README document for the Himawari-8/AHI cloud masking algorithm

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Output file name

AHIcm.v0.YYYYMMDDHHMN.dat
- YYYY: Year, MM: Month, DD: Day, HH: Hour (UTC), MN: Minute

Data format

Grid size   : 0.02°
Data type   : 4-byte float binary data with little endian byte order
Value   : 0-1 (Confidence of clear sky. AHI LST uses a value > 0.95 as a clear scene)
Missing code: -999.

Usage

1. Edit "control.sh" or "control_arg.sh"
   Set domain: start_lon, end_lon, start_lat, end_lat
   Set dates : YYYY,MM,DD,HH,MN (Please edit infile:timelist_sample.txt when using control_arg.sh)
2. Run "control.sh" or "control_arg.sh"
   For example: ./control.sh

List of directories and files

Directories:

clear_condition_org: The clear condition data for bands 03 and 14 of the full disk are included.
                     Please do not ever delete this directory.
cloudmask   : Cloud mask data will be output here.
clear_condition   : The clear condition data clipped in the target area are placed.
ir   : AHI IR band data are placed.
vis   : AHI VIS band data are placed.

Shell scripts:

control.sh   : Scripts to execute scripts in sequence on a for loop
control_arg.sh   : Scripts to execute scripts in sequence at the times given by infile
cloud_mask.sh   : Script to create cloud mask data
CEReS_himawari-8.sh   : Script to get AHI VIS/IR data
ndsii.sh   : Script to create NDSII data
convert_clear_condition.sh : Script to clip clear condition data of the target area
change_time.sh   : Script to calculate time

Fortran programs:

cloud_mask.f90/.exe   : Subroutine for cloud mask tests
convert.f90/.exe   : Subroutine to clip land cover data
clear_ndsii.f90/.exe   : Subroutine to calculate and min-composite NDSII
setting_ndsii.f90/.exe   : Subroutine to 999 NDSII data
sunrise_to_sunset.f90/.exe : Subroutine to calculate sunrise/solstice/sunset times

Python scripts:

clear_condition.py   : Subroutine to clip and calculate clear condition data
cloud_mask_B03.py   : Subroutine for band03 cloud mask test
count2tbb.py, pyplot.py, resample.py, split.py: Scripts for processing AHI VIS/IR data

".txt" files

AHICM_v0_README.pdf   : This document

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timelist_sample.txt      :"infile" used for control_arg.sh
calcerror_log.txt        : File to record processing errors
```

<u>Other files:</u>
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original_landcover_hi8.dat: MODIS IGBP Land cover data of full disk
landcover.dat            : Clipped land cover data
ext.01,vis.NN(01-03),sir.NN(01-02),tir.NN(01-10): LUT to convert from count values to R/TBB
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<u>About citation</u>

1. Yamamoto, Y., Ishikawa, H., Oku, Y., Hu, Z., 2018. An algorithm for land surface temperature retrieval using three thermal infrared bands of Himawari-8. *J. Meteorol. Soc. Japan* 96B, 59–76. https://doi.org/10.2151/jmsj.2018-005
2. Yamamoto, Y., Ichii, K., Ryu, Y., Kang, M., Murayama, S., 2022. Uncertainty quantification in land surface temperature retrieved from Himawari-8/AHI data by operational algorithms. *ISPRS J. Photogramm. Remote Sens.*, 191, 171–187. https://doi.org/10.1016/j.isprsjprs.2022.07.008

- Please describe below sentence in Acknowledgements: "Himawari-8/AHI cloud mask data are distributed by the Center for Environmental Remote Sensing (CEReS), Chiba University, Japan."
- Regarding the use of our cloud mask data, in principle, Commercial uses are prohibited in accordance with the data policies of the Japan Meteorological Agency of the Himawari standard data provider.

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