16FLHblue_MERIS()`, `Be16FLHblue_OLCI()`, `Be16FLHblue_S2()`, `Be16FLHblue_WV2()`, `Be16FLHviolet_LS8()`, `Be16FLHviolet_MERIS()`, `Be16FLHviolet_OLCI()`, `Be16FLHviolet_S2()`, `Be16FLHviolet_WV2()`, `Be16NDPhyI644over615()`, `Be16NDPhyI644over629()`, `Be16NDPhyI()`, `Be16NDTIblue()`, `Be16NDTIviolet()`, `Be16Phy2BDA644over629()`, `Da052BDA()`, `De933BDA()`, `Gi033BDA()`, `Go04MCI()`, `HU103BDA()`, `Kn07KIVU()`, `MI092BDA()`, `MM092BDA()`, `MM12NDCI()`, `MM143BDAopt()`, `SI052BDA()`, `SM122BDA()`, `SY002BDA()`, `TurbBe16GreenPlusRedBothOverViolet()`, `TurbBe16RedOverViolet()`, `TurbBow06RedOverGreen()`, `TurbChip09NIROverGreen()`, `TurbDox02NIRoverRed()`, `TurbFrohn09GreenPlusRedBothOverBlue()`, `TurbHarr92NIR()`, `TurbLath91RedOverBlue()`, `TurbMoore80Red()`, `Wy08CI()`

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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

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

SpatRaster or numeric

References

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

See Also

Other algorithms: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`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

SpatRaster 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_LS8()`, `Be16FLHBlueRedNIR_MERIS()`, `Be16FLHBlueRedNIR_OLCI()`, `Be16FLHBlueRedNIR_S2()`, `Be16FLHBlueRedNIR_WV2()`, `Be16FLHGreenRedNIR_LS8()`, `Be16FLHGreenRedNIR_MERIS()`, `Be16FLHGreenRedNIR_OLCI()`, `Be16FLHGreenRedNIR_S2()`, `Be16FLHGreenRedNIR_WV2()`, `Be16FLHVioletRedNIR_LS8()`, `Be16FLHVioletRedNIR_MERIS()`, `Be16FLHVioletRedNIR_OLCI()`, `Be16FLHVioletRedNIR_S2()`, `Be16FLHVioletRedNIR_WV2()`, `Be16FLHblue_LS8()`, `Be16FLHblue_MERIS()`, `Be16FLHblue_OLCI()`, `Be16FLHblue_S2()`, `Be16FLHblue_WV2()`, `Be16FLHviolet_LS8()`, `Be16FLHviolet_MERIS()`, `Be16FLHviolet_OLCI()`, `Be16FLHviolet_S2()`, `Be16FLHviolet_WV2()`, `Be16NDPhyI644over615()`, `Be16NDPhyI644over629()`, `Be16NDPhyI()`, `Be16NDTIblue()`, `Be16NDTIviolet()`, `Be16Phy2BDA644over629()`, `Da052BDA()`, `De933BDA()`, `Gi033BDA()`, `Go04MCI()`, `HU103BDA()`, `Kn07KIVU()`, `MI092BDA()`, `MM092BDA()`, `MM12NDCIalt()`, `MM12NDCI()`, `MM143BDAopt()`, `SI052BDA()`, `SM122BDA()`, `SY002BDA()`, `TurbBe16RedOverViolet()`, `TurbBow06RedOverGreen()`, `TurbChip09NIROverGreen()`, `TurbDox02NIRoverRed()`, `TurbFrohn09GreenPlusRedBothOv`
`TurbHarr92NIR()`, `TurbLath91RedOverBlue()`, `TurbMoore80Red()`, `Wy08CI()`

`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

SpatRaster 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_LS8()`, `Be16FLHBlueRedNIR_MERIS()`, `Be16FLHBlueRedNIR_OLCI()`, `Be16FLHBlueRedNIR_S2()`, `Be16FLHBlueRedNIR_WV2()`, `Be16FLHGreenRedNIR_LS8()`, `Be16FLHGreenRedNIR_MERIS()`, `Be16FLHGreenRedNIR_OLCI()`, `Be16FLHGreenRedNIR_S2()`, `Be16FLHGreenRedNIR_WV2()`, `Be16FLHVioletRedNIR_LS8()`, `Be16FLHVioletRedNIR_MERIS()`, `Be16FLHVioletRedNIR_OLCI()`, `Be16FLHVioletRedNIR_S2()`, `Be16FLHVioletRedNIR_WV2()`, `Be16FLHblue_LS8()`, `Be16FLHblue_MERIS()`, `Be16FLHblue_OLCI()`, `Be16FLHblue_S2()`, `Be16FLHblue_WV2()`, `Be16FLHviolet_LS8()`, `Be16FLHviolet_MERIS()`, `Be16FLHviolet_OLCI()`, `Be16FLHviolet_S2()`, `Be16FLHviolet_WV2()`, `Be16NDPhyI644over615()`, `Be16NDPhyI644over629()`, `Be16NDPhyI()`, `Be16NDTIblue()`, `Be16NDTIviolet()`, `Be16Phy2BDA644over629()`, `Da052BDA()`, `De933BDA()`, `Gi033BDA()`, `Go04MCI()`, `HU103BDA()`, `Kn07KIVU()`, `MI092BDA()`, `MM092BDA()`, `MM12NDCIalt()`, `MM12NDCI()`, `MM143BDAopt()`, `SI052BDA()`, `SM122BDA()`, `SY002BDA()`, `TurbBe16GreenPlusRedBothOverViolet()`, `TurbBow06RedOverGreen()`, `TurbChip09NIROverGreen()`, `TurbDox02NIRoverRed()`, `TurbFrohn09GreenPlusRedBothO`
`TurbHarr92NIR()`, `TurbLath91RedOverBlue()`, `TurbMoore80Red()`, `Wy08CI()`

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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothO TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`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

SpatRaster 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: `Al10SABI()`, `Am092Bsub()`, `Am09KBBI()`, `Be162B643sub629()`, `Be162B700sub601()`, `Be162BsubPhy()`, `Be16FLHBlueRedNIR_LS8()`, `Be16FLHBlueRedNIR_MERIS()`, `Be16FLHBlueRedNIR_OLCI()`, `Be16FLHBlueRedNIR_S2()`, `Be16FLHBlueRedNIR_WV2()`, `Be16FLHGreenRedNIR_LS8()`, `Be16FLHGreenRedNIR_MERIS()`, `Be16FLHGreenRedNIR_OLCI()`, `Be16FLHGreenRedNIR_S2()`, `Be16FLHGreenRedNIR_WV2()`, `Be16FLHVioletRedNIR_LS8()`, `Be16FLHVioletRedNIR_MERIS()`, `Be16FLHVioletRedNIR_OLCI()`, `Be16FLHVioletRedNIR_S2()`, `Be16FLHVioletRedNIR_WV2()`, `Be16FLHblue_LS8()`, `Be16FLHblue_MERIS()`, `Be16FLHblue_OLCI()`, `Be16FLHblue_S2()`, `Be16FLHblue_WV2()`, `Be16FLHviolet_LS8()`, `Be16FLHviolet_MERIS()`, `Be16FLHviolet_OLCI()`, `Be16FLHviolet_S2()`, `Be16FLHviolet_WV2()`, `Be16NDPhyI644over615()`, `Be16NDPhyI644over629()`, `Be16NDPhyI()`, `Be16NDTIblue()`, `Be16NDTIviolet()`, `Be16Phy2BDA644over629()`, `Da052BDA()`, `De933BDA()`, `Gi033BDA()`, `Go04MCI()`, `HU103BDA()`, `Kn07KIVU()`, `MI092BDA()`, `MM092BDA()`, `MM12NDCIalt()`, `MM12NDCI()`, `MM143BDAopt()`, `SI052BDA()`, `SM122BDA()`, `SY002BDA()`, `TurbBe16GreenPlusRedBothOverViolet()`, `TurbBe16RedOverViolet()`, `TurbBow06RedOverGreen()`, `TurbDox02NIRoverRed()`, `TurbFrohn09GreenPlusRedBothOve`
`TurbHarr92NIR()`, `TurbLath91RedOverBlue()`, `TurbMoore80Red()`, `Wy08CI()`

`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

SpatRaster 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: `Al10SABI()`, `Am092Bsub()`, `Am09KBBI()`, `Be162B643sub629()`, `Be162B700sub601()`, `Be162BsubPhy()`, `Be16FLHBlueRedNIR_LS8()`, `Be16FLHBlueRedNIR_MERIS()`, `Be16FLHBlueRedNIR_OLCI()`, `Be16FLHBlueRedNIR_S2()`, `Be16FLHBlueRedNIR_WV2()`, `Be16FLHGreenRedNIR_LS8()`, `Be16FLHGreenRedNIR_MERIS()`, `Be16FLHGreenRedNIR_OLCI()`, `Be16FLHGreenRedNIR_S2()`, `Be16FLHGreenRedNIR_WV2()`, `Be16FLHVioletRedNIR_LS8()`, `Be16FLHVioletRedNIR_MERIS()`, `Be16FLHVioletRedNIR_OLCI()`, `Be16FLHVioletRedNIR_S2()`, `Be16FLHVioletRedNIR_WV2()`, `Be16FLHblue_LS8()`, `Be16FLHblue_MERIS()`, `Be16FLHblue_OLCI()`, `Be16FLHblue_S2()`, `Be16FLHblue_WV2()`, `Be16FLHviolet_LS8()`, `Be16FLHviolet_MERIS()`, `Be16FLHviolet_OLCI()`, `Be16FLHviolet_S2()`, `Be16FLHviolet_WV2()`, `Be16NDPhyI644over615()`, `Be16NDPhyI644over629()`, `Be16NDPhyI()`, `Be16NDTIblue()`, `Be16NDTIviolet()`, `Be16Phy2BDA644over629()`, `Da052BDA()`, `De933BDA()`, `Gi033BDA()`, `Go04MCI()`, `HU103BDA()`, `Kn07KIVU()`, `MI092BDA()`, `MM092BDA()`, `MM12NDCIalt()`, `MM12NDCI()`, `MM143BDAopt()`, `SI052BDA()`, `SM122BDA()`, `SY002BDA()`, `TurbBe16GreenPlusRedBothOverViolet()`, `TurbBe16RedOverViolet()`, `TurbBow06RedOverGreen()`, `TurbChip09NIROverGreen()`, `TurbFrohn09GreenPlusRedBoth`, `TurbHarr92NIR()`, `TurbLath91RedOverBlue()`, `TurbMoore80Red()`, `Wy08CI()`

`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

SpatRaster 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: `Al10SABI()`, `Am092Bsub()`, `Am09KBBI()`, `Be162B643sub629()`, `Be162B700sub601()`, `Be162BsubPhy()`, `Be16FLHBlueRedNIR_LS8()`, `Be16FLHBlueRedNIR_MERIS()`, `Be16FLHBlueRedNIR_OLCI()`, `Be16FLHBlueRedNIR_S2()`, `Be16FLHBlueRedNIR_WV2()`, `Be16FLHGreenRedNIR_LS8()`, `Be16FLHGreenRedNIR_MERIS()`, `Be16FLHGreenRedNIR_OLCI()`, `Be16FLHGreenRedNIR_S2()`, `Be16FLHGreenRedNIR_WV2()`, `Be16FLHVioletRedNIR_LS8()`, `Be16FLHVioletRedNIR_MERIS()`, `Be16FLHVioletRedNIR_OLCI()`, `Be16FLHVioletRedNIR_S2()`, `Be16FLHVioletRedNIR_WV2()`, `Be16FLHblue_LS8()`, `Be16FLHblue_MERIS()`, `Be16FLHblue_OLCI()`, `Be16FLHblue_S2()`, `Be16FLHblue_WV2()`, `Be16FLHviolet_LS8()`, `Be16FLHviolet_MERIS()`, `Be16FLHviolet_OLCI()`, `Be16FLHviolet_S2()`, `Be16FLHviolet_WV2()`, `Be16NDPhyI644over615()`, `Be16NDPhyI644over629()`, `Be16NDPhyI()`, `Be16NDTIblue()`, `Be16NDTIviolet()`, `Be16Phy2BDA644over629()`, `Da052BDA()`, `De933BDA()`, `Gi033BDA()`, `Go04MCI()`, `HU103BDA()`, `Kn07KIVU()`, `MI092BDA()`, `MM092BDA()`, `MM12NDCIalt()`, `MM12NDCI()`, `MM143BDAopt()`, `SI052BDA()`, `SM122BDA()`, `SY002BDA()`, `TurbBe16GreenPlusRedBothOverViolet()`, `TurbBe16RedOverViolet()`, `TurbBow06RedOverGreen()`, `TurbChip09NIROverGreen()`, `TurbDox02NIRoverRed()`, `TurbHarr92NIR()`, `TurbLath91RedOverBlue()`, `TurbMoore80Red()`, `Wy08CI()`

TurbHarr92NIR *TurbHarr92NIR algorithm*

Description

Applies the TurbHarr92NIR algorithm

Usage

```
TurbHarr92NIR(w857)
```

Arguments

w857	numeric. Value at wavelength of 857 nm

Value

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbLath91RedOverBlue(), TurbMoore80Red(), Wy08CI()

`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

SpatRaster 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: `Al10SABI()`, `Am092Bsub()`, `Am09KBBI()`, `Be162B643sub629()`, `Be162B700sub601()`, `Be162BsubPhy()`, `Be16FLHBlueRedNIR_LS8()`, `Be16FLHBlueRedNIR_MERIS()`, `Be16FLHBlueRedNIR_OLCI()`, `Be16FLHBlueRedNIR_S2()`, `Be16FLHBlueRedNIR_WV2()`, `Be16FLHGreenRedNIR_LS8()`, `Be16FLHGreenRedNIR_MERIS()`, `Be16FLHGreenRedNIR_OLCI()`, `Be16FLHGreenRedNIR_S2()`, `Be16FLHGreenRedNIR_WV2()`, `Be16FLHVioletRedNIR_LS8()`, `Be16FLHVioletRedNIR_MERIS()`, `Be16FLHVioletRedNIR_OLCI()`, `Be16FLHVioletRedNIR_S2()`, `Be16FLHVioletRedNIR_WV2()`, `Be16FLHblue_LS8()`, `Be16FLHblue_MERIS()`, `Be16FLHblue_OLCI()`, `Be16FLHblue_S2()`, `Be16FLHblue_WV2()`, `Be16FLHviolet_LS8()`, `Be16FLHviolet_MERIS()`, `Be16FLHviolet_OLCI()`, `Be16FLHviolet_S2()`, `Be16FLHviolet_WV2()`, `Be16NDPhyI644over615()`, `Be16NDPhyI644over629()`, `Be16NDPhyI()`, `Be16NDTIblue()`, `Be16NDTIviolet()`, `Be16Phy2BDA644over629()`, `Da052BDA()`, `De933BDA()`, `Gi033BDA()`, `Go04MCI()`, `HU103BDA()`, `Kn07KIVU()`, `MI092BDA()`, `MM092BDA()`, `MM12NDCIalt()`, `MM12NDCI()`, `MM143BDAopt()`, `SI052BDA()`, `SM122BDA()`, `SY002BDA()`, `TurbBe16GreenPlusRedBothOverViolet()`, `TurbBe16RedOverViolet()`, `TurbBow06RedOverGreen()`, `TurbChip09NIROverGreen()`, `TurbDox02NIRoverRed()`, `TurbFrohn09GreenPlusRedBothOverBlue()`, `TurbHarr92NIR()`, `TurbMoore80Red()`, `Wy08CI()`

TurbMoore80Red *TurbMoore80Red algorithm*

Description

Applies the TurbMoore80Red algorithm

Usage

```
TurbMoore80Red(w658)
```

Arguments

w658	numeric. Value at wavelength of 658 nm

Value

SpatRaster or numeric

References

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

See Also

Other algorithms: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), Wy08CI()

wq_algorithms *wq_algorithms database*

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 *Water quality calculation*

Description

Calculates a set of water quality indices

Usage

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

Arguments

terraRast	Terra SpatRaster containing a satellite data
alg	Name (e.g. Am09KBBI()) or type of the algorithm ("chlorophyll", "phycocyanin", "turbidity") or "all"
sat	Name of the satellite or instrument ("worldview2", "sentinel2", "landsat8", "modis", "meris", or "OLCI")
...	Other arguments passed on to terra::rast()

Value

SpatRaster

Examples

```
library(terra)

# sentinel2 example
s2 = terra::rast(system.file("raster/S2_Harsha.tif", package = "waterquality"))
s2_Al10SABI = wq_calc(s2, alg = "Al10SABI", 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 = terra::rast(system.file("raster/L8_Taylorsville.tif", package = "waterquality"))
l8_wq = wq_calc(s2, alg = "all", sat = "landsat8")
)
## End(Not run)
```

`Wy08CI` *Wy08CI algorithm*

Description

Applies the Wy08CI algorithm

Usage

```
Wy08CI(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

SpatRaster 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: Al10SABI(), Am092Bsub(), Am09KBBI(), Be162B643sub629(), Be162B700sub601(), Be162BsubPhy(), Be16FLHBlueRedNIR_LS8(), Be16FLHBlueRedNIR_MERIS(), Be16FLHBlueRedNIR_OLCI(), Be16FLHBlueRedNIR_S2(), Be16FLHBlueRedNIR_WV2(), Be16FLHGreenRedNIR_LS8(), Be16FLHGreenRedNIR_MERIS(), Be16FLHGreenRedNIR_OLCI(), Be16FLHGreenRedNIR_S2(), Be16FLHGreenRedNIR_WV2(), Be16FLHVioletRedNIR_LS8(), Be16FLHVioletRedNIR_MERIS(), Be16FLHVioletRedNIR_OLCI(), Be16FLHVioletRedNIR_S2(), Be16FLHVioletRedNIR_WV2(), Be16FLHblue_LS8(), Be16FLHblue_MERIS(), Be16FLHblue_OLCI(), Be16FLHblue_S2(), Be16FLHblue_WV2(), Be16FLHviolet_LS8(), Be16FLHviolet_MERIS(), Be16FLHviolet_OLCI(), Be16FLHviolet_S2(), Be16FLHviolet_WV2(), Be16NDPhyI644over615(), Be16NDPhyI644over629(), Be16NDPhyI(), Be16NDTIblue(), Be16NDTIviolet(), Be16Phy2BDA644over629(), Da052BDA(), De933BDA(), Gi033BDA(), Go04MCI(), HU103BDA(), Kn07KIVU(), MI092BDA(), MM092BDA(), MM12NDCIalt(), MM12NDCI(), MM143BDAopt(), SI052BDA(), SM122BDA(), SY002BDA(), TurbBe16GreenPlusRedBothOverViolet(), TurbBe16RedOverViolet(), TurbBow06RedOverGreen(), TurbChip09NIROverGreen(), TurbDox02NIRoverRed(), TurbFrohn09GreenPlusRedBothOverBlue(), TurbHarr92NIR(), TurbLath91RedOverBlue(), TurbMoore80Red()

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