Composite Processor

# Weight Calculation

## Weight Aot Module

### Module Name

Name: WeightAOT

Library : otbapp\_WeightAOT.so

### Module Parameters

-in <string> Input image (mandatory)

-band <int32> Expression (mandatory)

-out <string> [pixel] Output Image [pixel=uint8/uint16/int16/uint32/int32/float/double] (default value is float) (mandatory)

-qaot <float> AOTQuantificationValue (mandatory)

-waotmin <float> WeightAOTMin (mandatory)

-waotmax <float> WeightAOTMax (mandatory)

-aotmax <int32> AOTMax (mandatory)

Examples:

otbcli\_WeightAOT -in verySmallFSATSW\_r.tif -band 2 -qaot 0.005 -waotmin 0.33 -waotmax 1 -aotmax 50 -out apAOTWeightOutput.tif

### Module Output

The output is a one band raster containing the AOT weights as float.

-out <string> [pixel] Output Image [pixel=uint8/uint16/int16/uint32/int32/float/double] (default value is float) (mandatory)

### Execution Notes

This module should be executed twice, for the 10m and 20m resolution.

## Cloud Weight Module

### Module Name

Name: WeightOnClouds

Library: otbapp\_WeightOnClouds.so

### Module Parameters

Parameters:

-incldmsk <string> Input cloud mask image (mandatory)

-incldmskres <int32> Input cloud mask resolution (mandatory)

-coarseres <int32> Coarse resolution (mandatory, default value is 240)

-sigmasmallcld <float> Small cloud sigma (mandatory)

-sigmalargecld <float> Large cloud sigma (mandatory)

-outres <int32> Resolution of the output image (mandatory)

-outcldweight <string> [pixel] Output Cloud Weight Image [pixel=uint8/uint16/int16/uint32/int32/float/double] (default value is float) (mandatory)

Examples:

otbcli\_WeightOnClouds -incldmsk verySmallFSATSW\_r.tif -incldmskres 20 -coarseres 240 -sigmasmallcld 10.0 -sigmalargecld 50.0 -outres 10 -outcldweight apAOTWeightOutput.tif

### Module Output

The output consists of a one band raster containing the Cloud weights as float.

-outcldweight <string> [pixel] Output Cloud Weight Image [pixel=uint8/uint16/int16/uint32/int32/float/double] (default value is float) (mandatory)

### Execution Notes

This module should be executed twice, for the 10m and 20m resolution.

## Compute Total Weight Module

### Module Name

Name: TotalWeight

Library: otbapp\_TotalWeight.so

### Module Parameters

Parameters:

-in <string> Input product file name (mandatory)

-wsensor <float> Weight for the given sensor type (mandatory)

-l2adate <int32> L2A date, expressed in days (mandatory)

-l3adate <int32> L3A date, expressed in days (mandatory)

-halfsynthesis <int32> Delta max (mandatory)

-wdatemin <float> Minimum date weight (mandatory, default value is 0.5)

-waotfile <string> Input AOT weight file name (mandatory)

-wcldfile <string> Input cloud weight file name (mandatory)

-outtotalweight <string> [pixel] Output Total Weight Image [pixel=uint8/uint16/int16/uint32/int32/float/double] (default value is float) (mandatory)

Examples:

otbcli\_TotalWeight -in example1.tif -waotfile example2.tif -wcldfile example3.tif -wsensor 0.33 -l2adate 10 -l3adate 20 -halfsynthesis 50 -wdatemin 0.10 -outtotalweight apTotalWeightOutput.tif

### Module Output

-outtotalweight <string> [pixel] Output Total Weight Image [pixel=uint8/uint16/int16/uint32/int32/float/double] (default value is float) (mandatory)

### Execution Notes

This module should be executed twice, for the 10m and 20m resolution.

# TODO

1. Some code refactor
2. Rescaling from 240m to 10m lead to a number of 10968 pixels instead of 10980 pixels. This leads to exception in TotalWeight module. Correction in CloudsInterpolation and TotalWeightComputation.
3. Some informations should be extracted from metadata. In this moment, they are expected as in their final types. After the xml parser is ready, they should be used from there

Ex:

AOT\_Quantification\_Value

DateL2A

DateL3A

Half Synthesis period

# Update Synthesis

TODO

# Composite Processor Execution

### 

For Landsat8 and Spot4 a preprocessing step is performed before in order to bring the following rasters to 10 and 20m resolution:

* Image
* Clouds
* Water
* Snow
* AOT

The Weight and Update Synthesis algorithm will make the following assumptions:

* For Landsat8 and Spot 4, the bands for clouds, water, snow and AOT will not be read from the original product rasters but instead will be read from the rasters created during preprocessing. In this case, attention must be payed to the bands indexes as they do not correspond to the original product specified bands. Usually, they will be band 0 in the new created rasters.
* Naming convention for Landsat8 and Spot4:
  + <OriginalName>\_CLD\_10M.tiff
  + <OriginalName>\_CLD\_20M.tiff
  + <OriginalName>\_AOT\_10M.tiff
  + <OriginalName>\_AOT\_20M.tiff
  + <OriginalName>\_SNOW\_10M.tiff
  + <OriginalName>\_SNOW\_20M.tiff
  + <OriginalName>\_WAT\_10M.tiff
  + <OriginalName>\_WAT\_20M.tiff