Mean_Leaf_Area_Index_Test_2 *[leaf_area_index]* Mean LAI, second test (6 biomes) (ATBD eq. 119)	X, Y, Biome	8-bit unsigned integer (See Table 14, scale_factor)	n/a	253 = Fill 254 = Underflow 255 = Overflow
Leaf_Area_Index_Merit_Function_ Test_2 Delta LAI, second test (6 biomes) (ATBD eq. 120) (ATBD sec. 3.3.6.2)	X, Y, Biome	32-bit float (sign flag)	n/a	-9999.0 = Fill Take absolute value to remove sign flag Negative sign indicates saturation Positive sign indicates no saturation
Number_Passing_LAI_Values_Test_2 Number of good fits after second test (6 biomes) (ATB eq. 118)	X, Y, Biome	32-bit integer	count	-9999 = Fill
Equivalent_Reflectance_Subregion_ Variability The standard deviation of the nadir equivalent reflectances divided by the mean value for each band (ATBD eq. 1)	X, Y, Band	8-bit unsigned integer (See Table 14, scale_factor)	n/a	253 = Fill 254 = Underflow 255 = Overflow
AGP_Surface_Type Surface type from AGP	X, Y	8-bit unsigned integer	n/a	253 = Fill 0 = shallow ocean 1 = land 2 = coastline 3 = shallow inland water 4 = ephemeral water 5 = deep inland water 6 = deep ocean
Suitable_For_Surface_Retrieval Indicates locations suitable for surface retrieval after applying all suitability tests	X, Y, Band, Camera	8-bit integer	n/a	-1 = Fill 0 = not suitable 1 = suitable

Table 12 – AUXILIARY Fields (4.4_KM_PRODUCTS)

Field Name Parameter Description	**Dimensions**	**Data Type**	**Units**	**Flag Values**
Smoothed_Aerosol_Optical_Depth_Per_Mixture *[atmosphere optical thickness due to ambient aerosol particles]* AOD at 550 nm after applying smoothing and gap filling algorithms. These are the AODs and mixtures used in the surface retrieval. Set to fill value for mixtures that are not used	X, Y, Mixture	32-bit float	n/a	-9999.0 = Fill
Smoothed_Aerosol_Optical_Depth *[atmosphere optical thickness due to ambient aerosol particles]* Mean of smoothed AOD at 550 nm	X, Y	32-bit float	n/a	-9999.0 = Fill

Table 13 – GEOMETRY Fields (4.4_KM_PRODUCTS)

Field Name *[CF standard_name]* Parameter Description	**Dimensions**	**Data Type**	**Units**	**Flag Values**
Solar_Zenith_Angle *[solar_zenith_angle]* The angle of the sun relative to overhead (0°)	X, Y	32-bit float	angular degree	-9999.0 = Fill
Solar_Azimuth_Angle *[solar_azimuth_angle]* Angle measured clockwise relative to local north of the projection of the solar illumination vector onto a horizontal plane. The illumination vector points in the direction of photon travel, away from the Sun. The opposing vector, pointing *toward* the Sun, is given by [(Solar_Azimuth_Angle + 180°) modulo 360°]	X, Y	32-bit float	angular degree	-9999.0 = Fill
View_Zenith_Angle *[sensor_zenith_angle]* Zenith angle of the observation relative to nadir (0°)	X, Y, Camera	16-bit unsigned integer (See Table 14, scale_factor)	angular degree	65533 = Fill 65534 = Underflow 65535 = Overflow
View_Azimuth_Angle *[sensor_azimuth_angle]* Angle measured clockwise relative to local north of the projection of the view vector onto a horizontal plane. The view vector points in the direction of photon travel.	X, Y, Camera	16-bit unsigned integer (See Table 14, scale_factor)	angular degree	65533 = Fill 65534 = Underflow 65535 = Overflow
Scattering_Angle *[scattering_angle]* The angle between the vector pointing in the direction of travel of the direct sunlight and the vector pointing toward the instrument	X, Y, Camera	16-bit unsigned integer (See Table 14, scale_factor)	angular degree	65533 = Fill 65534 = Underflow 65535 = Overflow
Glint_Angle *[sunglint_angle]* The angle between the vector pointing in the direction of specularly reflected direct sunlight from a horizontal surface and the vector pointing toward the instrument	X, Y, Camera	16-bit unsigned integer (See Table 14, scale_factor)	angular degree	65533 = Fill 65534 = Underflow 65535 = Overflow

Table 14 – Common Attributes of Dimensions and Fields (Where Applicable)

Attribute Name	Description

coordinates	NetCDF CF standard attribute for specifying alternative sets of coordinate values. In this product, spatially gridded data is implicitly geolocated by the SOM X and Y coordinates of each grid cell. Latitude and Longitude fields serve as an alternative source of geolocation. The Time field serves as an alternative to the SOM X (along-track) coordinate. Example:
	
	`uint16 Biome_Best_Estimate(X, Y);`
	`:coordinates = "Latitude Longitude Time";`

calendar	CF standard attribute specifying reference calendar for time units. Value of "standard" specifies standard Gregorian/Julian calendar. Example:
	
	`double Time(X);`
	`:calendar="standard"`
	`:units="seconds since 2007-01-24T05:05:38.043934Z"`

units	CF standard attribute specifying units of measurement (e.g. meters, seconds). See calendar example, above.

long_name
comment
	CF standard attributes for specifying more descriptive information about a field.
	Example:
	
	`short Elevation(X, Y);`
	`:standard_name="surface_height_above_reference_ellipsoid"`
	`:long_name="Surface elevation"`
	`:comment="Reference ellipsoid is WGS84"`

flag_values,
flag_meanings
	CF standard attributes for assigning meanings to numeric values. Example:
	
	`int Camera_Dim(Camera_Dim);`
	`:flag_values = 1, 2, 3, 4, 5, 6, 7, 8, 9`
	`:flag_meanings = "D_forward C_forward B_forward A_forward A_nadir A_aftward B_aftward C_aftward D_aftward"`

standard_name	CF standard attribute for specifying the common name of a field. Example:
	
	`double X_Dim(X_Dim);`
	`:axis="X"`
	`:long_name=" Space-oblique Mercator Along-Track"`
	`:standard_name="projection_x_coordinate"`
	`:units="meters"`

axis	CF standard attribute for specifying coordinate axis associated with a dimension. See standard_name example, above.

scale_factor,
add_offset,
valid_range
 	
(underflow)
(overflow)
	CF standard attributes for packed data. To translate packed (integer) values to real (float) values:
	
	*float_value = integer_value * scale_factor + add_offset*
	
	The valid range of integer values for which the above formula holds is given by valid_range. Integer values outside the valid range should be interpreted as either fill values or flag values (if provided). Example:
	
	`uint16 Hemispherical_Directional_Reflectance_Factor(X, Y, Camera, Band);`
	`:scale_factor = 7.62986E-5`
	`:add_offset = 0.0`
	`:valid_range = 0, 65532`
	`:flag_values = 65534, 65535`
	`:flag_meanings = "underflow, overflow"`
	`:_FillValue = 65533`
	
	Underflow and overflow flags indicate values outside the allowed range. For example, an HDRF of -0.1 cannot be numerically represented in the above example. Underflow represents values less than the minimum allowed. Overflow represents values greater than the maximum allowed.

_FillValue	CF standard attribute for specifying fill value.

* The Time variable is derived by interpolation of Block Center Time samples reported in the An camera GRP_ELLIPSOID product. This approximates the average time of acquisition of the 9 MISR camera views at a given location. The offset in time between the first (Df) camera view and the last (Da) camera view, at any given location, is approximately 7 minutes. More precise acquisition time per camera, per sample location, can be obtained from coefficients recorded in the PerBlockMetadataRad table of the GRP_ELLIPSOID products.

3 Appendix

3.1 ACRONYM LIST

AGP .....Ancillary Geographic Product
AOD.....Aerosol Optical Depth
ATBD.....Algorithm Theoretical Basis Document
AU.....Astronomical Unit
BHR .....Bihemispherical Reflectance
BOA .....Bottom Of Atmosphere
BRF .....Bidirectional Reflectance Factor
CART.....Canopy Architecture Radiative Transfer
CF.....Climate and Forecast
DAAC .....Distributed Active Archive Center
DHR .....Directional-Hemispherical Reflectance
DID .....DTED Intermediate Dataset
DMS.....Degrees Minutes Seconds
DTED.....Digital Terrain Elevation Dataset
ECS .....EOSDIS Core System
EOS .....Earth Observing System
EOSDIS .....Earth Observing System Data and Information System
ESDT.....Earth Science Data Type
FAPAR.....Fraction of Absorbed Photosynthetically-Active Radiation
GCTP .....General Cartographic Transformation Package
GSFC .....Goddard Space Flight Center
HDF .....Hierarchical Data Format
HDF-EOS.....Hierarchical Data Format for EOS
HDRF .....Hemispherical-Directional Reflectance Factor
ISO .....International Organization for Standardization
JPL .....Jet Propulsion Laboratory
LAI.....Leaf Area Index
LaRC.....Langley Research Center
MISR.....Multi-angle Imaging SpectroRadiometer
mRPV.....Modified Rahman-Pinty-Verstraete

NASA.....National Aeronautics and Space Administration
NDVI.....Normalized Difference Vegetation Index
NetCDF .....Network Common Data Format
PAR.....Photosynthetically Active Radiation
PGE.....Product Generation Executable
QA.....Quality Assurance
RCCT .....Radiometric Camera-by-camera Cloud mask Threshold
SCF .....Science Computing Facility
SDP .....Science Data Processing
SMART.....Simulated MISR Ancillary Radiative Transfer
SOM.....Space-Oblique Mercator
TASC .....Terrestrial Atmosphere and Surface Climatology
TOA .....Top-Of-Atmosphere
WGS84.....World Geodetic System 1984