

V2.2_i6 L2AS Detailed Release Description

November 27, 2002

Algorithm Changes

During aerosol retrievals, eliminate optical depth values for which the optical depth exceeds a fraction of the optical depth upper bound and for which the optical depth uncertainty exceeds a threshold.

During aerosol retrievals, reject aerosol mixtures based on optical depth constraints and optical depth uncertainty constraints.

Enable the use of all four bands in aerosol retrievals over dark water, weighted as a function of optical depth.

Make configurable the eigenvector to start with in the determination of the number of eigenvectors to use in aerosol retrievals over heterogeneous land.

In aerosol retrieval, update AlgTypeFlag, RegBestFit* and Reg*OpticalDepth fields to include results of retrievals from homogeneous surface algorithm.

Increase the valid range of BHR and DHR from 1.0 to 1.05. This affects the scaling factors which are used to unscale the data.

Report all chi-square values over water, regardless of whether the chisquare_abs test succeeded or failed.

Refine optical depth upper bound calculation by linearly interpolating between grid points in optical depth grid.

Modify optical depth upper bound determination by using a minimum surface reflectance criterion.

Modify the aerosol retrieval over homogeneous surfaces to downgrade the weight of any spectral camera-averaged HDRF which is very different than the median.

In the aerosol retrieval, add penalization of the chi-square for heterogeneous surfaces to give a larger residual if (rho_misr - rho_model) becomes negative.

In the land surface retrieval, use geometric parameters computed at regional resolution (17.6km x 17.6km) instead of at domain resolution (70.4km x 70.4km).

Limit the value of optical depth for which surface retrievals are permitted.

Modify the iteration algorithm for HDRF retrieval to avoid numerical instability.

Bug Fixes

Fix bug so that the number of eigenvectors to use is always less than the number of cameras with valid data.

In aerosol retrieval, add rho_bias to rho_model instead of subtracting it.

Fix HDRF and BHR calculations to eliminate banding problem which occurs under poor MISR/sun geometry viewing conditions.

Product Changes

Add new flag value to AlgTypeFlag field in aerosol product. The new value is 8, to be interpreted as "homogeneous land retrieval".

Add field RegBestFitCombinedResidual to aerosol product.

Add fields RegSfcRetrOptDepth, RegSfcRetrOptDepthunc, RegSfcRetrMixture, RegSfcRetrAlgTypeFlag, to land surface product.

Change valid range and scaling of BHR and DHR in land product, so that maximum allowed value is 1.05 instead of 1.0.

Science Config File Changes

Remove obsolete field brf_tau_refinement_thresh.

Change values of existing fields:

min_dw_subr_thresh: 16 -> 32

dw_band_mask: F F T T -> T T T T

het_band_mask: T T T F -> T T T T

homog_band_mask: T T T F -> T T T T

max_chisq_abs_dw_thresh: 4 -> 2

max_chisq_geom_dw_thresh: 16 -> 3

max_chisq_spec_dw_thresh: 4 -> 3

max_chisq_maxdev_dw_thresh: 16 -> 5

max_chisq_abs_ota_thresh: 3 -> 2

max_chisq_maxdev_ota_thresh: 3 -> 5

max_chisq_het_thresh: 3 -> 4

hdrf_conv_iter: 2 -> 0
max_bhr: 1.0 -> 1.05
max_brf: 3.0 -> 5.0
max_dhr: 1.0 -> 1.05
max_hdrf: 2.0 -> 5.0
Add new fields:
do_homog_retrieval = F
homog_min_cam_thresh = 6
homog_min_subr_thresh = 8
first_eigenvalue_for_eofs = 1
het_tau_upperbnd_fraction = 0.99
max_het_tau_thresh = 3.0
max_accept_tau_unc_per_het_case = 3.0
max_chisq_homog_thresh = 500.
num_tau_extra = 2
cam_weight_oblique_flag = T
cam_weight_nadir_flag = F
band_weight_short_flag = T
band_weight_long_flag = F
homog_tau_upperbnd_fraction = 0.99
max_tau_unc_homog_thresh = 0.1
frac_bias_regmean = 0.0
frac_geom_spec_mix = 0.5
frac_geom_spec_tau = 0.5
hdrf_thresh_factor_mix = 500.0
hdrf_thresh_factor_tau = 500.0
abs_tau_upperbnd_fraction = 0.99
max_tau_unc_abs_thresh = 0.1
dw_tau_min_for_weights(1) = 0.75
dw_tau_min_for_weights(2) = 0.50
dw_tau_min_for_weights(3) = 0.0
dw_tau_min_for_weights(4) = 0.0
dw_tau_max_for_weights(1) = 1.5
dw_tau_max_for_weights(2) = 1.0
dw_tau_max_for_weights(3) = 0.0
dw_tau_max_for_weights(4) = 0.0
low_tau_default_thresh = 0.1
prev_region_default_thresh = 0.95
albedo_thresh_land = 0.01
albedo_thresh_water = 0.0
chisq_het_normalize_flag = F
use_dynamic_band_weights = F
hdrf_green_tau_thresh = 1.0
hdrf_iteration_weight = 1.0