

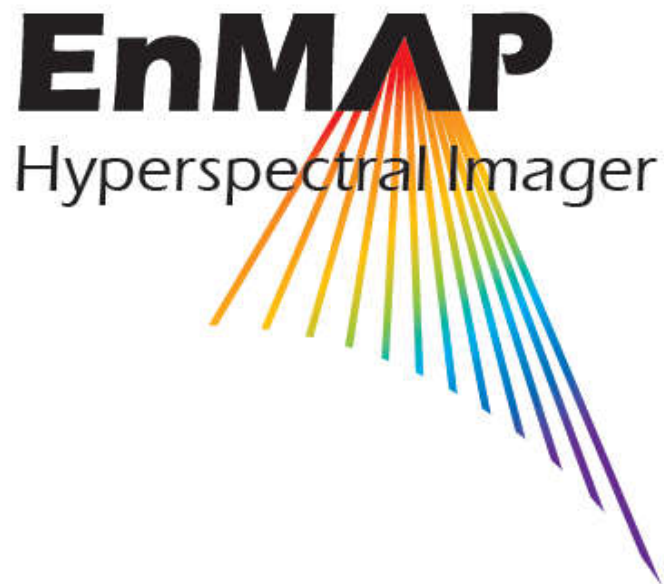


EnMAP Ground Segment

EnMAP HSI Level 1 Product Specification Document

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German Remote Sensing Data Center (DFD)
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1. Introduction

1.1 Purpose

The current document defines the product files to be generated by the high-level processors L1B, L1C and L2A. Its purpose is to specify thoroughly all the created files and directory structure.

1.2 Scope

The document defines the format, content and naming of the EnMAP product files for L1B, L1C and L2A as well as the corresponding directory structure. In case file formats are specified in detail elsewhere, the relevant documents are referenced and the file format description is not duplicated here.

2. Terms, Definitions and Abbreviations

Terms, definitions and abbreviations for the EnMAP Ground Segment and the EnMAP Space Segment are collected and published on <http://www.enmap.org/>, together with the mission description.

3. Product Files and Formats

Depending on the requested output product, ENMAP.HSI.Lx contains the spectral image corrected by the corresponding processing level, quicklooks and quality information as well as the product. The corrected scene contains one tile of the origin datatake which corresponds to approximately 30 km × 30 km.

The spectral images contain scaled pixel values, which have to be converted to physical units using the corresponding parameter set in the metadata. The format of the spectral images in each product level is detailed in Table 3-1. The user can read the gains and offsets from the metadata item `specific/bandCharacterisation` and the background value from `specific/backgroundValue`, cf. Table 3-5.

Product	Data type	Gain	Offset	Background value	Physical quantity	Physical unit
L1B	little-endian uint16	variable for each band	variable for each band	0	at-sensor radiance	W/m ² /sr/nm
L1C	little-endian uint16	variable for each band	variable for each band	0	at-sensor radiance	W/m ² /sr/nm
L2A	little-endian int16	10000	0	-32768	surface reflectance	absolute value

Table 3-1 Format of spectral images in L1B, L1C and L2A products.

The files contained in the L1B, L1C and L2A products are shown in Figure 3-1, Figure 3-2 and Figure 3-3 and detailed in Table 3-2, Table 3-3 and Table 3-4. For all levels, the extension of the spectral images is selectable by the user. Note that the quality layers (classes, cloud, cloud shadow, haze, cirrus, snow) for all levels use the VNIR scene as spatial reference.

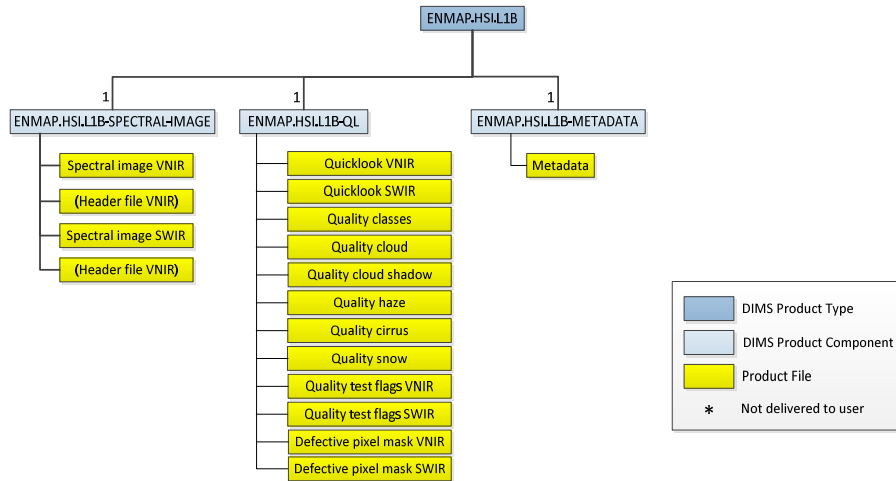


Figure 3-1 L1B product files.

Name	Description	File	Format	Estimated Size
ENMAP.HSI.L1B-METADATA	Provided metadata	ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-METADATA.XML	xml	10 MB
ENMAP.HSI.L1B-SPECTRAL_IMAGE	Earth image measurement data covering 1 tile (30x30km) in sensor geometry	ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-SPECTRAL_IMAGE_VNIR.{TIF,BSQ,BIP,BIL,JPEG2000}	tif, bsq, bip, bil, jpeg2000 (selectable by user)	<172 MB
		ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-SPECTRAL_IMAGE_VNIR.HDR	Envi header file (only for bsq, bip and bil)	10 KB
		ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-SPECTRAL_IMAGE_SWIR.{TIF,BSQ,BIP,BIL,JPEG2000}	tif, bsq, bip, bil, jpeg2000 (selectable by user)	<254 MB
		ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-SPECTRAL_IMAGE_SWIR.HDR	Envi header file (only for bsq, bip and bil)	10 KB
ENMAP.HSI.L1B-QL	Quicklooks in sensor geometry	ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-QL_VNIR.TIF	tif	<3 MB
		ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-QL_SWIR.TIF	tif	<3 MB
	Quality layers in sensor geometry	ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-QL_QUALITY_CLASSES.TIF	tif	<1 MB
		ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-QL_QUALITY_CLOUD.TIF	tif	<1 MB

Name	Description	File	Format	Estimated Size
		ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-QL_QUALITY_CLOUDSHADOW.TIF	tif	<1 MB
		ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-QL_QUALITY_HAZE.TIF	tif	<1 MB
		ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-QL_QUALITY_CIRRUS.TIF	tif	<1 MB
		ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-QL_QUALITY_SNOW.TIF	tif	<1 MB
		ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-QL_QUALITY_TESTFLAGS_VNIR.TIF	tif	<1 MB
		ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-QL_QUALITY_TESTFLAGS_SWIR.TIF	tif	<1 MB
	Defective pixel mask in sensor geometry	ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-QL_PIXELMASK_VNIR.TIF	tif	<86 MB
		ENMAP01-____L1B-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_nn_yyyymmddThhmmssZ-QL_PIXELMASK_SWIR.TIF	tif	<127 MB

Table 3-2 List of component files for L1B product. For the sizes, the following convention is used: 1 KB = 1024 bytes, 1MB = 1024 KB. Note that for image files the size depends crucially on compression format and content, so for these files only the maximum size is indicated.

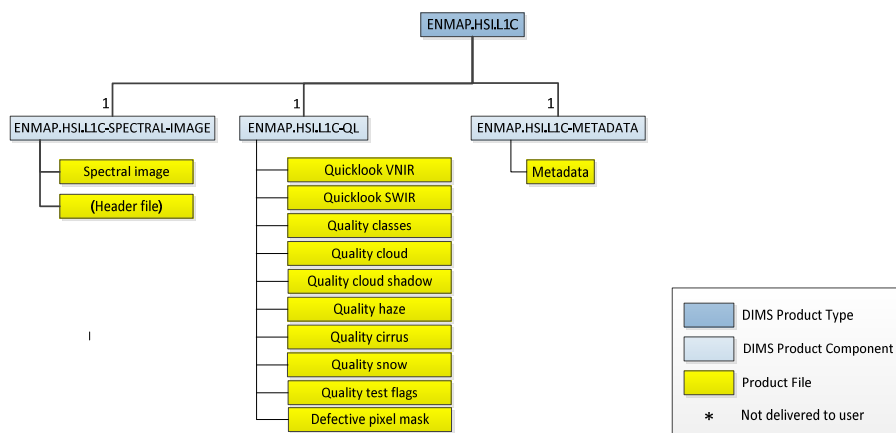


Figure 3-2 L1C product files.

Name	Description	File	Format	Estimated Size
ENMAP.HSI.L1C-METADATA	Provided metadata	ENMAP01-____L1C-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn nn_yyyymmddThhmmssZ-METADATA.XML	xml	10 MB
ENMAP.HSI.L1C-SPECTRAL_IMAGE	Earth image measurement data covering 1 tile (30x30km) in orthorectified geometry	ENMAP01-____L1C-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn nn_yyyymmddThhmmssZ-SPECTRAL_IMAGE.{TIF,BSQ,BIP,BIL,JPEG2000 }	tif, bsq, bip, bil, jpeg2000 (selectable by user)	<639 MB
		ENMAP01-____L1C-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn nn_yyyymmddThhmmssZ-SPECTRAL_IMAGE.HDR	Envi header file (only for bsq, bip and bil)	10 KB
ENMAP.HSI.L1C-QL	Quicklook in orthorectified geometry	ENMAP01-____L1C-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn nn_yyyymmddThhmmssZ-QL_VNIR.TIF	tif	<4 MB
		ENMAP01-____L1C-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn nn_yyyymmddThhmmssZ-QL_SWIR.TIF	tif	<4 MB
	Quality layers in orthorectified geometry	ENMAP01-____L1C-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn nn_yyyymmddThhmmssZ-QL_QUALITY_CLASSES.TIF	tif	<1 MB
		ENMAP01-____L1C-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn nn_yyyymmddThhmmssZ-QL_QUALITY_CLOUD.TIF	tif	<1 MB
		ENMAP01-____L1C-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn nn_yyyymmddThhmmssZ-QL_QUALITY_CLOUDSHADOW.TIF	tif	<1 MB
		ENMAP01-____L1C-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn nn_yyyymmddThhmmssZ-QL_QUALITY_HAZE.TIF	tif	<1 MB
		ENMAP01-____L1C-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn nn_yyyymmddThhmmssZ-QL_QUALITY_CIRRUS.TIF	tif	<1 MB
		ENMAP01-____L1C-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn nn_yyyymmddThhmmssZ-QL_QUALITY_SNOW.TIF	tif	<1 MB
		ENMAP01-____L1C-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn nn_yyyymmddThhmmssZ-QL_QUALITY_TESTFLAGS.TIF	tif	<1 MB
	Defective pixel mask in orthorectified geometry	ENMAP01-____L1C-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn nn_yyyymmddThhmmssZ-QL_PIXELMASK.TIF	tif	<320 MB

Table 3-3 List of component files for L1C product. The sizes of spectral images, quicklooks, quality layers and pixel masks were estimated considering that the orthorectified scene is a factor 1.5 larger than the original scene. For the sizes, the following convention is used: 1 KB = 1024 bytes, 1MB = 1024 KB. Note that for image files the size depends crucially on compression format and content, so for these files only the maximum size is indicated.

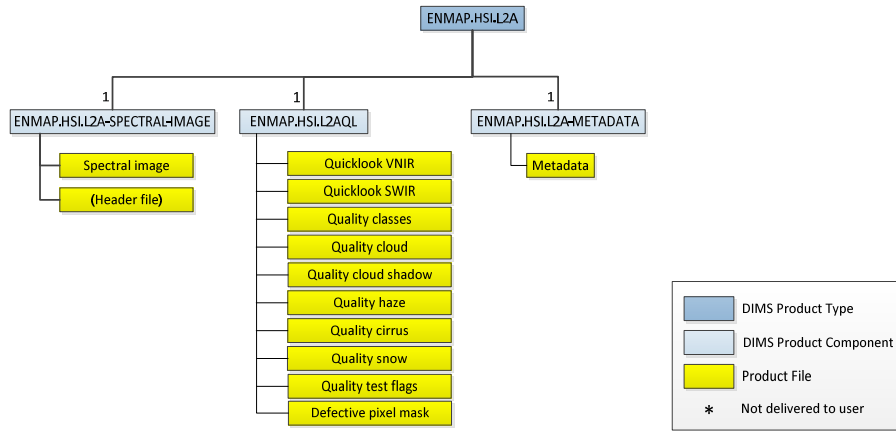


Figure 3-3 L2A product files.

Name	Description	File	Format	Estimated Size
ENMAP.HSI.L2A-METADATA	Provided metadata	ENMAP01-____L2A-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_yyyymmddThhmmssZ-METADATA.XML	xml	10 MB
ENMAP.HSI.L2A-SPECTRAL_IMAGE	Earth image measurement data covering 1 tile (30x30km) in orthorectified geometry	ENMAP01-____L2A-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_yyyymmddThhmmssZ-SPECTRAL_IMAGE.{TIF,BSQ,BIP,BIL,JPEG2000}	tif, bsq, bip, bil, jpeg2000 (selectable by user)	<639 MB
		ENMAP01-____L2A-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_yyyymmddThhmmssZ-SPECTRAL_IMAGE.HDR	Envi header file (only for bsq, bip and bil)	10 KB
ENMAP.HSI.L2A-QL	Quicklook in orthorectified geometry	ENMAP01-____L2A-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_yyyymmddThhmmssZ-QL_VNIR.TIF	tif	<4 MB
		ENMAP01-____L2A-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_yyyymmddThhmmssZ-QL_SWIR.TIF	tif	<4 MB
	Quality layers in orthorectified geometry	ENMAP01-____L2A-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_yyyymmddThhmmssZ-QL_QUALITY_CLASSES.TIF	tif	<1 MB
		ENMAP01-____L2A-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_yyyymmddThhmmssZ-QL_QUALITY_CLOUD.TIF	tif	<1 MB
		ENMAP01-____L2A-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_yyyymmddThhmmssZ-QL_QUALITY_CLOUDSHADOW.TIF	tif	<1 MB
		ENMAP01-____L2A-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_yyyymmddThhmmssZ-QL_QUALITY_HAZE.TIF	tif	<1 MB
ENMAP01-____L2A-DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnnn_yyyymmddThhmmssZ-QL_QUALITY_CIRRUS.TIF	tif	<1 MB		



Name	Description	File	Format	Estimated Size
		ENMAP01-____L2A- DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnn nn_yyyymmddThhmmssZ- QL_QUALITY_SNOW.TIF	tif	<1 MB
		ENMAP01-____L2A- DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnn nn_yyyymmddThhmmssZ-QL_ QUALITY_TESTFLAGS.TIF	tif	<1 MB
	Defective pixel mask in orthorectified geometry	ENMAP01-____L2A- DTnnnnnnnnn_yyyymmddThhmmssZ_nnn_Vnnnn nn_yyyymmddThhmmssZ-QL_PIXELMASK.TIF	tif	<320 MB

Table 3-4 List of component files for L2A product. The sizes of spectral images, quicklooks, quality layers and pixel masks were estimated considering that the orthorectified scene is a factor 1.5 larger than the original scene. For the sizes, the following convention is used: 1 KB = 1024 bytes, 1MB = 1024 KB. Note that for image files the size depends crucially on compression format and content, so for these files only the maximum size is indicated.

3.1 Metadata file

The metadata file contains all the necessary information for the user to be able to process and interpret the product. The file is in xml format and it is organized in five information blocks, namely:

- metadata file information;
- processing parameters;
- base parameters;
- specific parameters; and
- product specific parameters.

Table 3-5 provides a full list of the metadata parameters for each product level along with the corresponding data type and range. An example metadata file can be found in Appendix A.



Parameter Type	Parameter	Data Type	Value Range	Remarks
metadata	name	string	{ENMAP01-<productType>-DT<dataakeID>_<tileID>_<Version>_<dateTime>Z-METADATA.XML}	
metadata	comment	string		
metadata	copyright	string		
metadata	schema name	string	{metadata.xsd}	
metadata	schema processing_level	string	{L1B, L1C, L2A}	
metadata	schema versionSchema	string	{nn.nn.nn}	
metadata	schema copyright	string		
metadata	schema crc	string		Variable length.
metadata	citation	string	<p>This entry shall contain the product ID and DOI.</p> <p>The product ID has the following format:</p> <p><Datatake_ID>_<Tile_ID>_<Product_Type>_<Acquisition_Date_Time_UTC>_<Processor_Version>_<Processing_Date>_<Projection><Resampling><Correction><Cirrus_Haze><Interpolation><Water_Type><Season><Ozone_Column><Format></p> <p>Each field above have the following formats:</p> <ul style="list-style-type: none"> - Datatake ID: 000000000-999999999 - Tile ID: 01-99 - Product Type: {1B, 1C, 2A} - Acquisition Date/Time UTC: YYYYMMDDTHHMMSS - Processor Version: 000000-999999 - Processing Date: YYYYMMDD - Projection: {U0, U+, U-, UD, GE, EU} <p style="margin-left: 40px;">U0: UTM_Zone_of_Scene_Center U-: UTM_Zone_of_Scene_Center(-1)</p>	Unique ID for EnMAP products and corresponding DOI.



Parameter Type	Parameter	Data Type	Value Range	Remarks
			U+: UTM_Zone_of_Scene_Center(+1) UD: UTM_Zone_of_Datatake_Center GE: Geographic EU: European_Projection_LAEA - Resampling: {N, B, C} N: Nearest_Neighbour B: Bilinear_Interpolation C: Cubic_Convolution - Correction: {C, L, W} C: Combined L: Land_Mode W: Water_Mode - Cirrus Haze: {H, C, N} H: Cirrus_and_Haze C: Cirrus N: No - Interpolation: {Y, N} Y: Yes N: No - Water Type: {C, T, H} C: Clear T: Turbid H: Highly_Turbid - Season: {A, S, W} A: Automatic	



Parameter Type	Parameter	Data Type	Value Range	Remarks
			<p>S: Summer W: Winter</p> <p>- Ozone Column: {200-500, AUT} 200-500: ozone value in Dobson units AUT: Automatic</p> <p>- Format: {P, L, B, G, J}</p> <p>P: BIP L: BIL B: BSQ G: GeoTIFF J: JPEG2000</p> <p>Example product ID: 000034578_04_2A_20211128T160515_010200_20211 206_U+BCHYTS250G</p> <p>The product DOI has the following format: doi:<prefix>/<suffix> Example product DOI: doi:10.15489/rlyibn8gjc58</p> <p>Example citation with product ID and DOI: DLR (2021): EnMAP Product 000034578_04_2A_20211128_010200_20211206T160 515_U+BCHYTS250G. doi:10.15489/rlyibn8gjc58</p>	
processing	mapProjection	String	{UTM_Zone_of_Scene_Center, UTM_Zone_of_Scene_Center(-1), UTM_Zone_of_Scene_Center(+1), UTM_Zone_of_Datatake_Center, Geographic, European_Projection_LAEA, NA}	For L1B, the value is NA.



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Parameter Type	Parameter	Data Type	Value Range	Remarks
processing	imageResampling	string	{Nearest_Neighbour, Bilinear_Interpolation, Cubic_Convolution, NA}	For L1B, the value is NA.
processing	DEMDBVersion	string	{SRTM-C-X_vv.rr, best-of-DEM_vv.rr, DEM-derived-from-Tandem-X_vv.rr, ASTER-GDEM_vv.rr, NA}	Internal processing parameter. For L1B, the value is NA.
processing	correctionType	string	{Combined, Land_Mode, Water_Mode, NA}	For L1B and L1C, the value is NA.
processing	cirrusHazeRemoval	string	{Cirrus_and_Haze, Cirrus, No, NA}	For L1B and L1C, the value is NA.
processing	bandInterpolation	string	{Yes, No, NA}	For L1B and L1C, the value is NA.
processing	terrainCorrection	string	{Yes, No, NA}	Actually used terrain correction. For L1B and L1C, the value is NA. For L2A, the value is only relevant if land correction is performed.
processing	waterType	string	{Clear, Turbid, Highly_Turbid, NA}	For L1B and L1C, the value is NA. For L2A, the value is only relevant if water correction is performed.
processing	productFormat	string	{BSQ+Metadata, BIL+Metadata, BIP+Metadata, JPEG2000+Metadata, GeoTiff+Metadata}	
processing	ozoneValue	number	{[200-500], NA}	Actually used ozone value. For L1B and L1C, the value is NA.
processing	season	string	{summer, winter, NA}	Actually used season. For L1B and L1C, the value is NA. For L2A, the value is only relevant if land correction is performed.
base	revision	string	{nn.nn.nn}	Version of the processing chain (used in filename).
base	archivedVersion	string	{nn.nn.nn}	Version of the processor used to produce the archived L0 product (called revision in L0 metadata).
base	sphere	string	{earth}	
base	size	string		Size of product. Attribute unit {byte, Kbyte, Mbyte, Gbyte}.
base	level	string	{L1B, L1C, L2A}	
base	format	string	{ENMAP_L1B, ENMAP_L1C, ENMAP_L2A}	
base	spatialCoverage boundingPolygon	structure	elements: point	Closed 5-point Polygon bounding the entire scene (including non-usable pixels, but not



Parameter Type	Parameter	Data Type	Value Range	Remarks
				background dark pixels) in counter-clockwise order. A sixth point specifies the center of the scene. The element point is also a structure and consists on the following elements: - frame (upper right,..) - longitude - latitude - utcTime These values are valid for the image of the corresponding product.
base	altitudeCoverage	number	{0 – 1000000}	Mean altitude of satellite for scene in m.
base	temporalCoverage startTime	dateTime	2013-04-15 T01:45:11.123456Z	
base	temporalCoverage stopTime	dateTime	2013-04-13 T02:42:01.340870Z	
specific	mission	string	EnMAP	
specific	satelliteID	string	{01,02}	Constant.
specific	sensor	string	HSI	Constant.
specific	acquisitionMode	string	{earth}	
specific	code	string	{L1B, L1C, L2A}	Product specific constant.
specific	cyclogramVersion	string	{123}	3 digits.
specific	cyclogramType	string	{EARTH}	5 char.
specific	macrocommandVersion	string	{123}	3 digits.
specific	MCSequenceId	string	{123}	3 digits (macrocommand ID from VC).
specific	datatakeID	string	{000034578}	9 digits.
specific	imageID	string	{000356287}	9 digits.
specific	tileID	string	{03}	2 digits, id with the datatake.



Parameter Type	Parameter	Data Type	Value Range	Remarks
specific	numberOfTiles	string	{05}	2 digits, total number of tiles of the datatake.
specific	numberOfVNIRBands	number	88	Number of VNIR bands of the corresponding product.
specific	numberOfSWIRBands	number	130	Number of SWIR bands of the corresponding product.
specific	bandCharacterisation	structure	elements: - bandID (number attribute)	Each bandID element has the following children: - WavelengthCenterOfBand (wavelength at the center of band in nm) - FWHMOfBand (wavelength range of the band in nm) - GainOfBand (band gain) - OffsetOfBand (band offset) Filled for all bands in the corresponding product and with the same ordering as the spectral image. The gain and offset can be used to transform the pixel values to physical units (W/m ² /sr/nm for L1B/L1C and absolute value for L2A).
specific	acquisitionType	string	{EARTH}	
specific	acquisitionSubtype	string	{earth}	
specific	productType	string	{STANDARD,MAXIMUM}_{ALL,VNIR,SWIR}, OTHER	
specific	URLToProductType	string	enmap.org/product_{Product type}	
specific	compressionType	string	{COMPRESSED,UNCOMPRESSED,NA}	
specific	status	string	{NOMINAL, REDUCED, LOW, FAILED}	
specific	datatakeStart	dateTime	2013-04-12 T12:12:11.123456Z	
specific	datatakeStop	dateTime	2013-04-12 T16:09:55.458921Z	
specific	spatialCoverageOfDatatake boundingPolygon	structure	elements: point	The element point is also a structure and consists on the following elements: frame (upper right,..) longitude latitude utcTime



Parameter Type	Parameter	Data Type	Value Range	Remarks
				Latitude and longitude (this order) in signed decimal geographic degrees of upper left (maximum of all bands), upper right (maximum of all bands), lower right (maximum of all bands), lower left (maximum of all bands),
specific	spatialCoverageOfOrthoScene boundingPolygon	structure	elements: point	The element point is also a structure and consists on the following elements: frame (upper right,..) longitude latitude utcTime Latitude and longitude (this order) in signed decimal geographic degrees of upper left (maximum of all bands), upper right (maximum of all bands), lower right (maximum of all bands), lower left (maximum of all bands) including background pixels,
specific	pixelSize	number	30	Pixel resolution (unit meter).
specific	widthOfScene	number	1000	Value in pixel as integer or NA (unit pixel).
specific	heightOfScene	number	1024	Value in pixel as integer or NA (unit pixel).
specific	pixelSizeOfOrthoScene	number	30	Value in meters (unit meter), decimal degrees (unit degree) or NA.
specific	widthOfOrthoScene	number	1020	Value in pixel as integer or NA (unit pixel).
specific	heightOfOrthoScene	number	1032	Value in pixel as integer or NA (unit pixel).
specific	missionPhase	string	{pre-launch, leap, commissioning, routine}	
specific	orbitNo	number		
specific	orbitDirection	string	{ASCENDING, DESCENDING}	
specific	processingDateTime	dateTime	2013-04-15 T01:45:11.123456Z	
specific	processingCenter	string	{NZ, OP}	
specific	processingNode	string	IP	
specific	receivingStations	string	{NZ, OP}	List of identifiers of receiving stations.



Parameter Type	Parameter	Data Type	Value Range	Remarks
			<ul style="list-style-type: none"> - sceneWV - sceneAOT - sceneAtmParam - sceneTerrain - orthoTerrain - orthoRMSE - orthoRMSE_x - orthoRMSE_y - orthoResidual - orthoResidual_x - orthoResidual_y - orthoMean orthoMean_x - orthoMean_y - numPointsAll - numPointsGCP - numPointsICP - numPointsDiscardedGCP - numTilesUsed - levelOfRejection 	<ul style="list-style-type: none"> - dataset; {255}: not produced - Scene-average WV value [in cm * 10]; {255}: not produced - Scene-average AOT value [units * 1000]; {-999}: not produced - {0}: nominal quality; {1}: DDV warnings, {2}: negative values warning; {3} other log warnings; {4}: DDV and negative values warning; {5}: DDV and other log warnings; {6}: negative values warning and other log warnings; {7}: DDV warnings and negative values warnings and other log warnings; {255}: not produced - {0}: nominal; {1}: log entries related to scene terrain; {255}: not produced - {0}: nominal; {1}: log entries related to ortho terrain; {255}: not produced - RMSE (xy) of ortho-rectification based on ICPs [units: pixels * 10] ; {255}: not produced - RMSE (x) of ortho-rectification based on ICPs [units: pixels * 10] ; {255}: not produced - RMSE (y) of ortho-rectification based on ICPs [units: pixels * 10] ; {255}: not produced - RMSE (xy) of ortho-rectification based on GCPs [units: pixels * 10] ; {255}: not produced - RMSE (x) of ortho-rectification based on GCPs [units: pixels * 10] ; {255}: not produced - RMSE (y) of ortho-rectification based on GCPs [units: pixels * 10] ; {255}: not produced - Mean (xy) of ortho-rectification based on GCPs [units: pixels * 10] ; {255}: not produced - Mean (x) of ortho-rectification based on GCPs [units: pixels * 10] ; {255}: not produced



Parameter Type	Parameter	Data Type	Value Range	Remarks
			<ul style="list-style-type: none"> - spare_1 - spare_2 - spare_3 	<ul style="list-style-type: none"> - Mean (y) of ortho-rectification based on GCPs [units: pixels * 10] ; {255}: not produced - Total number of matched points - Number of GCPs - Number of ICPs - Number of discarded GCPs - Number of tiles (datatake) used for image matching and GCP / ICP generation - Threshold parameter in estimate - Spare parameter, currently not in use but might be required as new details on HSI performance are available - Spare parameter, currently not in use but might be required as new details on HSI performance are available - Spare parameter, currently not in use but might be required as new details on HSI performance are available
specific	meanGroundElevation	string	532	Value in meter.
specific	meanSlope	float	12.5	Value as decimal and in per cent or NA (unit percent).
specific	biomeType	string	{desert, rain forest etc.}	
specific	acrossOffNadirAngle	float	elements: <ul style="list-style-type: none"> - upper_left - upper_right - lower_right - lower_left - center 	This element has an attribute (DEG) which defines the unit of the displayed value. Value range: {-30,0;30,0} Value as mean in decimal degree or NA.
specific	alongOffNadirAngle		elements: <ul style="list-style-type: none"> - upper_left - upper_right - lower_right - lower_left - center 	Value as mean in decimal degree or NA Value as mean in decimal degree or NA.
specific	sunAzimuthAngle	float	elements: <ul style="list-style-type: none"> - upper_left 	This element has an attribute (DEG) which defines the unit of the displayed value.



Parameter Type	Parameter	Data Type	Value Range	Remarks
			<ul style="list-style-type: none"> - upper_right - lower_right - lower_left - center 	Value range: {-180,0;180,0} Value as mean in decimal degree or NA.
specific	sceneAzimuthAngle	structure	elements: <ul style="list-style-type: none"> - upper_left - upper_right - lower_right - lower_left - center 	This element has an attribute (DEG) which defines the unit of the displayed value. Value range: {-180,0;180,0} Value as mean in decimal degree or NA.
specific	sunElevationAngle	float	elements: <ul style="list-style-type: none"> - upper_left - upper_right - lower_right - lower_left - center 	This element has an attribute (DEG) which defines the unit of the displayed value. Value range: {-90,0;90,0} Value as mean in decimal degree or NA.
specific	instrumentStatus	structure	elements:	Possible values:
		string	- statusOK	{true; false}
		string	- statusVNIR	{on; off}
		string	- statusSWIR	{on; off}
		string	- configVNIR	{standard, maximum, NA}
		string	- configSWIR	{standard, maximum, NA}
		string	- statusSCM	{OK, WARNING, FAILED}
		string	- statusDiffuserProtectionHatch	{OK, WARNING, FAILED}
		string	- statusSunDiffuserHatch	{OK, WARNING, FAILED}
		number	- emergencyStatusOfSCM	{0; 1}
		number	- emergencyStatusOfSSM	{0; 1}
		number	- emergencyStatusOfSDH	{0; 1}
		string	- SWIRAOrSWIRBSelected	{SWIRA; SWIRB}



Parameter Type	Parameter	Data Type	Value Range	Remarks
		number	- mcsSequenceType	{0, 1, 2, 3, 4} (the only valid value is 1, others are errors)
specific	productQuality screeningResult	structure	elements: - status - failedGroups	Summarized VNIR quality status assessment by the screening processor: <ul style="list-style-type: none"> {OK, WARNING, FAILED} {NONE, string containing failed test group names separated by white spaces}. Test groups are coded as: TEMPERATURE, CURRENT, VOLTAGE, DEVSTATUS, DC
specific	productQuality screeningResultTemp	structure	elements: - status - listOfTemps <ul style="list-style-type: none"> o parameter (name attribute) 	List of temperatures: <ul style="list-style-type: none"> {OK, WARNING, FAILED} for all status flags List of checked temperatures written using the parameter data structure. The parameter structure contains the following fields (field names and number of appearances in the parameter structure): <ul style="list-style-type: none"> - description [0..1] - device [0..1] - units [0..1] - status [1] - info [0..1] - value [1] - minValue [0..1] - maxValue [0..1]
specific	productQuality screeningResultCurr	structure	elements: - status - listOfCurrents <ul style="list-style-type: none"> o parameter (name attribute) 	List of currents: <ul style="list-style-type: none"> {OK, WARNING, FAILED} List of checked currents written using the parameter data structure (structure see above)
specific	productQuality screeningResultVolt	structure	elements:	List of voltages:



Parameter Type	Parameter	Data Type	Value Range	Remarks
			<ul style="list-style-type: none"> - status - listOfVoltages <ul style="list-style-type: none"> o parameter (name attribute) 	<ul style="list-style-type: none"> • {OK, WARNING, FAILED} • List of checked voltages written using the parameter data structure (structure see above).
specific	productQuality screeningResultDevStatus	structure	elements: <ul style="list-style-type: none"> - status - listOfDevStatus <ul style="list-style-type: none"> o parameter (name attribute) 	List of device status parameters: <ul style="list-style-type: none"> • {OK, WARNING, FAILED} • List of checked items written using the parameter data structure (structure see above).
specific	vnirProductQuality vnirProductStatus	string	{OK, WARNING, FAILED}	Superior quality status for VNIR.
specific	vnirProductQuality vnirDarkBeforeQuality	structure	elements: <ul style="list-style-type: none"> - available - screeningResult 	Quality of dark current measurement before data take: <ul style="list-style-type: none"> • {yes, no} • {OK, WARNING, FAILED}
specific	vnirProductQuality vnirDarkAfterQuality	structure	elements: <ul style="list-style-type: none"> - available - screeningResult 	Quality of dark current measurement after data take: <ul style="list-style-type: none"> • {yes, no} • {OK, WARNING, FAILED}
specific	vnirProductQuality numChannelsExpected	number	95 (99 maximum configuration)	Number of downlinked VNIR channels.
specific	vnirProductQuality numChannelsMissing	number		Number of missing or unusable channels.
specific	vnirProductQuality expectedChannelsList	string		List of expected channels in terms of bandCharacterisation numbering as comma-separated values or ranges, e.g. 1, 2, ..., 100 or 1-100.
specific	vnirProductQuality missingChannelsList	string		List of missing or unusable channels in terms of bandCharacterisation numbering as



Parameter Type	Parameter	Data Type	Value Range	Remarks
				comma-separated values or ranges, e.g. 1, 2, ..., 100 or 1-100.
specific	swirProductQuality swirProductStatus	string	{OK, WARNING, FAILED}	Superior quality status for SWIR.
specific	swirProductQuality swirDarkBeforeQuality	structure	elements: - available - screeningResult	Quality of dark current measurement before data take: <ul style="list-style-type: none"> {yes, no} {OK, WARNING, FAILED}
specific	swirProductQuality swirDarkAfterQuality	structure	elements: - available - screeningResult	Quality of dark current measurement after data take: <ul style="list-style-type: none"> {yes, no} {OK, WARNING, FAILED}
specific	swirProductQuality numChannelsExpected	number	135 (163 maximum configuration)	Number of downlinked SWIR channels.
specific	swirProductQuality numChannelsMissing	number		Number of missing or unusable channels.
specific	swirProductQuality expectedChannelsList	string		List of expected channels in terms of bandCharacterisation numbering as comma-separated values or ranges, e.g. 1, 2, ..., 100 or 1-100.
specific	swirProductQuality missingChannelsList	string		List of missing or unusable channels in terms of bandCharacterisation numbering as comma-separated values or ranges, e.g. 1, 2, ..., 100 or 1-100.
specific	downlink dtakeNumMissingIsps	number		Total number of missing source packets for all transmitted channel files.
specific	downlink dtakeNumErrorIsps	number	0	Total number of source packets with missing transfer frames for all transmitted channel files.
specific	orbitType	string	{determined}	Constant.
specific	auxDataVersion	string	{nn.nn.nn}	



Parameter Type	Parameter	Data Type	Value Range	Remarks
	orbitVersion			
specific	auxDataVersion attitudeVersion	string	{nn.nn.nn}	
specific	auxDataVersion calTabAtmSpecVersion	string	{nn.nn.nn}	
specific	auxDataVersion calTabGeoVersion	string	{nn.nn.nn}	
specific	auxDataVersion calTabRadVersion	string	{nn.nn.nn}	
specific	auxDataVersion calTabLinearityVersion	string	{nn.nn.nn}	
specific	auxDataVersion calTabDeepSpaceVersion	string	{nn.nn.nn}	
specific	auxDataVersion calTabDPMVersion	string	{nn.nn.nn}	NA if not applicable.
specific	auxDataVersion refTabDarkVersion	string	{nn.nn.nn}	
specific	inputDatatake datatakeRevision	string	{nn.nn.nn}	
specific	inputDatatake datatakeAssemblyTime	dateTime	2013-04-15 T01:45:11.123456Z	
specific	backgroundValue	int	[0, 65535, -32768]	Background value of the spectral image(s) delivered to the user.
product	image vnir	structure	elements: channels qiChannels red green blue name size version format dimension columns rows dimensionGeographic longitude latitude	Only valid for L1B. The element format specifies the data type of the image.
product	image swir	structure	elements: channels	Only valid for L1B. The element format specifies the data type of the image.



Parameter Type	Parameter	Data Type	Value Range	Remarks
			qChannels red green blue name size version format dimension columns rows dimensionGeographic longitude latitude	
product	image merge	structure	elements: channels qChannelsSWIR red green blue qChannelsVNIR red green blue name size version format dimension columns rows dimensionGeographic longitude latitude	Only valid for L1C/L2A. The element format specifies the data type of the image.
product	quicklook vnir	structure	elements: channels qChannels red green	The element format specifies the data type of the image.



Parameter Type	Parameter	Data Type	Value Range	Remarks
			blue name size version format dimension columns rows dimensionGeographic longitude latitude	
product	quicklook swir	structure	elements: channels qlChannels red green blue name size version format dimension columns rows dimensionGeographic longitude latitude	The element format specifies the data type of the image.
product	calibration orbit	structure	elements: phase absOrbit timeInterval maneuverCounter stateVector	The element stateVector includes information about UTC and GPS time as about position , velocity . The state vector has the attribute number . For a description of stateVector see description of orbit data record in 1.
product	calibration attitude	structure	elements: accuracy referenceFrame fromFrame toFrame	The element stateVector includes information about UTC and GPS time as about quaternion . The state vector has the attribute number .



Parameter Type	Parameter	Data Type	Value Range	Remarks
			stateVector	For a description of stateVector see description of attitude data record in 1.
product	matching pyramidLevel	number	5	Value or NA.
product	matching match (ident attribute)	structure	elements: points percent	Values or NA.
product	navigation boresight	structure	elements: instrumentMountingAngles <ul style="list-style-type: none"> ○ initialValues ○ variationValues ○ estimatedValues 	The element instrumentMountingAngles contains the initial mounting angles (initialValues) and polynomial coefficients for the variations (variationValues) of the instrument mounting angles. If a reference is used an additional rotation is given by estimatedValues .
product	navigation interiorOrientation	structure	elements vnir swir	The elements vnir and swir contain the polynomial coefficients for the calculation of the view vector of each pixel.
product	navigation RPC bandID (number attribute)	structure	elements: - LAT_OFF - LONG_OFF - HIGHT_OFF - LAT_SCALE - LONG_SCALE - HIGHT_SCALE - ROW_OFF - COL_OFF - ROW_SCALE - COL_SCALE - - COL_NUM_01 - ... - COL_NUM_20 - COL_DEN_01 - ... - COL_DEN_20 - ROW_NUM_01 - ...	<ul style="list-style-type: none"> • Coefficients of Rational Polynomial Function, where: • OFF identifies the offset values of the normalized coefficients for latitude (LAT), longitude (LONG), height (HIGHT), row (ROW), and column (COL) • SCALE identifies the scale of the normalized coefficients for latitude (LAT), longitude (LONG), height (HIGHT), row (ROW), and column (COL) • ROW identifies row (also called line) • COL identifies column (also called samp) • NUM identifies numerator • DEN identifies denominator



Parameter Type	Parameter	Data Type	Value Range	Remarks
			<ul style="list-style-type: none"> - ROW_NUM_20 - ROW_DEN_01 - ... - ROW_DEN_20 	<ul style="list-style-type: none"> • INDEX identifies degree
product	time swir	array	elements: <ul style="list-style-type: none"> - frameTime (attrib number) 	Time (UTC) of each SWIR frame.
product	time vnir	array	elements: <ul style="list-style-type: none"> - frameTime (attrib number) - jitter (attrib number) 	Time (UTC) and jitter (FR_VNIR_JITTER in VC) entry of each VNIR frame.
product	ortho projection	string	{UTM_ZoneX_North, UTM_ZoneX_South (where X in {1..60}), Geographic, LAEA-ETRS89, NA}	For L1B, the value is NA.
product	ortho resolution	number		Value given in meters or decimal degree. For L1B, the value is NA.
product	ortho resampling	string	{Nearest_Neighbour, Bilinear_Interpolation, Cubic_Convolution, NA}	For L1B, the value is NA.
product	bandStatistics bandID (number attribute)	structure	elements: <ul style="list-style-type: none"> - wavelength - meanReflectance - stdDeviation 	Mean and standard deviation of surface reflectance (in %) for each band.
product	productFileInformation file (number attribute)	structure	elements: <ul style="list-style-type: none"> - name - size - format - version 	

Table 3-5 Metadata information provided for L1B, L1C and L2A products. Note that the same schema is used for the metadata of the three levels.

3.2 Quicklooks

The quicklooks of the VNIR and SWIR scenes are stored in tif format and contain an 8-bit RGB image radiometrically adjusted for optimal displaying. The following wavelengths are used to create the false RGB images:

- VNIR: 550 nm (blue), 670 nm (green), 850 nm (red);
- SWIR: 1050 nm (blue), 1650 nm (green), 2200 nm (red).

The L1B product quicklooks are in sensor geometry, while the L1C and L2A product quicklooks are orthorectified, cf. Table 3-2, Table 3-3 and Table 3-4.

3.3 Quality layers

The quality layers are stored in separate tif files with all available quality information listed in Table 3-6.

The L1B product quality layers are in sensor geometry, while the L1C and L2A product quality layers are orthorectified, cf. Table 3-2, Table 3-3 and Table 3-4. Note that quality layers 1 through 6 (classes, cloud, cloud shadow, haze, cirrus, snow) in Table 3-6 use the VNIR scene as spatial reference. The pixel mask (layers 7 and 8) and the quality test flags (layers 9 and 10) are registered to the corresponding spectral images in all levels: in L1B products these layers are separately provided for VNIR and SWIR, while in L1C and L2A products the layers are provided for the merged scene.

Value	0	1	2	3	Number of bits	Dimensions
Quality layer						
1 (classes)	None	Land	Water	Background	2	IxJ
2 (cloud)	None	Cloud			1	IxJ
3 (cloud shadow)	None	Cloud shadow			1	IxJ
4 (haze)	None	Haze			1	IxJ
5 (cirrus)	None	Thin	Medium	Thick	2	IxJ
6 (snow)	None	Snow			1	IxJ
7 (pixel mask VNIR)	Normal	Defective			1	IxJxK _{VNIR}
8 (pixel mask SWIR)	Normal	Defective			1	IxJxK _{SWIR}
9 (quality test flags VNIR)	-see below for the description of the bits-				8	IxJ
10 (quality test flags SWIR)	-see below for the description of the bits-				8	IxJ

Table 3-6 **Quality information encoded into the quality layers of L1B, L1C and L2A products. In the dimensions column, I denotes the number of frames, J the number of spatial pixels and K the number of channels. Note that, regardless of the number of encoded bits, all masks are provided as 8-bit tif files. For L1C and L2A products, the pixel mask and the quality test flags are provided as a single layer each.**

For the data quality test flags, the 8 bits are assigned as specified in Table 3-7 Note that for consistency with existing quality flags (incl. MODIS, MERIS, Landsat 8 or Hyperion missions), the bits are read from right to left, starting with bit 0. The quality information is encoded as follows:

- for the double bit (0-1),
 - 00: nominal quality;
 - 01: reduced quality;
 - 10: low quality;
 - 11: not produced;

- For the bits (2, 3, 4, 5, 6, and 7):
 0: this condition does not exist at all, or for less than a certain number of bands;
 1: this condition exists for more than a certain number of bands.

BIT	7	6	5	4	3	2	1	0
DESCRIPTION	artefactVNIR	artefactSWIR	saturationVNIR	saturationSWIR	interpolatedPixelVNIR	interpolatedPixelSWIR	Overall Quality	
VNIR								

Table 3-7 Specification of data quality flags.

4. Filename Structure

The files described in previous sections are stored with the following naming convention:

**ENMAP01-<productType>-
 DT<datatakeID>_<timeStartDatatake>_<tileID>_<version>_<timeProcessing>Z-
 <file_name>.<extension>**

A more detailed description of each key in the file name is presented in Table 4-1. Table 4-2, Table 4-3 and Table 4-4 present example file names for L1B, L1C and L2A products, respectively.

Product File Naming Scheme				
Parameter Group	Parameter Name	Length	Value Range	Remarks
Unique Product Identifier	mission	5	ENMAP	
	satellite	2	01	
	separator	1	-	Hyphen.
	product type	7	___L1B, ___L1C, ___L2A	
	separator	1	-	Hyphen.
	datatake id	11	DT123454321	
	separator	1	_	Underscore.
	datatake start time	16	<yyyymmddThhmmss>Z	UTC time.
	tile id	3	007	
	separator	1	_	Underscore.
	product version	7	V<010000>	Version of the processing chain (revision in metadata).
	separator	1	_	Underscore.
	processing date time	16	<yyyymmddThhmmss>Z	Value identical for all product files UTC time.
separator	1	-	Hyphen.	
Product File Parameters	product file	(variable)	(see rules below)	
	dot	1	.	
	file extension	3-8	{TIF, BIL, BSQ, BIP, JPEG2000, HDR, XML}	

Table 4-1 Product file name convention.



Product File Names	
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-METADATA.XML
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-SPECTRAL_IMAGE_VNIR.BIP
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-SPECTRAL_IMAGE_VNIR.HDR
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-SPECTRAL_IMAGE_SWIR.BIP
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-SPECTRAL_IMAGE_SWIR.HDR
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_VNIR.TIF
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_SWIR.TIF
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_CLASSES.TIF
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_CLOUD.TIF
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_CLOUDSHADOW.TIF
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_HAZE.TIF
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_CIRRUS.TIF
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_SNOW.TIF
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_TESTFLAGS_VNIR.TIF
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_TESTFLAGS_SWIR.TIF
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_PIXELMASK_VNIR.TIF
ENMAP01-	L1B-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_PIXELMASK_SWIR.TIF

Table 4-2 Example of L1B product file names. For illustration, it was assumed here that user selected the BIP format for the spectral images.

Product File Names	
ENMAP01-	L1C-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-METADATA.XML
ENMAP01-	L1C-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-SPECTRAL_IMAGE.BIP
ENMAP01-	L1C-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-SPECTRAL_IMAGE.HDR
ENMAP01-	L1C-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_VNIR.TIF
ENMAP01-	L1C-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_SWIR.TIF
ENMAP01-	L1C-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_CLASSES.TIF
ENMAP01-	L1C-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_CLOUD.TIF
ENMAP01-	L1C-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_CLOUDSHADOW.TIF
ENMAP01-	L1C-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_HAZE.TIF
ENMAP01-	L1C-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_CIRRUS.TIF
ENMAP01-	L1C-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_SNOW.TIF
ENMAP01-	L1C-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_TESTFLAGS.TIF
ENMAP01-	L1C-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_PIXELMASK.TIF

Table 4-3 Example of L1C product file names. For illustration, it was assumed here that user selected the BIP format for the spectral images.

Product File Names	
ENMAP01-	L2A-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-METADATA.XML
ENMAP01-	L2A-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-SPECTRAL_IMAGE.BIP
ENMAP01-	L2A-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-SPECTRAL_IMAGE.HDR
ENMAP01-	L2A-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_VNIR.TIF
ENMAP01-	L2A-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_SWIR.TIF
ENMAP01-	L2A-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_CLASSES.TIF
ENMAP01-	L2A-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_CLOUD.TIF
ENMAP01-	L2A-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_CLOUDSHADOW.TIF
ENMAP01-	L2A-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_HAZE.TIF
ENMAP01-	L2A-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_CIRRUS.TIF
ENMAP01-	L2A-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_SNOW.TIF
ENMAP01-	L2A-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_QUALITY_TESTFLAGS.TIF
ENMAP01-	L2A-DT103004711_20180201T011433Z_007_V010000_20180603T000728Z-QL_PIXELMASK.TIF

Table 4-4 Example of L2A product file names. For illustration, it was assumed here that user selected the BIP format for the spectral images.

Appendix A Example of Metadata File

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      <processingLevel>L1B</processingLevel>
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    <copyright>(c) DLR EnMAP 2019</copyright>
    <citation>DLR (2020): EnMAP Product 000326721_02_1B_20170626T112025_000204_200116+XXXXXXXXXXXXX.
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