PREPARATION AND OPERATIONS OF THE MISSION PERFORMANCE CENTRE (MPC) FOR THE COPERNICUS SENTINEL-3 MISSION

Product Data Format Specification: SYNERGY Level1 & Level2

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Title:	Product Data Format Specification: SYNERGY Level1 & Level2		
Author(s):	ACRI-ST IPF Team		
Approved by:	Olivia Lesne, QA Manager	**Authorized by**	Frédéric Rouffi, S3 IPF Manager
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ACRI-ST
260 route du Pin Montard
06904 Sophia-Antipolis, France
Tel: +33 (0)492 96 75 00 Fax: +33 (0)4 92 96 71 17
www.acri-st.fr

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AMENDMENT POLICY

This document shall be amended by releasing a new edition of the document in its entirety. The Amendment Record Sheet below records the history and issue status of this document.

AMENDMENT RECORD SHEET

ISSUE	DATE	REASON
1.0	28 February 2011	Issue for PDR
1.1	17th February 2014	First issue for SYN processing
1.2	30 April 2014	RIDS and SPRs updates
1.3	23 July 2014	Correct the SYN product size tables
1.4	30 September 2014	Correct typos
1.5	12 February 2015	Reference update, product size and MISR specification clarification
1.6	23 March 2015	Accounting for Agencies feedback
1.7	25 April 2017	Correction and Evolution of SYN Level 2 processing
1.8	9 October 2017	Document presentation update
1.9	04 December 2017	Inclusion of the SYN Neural Network Cloud mask Suppresion of remaining absorption and cloud detection channel in SYN L2 products
1.10	13 December 2018	New products Activity : providing the VGK products on the 1 km Plate Carrée grid
1.11	20 Sept. 2019	Adaptation to SLSTR L1 evolutions
1.12	24 April 2020	Modification of the SYN MISR files required for SYN L1c tool
1.13	12 January 2021	Correction of the NDVI parameter in VGS products Addition of a new NDVi file in VG1 products

DOCUMENT HISTORY

No.	Change in Issue	Description	Affected Section
1	1.1	First issue	
2	1.2	RID S3 IPF-1820 : Correction of S1 and S2 central wavelengths in table 10	Table 10
3	1.2	RID S3IPF-1845 : Removal of error estimates of angstrom exponent	4.2.2.2.3
4	1.2	RID S3IPF-1823 and 1846: Addition et correction of the VGT spectral bands	4.2.3.1 4.2.4.1 4.2.5.1
5	1.2	RID S3IPF-1819 : correction of the metadata reference	4.2.1.2 4.2.2.1 4.2.3.2 4.2.4.2
6	1.2	RID S3IPF-1822 : checking of all attributes and compliance with prototype specifications (addition of all missing standard_name)	4.2.1 4.2.2 4.2.3 4.2.4 4.2.5
7	1.2	RID S3IPF-1814 : Correction of product tree	figure 3-1
8	1.2	RID S3IPF-1816 and 1818 : correction fo the number of files in SY_1_MISR	4.2.1.1
9	1.2	RID S3IPF-1826 : Completion of Appendix B (Product size – now section 7)	7
10	1.2	RID S3IPF-1827 : Update and correction of section browse	4.4.1
11	1.2	RID S3IPF-1825 : Correction of all broken links	/
12	1.2	Update of the information package maps	5
13	1.3	Correction of the Product Size	7
14	1.4	Replace VG2 by VGK	4.2.4.1
15	1.4	Replace orbitReference, qualityInformation, frameset with measurementOrbitReference, measurementQualityInformation, measurementFrameSet	4.1.2, 5.1.1 to 5.1.6
16	1.5	Reference update	1.3
17	1.5	Product size update	7
18	1.5	MISR specification clarification	4.2.1.4
19	1.5	Update the number of files composing L1 product	4.2.1.1
20	1.5	Clarify the grid selection rule	4.2.1.4 4.2.1.4.3

No.	Change in Issue	Description	Affected Section
21	1.6	Addition of Global attributes	4.1.3
22	1.7	Replacement of two unspecified SYN L2 flags by two flags usefull for validation	4.2.2.5.2
23	1.8	Document presentation update	
24	1.9	Inclusion of new SYN cloud flags computed through Neural Network approach	4.2.2.5.2
25	1.9	Suprresion of SDR_13, SDR_17, SDR_22 and SDR_28 from SYN L2. Renaming of all SDR parameters	4.2.2.4
26	1.10	The VGK products are now provided on the 1 km Plate Carrée grid, geolocation are now directly provided in all files and the time is now a synthetic time as computed during VGT-S1 compositing	4.2.4
27	1.10	The range and attributes of NDVI has been modified to be compliant with PROBA-V products	4.2.4
28	1.11	Supression of the TDI stripe and creation of a dedicated F1 oblique collocation file	4.2.1
29	1.12	Modification of the format and projection of the SYN_1_MISR file. These files are now included misregistration on the instrument grid in addition to the one provided on the image grid.	4.2.1
30	1.13	Addition of the toa_ndvi file in VG1 product	4.2.5
31	1.13	Updated of the VG1 product size	7.2.4

1. INTRODUCTION

1.1 Purpose and Scope

This document aims to identify and specify the format of the Sentinel 3 Synergy products, browse products included.

1.2 Structure of the Document

After this introduction, the document is divided into a number of major sections that are briefly described below:

Chapter Number	Title	Contents
1	INTRODUCTION	This section.
2	OVERVIEW OF THE OPTICAL INSTRUMENTS	A description of the main features and characteristics of the OLCI and SLSTR instruments is provided here. These instruments generate the data that are processed to generate synergy products.
3	PRODUCT OVERVIEW	The Product Tree for Synergy Products and the product names convention are specified here.
4	SYNERGY PRODUCT FORMAT SPECIFICATION	In this section the format of each Synergy Products, from Level 1 up to Level 2 is specified. NetCDF templates for each product are reported in this section
5	MANIFEST FILE DESCRIPTION	In this section details for the implementation of the manifest file is provided
6	XML SCHEMAS	The xml schemas for the manifest representation are provided in this section.
7	PRODUCT SIZE	In this section the size of each file composing the SYNERGY products is provided.

1.3 Applicable and Reference Documents

1.3.1 Applicable documents

The following applicable documents contain information supporting this document.

ID	Document	Reference
AD- 1	Sentinel 3 PDGS File Naming Convention	EUM/LEO-SEN3/SPE/10/0070 GMES-S3GS-EOPG-TN-09-0009, 1.4, 24/06/2016
AD- 2	Drivers for the S3 PDGS Processing Function Implementation	EUM/LEO-SEN3/TEN/09/0183, Issue 1G, 12/10/2013
AD- 3	S3PDGS Product Data Format Specification – Product Structures	GMES-GSEG-EOPG-TN-11-0062, i1r7, 27/06/2014
AD- 4	Metadata Specification, Excel document	S3IPF.PDS.002, Issue 1.7, 09/10/2017
AD-5.1	Product Data Format Specification: OLCI Level 1	S3IPF.PDS.008, i3r4, 09/10/2017
AD-5.2	Product Data Format Specification: OLCI Level 2 Land	S3IPF.PDS.004.1, Issue 2.2 09/10/2017
AD- 5.3	Product Data Format Specification: OLCI Level 2 Marine	S3IPF.PDS.004.2, Issue 2.2 09/10/2017
AD- 6.1	Product Data Format Specification: SLSTR Level 1	S3IPF.PDS.004.3, Issue 2.2 09/10/2017
AD-6.2	Product Data Format Specification: SLSTR Level 2 Land	S3IPF.PDS.005.1, Issue 2.6, 09/10/2017
AD-6.3	Product Data Format Specification: SLSTR Level 2 Marine	S3IPF.PDS.005.2, Issue 2.6, 09/10/2017

1.3.2 Reference documents

The following reference documents contain information supporting this document. This product format specification has been written taking into account the outcomes of the activities carried out during the prototype development and the related documents have been used as reference.

ID	Document	Reference
RD 1	CCSDS 661.0-B-0 XFDU structure and construction rules	Issue Sept. 2008
RD 2	Sentinel SAFE Control Book Volume 1 – Core Specifications	GAEL-P264-DOC-0001-01-01, i1r1, 05/06/2012
RD 3	SLSTR Level 0, Level 1a/b/c Products Definition	S3-RS-RAL-SY-0003, Issue 6.2, 23/08/2013
RD 4	L2 SYN Input Output Data Description	S3-L2-SD-08-S-BC-IODD , Issue 2.10, 26/02/2013

ID	Document	Reference
RD 5	Sentinel-3 Level 0, Level 1a/b/c Products Definition Part 2: Optical Products. Volume 1: Introduction, Conventions, and Common Structures (SY-4)	S3-RS-ACR-SY-00001, Issue 7.0, 21/08/2013
RD 6	Sentinel-3 Optical products and Algorithm Definition: SYN Product Definition	S3-L2-SD-05-S-BC-PD, Issue 2.5, 11/10/2012

1.4 Terms, Definitions and Abbreviated Terms

Terms, Definitions and Abbreviated Terms are identified in [AD 4]

Conventions and general concepts are described in [AD 4].

2. OVERVIEW OF THE OPTICAL INSTRUMENTS

The products specified in this document refer to the processed data coming from the optical instruments on-board Sentinel 3 satellite that are the OLCI and the SLSTR instruments. An overview of the main characteristics of these instruments is provided hereafter.

2.1 On-board Science Optical Instruments

2.1.1 OLCI

OLCI is a push-broom instrument with 5 camera modules sharing the field-of-view as follows:

- The five cameras field of view are arranged in a fan-shaped configuration in the vertical plane perpendicular to the platform velocity,
- Each camera has an individual field of view of 14.2 degrees with a 0.6 degrees overlap with its neighbours,
- The whole field-of-view is shifted across-track by 12.58 degrees away from the Sun to minimise the Sun glint impact.

OLCI measures top of atmosphere (TOA) radiances at 21 wavelengths. However, the instrument principle – an imaging spectrometer – and design allows the redefinition of these bands, in both location and width, thanks to the programmable acquisition.

OLCI is equipped with on-board calibration hardware based on Sun diffusers. There are 3 Sun diffusers: 2 “white” diffusers dedicated to radiometric calibration, and one including spectral reflectance features dedicated to spectral calibration:

The OLCI calibration is undertaken in the region of the orbit between the observation phase and the eclipse period. Each calibration sequence begins with a dark current evaluation.

2.1.2 SLSTR

The Sentinel SLSTR instrument is an 11-channel radiometer configured as follows:

- 3 thermal infra-red channels at 3.7, 10.8 and 12 micron wavelengths;
- 2 fire channels at 3.7, and 10.8 micron wavelengths;
- 6 short-wave and visible channels at 2.25, 1.6, 1.375, 0.87, 0.67 and 0.55 micron wavelengths.

The instrument uses two independent scan mirrors each scanning at 200 scans per minute, but each scan measures 2 along-track pixels of 1 km (and 8 pixels at 500 m resolution) simultaneously, thus providing 500 metre resolution in the reflectance channels.

Each scan mirror is mounted at an oblique angle to its axis of rotation, and directs radiation into a telescope assembly the optical axis of which is aligned parallel to the rotation axis. As the scan mirror rotates, the line of sight traces out a cone whose intersection with the Earth traces out the measurement swath of the instrument. The scan cone will intersect the Earth view, the two calibration black bodies, and the Visible Calibration (VISCAL) Unit, so that the line of sight will encounter each of these once during a complete rotation.
Radiation incident along the line of sight enters the focal plane assembly, where it is split into frequency bands corresponding to the different channels. Radiation in each channel is focussed onto a small array of detector elements which correspond to pixels.

3. PRODUCT OVERVIEW

A graphical representation of the product tree for Synergy products is provided in Figure 3-1~~Figure 3-1~~.

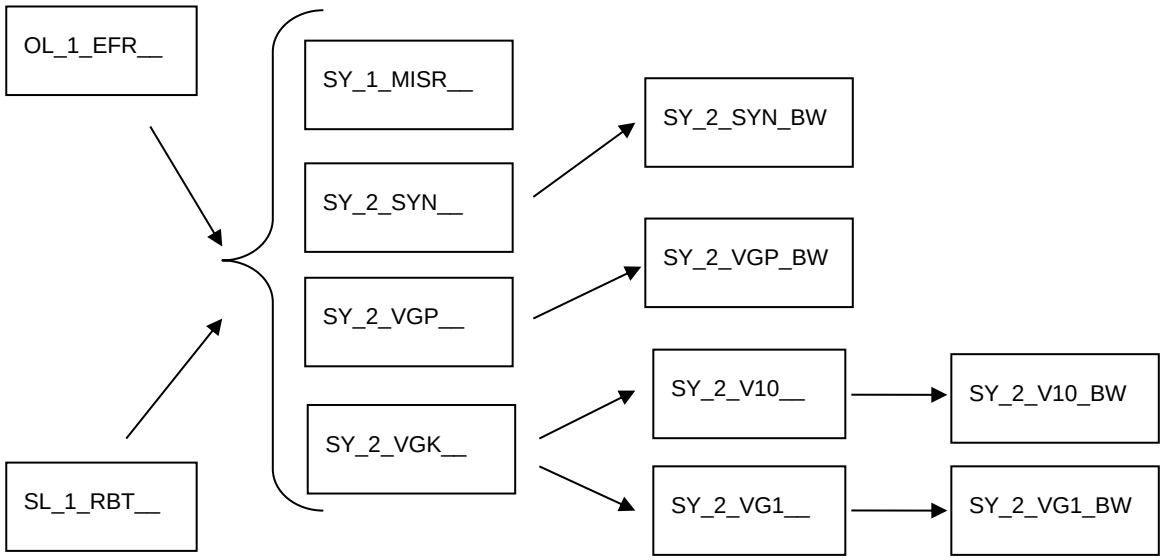


Figure 3-1: Synergy Product Tree

3.1 Product Tree

3.1.1 Science Product Tree

The S-3 SYNERGY products are summarized in Table 1~~Table 1~~.

Product type	Description	Availability to the User	Level
SY_1_MISR__	Correspondence and collocation grids between OLCI/SLSTR acquisition and image grid and SYN Level 2 internal grid (i.e. OLCI instrument grid)	Not Available	Level 1
SY_2_SYN___	Surface Reflectance and Aerosol parameters over Land	Available	Level 2
SY_2_VGP___	1 km VEGETATION Like product (~VGT-P) - TOA Reflectance	Available	Level 2
SY_2_VGK___	Surface reflectance over Land– use as input for VG-S product	Not Available	Level 2
SY_2_VG1___	1 km VEGETATION Like product (~VGT-S1) 1day synthesis surface reflectance and NDVI	Available	Level 2
SY_2_V10___	1 km VEGETATION Like product (~VGT-S10) 10days synthesis surface reflectance and NDVI	Available	Level 2

Table 1: Synergy Product Tree

3.1.2 Browse Product Tree

Browse Product are meant to support the analysis of quality and suitability of the optical products only. One or more browse products, or quick-look images, can be associated to each single product type.

The Synergy Browse Product Tree is the following (TBC):

Product type	Description	Main Product	Subsampled Parameters
SY_2_SYN_BW	Quick Look of Surface Reflectances and Aerosol parameters over Land	SY_2_SYN___	• Aerosol optical depth or angstrom exponent • Combination of reflectances
SY_2_VGP_BW	Quick Look of TOA Reflectances	SY_2_VGP___	Vegetation-like-P product
SY_2_VG1_BW	Quick Look of Daily composite fully atmosphere-corrected Surface Reflectances	SY_2_VG1___	NDVI Vegetation-like-S product
SY_2_V10_BW	Quick Look of 10 days composite fully atmosphere-corrected Surface Reflectances	SY_2_V10___	

Table 2: Synergy Browse Products tree

3.2 Product Naming Convention

The names of the Synergy products comply with the Sentinel 3 file naming convention, according to [AD 1].

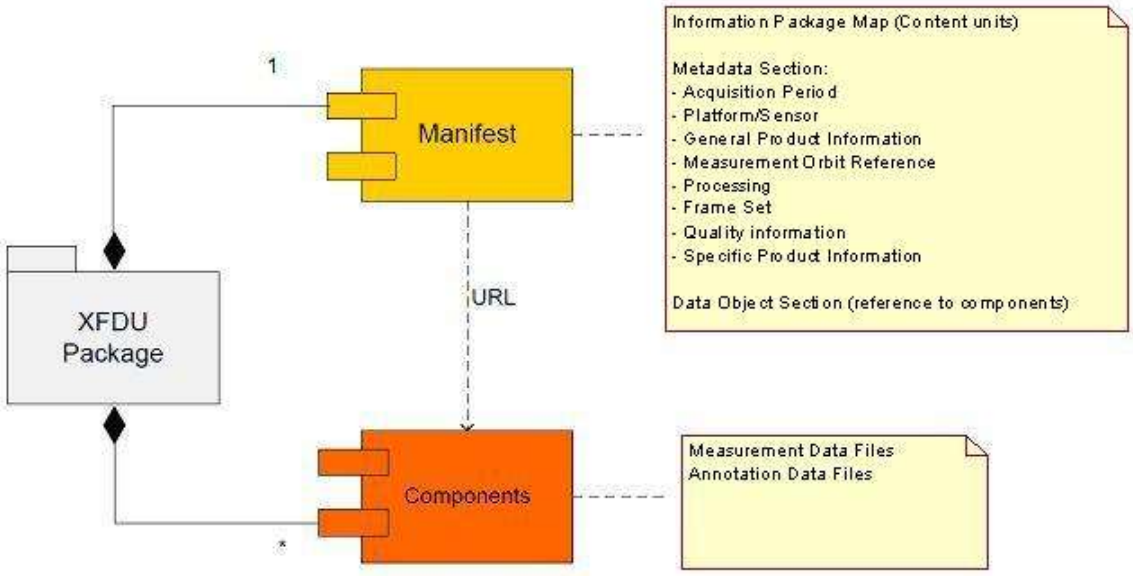
4. SYNERGY PRODUCT FORMAT SPECIFICATION

4.1 General Product Structure

4.1.1 Package Layout

The format of every Sentinel 3 product is described in [AD 4]. The Product Package is sketched in Figure 4-1~~Figure 4-1~~.

Figure 4-1: XFDU package



In the following sections, the physical composition of each package is specified for the Synergy instrument.

The components of the package that are not part of the current operational production baseline are identified with a flag in the column N.O. (Not Operational). These components might be required to be generated at a later time during the mission lifecycle.

4.1.2 Primary Metadata

The primary metadata is contained in various wrapped metadata units within the Sentinel-SAFE manifest: “acquisitionPeriod”, “platform”, " generalProductInformation ", “measurementOrbitRerence”, “processing”, “measurementQualityInformation”, “measurementFrameSet”, and “generalProductInformation”.

4.1.3 Measurement Data Files and Annotation Data Files

The format of the measurement and annotation data files is NetCDF 4.

A NetCDF file contains dimensions, variables, and attributes, which all have both a name by which they are identified. These components can be used together to capture the meaning of data and relations among data fields in an array-oriented data set.

The global attributes defined for each netCDF file composing the products are fully defined in the common volume of the product data format specification documents named "Product structures".

Additional global attributes are defined specifically for SYN L2, VGP and VGT-S files. These attributes aims to ensure the self-containment of the dataset. There are defined in the following table and their value should be adapted according to the file.

Element name	Description	T	D
absolute_orbit_number	Absolute orbit number during which data contained within the product have been acquired **Note that this attribute is not included in VGT-S products**	u32	1
start_time	Product start date and time (yyyy-mm-ddThh:mm:ss.ssssssZ)	S	1
stop_time	Product stop date and time (yyyy-mm-ddThh:mm:ss.ssssssZ)	S	1
comment	Miscellaneous extra information (empty)	S	1
resolution	Dataset resolution (across- and along-track) in meters unit function of the associated grid and view	S	1

Table 3: Additional Global Attributes for SYN L2, VGP and VGT-S files

4.2 Earth Observation Products

4.2.1 Level 1 Product: SY_1_MISR__

4.2.1.1 Package Description

A “SY_1_MISR__” product is composed of 25 to 36 files, taking into account the components that today are decided not to be part of the operational production baseline and that can be activated by configuration of the processing chain. All these files are misregistration files, considered as annotation files, containing the correspondence/collocation grids between OLCI/SLSTR image and image grids and SYN Level 2 reference grid, i.e. the OLCi instrument grid.

In the following sections the content of the files is reported.

Element name	Description	Reference
manifest.safe	**Sentinel-SAFE product manifest**	
misregist_Oref_Oa01.nc	**Misregistration Data files associated with Oa01 channel**	**Section 4.2.1.4.1**
misregist_Oref_Oa02.nc	**Misregistration Data files associated with Oa02 channel**	
misregist_Oref_Oa03.nc	**Misregistration Data files associated with Oa03 channel**	
misregist_Oref_Oa04.nc	**Misregistration Data files associated with Oa04 channel**	
misregist_Oref_Oa05.nc	**Misregistration Data files associated with Oa05 channel**	
misregist_Oref_Oa06.nc	**Misregistration Data files associated with Oa06 channel**	
misregist_Oref_Oa07.nc	**Misregistration Data files associated with Oa07 channel**	
misregist_Oref_Oa08.nc	**Misregistration Data files associated with Oa08 channel**	
misregist_Oref_Oa09.nc	**Misregistration Data files associated with Oa09 channel**	
misregist_Oref_Oa10.nc	**Misregistration Data files associated with Oa10 channel**	
misregist_Oref_Oa11.nc	**Misregistration Data files associated with Oa11 channel**	
misregist_Oref_Oa12.nc	**Misregistration Data files associated with Oa12 channel**	
misregist_Oref_Oa13.nc	**Misregistration Data files associated with Oa13 channel**	

Element name	Description	Reference
misregist_Oref_Oa14.nc	Misregistration Data files associated with Oa14 channel	
misregist_Oref_Oa15.nc	Misregistration Data files associated with Oa15 channel	
misregist_Oref_Oa16.nc	Misregistration Data files associated with Oa16 channel	
misregist_Oref_Oa17.nc	Misregistration Data files associated with Oa17 channel	
misregist_Oref_Oa18.nc	Misregistration Data files associated with Oa18 channel	
misregist_Oref_Oa19.nc	Misregistration Data files associated with Oa19 channel	
misregist_Oref_Oa20.nc	Misregistration Data files associated with Oa20 channel	
misregist_Oref_Oa21.nc	Misregistration Data files associated with Oa21 channel	
misregist_Oref_S1.nc	Misregistration Data files associated with S1 channel, nadir view	
misregist_Oref_S2.nc	Misregistration Data files associated with S2 channel, nadir view	
misregist_Oref_S3.nc	Misregistration Data files associated with S3 channel, nadir view	
misregist_Oref_S4.nc	Misregistration Data files associated with S4 channel, nadir view	
misregist_Oref_S5.nc	Misregistration Data files associated with S5 channel, nadir view	
misregist_Oref_S6.nc	Misregistration Data files associated with S6 channel, nadir view	Section 4.2.1.4.2
misregist_Oref_S7.nc	Misregistration Data files associated with S7 channel, nadir view	
misregist_Oref_S8.nc	Misregistration Data files associated with S8 channel, nadir view	
misregist_Oref_S9.nc	Misregistration Data files associated with S9 channel, nadir view	
misregist_Oref_F1.nc	Misregistration Data files associated with F1 channel, nadir view	
misregist_Oref_F2.nc	Misregistration Data files associated with F2 channel, nadir view	
misregist_Oref_ao.nc	Collocation Data Files associated with Oblique view and stripe A	
misregist_Oref_bo.nc	Collocation Data Files associated with Oblique view and stripe B	
misregist_Oref_fo.nc	Collocation Data Files associated with Oblique view and F1 channel	Section 4.2.1.4.3
misregist_Oref_io.nc	Collocation Data Files associated with Oblique view and 1 km grid (except F1 channel)	

4.2.1.1.1 SY_1_MISR__ product summary

Product Package Type SY_1_MISR__		*Description* All OLCI and SLSTR correspondence/collocation grids			
Product Level	**Diss. Timeliness**	**Product Category**	**Application Domain**		**Spatial Resolution**
1	(NTC)	Not Available to the user	LND		OLCI 300m
Product Dissemination Unit N/A		Number of Package components	Number of Measurement Data Files	Number of Annotation Data Files	Number of Representation Information Files
		38[1]	0	25 (36)	0

Table 4: SYN Level 1 product physical composition

4.2.1.2 Manifest File

The structure of the Manifest element is described in [AD-3].

4.2.1.3 Wrapped Metadata

According to [AD-3], Wrapped Metadata are grouped in Primary Metadata, common to all Sentinel 3 products and Secondary Metadata, specific for instrument and processing level.

Primary Metadata are described in [AD-3].

Secondary Metadata for the SYN product are reported inTable 5. Last columns of the table indicate the applicability of Metadata fields to the processing Level.

< Complete secondary metadata is described in details in [AD-7].
The content of this table will be embedded in the document when it will be finalized>

Table 5 : Secondary Metadata for SYN products

[1] [1] *Number of Package components includes the manifest and the OLQC Report.*

4.2.1.4 Annotations Data Files

The Level 1 SYNERGY product contains from of 26 to 36 datasets, depending on the computed channels and stripes:

- One misregistration dataset for each of the computed OLCI channels Oa1 – Oa21. The computation of absorption channels, unused in SYN Level 2 (Oa14, Oa15 and Oa20) can be disabled by a dedicated switch
- One misregistration dataset for each of the computed SLSTR channels S1 – S9, F1, F2, associated with nadir view. The computation of Thermal/Fire channels, unused in SYN Level 2 (S7 to S9, F1, F2) can be disabled by a dedicated switch
- One collocation dataset for each of the computed SLSTR grids associated with oblique view, the computation of stripe TDI and of the 1 km grid can be disabled if these grids are not selected

The misregistration / collocation values are provided on the SYN Level 2 reference grid, similar to the OLCI acquisition grid associated with the OLCI reference channel and corresponds to positions:
1. on the OLCI /SLSTR image grid
2. on their own OLCI / SLSTR acquisition grids.

The format of the two types of measurements datasets (misregistration and collocation) are described below, using place holders for the band, grid, and view names, which are to be substituted for each valid combination thereof.

Variable	Placeholder	Possible Values
band	<b>	Oa1- Oa21, S1 – S9, F1, F2
grid	<g>	‘i’ – SLSTR 1km Thermal Infra-Red grid ‘a’ – SLSTR 500m visibile and SWIR “A stripe” grid ‘b’ – SLSTR 500m visible and SWIR “B stripe” grid ‘f’ – SLSTR 1 km F1 fire channel grid
view	<v>	‘n’ – nadir view ‘o’ – oblique view

Table 6: band/grid/view abbreviation meaning

4.2.1.4.1 OLCI channels Misregistration Data Files

There is one data file for each OLCI channel. Each correspondence grid between the OLCI reference channel camera modules and channel Oai is represented by five 3D variables:

1. On image grid = L1b_row, L1b_col and L1b_removed of size [N_CAM, N_LINE_OLC, N_DET_CAM].

Let f_{l1b} = L1b_row (m, k, j) and j_{l1b} = L1b_col (m, k, j) then (f_{l1b}, j_{l1b}) is the L1b image pixel location in channel Oai of OLCI camera module m corresponding to pixel (k,j) in OLCI reference channel of camera module m.

2. On instrument grid = delta_row and delta_col of size [N_CAM, N_LINE_OLC, N_DET_CAM].

Let $k^d = k + delta\_row(m,k,j)$ and $j^d = j + delta\_col\ (m,k,j)$ then (k^d, j^d) is the sub-pixel location in channel Oai of OLCI camera module m corresponding to pixel (k,j) in OLCI reference channel of camera module m.

Element name	Description	Range or value	T	D
n_line_olc	**Number of lines in OLCI FR reference image**			
n_det_cam	**Number of pixels per line in OLCI FR reference image**			
n_cam	**Number of OLCI camera modules**	**5**		
<common global attributes>	Common global attributes (see [AD- 3])			
L1b_row_<b>	**Corresponding row index in the OLCI L1b product image**	**[0, 2^{16} - 2]**	**u16**	**n_line_olc n_det_cam n_cam**
_FillValue	Value indicating missing data	2^{16} - 1		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1
L1b_col_<b>	**Corresponding column index in the OLCI L1b product image**	**[0, 2^{16} - 2]**	**u16**	**n_line_olc n_det_cam n_cam**
_FillValue	Value indicating missing data	2^{16} - 1		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1

Element name	Description	Range or value	T	D
L1b_removed_<b>	**Corresponding removed pixel index in the OLCI L1b product image**	**[0, 2^{16} - 2]**	**u16**	**n_line n_det n_cam**
_FillValue	Value indicating missing data	2^{16} - 1		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1
delta_row_<b>	**Sub-pixel shift in rows between pixels in the SYNERGY reference channel and pixels in channel Oaid**	**[0, 2^{16} - 2]**	**u16**	**n_line_olc n_det_cam n_cam**
_FillValue	Value indicating missing data	2^{16} - 1		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1
delta_col_<b>	**Sub-pixel shift in columns between pixels in the SYNERGY reference channel and pixels in channel Oaid**	**[0, 2^{16} - 2]**	**u16**	**n_line_olc n_det_cam n_cam**
_FillValue	Value indicating missing data	2^{16} - 1		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1

Table 7 : SY_1_MISR_OLCI misregistration Data Files

4.2.1.4.2 SLSTR channels Misregistration Data Files for nadir view

There is one data file for each SLSTR nadir view channel B d d=22,…,32, including the two Fire, for which the computation has been enabling by the user (i.e. solar channels are always presents, thermal and fire channels are optional). Each correspondence grid between the OLCI reference channel camera modules and channel Si is represented by five 3D variables:

1. Over Image grid = L1b_row, L1b_col and L1b_removed of size [N_CAM, N_LINE_OLC, N_DET_CAM].

Let f_{l1b} = L1b_row (m, k, j) and j_{l1b} = L1b_col (m, k, j) then (f_{l1b}, j_{l1b}) is the L1b image pixel location in channel Oai of OLCI camera module m corresponding to pixel (k,j) in OLCI reference channel of camera module m. Same correspondence is defined for removed pixels

Same correspondence is defined for orphan pixels.

2. Over acquisition grid = row_corresp and col_corresp of size [N_CAM, N_LINE_OLC, N_DET_CAM].

Let k^d = *row_corresp(m,k,j)* and j^d = *col_corresp(m,k,j)* then (k^d, j^d) is the sub-pixel location in channel Si of SLSTR nadir view corresponding to pixel (k,j) in OLCI reference channel of camera module m.

Note that the SLSTR instrument grid is no longer indexed by 3 dimensions but only by two. The detector index has been included in the scan dimensions (c.f. SYN L1 section in SYN Detailed Processing Module document)

The ‘g’ placeholder is:

- equal to ‘a’ for S1 to S3
- equal to ‘i’ for S7 to F2
- provided by the SLSTR _SWIR_SELECT processing configuration parameter for S4 to S6.

The ‘v’ placeholder is equal to ‘n’ in each case

Element name	Description	Range or value	T	D
n_line_olc	**Number of lines in OLCI FR reference image**			
n_det_cam	**Number of pixels per line in OLCI FR reference image**			
n_cam	**Number of OLCI camera modules**	**5**		
<common global attributes>	Common global attributes (see [AD- 3])			
L1b_row_<b>_<g><v>	**Corresponding row index in the SLSTR L1b product image**	**[0, 2^{32} -2]**	**u32**	**n_line_olc n_det_cam n_cam**
_FillValue	Value indicating missing data	**2^{32} -1**		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1
L1b_col_<b>_<g><v>	**Corresponding column index in the SLSTR L1b product image**	**[0, 2^{16} -2]**	**u16**	**n_line_olc n_det_cam n_cam**
_FillValue	Value indicating missing data	**2^{16} -1**		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1

Element name	Description	Range or value	T	D
L1b_orphan_<b>_<g><v>	**Corresponding orphan pixel index in the SLSTR L1b product image**	**[0, 2^{16} -2]**	**u16**	**n_line_olc n_det_cam n_cam**
_FillValue	Value indicating missing data	**2^{16} -1**		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1
row_corresp_<b>_<g><v>	**The rows component of the sub-pixel correspondence grid between L1c reference channel and channel Bd**	**[0, 2^{32} -2]**	**u32**	**n_line_olc n_det_cam n_cam**
_FillValue	Value indicating missing data	**2^{32} -1**		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1
col_corresp_<b>_<g><v>	**The column component of the sub-pixel correspondence grid between L1c reference channel and channel Bd**	**[0, 2^{32} -2]**	**u32**	**n_line_olc n_det_cam n_cam**
_FillValue	Value indicating missing data	**2^{32} -1**		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1

Table 8: SY_1_MISR__SLSTR misregistration nadir view Data Files

4.2.1.4.3 SLSTR oblique view collocation Data Files

These files are present only if the computation of oblique view is enabled in the SYNERGY Level 1 processing. In this case, the number of datafiles in the product depends on the SWIR sub-bands (“A” or “B”) included in the L1 product. The file for the “A” is always present on a contrary to “B” ones (The selection rules defined for SYN is A first, then B). File associated with 1km channels are present if the computation of thermal/fire channels are enabled. Note however that, as the fire channel F1 is then associated with different line of sigth than the others 1 km channels, there is a dedicated F1 oblique view collocation Data files.

Each correspondence grid between the OLCI reference channel camera modules and SLSTR stripe is represented by Five 3D variables:

1. Over image grid = L1b_row, L1b_col and L1b_orphan of size [N_CAM, N_LINE_OLC, N_DET_CAM].

Let i_{l1b} = L1b_row (m, k, j) and j_{l1b} = L1b_col (m, k, j) then (i_{l1b}, jl_{1b}) is the L1b image pixel location in channel Si of SLSTR nadir view corresponding to pixel (k,j) in OLCI reference channel of camera module m.

Same correspondence is defined for orphan pixels.

2. Over instrument grid = row_corresp and col_corresp [N_CAM, N_LINE_OLC, N_DET_CAM].

k^d = *row_corresp(m,k,j)* and j^d = *col_corresp(m,k,j)* then (k^d, j^d) is the sub-pixel location in the SLSTR oblique view considered sub-band corresponding to pixel (k,j) in OLCI reference channel of camera module m.

The ‘v’ placeholder is equal to ‘o’ in each case

Element name	Description	Range or value	T	D
n_line_olc	**Number of lines in OLCI FR reference image**			
n_det_cam	**Number of pixels per line in OLCI FR reference image**			
n_cam	**Number of OLCI camera modules**	**5**		
<common global attributes>	Common global attributes (see [AD- 3])			
L1b_row_<g><v>	**Corresponding row index in the SLSTR L1b product image**	**[0, 2^{32} -2]**	**u32**	**n_line_olc n_det_cam n_cam**
_FillValue	Value indicating missing data	**2^{32} -1**		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1
L1b_col_<g><v>	**Corresponding column index in the SLSTR L1b product image**	**[0, 2^{16} -2]**	**u16**	**n_line_olc n_det_cam n_cam**
_FillValue	Value indicating missing data	**2^{16} -1**		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1

Element name	Description	Range or value	T	D
L1b_orphan_<g><v>	**Corresponding orphan pixel index in the SLSTR L1b product image**	**[0, 2^{16} -2]**	**u16**	**n_line_olc n_det_cam n_cam**
_FillValue	Value indicating missing data	**2^{16} -1**		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1
row_corresp_<b>_<g><v>	**The rows component of the sub-pixel correspondence grid between L1c reference channel and channel Bd**	**[0, 2^{32} -2]**	**u32**	**n_line_olc n_det_cam n_cam**
_FillValue	Value indicating missing data	**2^{32} -1**		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1
col_corresp_<b>_<g><v>	**The column component of the sub-pixel correspondence grid between L1c reference channel and channel Bd**	**[0, 2^{32} -2]**	**u32**	**n_line_olc n_det_cam n_cam**
_FillValue	Value indicating missing data	**2^{16} -1**		1
scale_factor	Scaling factor used in decoding packed data			1
add_offset	Offset used to in decoding packed data			1

Table 9: SY_1_MISR__SLSTR collocation oblique view Data Files

4.2.2 Level 2 Product: SY_2_SYN___

This product contains the Land surface reflectance and aerosol geophysical parameters

4.2.2.1 Package Description

A “SY_2SYN___” Level 2 product is composed by 36 files: 28 containing the measurements whereas the other 8 files contain the annotation data.

In the following sections the content of the files is reported.

Element name	Description	Reference
manifest.safe	Sentinel-SAFE product manifest	
Syn_Oa01_reflectance.nc	Surface directional reflectance associated with OLCI channel 01	Section 4.2.2.4.1
Syn_Oa02_reflectance.nc	Surface directional reflectance associated with OLCI channel 02	
Syn_Oa03_reflectance.nc	Surface directional reflectance associated with OLCI channel 03	
Syn_Oa04_reflectance.nc	Surface directional reflectance associated with OLCI channel 04	
Syn_Oa05_reflectance.nc	Surface directional reflectance associated with OLCI channel 05	
Syn_Oa06_reflectance.nc	Surface directional reflectance associated with OLCI channel 06	
Syn_Oa07_reflectance.nc	Surface directional reflectance associated with OLCI channel 07	
Syn_Oa08_reflectance.nc	Surface directional reflectance associated with OLCI channel 08	
Syn_Oa09_reflectance.nc	Surface directional reflectance associated with OLCI channel 09	
Syn_Oa10_reflectance.nc	Surface directional reflectance associated with OLCI channel 10	
Syn_Oa11_reflectance.nc	Surface directional reflectance associated with OLCI channel 11	
Syn_Oa12_reflectance.nc	Surface directional reflectance associated with OLCI channel 12	
Syn_Oa16_reflectance.nc	Surface directional reflectance associated with OLCI channel 16	
Syn_Oa17_reflectance.nc	Surface directional reflectance associated with OLCI channel 17	
Syn_Oa18_reflectance.nc	Surface directional reflectance associated with OLCI channel 18	
Syn_Oa21_reflectance.nc	Surface directional reflectance associated with OLCI channel 21	
Syn_S1N_reflectance.nc	Surface directional reflectance associated with SLSTR Channel 1 acquired in nadir view	
Syn_S2N_reflectance.nc	Surface directional reflectance associated with SLSTR channel 02 acquired in nadir view	
Syn_S3N_reflectance.nc	Surface directional reflectance associated with SLSTR channel 03 acquired in nadir view	
Syn_S5N_reflectance.nc	Surface directional reflectance associated with SLSTR channel 05 acquired in nadir view	

Element name	Description	Reference
Syn_S6N_reflectance.nc	Surface directional reflectance associated with SLSTR channel 06 acquired in nadir view	
Syn_S1O_reflectance.nc	Surface directional reflectance associated with SLSTR channel 01 acquired in oblique view	
Syn_S2O_reflectance.nc	Surface directional reflectance associated with SLSTR channel 02 acquired in oblique view	
Syn_S3O_reflectance.nc	Surface directional reflectance associated with SLSTR channel 03 acquired in oblique view	
Syn_S5O_reflectance.nc	Surface directional reflectance associated with SLSTR channel 05 acquired in oblique view	
Syn_S6O_reflectance.nc	Surface directional reflectance associated with SLSTR channel 06 acquired in oblique view	
Syn_AOT550.nc	Aerosol Optical thickness	Section 4.2.2.4.2
Syn_Angstrom_exp550.nc	Aerosol Angstrom exponent	Section 4.2.2.4.3
Syn_SDR_removed_pixel.nc	Surface directional reflectance and aerosol parameters associated with removed pixel	Section 4.2.2.4.4
Syn_AMIN.nc	Aerosol index number	Section 4.2.2.5.1
flags.nc	Classification and quality Flags associated with OLCI, SLSTR and SYNERGY products	Section 4.2.2.5.2
geolocation.nc	High resolution georeferencing data	Section 4.2.2.5.3
time.nc	Time stamp annotations	Section 4.2.2.5.4
Syn_annot_rem.nc	Annotations parameters associated with removed pixel	Section 4.2.2.5.5
tiepoint_olci.nc	Low resolution georeferencing data and Sun and View angles associated with OLCI products	Section 4.2.2.5.6
tiepoint_slstr_n.nc	Low resolution georeferencing data and View angles associated with SLSTR nadir view products	Section 4.2.2.5.7
tiepoints_slstr_o.nc	Low resolution georeferencing data and View angles associated with SLSTR oblique view products	Section 4.2.2.5.8

Element name	Description	Reference
tiepoints_meteo.nc	ECMWF meteorology data	Section 4.2.2.5.9

Table 10: SY_2_SYN__ package description

4.2.2.1.1 SY_2_SYN___ product summary

Product Package Type SY_2_SYN___		*Description* Land surface reflectance and aerosol geophysical parameters			
Product Level	**Diss. Timeliness**	**Product Category**	**Application Domain**		**Spatial Resolution**
2	NTC	user	LND		300 m
Product Dissemination Unit Stripe		Number of Package components	Number of Measurement Data Files	Number of Annotation Data Files	Number of Representation Information Files
		38	29	9	0

Table 11: SYNERGY Level 2 product physical composition

4.2.2.2 Manifest File

The structure of the Manifest element is described in [AD-3].

4.2.2.3 Wrapped Metadata

According to [AD-3], Wrapped Metadata are grouped in Primary Metadata, common to all Sentinel 3 products and Secondary Metadata, specific for instrument and processing level.

Primary Metadata are described in [AD-3].

Secondary Metadata for the SYN product are reported inTable 12. Last columns of the table indicate the applicability of Metadata fields to the processing Level.

< Complete secondary metadata is described in details in [AD-6].
The content of this table will be embedded in the document when it will be finalized>

Table 12 : Secondary Metadata for SYN products

4.2.2.4 Measurement Data Files

4.2.2.4.1 SYN Level 2 surface directional reflectance

There is a single SYN L2 surface directional reflectance dataset for each SYN channel, yielding 26 datasets in total. The structure of all datasets is the same. The definition of the 26 SYNERGY channel are provided in following table:

SYN Level 2 channel	Associated channel in OLCI/SLSTR L1b product	Central Wavelength (nm)	Bandwidth (nm)	SYN Level 2 channel	Associated channel in OLCI/SLSTR L1b product	Central Wavelength (nm)	Bandwidth (nm)
1	Oa1	400	15	14	Oa17	865	20
2	Oa2	412.5	10	15	Oa18	885	10
3	Oa3	442.5	10	16	Oa21	1020	40
4	Oa4	490	10	17	S1 for nadir view	555	20
5	Oa5	510	10	18	S2 for nadir view	659	20
6	Oa6	560	10	19	S3 for nadir view	865	20
7	Oa7	620	10	20	S5 for nadir view	1610	60
8	Oa8	665	10	21	S6 for nadir view	2250	50
9	Oa9	673.75	7.5	22	S1 for obliqe view	555	20
10	Oa10	681.25	7.5	23	S2 for obliqe view	659	20
11	Oa11	708.75	10	24	S3 for obliqe view	865	20
12	Oa12	753.75	7.5	25	S5 for obliqe view	1610	60
13	Oa16	778.75	15	26	S6 for obliqe view	2250	50

Table 13 : Definition of SYN Level 2 channels

Element name	Description	Range or value	T	D
rows	**Number of rows in the product image**			
columns	**Number of columns in the product image**	**4865**		
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
SDR_Oa<i> or SDR_S<i><g>	**Surface directional refle ctance for OLCI or SLSTR channel i and view <g> for SLSTR channel (<g> equals to N or O)**	**[0,10 000]**	**i16**	**rows columns**
standard_name	CF standard name	surface_directional_ reflectance		
_FillValue	Value indicating missing data	-10 000		1
scale_factor	Scaling factor used in decoding packed data	10^-4		1
SDR_Oa<i>_err or SDR_S<i><g>_err	**Surface directionam reflectance error estimate for OLCI or SLSTR channel i and view <g> for SLSTR channel (<g> equals to N or O)**	**[0,10 000]**	**i16**	**rows columns**
standard_name	CF standard name	surface_directional_ reflectance_standar d_error		
_FillValue	Value indicating missing data	-10 000		1
scale_factor	Scaling factor used in decoding packed data	10^-4		1

Table 14 : SY_2_SYN___ Level 2 surface directional reflectance

4.2.2.4.2 SYN Level 2 aerosol optical thickness

There is a single SYN L2 aerosol optical thickness gathering the value and the error estimates of the AOT at 550 nm

Element name	Description	Range or value	T	D
rows	**Number of rows in the product image**			
columns	**Number of columns in the product image**	**4865**		

Element name	Description	Range or value	T	D
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
T550	**Aerosol optical thickness at 550 nm**	**[0, 32767]**	**i16**	**rows columns**
standard_name	CF standard name	atmosphere_optical_thickness_due_to_aerosol		
_FillValue	Value indicating missing data	-10 000		1
scale_factor	Scaling factor used in decoding packed data	10^-4		1
T550_err	**Error estimate for aerosol optical thickness at 550 nm**	**[0, 32767]**	**i16**	**rows columns**
standard_name	CF standard name	atmosphere_optical_thickness_due_to_aerosol__standard_error		
_FillValue	Value indicating missing data	-10 000		1
scale_factor	Scaling factor used in decoding packed data	10^-4		1

Table 15 : SY_2_SYN___ Level 2 aerosol optical thickness

4.2.2.4.3 SYN Level 2 aerosol Angstrom exponent

There is a single SYN L2 file gathering the value of the Angstrom exponent at 550 nm

Element name	Description	Range or value	T	D
rows	**Number of rows in the product image**			
columns	**Number of columns in the product image**	**4865**		
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
A550	**Aerosol Angstrom exponent at 550 nm**	**[1, 255]**	**u8**	**rows columns**

Element name	Description	Range or value	T	D
standard_name	CF standard name	aerosol_angstrom_ exponent		
_FillValue	Value indicating missing data	0		1
scale_factor	Scaling factor used in decoding packed data	0.015		1
add_offset	Offset used to in decoding packed data	-1.0		1

Table 16 : SY_2_SYN___ Level 2 aerosol Angstrom Exponent

4.2.2.4.4 SYN Level 2 removed pixel Measurements data

There is a single SYN L2 file gathering the surface reflectance values/errors estimates for each SYN channel for pixel considered as removed. This file also provides aerosol optical thickness and Angstrom exponent for removed pixels.

Element name	Description	Range or value	T	D
rows	**Number of rows in the product image**			
removed_pixels	**Maximum removed pixel per line**			
bands	**Number of SYN Level 2 channels**	**26**		
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
SDR	**Surfacedirectional refle ctance for Removed pixels**	**[0,10 000]**	**i16**	**rows removed_pixels bands**
standard_name	CF standard name	surface_directional_ reflectance		
_FillValue	Value indicating missing data	-10 000		1
scale_factor	Scaling factor used in decoding packed data	10^-4		1
SDR_err	**Surface directionam reflectance error estimate for removed pixels**	**[0,10 000]**	**i16**	**rows removed_pixels bands**

Element name	Description	Range or value	T	D
standard_name	CF standard name	surface_directional_reflectance_standard_error		
_FillValue	Value indicating missing data	-10 000		1
scale_factor	Scaling factor used in decoding packed data	10^-4		1
T550	**Aerosol optical thickness at 550 nm for removed pixels**	**[0, 32767]**	**i16**	**rows removed_pixels**
standard_name	CF standard name	atmosphere_optical_thickness_due_to_aerosol		
_FillValue	Value indicating missing data	-10 000		1
scale_factor	Scaling factor used in decoding packed data	10^-4		1
T550_err	**Error estimate for aerosol optical thickness at 550 nm for removed pixels**	**[0, 32767]**	**i16**	**rows removed_pixels**
standard_name	CF standard name	atmosphere_optical_thickness_due_to_aerosol__standard_error		
_FillValue	Value indicating missing data	-10 000		1
scale_factor	Scaling factor used in decoding packed data	10^-4		1
A550	**Aerosol Angstrom exponent at 550 nm for removed pixels**	**[1, 255]**	**u8**	**rows removed_pixels**
standard_name	CF standard name	aerosol_angstrom_exponent		
_FillValue	Value indicating missing data	0		1
scale_factor	Scaling factor used in decoding packed data	0.015		1
add_offset	Offset used to in decoding packed data	-1.0		1

Table 17 : SY_2_SYN___ Level 2 Removed pixels Measurements data

4.2.2.5 Annotations Data Files

4.2.2.5.1 SYN Level 2 aerosol model index

There is a single SYN L2 file gathering the value of the Aerosol model index number for each pixel

Element name	Description	Range or value	T	D
rows	**Number of rows in the product image**			
columns	**Number of columns in the product image**	**4865**		
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
AMIN	**Aerosol Model index number**	**[1, 40]**	**u8**	**rows columns**
_FillValue	Value indicating missing data	0		1

Table 18 : SY_2_SYN___ Level 2 AMIN file

4.2.2.5.2 SYN Level 2 classification and aerosol retrieval flags

Besides the classification and aerosol retrieval flags listed in Table 20, the SYN L2 status flags dataset contains selected flags copied or aggregated from L1c.

Element name	Description	Range or value	T	D
rows	**Number of rows in the product image**			
columns	**Number of columns in the product image**	**4865**		
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
SYN_flags	**Synergy classification and aerosol retrieval flags**		**u16**	**rows columns**
_FillValue	Value indicating missing data	0		1
flags_masks	Masks for each flag bit	see Table 20		1
flag_meanings	Text descriptions for each flag bit	see Table 20		1

Element name	Description	Range or value	T	D
OLC_flags	**Selected quality and classification flags for OLCI SYN channels**		**u16**	**rows columns**
_FillValue	Value indicating missing data	0		1
flags_masks	Masks for each flag bit	see Table 21		1
flag_meanings	Text descriptions for each flag bit	see Table 21		1
SLN_flags	**Exception summary and confidence flags for SLSTR nadir-view SYN channels**		**u32**	**rows columns**
_FillValue	Value indicating missing data	0		1
flags_masks	Masks for each flag bit	see Table 22		1
flag_meanings	Text descriptions for each flag bit	see Table 22		1
SLO_flags	**Exception summary and confidence flags for SLSTR oblique-view SYN channels**		**u32**	**rows columns**
_FillValue	Value indicating missing data	0		1
flags_masks	Masks for each flag bit	see Table 23		1
flag_meanings	Text descriptions for each flag bit	see Table 23		1
CLOUD_flags	**Cloud flags**		**u8**	**rows columns**
flags_masks	Masks for each flag bit	see Table 24		1
flag_meanings	Text descriptions for each flag bit	see Table 24		1

Table 19 : SY_2_SYN___ Level 2 flags file

FLAG MASK	FLAG MEANING	DESCRIPTION
2^0	SYN_cloud	Identifies clouds
2^1	SYN_snow_risk	Foreseen for indicating areas with or without snow/ice that are not clouds, but present features similar to clouds
2^2	SYN_SDR_OOR	Indicates that at least one SDR is out of range (<0 or >1)

FLAG MASK	FLAG MEANING	DESCRIPTION
2^3	SYN_AOT_climato	Indicates that AOT is filled with the climatological value
2^4	SYN_land	Identifies land
2^5	SYN_no_olc	Pixel has no OLCI radiances
2^6	SYN_no_sln	Pixel has no SLSTR nadir view radiances
2^7	SYN_no_slo	Pixel has no SLSTR oblique view radiances
2^8	SYN_partly_cloudy	Averaging region contains cloudy pixels
2^9	SYN_partly_water	Averaging region contains water pixels
2^{10}	SYN_border	Averaging region contains fewer pixels, because pixel is at the boundary of the camera image
2^{11}	SYN_aerosol_filled	Aerosol optical thickness was filled
2^{12}	SYN_success	Aerosol retrieval was successful
2^{13}	SYN_negative_curvature	Aerosol retrieval failed because of negative error metric curvature
2^{14}	SYN_too_low	Aerosol retrieval failed because AOT was too low (AOT < 10^{-4})
2^{15}	SYN_high_error	Aerosol retrieval failed because relative error was too high (AOT > 0.1 and relative error > 500 %)

Table 20 : SYN L2 classification and aerosol flags

FLAG MASK	FLAG MEANING	DESCRIPTION
2^0	OLC_summary_saturated	Sample is saturated for any of SYN channels 1 – 18
2^1	OLC_dubious	Copied from [AD-4] but flag meaning prefixed
2^2	OLC_sun_glint_risk	Copied from [AD-4] but flag meaning prefixed
2^3	OLC_cosmetic	Copied from [AD-4] but flag meaning prefixed
2^4	OLC_invalid	Copied from [AD-4] but flag meaning prefixed
2^8	OLC_bright	Copied from [AD-4] but flag meaning prefixed
2^9	OLC_tidal_region	Copied from [AD-4] but flag meaning prefixed
2^{10}	OLC_fresh_inland_water	Copied from [AD-4] but flag meaning prefixed
2^{11}	OLC_coastline	Copied from [AD-4] but flag meaning prefixed
2^{12}	OLC_land	Copied from [AD-4] but flag meaning prefixed

Table 21: SYN L2 OLCI quality and classification flags

FLAG MASK	FLAG MEANING	DESCRIPTION
2^0	SLN_summary_ISP_absent	ISP absent for any SYN channel of 19 – 24
2^1	SLN_summary_pixel_absent	Pixel absent for any SYN channel of 19 – 24
2^2	SLN_summary_not_decompressed	Not decompressed for any SYN channel of 19 – 24
2^3	SLN_summary_no_signal	No signal for any SYN channel of 19 – 24

FLAG MASK	FLAG MEANING	DESCRIPTION
2^4	SLN_summary_saturation	Saturation for any SYN channel of 19 – 24
2^5	SLN_summary_invalid_radiance	Invalid radiance for any SYN channel of 19 – 24
2^6	SLN_summary_no_parameters	No parameters for any SYN channel of 19 – 24
2^7	SLN_summary_unfilled_pixel	Unfilled pixel for any SYN channel of 19 – 24
2^8	SLN_coastline	Copied from [AD-5] but flag meaning prefixed
2^9	SLN_ocean	Copied from [AD-5] but flag meaning prefixed
2^{10}	SLN_tidal	Copied from [AD-5] but flag meaning prefixed
2^{11}	SLN_land	Copied from [AD-5] but flag meaning prefixed
2^{12}	SLN_inland_water	Copied from [AD-5] but flag meaning prefixed
2^{16}	SLN_cosmetic	Copied from [AD-5] but flag meaning prefixed
2^{18}	SLN_day	Copied from [AD-5] but flag meaning prefixed
2^{19}	SLN_twilight	Copied from [AD-5] but flag meaning prefixed
2^{20}	SLN_sun_glint	Copied from [AD-5] but flag meaning prefixed
2^{21}	SLN_snow	Copied from [AD-5] but flag meaning prefixed
2^{22}	SLN_summary_cloud	Copied from [AD-5] but flag meaning prefixed
2^{23}	SLN_summary_pointing	Copied from [AD-5] but flag meaning prefixed

Table 22: SYN L2 SLSTR nadir-view exception summary and confidence flags

FLAG MASK	FLAG MEANING	DESCRIPTION
2^0	SLO_summary_ISP_absent	ISP absent for any SYN channel of 25 – 30
2^1	SLO_summary_pixel_absent	Pixel absent for any SYN channel of 25 – 30
2^2	SLO_summary_not_decompressed	Not decompressed for any SYN channel of 25 – 30
2^3	SLO_summary_no_signal	No signal for any SYN channel of 25 – 30
2^4	SLO_summary_saturation	Saturation for any SYN channel of 25 – 30
2^5	SLO_summary_invalid_radiance	Invalid radiance for any SYN channel of 25 – 30
2^6	SLO_summary_no_parameters	No parameters for any SYN channel of 25 – 30
2^7	SLO_summary_unfilled_pixel	Unfilled pixel for any SYN channel of 25 – 30
2^8	SLO_coastline	Copied from [AD-5] but flag meaning prefixed
2^9	SLO_ocean	Copied from [AD-5] but flag meaning prefixed
2^{10}	SLO_tidal	Copied from [AD-5] but flag meaning prefixed
2^{11}	SLO_land	Copied from [AD-5] but flag meaning prefixed
2^{12}	SLO_inland_water	Copied from [AD-5] but flag meaning prefixed
2^{16}	SLO_cosmetic	Copied from [AD-5] but flag meaning prefixed
2^{18}	SLO_day	Copied from [AD-5] but flag meaning prefixed

FLAG MASK	FLAG MEANING	DESCRIPTION
2^{19}	SLO_twilight	Copied from [AD-5] but flag meaning prefixed
2^{20}	SLO_sun_glint	Copied from [AD-5] but flag meaning prefixed
2^{21}	SLO_snow	Copied from [AD-5] but flag meaning prefixed
2^{22}	SLO_summary_cloud	Copied from [AD-5] but flag meaning prefixed
2^{23}	SLO_summary_pointing	Copied from [AD-5] but flag meaning prefixed

Table 23: SYN L2 SLSTR oblique-view exception summary and confidence flags

FLAG MASK	FLAG MEANING	DESCRIPTION
2^{0}	CLOUD	Cloudy pixel
2^{1}	CLOUD_AMBIGUOUS	Ambiguous Cloudy pixel
2^{2}	CLOUD_MARGIN	Dilatation around (CLOUD+CLOUD_AMBIGUOUS)
2^{3}	SNOW_ICE	Snow/ice pixel

Table 24: SYN L2 cloud flags

4.2.2.5.3 SYN Level 2 Geolocation

The SYN L2 geolocation dataset essentially is the same as the S3 OLCI Level 1 geo-location dataset but with attributes modified in order to comply with CF-1.4 conventions.

Element name	Description	Range or value	T	D
rows	**Number of rows in the product image**		**u16**	
columns	**Number of columns in the product image**	**4865**	**u16**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
lat	**DEM_corrected latitude**	**[-90 e6, 90 e6]**	**i32**	**rows columns**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
scale_factor	Scaling factor used in decoding packed data	10^-6		1

Element name	Description	Range or value	T	D
lon	**DEM_corrected longitude**	**[-180 e6, 180 e6]**	**i32**	**rows columns**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
scale_factor	Scaling factor used in decoding packed data	10^-6		1
altitude	**DEM_corrected altitude**	**[-1000, 9000]**	**i16**	**rows columns**
standard_name	CF standard name	altitude		
units	UDUNITS unit name	meters		1
positive	axis orientation	up		1

Table 25 : SY_2_SYN___ geolocation file

4.2.2.5.4 SYN Level 2 time stamps

The SYN L2 time stamps dataset is essentially the same as the OLCI measurements time stamps dataset, which is described in [AD-4]

Element name	Description	Range or value	T	D
rows	**Number of rows in the OLCI product image**		**u16**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
Time	**Time of measurement**	**[0, 2^{32} -1]**	**i64**	**rows**
standard_name	CF standard name	time		
units	UDUNITS unit name	microseconds since 2000-1-1 0:0:0		1
_FillValue	Value indicating missing data	-1		1

Table 26 : SY_2_SYN___ time stamps dataset

4.2.2.5.5 SYN Level 2 Removed pixel Annotations data

The SYN L2 annotations removed pixel dataset gathers each annotation parameter provided for removed pixels.

Element name	Description	Range or value	T	D
rows	**Number of rows in the product image**			
removed_pixels	**Maximum removed pixel per line**	**~125**		
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
AMIN	**Aerosol Model index number**	**[1, 40]**	**u8**	**rows removed_pixels**
_FillValue	Value indicating missing data	0		1
SYN_flags	**Synergy classification and aerosol retrieval flags**		**u16**	**rows removed_pixels**
_FillValue	Value indicating missing data	0		1
flags_masks	Masks for each flag bit	see Table 20		1
flag_meanings	Text descriptions for each flag bit	see Table 20		1
OLC_flags	**Selected quality and classification flags for OLCI SYN channels**		**u16**	**rows removed_pixels**
_FillValue	Value indicating missing data	0		1
flags_masks	Masks for each flag bit	see Table 21		1
flag_meanings	Text descriptions for each flag bit	see Table 21		1
SLN_flags	**Exception summary and confidence flags for SLSTR nadir-view SYN channels**		**u32**	**rows removed_pixels**
_FillValue	Value indicating missing data	0		1
flags_masks	Masks for each flag bit	see Table 22		1
flag_meanings	Text descriptions for each flag bit	see Table 22		1

Element name	Description	Range or value	T	D
SLO_flags	**Exception summary and confidence flags for SLSTR oblique-view SYN channels**		**u32**	**rows removed_pixels**
_FillValue	Value indicating missing data	0		1
flags_masks	Masks for each flag bit	see Table 23		1
flag_meanings	Text descriptions for each flag bit	see Table 23		1
CLOUD_flags	**Cloud flags**		**u8**	**rows removed_pixels**
flags_masks	Masks for each flag bit	see Table 24		1
flag_meanings	Text descriptions for each flag bit	see Table 24		1
lat	**DEM_corrected latitude**	**[-90 e6, 90 e6]**	**i32**	**rows removed_pixels**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
scale_factor	Scaling factor used in decoding packed data	10^-6		1
lon	**DEM_corrected longitude**	**[-180 e6, 180 e6]**	**i32**	**rows removed_pixels**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
scale_factor	Scaling factor used in decoding packed data	10^-6		1
altitude	**DEM_corrected altitude**	[-1000, 9000]	**i16**	**rows removed_pixels**
standard_name	CF standard name	altitude		
units	UDUNITS unit name	meters		1
positive	axis orientation	up		1

Table 27 : SY_2_SYN___ time stamps dataset

4.2.2.5.6 SYN Level 2 Sub-sampled annotation from OLCI dataset

The SYN L2 sub-sampled annotation datasets are essentially the same as the OLCI sub-sampled annotations datasets described in [AD-4]

Element name	Description	Range or value	T	D
number_tp	**Number of tie points associated with OLCI image**		**u32**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
OLC_TP_lat	**latitude (WGS-84)**	**[-90 e6, 90 e6]**	**i32**	**number_tp**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
scale_factor	Scaling factor used in decoding packed data	10^-6		1
OLC_TP_lon	**longitude (WGS-84)**	**[-180 e6, 180 e6]**	**i32**	**number_tp**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
scale_factor	Scaling factor used in decoding packed data	10^-6		1
SAA	**Solar azimuth angle**	**[-180 e6, 180 e6]**	**i32**	**number_tp**
standard_name	CF standard name	solar_azimuth_angle		
units	UDUNITS unit name	degrees		1
scale_factor	Scaling factor used in decoding packed data	10^-6		1
coordinates		OLC_TP_lat OLC_TP_lon		1
SZA	**Solar Zenith angle**	**[0, 90 e6]**	**i32**	**number_tp**
standard_name	CF standard name	solar_zenith_angle		

Element name	Description	Range or value	T	D
units	UDUNITS unit name	degrees		1
scale_factor	Scaling factor used in decoding packed data	10^-6		1
coordinates		OLC_TP_lat OLC_TP_lon		1
OLC_VAA	**OLCI view azimuth angle**	**[-180 e6, 180 e6]**	**i32**	**number_tp**
units	UDUNITS unit name	degrees		1
scale_factor	Scaling factor used in decoding packed data	10^-6		1
coordinates		OLC_TP_lat OLC_TP_lon		1
OLC_VZA	**OLCI view zenith angle**	**[0, 90 e6]**	**i32**	**number_tp**
units	UDUNITS unit name	degrees		1
scale_factor	Scaling factor used in decoding packed data	10^-6		1
coordinates		OLC_TP_lat OLC_TP_lon		1

Table 28 : SY_2_SYN___ OLCI sub-sampled annotations dataset

4.2.2.5.7 SYN Level 2 Sub-sampled annotation from SLSTR nadir view dataset

The SYN L2 sub-sampled annotation datasets are essentially the same as the SLSTR sub-sampled annotations datasets defined for nadir view described in [AD-5]

Element name	Description	Range or value	T	D
number_tp	**Number of tie points associated with SLSTR nadir view image**		**u32**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			

Element name	Description	Range or value	T	D
SLN_TP_lat	**latitude (WGS-84)**	**[-90 e6, 90 e6]**	**f64**	**number_tp**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
SLN_TP_lon	**longitude (WGS-84)**	**[-180 e6, 180 e6]**	**f64**	**number_tp**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
SLN_VAA	**SLSTR nadir view azimuth angle**	**[-180 e6, 180 e6]**	**f32**	**number_tp**
units	UDUNITS unit name	degrees		1
coordinates		SLN_TP_lat SLN_TP_lon		1
SLN_VZA	**SLSTR nadir view zenith angle**	**[0, 90 e6]**	**f32**	**number_tp**
units	UDUNITS unit name	degrees		1
coordinates		SLN_TP_lat SLN_TP_lon		1

Table 29 : SY_2_SYN___ SLSTR nadir view sub-sampled annotations dataset

4.2.2.5.8 SYN Level 2 Sub-sampled annotation from SLSTR oblique view dataset

The SYN L2 sub-sampled annotation datasets are essentially the same as the SLSTR sub-sampled annotations datasets defined for oblique view described in [AD-5]

Element name	Description	Range or value	T	D
number_tp	**Number of tie points associated with SLSTR oblique view image**		**u32**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			

Element name	Description	Range or value	T	D
SLO_TP_lat	**latitude (WGS-84)**	**[-90 e6, 90 e6]**	**f64**	**number_tp**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
SLO_TP_lon	**longitude (WGS-84)**	**[-180 e6, 180 e6]**	**f64**	**number_tp**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
SLO_VAA	**SLSTR oblique view azimuth angle**	**[-180 e6, 180 e6]**	**f32**	**number_tp**
units	UDUNITS unit name	degrees		1
coordinates		SLN_TP_lat SLN_TP_lon		1
SLO_VZA	**SLSTR oblique view zenith angle**	**[0, 90 e6]**	**f32**	**number_tp**
units	UDUNITS unit name	degrees		1
coordinates		SLN_TP_lat SLN_TP_lon		1

Table 30 : SY_2_SYN___ SLSTR nadir view sub-sampled annotations dataset

4.2.2.5.9 SYN Level 2 Geophysical Atmospheric dataset

The SYN L2 geophysical atmospheric dataset essentially is a subset of the corresponding OLCI+ SLSTR dataset, using the same tie points as the OLCI sub-sampled annotations dataset

Element name	Description	Range or value	T	D
number_tp	**Number of tie points associated with OLCI image**		**u32**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			

Element name	Description	Range or value	T	D
air_pressure	**Mean air pressure at sea-level**	**[850, 1100]**	**f32**	**number_tp**
standard_name	CF standard name	air_pressure_at_sea_level		
units	UDUNITS unit name	hPa		1
_FillValue	Value indicating missing data	-1		1
ozone	**Total column ozone**		**f32**	**number_tp**
standard_name	CF standard name	atmosphere_mass_content_of_ozone		
units	UDUNITS unit name	kg m-2		1
_FillValue	Value indicating missing data	-1		1
Water_vapour	**Total column water vapour**		**f32**	**number_tp**
standard_name	CF standard name	atmosphere_water_vapour_content		
units	UDUNITS unit name	g cm-2		1
_FillValue	Value indicating missing data	-1		1

Table 31 : SY_2_SYN___ geophysical atmospheric dataset

4.2.3 Level 2 Product: SY_2_VGP___

This product contains the SPOT VGT-P continuity products

4.2.3.1 Package Description

A “SY_2_VGP___” Level 2 product is composed by 13 files: 4 containing the measurements whereas the other 8 files contain the annotation data.

In the following sections the content of the files is reported.

Element name	Description	Reference
manifest.safe	**Sentinel-SAFE product manifest**	
B0.nc	**TOA reflectance associated with VGT- B0 channel**	**section 4.2.3.4.1**
B2.nc	**TOA reflectance associated with VGT- B2 channel**	
B3.nc	**TOA reflectance associated with VGT- B3 channel**	
MIR.nc	**TOA reflectance associated with VGT- MIR channel**	
vaa.nc	**View Azimuth Angle**	**section 4.2.3.5.2**
vza.nc	**View Zenith Angle**	**section 4.2.3.5.3**
saa.nc	**Solar Azimuth Angle**	**section 4.2.3.5.4**
sza.nc	**Solar Zemith Angle**	**section 4.2.3.5.5**
ag.nc	**Aerosol Optical thickness**	**section 4.2.3.5.6**
og.nc	**Total Ozone Column**	**section 4.2.3.5.7**
wvg.nc	**Total column water vapour**	**section 4.2.3.5.8**
sm.nc	**Status flags**	**section 4.2.3.5.1**

Table 32: SY_2_VGP__ package description

4.2.3.1.1 SY_2_ VGP ___ product summary

Product Package Type SY_2_VGP		*Description* SPOT VGT-P continuity products			
Product Level	**Diss. Timeliness**	**Product Category**	**Application Domain**		**Spatial Resolution**
2	NTC	Available to the user	LND		1Km
Product Dissemination Unit Stripe		Number of Package components	Number of Measurement Data Files	Number of Annotation Data Files	Number of Representation Information Files
		13	4	8	0

Table 33: SYN VGT-P Level 2 product physical composition

4.2.3.2 Manifest File

The structure of the Manifest element is described in [AD-3].

4.2.3.3 Wrapped Metadata

According to [AD-3], Wrapped Metadata are grouped in Primary Metadata, common to all Sentinel 3 products and Secondary Metadata, specific for instrument and processing level.

Primary Metadata are described in [AD-3].

Secondary Metadata for the SYN product are reported inTable 34. Last columns of the table indicate the applicability of Metadata fields to the processing Level.

< Complete secondary metadata is described in details in [AD-6].
The content of this table will be embedded in the document when it will be finalized>

Table 34 : Secondary Metadata for SYN products

4.2.3.4 Measurement Data Files

4.2.3.4.1 SYN Level 2 VGT P TOA reflectance

There is a single VGT P TOA reflectance dataset for each VGT spectral band. In total there are 4 datasets; the structure of all datasets is the same. It is indexed on 1 km Plate carrée grid. Note that we restrict the VGT-P product in longitude to have only the filled Plate-Carrée boxes.

The definition of the 4 VGT channels and the combination of SYNERGY channel used to compute these TOA reflectance are provided in following table:

VGT channel	Central Wavelength (nm)	Bandwidth (nm)	Conbined SYN Level 2 channels (see Table 13)
B0	450	20	SYN channel 2 and channel 3
B2	645	35	SYN channels 6 to 10

B3	835	55	SYN channels 13 to 16
MIR	1665	85	SYN channel 20 and channel 21

Table 35 : Definition of VGT channels

Element name	Description	Range or value	T	D
latitude	**Latitude dimension, Number of rows in the 1km plate carrée grid**		**u16**	
longitude	**Longitude dimension, Number of column in the 1km plate carrée grid**		**u16**	
vertices	**Number of vertices**	**2**	**u16**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
B0	**TOA reflectance for VGT B0 channel**	**[0.0, 1.0] (scaled)**	**i16**	**latitude longitude**
_FillValue	Value indicating missing data	-10 000		1
scale_factor	Scaling factor used in decoding packed data	10^-4		1
grid_mapping		crs		1
Wavelength	Central wavelength of VGT channel	see Table 35		1
Bandwidth	Bandwidth of VGT channel	see Table 35		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
bounds		lat_bnds		1
crs	**Coordinate reference system**		**st**	**1**

Element name	Description	Range or value	T	D
grid_mapping_name		latitude_longitude		1
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1
inverse_flattening		298.257223563		
lat_bnds	**latitude cell boundaries**			**latitude vertices**
lon_bnds	**longitude cell boundaries**			**longitude vertices**

Table 36 : SY_2_VGP ___ Level 2 surface directional reflectance for B0 channel

Structures of files B2.nc, B3.nc and MIR.nc are similar. The only change is the TOA reflectance which should be replaced by :

B2	**TOA reflectance for VGT B2 channel**	**[0.0, 1.0] (scaled)**	**i16**	**latitude longitude**

Table 37 : part of the SY_2_VGP___ Level 2 surface directional reflectance for B2 channel

B3	**TOA reflectance for VGT B3 channel**	**[0.0, 1.0] (scaled)**	**i16**	**latitude longitude**

Table 38 : part of the SY_2_VGP___ Level 2 surface directional reflectance for B3 channel

MIR	**TOA reflectance for VGT MIR channel**	**[0.0, 1.0] (scaled)**	**i16**	**latitude longitude**

Table 39 : part of the SY_2_VGP___ Level 2 surface directional reflectance for MIR channel

4.2.3.5 Annotations Data Files

4.2.3.5.1 SYN Level 2 VGT P Status Flag

There is a single SYN Level 2 VGT-P file gathering the status flags

Element name	Description	Range or value	T	D
latitude	**Latitude dimension, Number of rows in the 1km plate carrée grid**		**u16**	
longitude	**Longitude dimension, Number of columns in the 1km plate carrée grid**		**u16**	
vertices	**Number of vertices**	**2**	**u16**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
SM	**Status flag**		**u8**	**latitude longitude**
_FillValue	Value indicating missing data	0		1
flag_masks	Masks for each flag bit	See Table 41		8
flag_values	flag values	See Table 41		8
flag_meanings	Text descriptions for each flag bit	See Table 41		1
grid_mapping		crs		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
bounds		lat_bnds		1
crs	**Coordinate reference system**		**st**	**1**
grid_mapping_name		latitude_longitude		1

Element name	Description	Range or value	T	D
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1
inverse_flattening		298.257223563		
lat_bnds	**latitude cell boundaries**			**latitude vertices**
lon_bnds	**longitude cell boundaries**			**longitude vertices**

Table 40 : SY_2_VGP ___ Level 2 status flag

FLAG MASK	FLAG VALUE	FLAG MEANING	DESCRIPTION
3	0	clear	Indicates cloud-free pixels
3	1	shadow	Indicates pixels shadowed by clouds
3	2	uncertain	Indicates uncertain cloud detection
3	3	cloud	Indicates cloudy pixels
4	4	ice_or_snow	Indicates ice or snow
8	8	land	Indicates land
16	16	MIR_good	Quality of MIR measurement is good
32	32	B3_good	Quality of B3 measurement is good
64	64	B2_good	Quality of B2 measurement is good
128	128	B0_good	Quality of B0 measurement is good

Table 41 : VGT status flags

4.2.3.5.2 SYN Level 2 VGT P View Azimuth Angle

Element name	Description	Range or value	T	D
latitude	**Latitude dimension, Number of sub-sampled rows**		**u16**	
longitude	**Longitude dimension, Number of sub-sampled columns**		**u16**	
vertices	**Number of vertices**	**2**	**u16**	
<common global attributes>	Common global attributes(see [AD- 3] and Table 3)			
VAA	**view azimuth angle**	**[-180, 180] (scaled)**	**i8**	**latitude longitude**
units	UDUNITS unit name	degrees		1
scale_factor	Scaling factor used in decoding packed data	1.5		1
_FillValue	Value indicating missing data	-128		1
grid_mapping		crs		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
bounds		lat_bnds		1
crs	**Coordinate reference system**		**st**	**1**
grid_mapping_name		latitude_longitude		1
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1
inverse_flattening		298.257223563		
lat_bnds	**latitude cell boundaries**			**latitude vertices**
lon_bnds	**longitude cell boundaries**			**longitude vertices**

Table 42 : SY_2_VGP ___ Level 2 Viewing azimurth angle dataset

4.2.3.5.3 SYN Level 2 VGT P View Zenith Angle

Element name	Description	Range or value	T	D
latitude	**Latitude dimension, Number of sub-sampled rows**		**u16**	
longitude	**Longitude dimension, Number of sub-sampled columns**		**u16**	
vertices	**Number of vertices**	**2**	**u16**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
VZA	**view zenith angle**	**[0, 90] (scaled)**	**u8**	**latitude longitude**
units	UDUNITS unit name	degrees		1
scale_factor	Scaling factor used in decoding packed data	0.5		1
_FillValue	Value indicating missing data	255		1
grid_mapping		crs		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
bounds		lat_bnds		1
crs	**Coordinate reference system**		**st**	**1**
grid_mapping_name		latitude_longitude		1
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1

Element name	Description	Range or value	T	D
inverse_flattening		298.257223563		
lat_bnds	**latitude cell boundaries**			**latitude vertices**
lon_bnds	**longitude cell boundaries**			**longitude vertices**

Table 43 : SY_2_VGP ___ Level 2 view zenith angle dataset

4.2.3.5.4 SYN Level 2 VGT P Solar Azimuth Angle

Element name	Description	Range or value	T	D
latitude	**Latitude dimension, Number of sub-sampled rows**		**u16**	
longitude	**Longitude dimension, Number of sub-sampled columns**		**u16**	
vertices	**Number of vertices**	**2**	**u16**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
SAA	**Solar azimuth angle**	**[-180.0, 180.0] (scaled)**	**i8**	**latitude longitude**
standard_name	CF standard name	solar_azimuth_angle		
units	UDUNITS unit name	degrees		1
scale_factor	Scaling factor used in decoding packed data	1.5		1
_FillValue	Value indicating missing data	-128		1
grid_mapping		crs		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1

Element name	Description	Range or value	T	D
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
bounds		lat_bnds		1
crs	**Coordinate reference system**		**st**	**1**
grid_mapping_name		latitude_longitude		1
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1
inverse_flattening		298.257223563		
lat_bnds	**latitude cell boundaries**			**latitude vertices**
lon_bnds	**longitude cell boundaries**			**longitude vertices**

Table 44 : SY_2_VGP ___ Level 2 solar azimuth angle dataset

4.2.3.5.5 SYN Level 2 VGT P Solar Zenith Angle

Element name	Description	Range or value	T	D
latitude	**Latitude dimension, Number of sub-sampled rows**		**u16**	
longitude	**Longitude dimension, Number of sub-sampled columns**		**u16**	
vertices	**Number of vertices**	**2**	**u16**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
SZA	**Solar zenith angle**	**[0, 90.0] (scaled)**	**u8**	**latitude longitude**
standard_name	CF standard name	solar_zenith_angle		
units	UDUNITS unit name	degrees		1

Element name	Description	Range or value	T	D
scale_factor	Scaling factor used in decoding packed data	0.5		1
_FillValue	Value indicating missing data	255		1
grid_mapping		crs		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
bounds		lat_bnds		1
crs	**Coordinate reference system**		**st**	**1**
grid_mapping_name		latitude_longitude		1
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1
inverse_flattening		298.257223563		
lat_bnds	**latitude cell boundaries**			**latitude vertices**
lon_bnds	**longitude cell boundaries**			**longitude vertices**

Table 45 : SY_2_VGP ___ Level 2 solar zenith angle dataset

4.2.3.5.6 SYN Level 2 VGT P Aerosol Optical Thickness

Element name	Description	Range or value	T	D
latitude	**Latitude dimension, Number of sub-sampled rows**		**u16**	
longitude	**Longitude dimension, Number of sub-sampled columns**		**u16**	
vertices	**Number of vertices**	**2**	**u16**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
AG	**Aerosol optical thickness at 550 nm**	**[0, 254]**	**u8**	**latitude longitude**
standard_name	CF standard name	atmosphere_optical_thickness_due_to_aerosol		
scale_factor	Scaling factor used in decoding packed data	0.004		1
_FillValue	Value indicating missing data	255		1
grid_mapping		crs		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
bounds		lat_bnds		1
crs	**Coordinate reference system**		**st**	**1**
grid_mapping_name		latitude_longitude		1
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1
inverse_flattening		298.257223563		
lat_bnds	**latitude cell boundaries**			**latitude vertices**

Element name	Description	Range or value	T	D
lon_bnds	**longitude cell boundaries**			**longitude vertices**

Table 46 : SY_2_VGP ___ Level 2 aerosol dataset

4.2.3.5.7 SYN Level 2 VGT P Total Column Ozone

Element name	Description	Range or value	T	D
latitude	**Latitude dimension, Number of sub-sampled rows**		**u16**	
longitude	**Longitude dimension, Number of sub-sampled columns**		**u16**	
vertices	**Number of vertices**	**2**	**u16**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
OG	**Total column ozone**	**[0, 254]**	**u8**	**latitude longitude**
units	UDUNITS unit name	atm.cm		1
scale_factor	Scaling factor used in decoding packed data	0.004		1
_FillValue	Value indicating missing data	255		1
grid_mapping		crs		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
bounds		lat_bnds		1
crs	**Coordinate reference system**		**st**	**1**

Element name	Description	Range or value	T	D
grid_mapping_name		latitude_longitude		1
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1
inverse_flattening		298.257223563		
lat_bnds	**latitude cell boundaries**			**latitude vertices**
lon_bnds	**longitude cell boundaries**			**longitude vertices**

Table 47 : SY_2_VGP ___ Level 2 ozone dataset

4.2.3.5.8 SYN Level 2 VGT P Total Column Water Vapour

Element name	Description	Range or value	T	D
latitude	**Latitude dimension, Number of sub-sampled rows**		**u16**	
longitude	**Longitude dimension, Number of sub-sampled columns**		**u16**	
vertices	**Number of vertices**	**2**	**u16**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
WVG	**Total column water vapour**	**[0, 254]**	**u8**	**latitude longitude**
units	UDUNITS unit name	g cm-2		1
scale_factor	Scaling factor used in decoding packed data	0.04		1
_FillValue	Value indicating missing data	255		1
grid_mapping		crs		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		

Element name	Description	Range or value	T	D
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
bounds		lat_bnds		1
crs	**Coordinate reference system**		**st**	**1**
grid_mapping_name		latitude_longitude		1
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1
inverse_flattening		298.257223563		
lat_bnds	**latitude cell boundaries**			**latitude vertices**
lon_bnds	**longitude cell boundaries**			**longitude vertices**

Table 48 : SY_2_VGP ___ Level 2 water vapour dataset

4.2.4 Level 2 Product: SY_2_VGK___

This product is similar to the SY_2_VGP product: same measurement and annotation files, same included parameters. The only difference is that the radiometric measurements have been corrected thank to the aerosol model computed in SYN Level 2 processing. .

There are three additional files, one providing the NDVI and two annotation ones providing the time and the geolocation.

4.2.4.1 Package Description

A “SY_2_VGK___” Level 2 product is composed by 15 files: 5 containing the measurements whereas the other 10 files contain the annotation data.

In the following sections the content of the files is reported.

Element name	Description	Reference
manifest.safe	Sentinel-SAFE product manifest	
B0.nc	Surface reflectance associated with VGT- B0 channel	section 4.2.4.4.1
B2.nc	Surface reflectance associated with VGT- B2 channel	
B3.nc	Surface reflectance associated with VGT- B3 channel	
MIR.nc	Surface reflectance associated with VGT- MIR channel	
NDVI.nc	Normalised difference vegetation index	section 4.2.4.4.2
vaa.nc	View Azimuth Angle	section 4.2.3.5.2
vza.nc	View Zenith Angle	section 4.2.3.5.3
saa.nc	Solar Azimuth Angle	section 4.2.3.5.4
sza.nc	Solar Zemith Angle	section 4.2.3.5.5
ag.nc	Aerosol Optical thickness	section 4.2.3.5.6
og.nc	Total Ozone Column	section 4.2.3.5.7
wvg.nc	Total column water vapour	section 4.2.3.5.8
sm.nc	Status flags	section 4.2.3.5.1
tg.nc	Synthetic Time annotations	section 4.2.4.5.1

Table 49: SY_2_VGP__ package description

4.2.4.1.1 SY_2_ VGK ___ product summary

Product Package Type SY_2_VGK		*Description* SPOT VGP product including NDVI and Surface reflectance		
Product Level	**Diss. Timeliness**	**Product Category**	**Application Domain**	**Spatial Resolution**
2	NTC	Available to the user	LND	1Km

Product Dissemination Unit Stripe	Number of Package components	Number of Measurement Data Files	Number of Annotation Data Files	Number of Representation Information Files
	15	5	9	0

Table 50: SYN VGK Level 2 product physical composition

4.2.4.2 Manifest File

The structure of the Manifest element is described in [AD-3].

4.2.4.3 Wrapped Metadata

According to [AD-3], Wrapped Metadata are grouped in Primary Metadata, common to all Sentinel 3 products and Secondary Metadata, specific for instrument and processing level.

Primary Metadata are described in [AD-3].

Secondary Metadata for the SYN product are reported inTable 51. Last columns of the table indicate the applicability of Metadata fields to the processing Level.

< Complete secondary metadata is described in details in [AD-6].
The content of this table will be embedded in the document when it will be finalized>

Table 51 : Secondary Metadata for SYN products

4.2.4.4 Measurement Data Files

4.2.4.4.1 SYN Level 2 VGK surface directional reflectance

There is a single VGK TOA reflectance dataset for each VGT spectral band. In total there are 4 datasets; the structure of all datasets is the same and described in the following table. Similarly to SYN VGP product, it is indexed on the 1km Plate Carrée grid. See Table 35 for the description of VGT channels.

Element name	Description	Range or value	T	D
latitude	**Latitude dimension, Number of rows in the 1km plate carrée grid**		**u16**	
longitude	**Longitude dimension, Number of column in the 1km plate carrée grid**		**u16**	
vertices	**Number of vertices**	**2**	**u16**	
<common global attributes>	Common global attributes			
B0	**TOA reflectance for VGT B0 channel**	**[0.0, 1.0] (scaled)**	**i16**	**latitude longitude**
_FillValue	Value indicating missing data	-10 000		1
scale_factor	Scaling factor used in decoding packed data	10^-4		1
grid_mapping		crs		1
Wavelength	Central wavelength of VGT channel	see Table 35		1
Bandwidth	Bandwidth of VGT channel	see Table 35		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
bounds		lat_bnds		1
crs	**Coordinate reference system**		**st**	**1**
grid_mapping_name		latitude_longitude		1
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1
inverse_flattening		298.257223563		
lat_bnds	**latitude cell boundaries**			**latitude vertices**

Element name	Description	Range or value	T	D
lon_bnds	longitude cell boundaries			longitude vertices

Table 52 : SY_2_VGK ___ Level 2 surface directional reflectance for B0 channel

Structures of files B2.nc, B3.nc and MIR.nc are similar. The only change is the TOA reflectance which should be replaced by:

B2	TOA reflectance for VGT B2 channel	[0.0, 1.0] (scaled)	i16	latitude longitude

Table 53 : part of the SY_2_VGK___ Level 2 surface directional reflectance for B2 channel

B3	TOA reflectance for VGT B3 channel	[0.0, 1.0] (scaled)	i16	latitude longitude

Table 54 : part of the SY_2_VGK___ Level 2 surface directional reflectance for B3 channel

MIR	TOA reflectance for VGT MIR channel	[0.0, 1.0] (scaled)	i16	latitude longitude

Table 55 : part of the SY_2_VGK___ Level 2 surface directional reflectance for MIR channel

4.2.4.4.2 SYN Level 2 VGK NDVI

Element name	Description	Range or value	T	D
latitude	Latitude dimension, Number of rows in the 1km plate carrée grid		u16	
longitude	Longitude dimension, Number of column in the 1km plate carrée grid		u16	
vertices	Number of vertices	2	u16	

Element name	Description	Range or value	T	D
<common global attributes>	Common global attributes			
NDVI	**Normalised difference vegetation index**	**[-0.08; 0.92] (scaled)**	**u8**	**latitude longitude**
standard_name	CF standard name	Normalized_difference_vegetation_index		
scale_factor	Scaling factor used in decoding packed data	0.004		1
add_offset	Offset used to in decoding packed data	-0.08		
_FillValue	Value indicating missing data	-1		
grid_mapping		crs		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
bounds		lat_bnds		1
crs	**Coordinate reference system**		**st**	**1**
grid_mapping_name		latitude_longitude		1
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1
inverse_flattening		298.257223563		
lat_bnds	**latitude cell boundaries**			**latitude vertices**
lon_bnds	**longitude cell boundaries**			**longitude vertices**

4.2.4.5 Annotations Data Files

The annotations file includes exactly the same parameter than the ones included in the VGP product (see section 4.2.3.5). However, they are indexed on the full resolution 1km Plate carrée grid and not on a subsampled resolution as described in section 4.2.4.5.1

4.2.4.5.1 SYN Level 2 VGK Time stamps

The VGK time stamps dataset is essentially the same as the one included in SYN Level 2 product but projected on the SYN reference grid

Element name	Description	Range or value	T	D
latitude	**Latitude dimension, Number of rows**		**u16**	
longitude	**Longitude dimension, Number of columns**		**u16**	
vertices	**Number of vertices**	**2**	**u16**	
<common global attributes>	Common global attributes			
TG	**Synthesis time grid**	**[0, 14400]**	**u32**	**latitude longitude**
standard_name	CF standard name	time		
units	UDUNITS unit name	minutes since start_time		1
_FillValue	Value indicating missing data	-1		1
grid_mapping		crs		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1

Element name	Description	Range or value	T	D
bounds		lat_bnds		1
crs	**Coordinate reference system**		**st**	**1**
grid_mapping_name		latitude_longitude		1
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1
inverse_flattening		298.257223563		
lat_bnds	**latitude cell boundaries**			**latitude vertices**
lon_bnds	**longitude cell boundaries**			**longitude vertices**

Table 56 : SY_2_VGK___ time stamps dataset

4.2.5 Level 2 Products: SY_2_VG1 and SY_2_V10___

These products contains respectively the Single 'best' value for TOA reflectance at the four VGT channels over 1 day period and the Maximum value composite over a 10 day period at the four VGT channels. Their contents are so similar.

4.2.5.1 Package Description

"SY_2_VG1___" and "SY_2_V10___" Level 2 products are composed by 14 files: 5 containing the measurements whereas the other 9 files contain the annotation data. To process VG10 product directly from VG1 products, we also include the TOA NDVI (i.e., computed using TOA reflectances) in VG1 products

In the following sections the content of the files is reported.

Element name	Description	Reference
manifest.safe	**Sentinel-SAFE product manifest**	
B0.nc	**Surface reflectance associated with VGT- B0 channel**	**section 4.2.5.4.1**
B2.nc	**Surface reflectance associated with VGT- B2 channel**	
B3.nc	**Surface reflectance associated with VGT- B3 channel**	

Element name	Description	Reference
MIR.nc	Surface reflectance associated with VGT- MIR channel	
NDVI.nc	Normalised difference vegetation index (computed from Surface Reflectance)	section 4.2.5.4.2
TOA_NDVI.nc *only in VG1 product*	Normalised difference vegetation index (computed from TOA Reflectance) *only in VG1 product*	section_XX
vaa.nc	View Azimuth Angle	section 4.2.3.5.2
vza.nc	View Zenith Angle	section 4.2.3.5.3
saa.nc	Solar Azimuth Angle	section 4.2.3.5.4
sza.nc	Solar Zemith Angle	section 4.2.3.5.5
ag.nc	Aerosol Optical thickness	section 4.2.3.5.6
og.nc	Total Ozone Column	section 4.2.3.5.7
wvg.nc	Total column water vapour	section 4.2.3.5.8
tg.nc	Synthesis Time	section 4.2.5.5.1
sm.nc	Status flags	section 4.2.3.5.1

Table 57: SY_2_VG1 and SY_2_V10__ package description

4.2.5.1.1 SY_2_ VG1 and SY_2_V10 ___ product summary

Product Package Type **SY_2_VG1~~,~~ ~~SY_2_V10~~**		*Description* VG1: Single 'best' value for TOA reflectance at the four VGT channels ~~V10: Maximum value composite over a 10 days period at the four VGT channels.~~			
Product Level	**Diss. Timeliness**	**Product Category**	**Application Domain**		**Spatial Resolution**
2	NTC	Available to the user	LND		1Km
Product Dissemination Unit Tiles		Number of Package components	Number of Measurement Data Files	Number of Annotation Data Files	Number of Representation Information Files
		1~~6~~5	5	1~~0~~9	0

Table 58: SYN VG1~~/V10~~ Level 2 product physical composition

Product Package Type SY_2_V10		Description V10: Maximum value composite over a 10 days period at the four VGT channels.			
Product Level	**Diss. Timeliness**	**Product Category**	**Application Domain**		**Spatial Resolution**
2	NTC	Available to the user	LND		1Km
Product Dissemination Unit Tiles		Number of Package components	Number of Measurement Data Files	Number of Annotation Data Files	Number of Representation Information Files
		15	5	9	0

Table 59: SYN V10 Level 2 product physical composition

4.2.5.2 Manifest File

The structure of the Manifest element is described in [AD-3].

4.2.5.3 Wrapped Metadata

According to [AD-3], Wrapped Metadata are grouped in Primary Metadata, common to all Sentinel 3 products and Secondary Metadata, specific for instrument and processing level.

Primary Metadata are described in [AD-3].

Secondary Metadata for the SYN product are reported in Table 60. Last columns of the table indicate the applicability of Metadata fields to the processing Level.

< Complete secondary metadata is described in details in [AD-6].
The content of this table will be embedded in the document when it will be finalized>

Table 60 : Secondary Metadata for SYN products

4.2.5.4 Measurement Data Files

4.2.5.4.1 SYN Level 2 VG1/V10 TOCA reflectance

These files have similar dimension that ~~are similar~~ to the ones included in SY_2_VGP product and are described in section 4.2.3.4.1, however the included data are surface reflectances instead of TOA reflectances. See Table 35 for the description of VGT channels.

4.2.5.4.2 SYN Level 2 VG1/V10 NDVI dataset

Element name	Description	Range or value	T	D
latitude	**Latitude dimension, Number of rows in the ~~1km~~ plate carrée grid**		**u16**	
longitude	**Longitude dimension, Number of columns ~~in the 1km~~ plate carrée grid**		**u16**	
vertices	**Number of vertices**	**2**	**u16**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
NDVI	**Normalised difference vegetation index, computed from surface reflectances**	**[-0.08; 0.92] (scaled)**	**u8**	**latitude longitude**
standard_name	CF standard name	Normalized_difference_vegetation_index		
_FillValue	Value indicating missing data	-1		1
scale_factor	Scaling factor used in decoding packed data	0.004		1
add_offset	Offset used to in decoding packed data	-0.08		
grid_mapping		crs		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1

Element name	Description	Range or value	T	D
bounds		lat_bnds		1
crs	**Coordinate reference system**		**st**	**1**
grid_mapping_name		latitude_longitude		1
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1
inverse_flattening		298.257223563		
lat_bnds	**latitude cell boundaries**			**latitude vertices**
lon_bnds	**longitude cell boundaries**			**longitude vertices**

4.2.5.5 Annotations Data Files

Annotations datasets included in SY_2_VG1/V10 products are common to the one included in SY_2_VGP product. The only difference is the dimensions, as VG1 and V10 annotations dataset are provided on the same grid that the measurement files (not one sub-sampled grid).

The dimensions rows_tp and columns_tp have to be replaced by rows and columns as indicated in section 4.2.5.4.

Common Annotations datasets are fully described in section 4.2.3.5

4.2.5.5.1 SYN Level 2 VG1/V10 Synthesis Time grid

Element name	Description	Range or value	T	D
latitude	**Latitude dimension, Number of rows in the plate carrée grid~~Latitude dimension, Number of rows~~**		**u16**	
longitude	**Longitude dimension, Number of columns in the plate carrée grid~~Longitude dimension, Number of columns~~**		**u16**	
vertices	**Number of vertices**	**2**	**u16**	

Element name	Description	Range or value	T	D
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
TG	**Synthesis time grid**	**[0, 14400]**	**u32**	**latitude longitude**
standard_name	CF standard name	time		
units	UDUNITS unit name	minutes since start_time		1
_FillValue	Value indicating missing data	-128		1
grid_mapping		crs		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
bounds		lat_bnds		1
crs	**Coordinate reference system**		**st**	**1**
grid_mapping_name		latitude_longitude		1
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1
inverse_flattening		298.257223563		
lat_bnds	**latitude cell boundaries**			**latitude vertices**
lon_bnds	**longitude cell boundaries**			**longitude vertices**

Table 61 : SY_2_VG1/V10___ synthesis time dataset

4.2.5.5.2 SYN Level 2 VG1 TOA NDVI dataset

This file has been added to VG1 to enable the VG10 compositing directly from VG1 products, instead of segment ones. As this composite method is based on the maximum TOA NDVI, this dataset needs to be available on VG1 products.

This file is then considered as an annotation one.

Element name	Description	Range or value	T	D
latitude	**Latitude dimension, Number of rows in the plate carrée grid**		**u16**	
longitude	**Longitude dimension, Number of columns in the plate carrée grid**		**u16**	
vertices	**Number of vertices**	**2**	**u16**	
<common global attributes>	Common global attributes (see [AD- 3] and Table 3)			
TOA_NDVI	**Normalised difference vegetation index, computed from TOA reflectances**	**[-0.08; 0.92] (scaled)**	**u8**	**latitude longitude**
standard_name	CF standard name	Normalized_difference_vegetation_index		
_FillValue	Value indicating missing data	-1		1
scale_factor	Scaling factor used in decoding packed data	0.004		1
add_offset	Offset used to in decoding packed data	-0.08		
grid_mapping		crs		1
longitude	**longitude**	**[-180.0, 180.0]**	**f64**	**longitude**
standard_name	CF standard name	longitude		
units	UDUNITS unit name	degrees_east		1
bounds		lon_bnds		1
latitude	**latitude**	**[-56.00, 75.00]**	**f64**	**latitude**
standard_name	CF standard name	latitude		
units	UDUNITS unit name	degrees_north		1
bounds		lat_bnds		1

Element name	Description	Range or value	T	D
crs	Coordinate reference system		st	1
grid_mapping_name		latitude_longitude		1
longitude_of_prime_meridian		0.0		1
semi_major_axis		6378137.0		1
inverse_flattening		298.257223563		
lat_bnds	latitude cell boundaries			latitude vertices
lon_bnds	longitude cell boundaries			longitude vertices

Table 62 : SY_2_VG1___TOA NDVI dataset

4.3 Browse Products

A browse product consists of a collection of metadata information gathered in the xfdumanifest files and of one or more browse images. The images can represent one or several parameters or combination of parameters stored in one or several image formats.

4.3.1 Manifest File

The structure of the Manifest element is described in [AD-3].

4.3.1.1 Wrapped Metadata

According to [AD-3], Wrapped Metadata are grouped in Primary Metadata, common to all Sentinel 3 products.

Regarding the primary metadata: the fields are the same of the parent product, with different values for some fields (which are filled by the browse processor). There is no secondary metadata section for the browse products.

NOTE: there is no Level 1 Browse Package

4.3.2 Level 2 Browse Package Description

4.3.2.1 'SY_2_SYN_BW'/ 'SY_2_VGP_BW'/ 'SY_2_VG1_BW' and 'SY_2_V10_BW' L2 Measurement Data Files

4.3.2.1.1 SYNERGY Level 2_BW product summary

<table>
<tr><td colspan="2">Product Package Type
SY_2_SYN_BW
SY_2_VGP_BW
SY_2_VG1_BW
SY_2_V10_BW</td><td colspan="4">Description
Synergy Browse L2 Product general structure</td></tr>
<tr><td>Product Level</td><td>Diss. Timeliness</td><td>Product Category</td><td colspan="2">Application Domain</td><td>Spatial Resolution</td></tr>
<tr><td>2</td><td>(NRT) (NTC)</td><td>Not Available to the user</td><td colspan="2"></td><td></td></tr>
<tr><td colspan="2" rowspan="2">Product Dissemination Unit
N/A</td><td>Number of Package components</td><td>Number of Measurement Data Files</td><td>Number of Annotation Data Files</td><td colspan="2">Number of Representation Information Files</td></tr>
<tr><td>≥2</td><td colspan="2">≥1</td><td>0</td><td colspan="2">0</td></tr>
<tr><td colspan="7">Product Package Structure</td></tr>
<tr><td colspan="7">Manifest file (see section 4.3.1 for more details)</td></tr>
<tr><td colspan="3">File name</td><td colspan="3">Composition</td><td></td></tr>
<tr><td colspan="3">xfdumanifest.xml</td><td colspan="3">XML fields</td><td></td></tr>
<tr><td colspan="6">Measurement Data files (see section 4.5 for more details)</td><td>N.O.</td></tr>
<tr><td colspan="3">File name</td><td colspan="3">Composition</td><td></td></tr>
<tr><td colspan="3"><scientificData>_BrwImage.<ext></td><td colspan="3">Pseudo color image referred to the scientific data indicated into the component filename</td><td></td></tr>
<tr><td colspan="6">Annotation Data files</td><td></td></tr>
<tr><td colspan="3">File name</td><td colspan="3">Composition</td><td></td></tr>
<tr><td colspan="3">none</td><td colspan="3"></td><td></td></tr>
<tr><td colspan="6">Representation Information Files</td><td>N.O.</td></tr>
<tr><td colspan="3">File name</td><td colspan="3">Composition</td><td></td></tr>
<tr><td colspan="3">none</td><td colspan="3"></td><td></td></tr>
</table>

Table 63: Synergy Browse L2 Product physical composition

4.3.2.2 Package Description

The SYN Level 2 Browse consists of multiple pseudo colour image.

4.3.2.3 Measurement Data File

The Browse products contain one or more images corresponding respectively to one or more scientific data. The full list of allowed parameters is provided in the processing control parameter file description ("scientific Fields" container, "Field" parameter). The number of fields to process is set through the 'count' attribute.

The product may contain one or several browse images representing one or several parameters in the allowed image formats (see list of accepted formats in AD-3 for the list)

5. MANIFEST FILE DESCRIPTION

The purpose of this section is to describe in detail all the data sets that are included with any of the Sentinel-3 Synergy product. Most of the description are common to all products and are therefore described in [AD-3].

Only the IPF specific parts are detailed in this section.

5.1 InformationPackageMap

5.1.1 "SY_1_MISR__" Level 1 Product

The Information Package Map associated to the package of the SY_1_MISR__ product is reported in Table 64~~Table 64~~.

Name				Description	Data Type	Value	Occ.
contentUnit				The information package map contains one content unit that includes the product data component included in the product.	Content Unit Type		1
	ID			Content unit Identifier	S	"packageUnit"	0..1
	unitType			Describes the type of data referenced by this content unit	S	"Information Package"	0..1
	textInfo			Textual description of the content unit	S	"SENTINEL-3 Synergy Level 1"	0..1
	pdiID			Identifier of the Preservation Description Information applicable to this content unit	S	"processing"	1
	dmdID			Identifier of the Metadata applicable to this content unit	S	In any order : "acquisitionPeriod" "platform" "measurementOrbitReference" "measurementFrameSet" "measuremenQualityInformation" 'generalProductInformation' 'synProductInformation' 'olciProductInformation' 'slstrProductInformation' "processing"	1
	contentUnit						1
		ID		Content unit ID	S	SYNERGY_xxx_Unit, xxx=001,… 021	1
		unitType			S	'Annotation Data Unit'	1
		textInfo			S	"Misregistration Data files associated with OLCI Oaxx channel", xx = 01, 02, …, 21	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"OLC_MISREGIST_Oref_Oaxx_Annotation", xx = 01, …, 21	1
	contentUnit						1
		ID		Content unit ID	S	SYNERGY_xxx_Unit, xxx=022,… 030	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	" Misregistration data files associated with SLSTR nadir view Si channel", i=1, …,9	0..1

Name				Description	Data Type	Value	Occ.
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"SLST_NAD_MISREGIST_Oref_Si_Annotation", i = 1, …, 9	1
	contentUnit						1
		ID		Content unit ID	S	SYNERGY_xxx_Unit, xxx=031, 032	1
		unitType			S	"Annotations Data Unit"	1
		textInfo			S	"Misregistration data files associated with SLSTR nadir view Fi channel", F=1,2"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"SLST_NAD_MISREGIST_Oref_Fi_Annotation", i = 1, 2	1
	contentUnit						1
		ID		Content unit ID	S	SYNERGY_xxx_Unit, xxx=033,…, 036	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"Misregistration data files associated with SLSTR oblique view and grid X", X= 05A, 05B, F1, 1km	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		anyMdID			S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"SLST_OBL_MISREGIST_Oref_xx_Data", xx = ao, bo, fo, io	1

Table 64: Information Package Map for L1 Synergy product

5.1.2 "SY_2_SYN___" Level 2 Product

The Information Package Map associated to the package of the SY_2_SYN product is reported in Table 65.

Name				Description	Data Type	Value	Occ.
contentUnit				The information package map contains one content unit that includes the product data component included in the product.	Content Unit Type		1
	ID			Content unit Identifier	S	"packageUnit"	0..1
	unitType			Describes the type of data referenced by this content unit	S	"Information Package"	0..1
	textInfo			Textual description of the content unit	S	"SENTINEL-3 Synergy Level 2 package"	0..1
	pdiID			Identifier of the Preservation Description Information applicable to this content unit	S	"processing"	1

Name				Description	Data Type	Value	Occ.
	dmdID			Identifier of the Metadata applicable to this content unit	S	In any order : “acquisitionPeriod” “platform” "measurementOrbitReference" "measuremenQualityInformation" "processing" "measurementFrameSet" "generalProductInformation" "synProductInformation"	1
	contentUnit						1…16
		ID			S	SYNERGY_xxx_Unit, xxx=001,… 015	1
		unitType			S	“Measurement Data Unit”	1
		textInfo			S	“Surface directional reflectance associated with OLCI channel xx”, xx = 01,… 21 (except 13, 14,15, 19 and 20)	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“Syn_Oaxx_ reflectance_Data”, xx = 01,… 21 (except 13, 14,15, 19 and 20)	1
	contentUnit						1…5
		ID			S	SYNERGY_xxx_Unit, xxx=16, …21	1
		unitType			S	“Measurement Data Unit”	1
		textInfo			S	“Surface directional reflectance associated with SLSTR channel xx acquired in Nadir view”, xx = 01,… 6 (except 4)	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“Syn_SxN_ reflectance_Data”, xx = 1,… 6 (except 4)	1
	contentUnit						1…5
		ID			S	SYNERGY_xxx_Unit, xxx=22, …26	1
		unitType			S	“Measurement Data Unit”	1
		textInfo			S	“Surface directional reflectance associated with SLSTR channel xx acquired in Oblique view”, xx = 01,… 6 (except 4)	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“Syn_SxO_ reflectance_Data”, xx = 1,… 6 (except 4)	1
	contentUnit						1
		ID			S	SYNERGY_027_Unit	1
		unitType			S	“Measurement Data Unit”	1
		textInfo			S	“Aerosol Optical Thickness Data Set”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1

Name				Description	Data Type	Value	Occ.
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"Syn_ATO550_Data"	1
	contentUnit						1
		ID			S	SYNERGY_028_Unit	1
		unitType			S	"Measurement Data Unit"	1
		textInfo			S	"Aerosol Angstrom Exponent Data Set"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"Syn_Angstrom_exp550_Data"	1
	contentUnit						1
		ID			S	SYNERGY_029_Unit	1
		unitType			S	"Measurement Data Unit"	1
		textInfo			S	"Surface directional reflectance and aerosol parameters associated with removed pixel"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"Syn_SDR_removed_pixels_Data"	1
	contentUnit						1
		ID			S	SYNERGY_030_Unit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"L2 Aerosol model index number data"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"Syn_AMIN_Data"	1
	contentUnit						1
		ID			S	SYNERGY_031_Unit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"Classification and quality Flags associated with OLCI, SLSTR and SYNERGY products"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"Syn_flags_Data"	1
	contentUnit						1
		ID			S	SYNERGY_032_Unit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"High resolution georeferencing data"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"geolocation_Data"	1
	contentUnit						1

Name				Description	Data Type	Value	Occ.
		ID			S	SYNERGY_033_Unit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Time stamps annotation”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“time_Data”	1
	contentUnit						1
		ID			S	SYNERGY_034_Unit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Annotations parameters associated with removed pixel”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“annotations_removed_pixels_Data”	1
	contentUnit						1
		ID			S	SYNERGY_035_Unit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Low resolution georeferencing data and Sun and View angles associated with OLCI products”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“tiepoints_olci_Data”	1
	contentUnit						1
		ID			S	SYNERGY_036_Unit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Low resolution georeferencing data and Sun and View angles associated with SLSTR nadir view products”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“tiepoints_slstr_n_Data”	1
	contentUnit						1
		ID			S	SYNERGY_027_Unit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Low resolution georeferencing data and Sun and View angles associated with SLSTR oblique view products”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“tiepoints_slstr_o_Data”	1
	contentUnit						1
		ID			S	SYNERGY_038_Unit	1
		unitType			S	“Annotation Data Unit”	1

Name				Description	Data Type	Value	Occ.
		textInfo			S	"ECMWF meteorology data"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"tiepoints_meteo_Data"	1

Table 65: Information Package Map for L2 Synergy product

5.1.3 "SY_2_VGP___" Level 2 Product

The Information Package Map associated to the package of the SY_2_VGP product is reported in Table 66.

Name				Description	Data Type	Value	Occ.
contentUnit				The information package map contains one content unit that includes the product data component included in the product.	Content Unit Type		1
	ID			Identifier of the package	S	"packageUnit"	0..1
	unitType			Describes the type of data referenced by this content unit	S	"Information Package"	0..1
	textInfo			Textual description of the content unit	S	"SENTINEL-3 Synergy Level 2 VGT P package"	0..1
	pdiID			Identifier of the Preservation Description Information applicable to this content unit	S	"processing"	1
	dmdID			Identifier of the Metadata applicable to this content unit	S	In any order : "acquisitionPeriod" "platform" "'generalProductInformation' 'synProductInformation' "processing" 'measurementFrameSet', 'measurementOrbitReference', 'measuremenQualityInformation'	1
	contentUnit						1…3
		ID			S	biUnit, i=0, 2, 3	1
		unitType			S	"Measurement Data Unit"	1
		textInfo			S	"VGT P TOA Reflectance Data Set associated with Bi channel" i=0, 2, 3	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"biData", i = 0, 2, 3	1
	contentUnit						1
		ID			S	mirUnit	1
		unitType			S	"Measurement Data Unit"	1
		textInfo			S	"VGT P TOA Reflectance Data Set associated with the MIR channel"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1

Name				Description	Data Type	Value	Occ.
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“mirData”	1
	contentUnit						1
		ID			S	vaaUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“View azimuth angle data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“vaaData”	1
	contentUnit						1
		ID			S	vzaUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“View zenith angle data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“vzaData”	1
	contentUnit						1
		ID			S	saaUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Solar azimuth angle data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“saaData”	1
	contentUnit						1
		ID			S	szaUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Solar zenith angle data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	szaData”	1
	contentUnit						1
		ID			S	agUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Aerosol optical thickness data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	agData”	1
	contentUnit						1
		ID			S	ogUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Total Ozone column data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1

Name				Description	Data Type	Value	Occ.
			dataObjectID	Data Object element ID	S	"ogData"	1
	contentUnit						1
		ID			S	wvgUnit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"Total column Water vapour data"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"wvgData"	1
	contentUnit						1
		ID			S	smUnit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"Status Map data"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"smData"	1

Table 66: Information Package Map for VGT-P continuity product

5.1.4 SY_2_VGK___" Level 2 Product

The Information Package Map associated to the package of the SY_2_VGK product is reported in Table 67.

Name				Description	Data Type	Value	Occ.
contentUnit				The information package map contains one content unit that includes the product data component included in the product.	Content Unit Type		1
	ID			Identifier of the package	S	"packageUnit"	0..1
	unitType			Describes the type of data referenced by this content unit	S	"Information Package"	0..1
	textInfo			Textual description of the content unit	S	"SENTINEL-3 Synergy Level 2 VGK package"	0..1
	pdiID			Identifier of the Preservation Description Information applicable to this content unit	S	"processing"	1
	dmdID			Identifier of the Metadata applicable to this content unit	S	In any order : "acquisitionPeriod" "platform" "'generalProductInformation' 'synProductInformation' "processing" 'measurementFrameSet', 'measurementOrbitReference', 'measuremenQualityInformation'	1
	contentUnit						1…3
		ID			S	biUnit, i=0, 2, 3	1
		unitType			S	"Measurement Data Unit"	1
		textInfo			S	"VGT P TOA Reflectance Data Set associated with Bi channel" i=0, 2, 3	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"biData", i = 0, 2, 3	1
	contentUnit						1
		ID			S	mirUnit	1
		unitType			S	"Measurement Data Unit"	1
		textInfo			S	"VGT P TOA Reflectance Data Set associated with the MIR channel"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"mirData"	1
	contentUnit						1
		ID			S	ndviUnit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"Normalised difference vegetation index"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"ndviData"	1
	contentUnit						1

Name				Description	Data Type	Value	Occ.
		ID			S	vaaUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“View azimuth angle data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“vaaData”	1
	contentUnit						1
		ID			S	vzaUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“View zenith angle data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“vzaData”	1
	contentUnit						1
		ID			S	saaUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Solar azimuth angle data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“saaData”	1
	contentUnit						1
		ID			S	szaUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Solar zenith angle data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“szaData”	1
	contentUnit						1
		ID			S	agUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Aerosol optical thickness data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“agData”	1
	contentUnit						1
		ID			S	ogUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Total Ozone column data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“ogData”	1
	contentUnit						1
		ID			S	wvgUnit	1
		unitType			S	“Annotation Data Unit”	1

Name				Description	Data Type	Value	Occ.
		textInfo			S	"Total column Water vapour data"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"wvgData"	1
	contentUnit						1
		ID			S	smUnit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"Status Map data"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"smData"	1
	contentUnit						1
		ID			S	Synthetic timeUnit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"Time stamps"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"tgData"	1

Table 67: Information Package Map for VGT-P continuity product

5.1.5 "SY_2_VG1___" and "SY_2_V10___" Level 2 Products

The Information Package Map associated to the package of the SY_2_VG1 and SY_2_V10 products is reported in Table 68.

Name				Description	Data Type	Value	Occ.
contentUnit				The information package map contains one content unit that includes the product data component included in the product.	Content Unit Type		1
	ID			Identifier of the package	S	"packageUnit"	0..1
	unitType			Describes the type of data referenced by this content unit	S	"Information Package"	0..1
	textInfo			Textual description of the content unit	S	"SENTINEL-3 Synergy Level 2 VGT-S package"	0..1
	pdiID			Identifier of the Preservation Description Information applicable to this content unit	S	"processing"	1
	dmdID			Identifier of the Metadata applicable to this content unit	S	In any order : "acquisitionPeriod" "platform" "'generalProductInformation' 'synProductInformation' "processing" 'measurementFrameSet', 'measurementOrbitReference', 'measuremenQualityInformation'	1
	contentUnit						1…3
		ID			S	biUnit, i=0, 2, 3	1
		unitType			S	"Measurement Data Unit"	1
		textInfo			S	"Surface Reflectance Data Set associated with VGT-Bi channel" i=0, 2, 3	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"biData", i = 0, 2, 3	1
	contentUnit						1
		ID			S	mirUnit	1
		unitType			S	"Measurement Data Unit"	1
		textInfo			S	"Surface Reflectance Data Set associated with VGT-MIR channel"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"mirData"	1
	contentUnit						1
		ID			S	ndviUnit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"Normalised difference vegetation index"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"ndviData"	1

Name				Description	Data Type	Value	Occ.
	contentUnit						1
		ID			S	toa_ndviUnit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"Normalised difference vegetation index, computed using TOA reflectance"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"toa_ndviData"	1
	contentUnit						1
		ID			S	vaaUnit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"View azimuth angle data"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"vaaData"	1
	contentUnit						1
		ID			S	vzaUnit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"View zenith angle data"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"vzaData"	1
	contentUnit						1
		ID			S	saaUnit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"Solar azimuth angle data"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"saaData"	1
	contentUnit						1
		ID			S	szaUnit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"Solar zenith angle data"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"szaData"	1
	contentUnit						1
		ID			S	agUnit	1
		unitType			S	"Annotation Data Unit"	1
		textInfo			S	"Aerosol optical thickness data"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	"agData"	1

Name				Description	Data Type	Value	Occ.
	contentUnit						1
		ID			S	ogUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Total Ozone column data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“ogData”	1
	contentUnit						1
		ID			S	wvgUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Total column Water vapour data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“wvgData”	1
	contentUnit						1
		ID			S	tgUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Synthesis time data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“tgData”	1
	contentUnit						1
		ID			S	smUnit	1
		unitType			S	“Annotation Data Unit”	1
		textInfo			S	“Status Map data”	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	“smData”	1

Table 68: Information Package Map for VGT S1 and VGT S10 continuity products – note that toa_ndviData is only available in VGT S1 products.

5.1.6 "SY_2_SYN_BW", "SY_2_VGP_BW", "SY_2_VG1_BW" and "SY_2_V10_BW" L2 Browse Products

The Information Package Map associated to the package of the SY_2_SYN_BW, SY_2_VGP_BW, SY_2_VG1_BW and SY_2_V10_BW Browse products is reported in Table 69~~Table 69~~.

Name				Description	Data Type	Value	Occ
contentUnit				The information package map contains one content unit that includes the product data component included in the product.	Content Unit Type		1
	ID			Content unit Identifier	S	"packageUnit"	0..1
	unitType			Describes the type of data referenced by this content unit	S	"Information Package"	0..1
	textInfo			Textual description of the content unit	S	"SENTINEL-3 Synergy Level 2 Browse package"	0..1
	pdiID			Identifier of the Preservation Description Information applicable to this content unit	S	"processing"	1
	dmdID			Identifier of the Metadata applicable to this content unit	S	In any order : "acquisitionPeriod" "platform" "generalInformation" "measuremenQualityInformation" "measurementOrbitReference" "processing" "measurementFrameSet"	1
	contentUnit						1
		ID			S	brwImageXXUnit, XX=01, …, N	1
		unitType			S	"Measurement Data Unit"	1
		textInfo			S	"Pseudo Colour image"	0..1
		dmdID		Attribute: Description Metadata Identifier	S		0..1
		dataObject Pointer					1
			ID	Data Object pointer ID	S		0..1
			dataObjectID	Data Object element ID	S	brwImageXXData, XX=01, …, N	1

Table 69: Information Package Map for L2 Synergy Browse Products

5.1.7 Metadata Section

See AD-3 for the metadata general description.

5.1.8 Data Object Section

5.1.8.1 Measurement Data File

5.1.8.1.1 "SY_1_MISR__" Level 1 Product

There is no measurement Data File in SY_1_MISR product.

5.1.8.1.2 "SY_2_SYN" Level 2 Product

Data Objects for the Synergy SY_2_SYN Level 2 product are listed in Table 70.

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the L1 product.	U	1..*	
	ID			Data Component ID	S	1	"Syn_reflectance_xx_Data" xx = 01, 02,…, 30
	byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locatorType	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"Synxx_reflectance.nc" xx = 01, 02,…, 30
			textInfo	Textual description of the Data Component	S	0..1	"Reflectance Data File"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5
Data Object				This element references the Data Component included in the L1 product.	U	1..*	
	ID			Data Component ID	S	1	"Syn_AOT550_Data"
	byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locatorType	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"Syn_AOT550.nc"
			textInfo	Textual description of the Data Component	S	0..1	"Aerosol Optical Thickness Data File"

Name				Description	Data type	Occ.	Value
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5
Data Object				This element references the Data Component included in the L1 product.	U	1..*	
	ID			Data Component ID	S	1	"Syn_Angstrom_exp550_ Data"
	byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"Syn_Angstrom_exp550.nc"
			textInfo	Textual description of the Data Component	S	0..1	"Aerosol Angstrom Exponent Data File"
		checksum		Checksum for the Data Component	U	1	

Name				Description	Data type	Occ.	Value
			checksumName		E	1	MD5
Data Object				This element references the Data Component included in the L1 product.	U	1..*	
	ID			Data Component ID	S	1	“Syn_SDR_removed_pixel_Data”
	byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf”
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		“Syn_SDR_removed_pixel.nc”
			textInfo	Textual description of the Data Component	S	0..1	“Removed pixel Measurement Data File”
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 70: SY_2_SYN Level 2 Data Objects

5.1.8.1.3 "SY_2_VGP" Level 2 Product

Data Objects for the Synergy SY_2_VGP Level 2 product are listed in Table 71.

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the L1 product.	U	1..*	
	ID			Data Component ID	S	1	"biData" i = 0, 2, 3
	byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"Bi.nc" i = 0, 2, 3
			textInfo	Textual description of the Data Component	S	0..1	"TOA Reflectance Data File"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5
Data Object				This element references the Data Component included in the L1 product.	U	1..*	
	ID			Data Component ID	S	1	"mirData"
	byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"MIR.nc"
			textInfo	Textual description of the Data Component	S	0..1	"TOA Reflectance Data File"
		checksum		Checksum for the Data Component	U	1	

Name				Description	Data type	Occ.	Value
			checksumName		E	1	MD5

Table 71: SY_2_VGP Level 2 Data Objects

5.1.8.1.4 "SY_2_VGK" Level 2 Product

Data Objects for the Synergy SY_2_VGK Level 2 product are listed in Table 72.

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the L1 product.	U	1..*	
	ID			Data Component ID	S	1	"biData" i = 0, 2, 3
	byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"Bi.nc" i = 0, 2, 3
			textInfo	Textual description of the Data Component	S	0..1	"Surface Reflectance Data File"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5
Data Object				This element references the Data Component included in the L1 product.	U	1..*	
	ID			Data Component ID	S	1	"mirData"
	byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"MIR.nc"
			textInfo	Textual description of the Data Component	S	0..1	"Surface Reflectance Data File"
		checksum		Checksum for the Data Component	U	1	

Name				Description	Data type	Occ.	Value
			checksumName		E	1	MD5
Data Object				This element references the Data Component included in the L1 product.	U	1..*	
	ID			Data Component ID	S	1	“ndviData”
	byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf”
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		“NDVI.nc”
			textInfo	Textual description of the Data Component	S	0..1	“Normalised difference vegetation index”
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 72: SY_2_VGK Level 2 Data Objects

5.1.8.1.5 "SY_2_VG1" and "SY_2_V10" Level 2 Products

Data Objects for the Synergy "SY_2_VG1" and "SY_2_V10" Level 2 products are listed in Table 73.

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the L1 product.	U	1..*	
	ID			Data Component ID	S	1	"biData" i = 0, 2, 3
	byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"Bi.nc" i = 0, 2, 3
			textInfo	Textual description of the Data Component	S	0..1	"Surface Reflectance Data File"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5
Data Object				This element references the Data Component included in the L1 product.	U	1..*	
	ID			Data Component ID	S	1	"mirData"
	byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"MIR.nc"
			textInfo	Textual description of the Data Component	S	0..1	"Surface Reflectance Data File"
		checksum		Checksum for the Data Component	U	1	

Name				Description	Data type	Occ.	Value
			checksumName		E	1	MD5
Data Object				This element references the Data Component included in the L1 product.	U	1..*	
	ID			Data Component ID	S	1	“ndviData”
	byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf”
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		“NDVI.nc”
			textInfo	Textual description of the Data Component	S	0..1	“Normalised Difference Vegetation Index Data File”
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 73: SY_2_VG1/SY_2_V10 Level 2 Data Objects

5.1.8.1.6 "SY_2_SYN_BW", "SY_2_VGP_BW", "SY_2_VG1_BW" and "SY_2_V10_BW" L2 Browse Products

Data Object for Synergy Level 2 browse products is reported in Table 74~~Table 74~~:

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the L1 product.	U	1..*	
	ID			Data Component ID	S	1	brwImageXXData, XX=01, …, N
	byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	One value among: "image/jpeg" " image/tiff" " image/png" " image/jp2"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locatorType	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		One value among: "<.scientificData>_BrwImage.jpeg" "<.scientificData>_BrwImage.tiff" "<.scientificData>_BrwImage.png" "<.scientificData>_BrwImage.jp2"
			textInfo	Textual description of the Data Component	S	0..1	"Pseudo Color Image File"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 74: Synergy Browse Level 2 Data Object

5.1.8.2 Annotation Data File – L1 Product

Each Level 1 Annotations Data File constitutes a Data Object composed as follows:

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	"misregist_Oref_Oaxx", xx = 01, …, 21
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"misregist_Oref_Oaxx.nc", xx = 01, …, 21
			textInfo	Textual description of the Data Component	S	0..1	"OLCI Misregistration data"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 75: misregist_Oref_Oaxx Annotataion Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	"misregist_Oref_Si", i = 1, …, 9
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing	S		"misregist_Oref_Si.nc", i = 1, …, 9

Name				Description	Data type	Occ.	Value
				the referenced Data Component			
			textInfo	Textual description of the Data Component	S	0..1	"SLSTR Misregistration data"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 76: misregist_Oref_Si SLSTR nadir view Annotation data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	"misregist_Oref_Fi", i = 1, 2
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"misregist_Oref_Fi.nc", i = 1, 2
			textInfo	Textual description of the Data Component	S	0..1	"SLSTR Misregistration data"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 77: misregist_Oref_Fi SLSTR nadir view Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	"misregist_Oref_xx", xx = ao, bo, fo, io
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	

Name				Description	Data type	Occ.	Value
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"misregist_Oref_xx.nc", xx = ao, bo, fo, io
			textInfo	Textual description of the Data Component	S	0..1	"SLSTR Misregistration data"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 78: misregist_Oref_xx SLSTR oblique view Annotation Data Object

Data Object				This element references the OLQC Report associated to the L0 product.	U	1..*	
	ID			Data Component ID	S	1	"OLQCReport"
	Byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/octetstream"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		TBD
			textInfo	Textual description of the Data Component	S	0..1	"On Line Quality Control Report"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 5-41: **OLQC** Annotation Metadata Object

5.1.8.3 Annotation Data File – SYN L2 Products

The SYN Level 2 Annotations Data File constitutes a Data Object composed as follows:

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	“tiepoints_olci”
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf”
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		“tiepoints_olci.nc”
			textInfo	Textual description of the Data Component	S	0..1	“L2 OLCI tie points data file”
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 79: tiepoints_olci Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	“tiepoints_slstr_n”
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf”
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		“tiepoints_slstr_n.nc”
			textInfo	Textual description of the Data Component	S	0..1	“L2 SLSTR tie points data file”

Name				Description	Data type	Occ.	Value
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 80: tiepoints_slstr_n Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	“tiepoints_slstr_o”
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf”
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		“tiepoints_slstr_o.nc”
			textInfo	Textual description of the Data Component	S	0..1	“L2 SLSTR tie points data file”
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 81: tiepoints_slstr_o Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	“geolocation”
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf”
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL

Name				Description	Data type	Occ.	Value
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"geolocation.nc"
			textInfo	Textual description of the Data Component	S	0..1	"L2 geolocation data file"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 82: geolocation Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	"time"
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"time"
			textInfo	Textual description of the Data Component	S	0..1	"Time Data File"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 83: time Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	"tirepoints_meteo"
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"

Name				Description	Data type	Occ.	Value
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		“tirepoints_meteo.nc”
			textInfo	Textual description of the Data Component	S	0..1	“Meteo Data File”
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 84: tiepoints_meteo Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	“flags”
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf”
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		“flags.nc”
			textInfo	Textual description of the Data Component	S	0..1	“L2 status flag data file”
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 85: flags Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	“Syn_AMIN”
	byte			Pointer to the data Component	U	1..*	

Name				Description	Data type	Occ.	Value
	Stream						
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"Syn_AMIN.nc"
			textInfo	Textual description of the Data Component	S	0..1	"L2 Aerosol model index number data file"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 86: Syn_AMIN Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	"Syn_annot_rem"
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"Syn_annot_rem.nc"
			textInfo	Textual description of the Data Component	S	0..1	"L2 annotation parameters for removed pixels"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 87: Syn_annot_rem Annotation Data Object

Data Object				This element references the OLQC Report associated to the L0 product.	U	1..*	
	ID			Data Component ID	S	1	"OLQCReport"
	Byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/octetstream"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		TBD
			textInfo	Textual description of the Data Component	S	0..1	"On Line Quality Control Report"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 5-41: **OLQC** Annotation Metadata Object

5.1.8.4 Annotation Data File – VGT Continuity Products

Each VGT Continuity Annotations Data File (i.e. included in VGT-P, VGK, VG1 or V10 Product) constitutes a Data Object composed as follows:

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	"toa_ndvi"
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"toa_ndvi.nc"
			textInfo	Textual description of the Data Component	S	0..1	"Normalised Difference Vegetation Index, computed using TOA reflectance, Data File"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 88: TOA NDVI Annotation Data Object – only available in VGT S1 products

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	"vaa"
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"vaa.nc"

Name				Description	Data type	Occ.	Value
			textInfo	Textual description of the Data Component	S	0..1	“L2 view azimuth angle data file”
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 89: vaa Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	“vza”
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf”
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	URL		“vza.nc”
			textInfo	Textual description of the Data Component	S	0..1	“L2 view zenith angle data file”
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 90: vza Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	“saa”
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf”
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	

Name				Description	Data type	Occ.	Value
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"saa.nc"
			textInfo	Textual description of the Data Component	S	0..1	"L2 solar azimuth angle data file"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 91: saa Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	"sza"
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"sza.nc"
			textInfo	Textual description of the Data Component	S	0..1	"L2 solar zenith angle data file"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 92: sza Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	"ag"
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"

Name				Description	Data type	Occ.	Value
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	URL		"ag.nc"
			textInfo	Textual description of the Data Component	S	0..1	"L2 aerosol optical thickness data file"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 93: ag Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	"og"
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"og.nc"
			textInfo	Textual description of the Data Component	S	0..1	"L2 total ozone column data file"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 94: og Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	"wvg"
	byte			Pointer to the data Component	U	1..*	

Name				Description	Data type	Occ.	Value
	Stream						
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"wvg.nc"
			textInfo	Textual description of the Data Component	S	0..1	"L2 total column water vapour data file"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 95: wvg Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	"sm"
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		"sm.nc"
			textInfo	Textual description of the Data Component	S	0..1	"L2 status map data file"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 96: sm Annotation Data Object

Name				Description	Data type	Occ.	Value
Data Object				This element references the Data Component included in the product.	U	1..*	
	ID			Data Component ID	S	1	“tg”
	byte Stream			Pointer to the data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/x-netcdf”
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the Data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		“tg.nc”
			textInfo	Textual description of the Data Component	S	0..1	“L2 synthesis time data file”
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 97: tg Metadata Object (VGK and VGT-S product)

Name				Description	Data type	Occ.	Value
Data Object				This element references the OLQC Report associated to the L0 product.	U	1..*	
	ID			Data Component ID	S	1	"OLQCReport"
	Byte Stream			Pointer to the Data Component	U	1..*	
		ID		Byte stream ID	S	0..1	
		mimeType		MIME type for the referenced Data Component	E	1	"application/octetstream"
		size		Size of the Data Object File	L	1	
		fileLocation		Description of the location of the data component file	U	1	
			locator Type	Type of the file location	URL	0..1	URL
			href	Relative path of the file (in the file system) containing the referenced Data Component	S		TBD
			textInfo	Textual description of the Data Component	S	0..1	"On Line Quality Control Report"
		checksum		Checksum for the Data Component	U	1	
			checksumName		E	1	MD5

Table 5-58: **OLQC** Annotation Metadata Object

6. XML SCHEMA

The xml schemas used to generate the product manifest are provided as separate files (see AD-6).

7. PRODUCT SIZE

In the following table the approximate size of each SYN file composing the Level 1 and Level 2 product over one full orbit is given.

The following table enumerates the data sets based upon the description tables in section 4. Values for the dimensions in the above tables are taken as follows.

OLCI acquisition grid dimension: (one orbit):

rows = 60 000

detector = 740

camera = 5

OLCI image grid dimension (one orbit):

rows =60 000

columns = 4865

orphan = 125

Tie points dimensions (one orbit)::

olci_tp = 60 000 * 77 = 4,62 10^6

slstr_tp = 40 000* 130 = 5,2 10^6

Plate-carrée grid dimensions

rows = 14 672 : limited in [-56°, 75°]

columns = 3000 (1 km) : The across-track size depends on the acquisition coverage

subsampled_rows = 14 672

subsampled_columns = 188 (16 km)

Plate-carrée grid dimensions (global):

rows = 14 672

columns = 40 320

No file compression is applied.

7.1 SYNERGY Level 1

7.1.1 SY_1_MISR__

The following table assumes that:

- A and B stripes are activated.
- S7, S8, S9, F1, F2 (thermal bands) and all others absorption or cloud-dedicated channels are activated

Element name	Description	Size in GBytes
xfdumanifest.xml	Sentinel-SAFE product manifest	
misregist_Oref_Oa0##.nc	Misregistration Data files associated with OLCI channel 01 to 21	43.418
misregist_Oref_S#.nc	Misregistration Data files associated withSLSTR channel 01 to 6 and nadir view	33.494
misregist_Oref_S#.nc misregist_Oref_F#.nc	Misregistration Data files associated withSLSTR channel 07, 08, 09, Fire channels 01 and 02 and nadir view	18.608
misregist_Oref_#o.nc	Misregistration Data files associated withSLSTR oblique view	14.886
Total		110.406

Table 98: SY_1_MISR__ product size

Same estimation has been made without any thermal and fire channels enabled included (nominal mode)

Element name	Description	Size in GBytes
xfdumanifest.xml	Sentinel-SAFE product manifest	
misregist_Oref_Oa0##.nc	Misregistration Data files associated with OLCI channel 01 to 21	43.418
misregist_Oref_S#.nc	Misregistration Data files associated withSLSTR channel 01 to 6 and nadir view	33.494
misregist_Oref_S#.nc misregist_Oref_F#.nc	Misregistration Data files associated withSLSTR channel 07, 08, 09, Fire channels 01 and 02 and nadir view	0
misregist_Oref_#o.nc	Misregistration Data files associated withSLSTR oblique view	7.443
Total		84.355

7.2 SYNERGY Level 2

7.2.1 SY_2_SYN___

Element name	Description	Size in Gbytes
xfdumanifest.safe	Sentinel-SAFE product manifest	
Syn#_reflectance.nc	Surface directional reflectance associated with SYN channel 01 to 30	28,666
Syn_AOT550.nc	Aerosol Optical thickness	0,897
Syn_Angstrom_exp550.nc	Aerosol Angstrom exponent	0,051
Syn_SDR_removed_pixel.nc	Surface directional reflectance and aerosol parameters associated with removed pixel	0,706
Syn_AMIN.nc	Aerosol index number	0,168
flags.nc	Classification and quality Flags associated with OLCI, SLSTR and SYNERGY products	2,718

geolocation.nc	High resolution georeferencing data	2,472
time.nc	Time stamp annotations	0,000
Syn_annot_rem.nc	Annotations parameters associated with removed pixel	0,002
tiepoint_olci.nc	Low resolution georeferencing data and Sun and View angles associated with OLCI products	0,081
tiepoint_slstr_n.nc	Low resolution georeferencing data and View angles associated with SLSTR nadir view products	0,003
tiepoints_slstr_o.nc	Low resolution georeferencing data and View angles associated with SLSTR oblique view products	0,003
tiepoints_meteo.nc	ECMWF meteorology data	0,052
Total		35.819

Table 99:SY_2_SYN___ product size

7.2.2 SY_2_VGP___

Element name	Description	Size in Gbytes
xfdumanifest.safe	Sentinel-SAFE product manifest	
B0.nc	TOA reflectance associated with VGT- B0 channel	0,08238
B2.nc	TOA reflectance associated with VGT- B2 channel	0,08238
B3.nc	TOA reflectance associated with VGT- B3 channel	0,08238
MIR.nc	TOA reflectance associated with VGT- MIR channel	0,08238
vaa.nc	View Azimuth Angle	0,00290
vza.nc	View Zenith Angle	0,00290
saa.nc	Solar Azimuth Angle	0,00290
sza.nc	Solar Zemith Angle	0,00290
ag.nc	Aerosol Optical thickness	0,00290
og.nc	Total Ozone Column	0,00290
wvg.nc	Total column water vapour	0,00290
sm.nc	Status flags	0,04139
Total		0,39122

Table 100:SY_2_VGP___ product size

7.2.3 SY_2_VGK___

Element name	Description	Size in Gbytes
xfdumanifest.safe	Sentinel-SAFE product manifest	

B0.nc	Surface reflectance associated with VGT- B0 channel	1,1031
B2.nc	Surface reflectance associated with VGT- B2 channel	1,1031
B3.nc	Surface reflectance associated with VGT- B3 channel	1,1031
MIR.nc	Surface reflectance associated with VGT- MIR channel	1,1031
NDVI.nc	Normalised difference vegetation index	0,5522
vaa.nc	View Azimuth Angle	0,5522
vza.nc	View Zenith Angle	0,5522
saa.nc	Solar Azimuth Angle	0,5522
sza.nc	Solar Zemith Angle	0,5522
ag.nc	Aerosol Optical thickness	0,5522
og.nc	Total Ozone Column	0,5522
wvg.nc	Total column water vapour	0,5522
sm.nc	Status flags	0,5522
tg.nc	Time annotations	2,2050
Total		11.5871

Table 101:SY_2_VGK___ product size

7.2.4 SY_2_VG1 and SY_2_V10___

Element name	Description	Size in Gbytes
xfdumanifest.safe	Sentinel-SAFE product manifest	
B0.nc	Surface reflectance associated with VGT- B0 channel	1,1031
B2.nc	Surface reflectance associated with VGT- B2 channel	1,1031
B3.nc	Surface reflectance associated with VGT- B3 channel	1,1031
MIR.nc	Surface reflectance associated with VGT- MIR channel	1,1031
NDVI.nc	Normalised difference vegetation index	0,5522
TOA_NDVI.nc	Normalised difference vegetation index – computed using TOA reflectance	0,5522
vaa.nc	View Azimuth Angle	0,5522
vza.nc	View Zenith Angle	0,5522
saa.nc	Solar Azimuth Angle	0,5522
sza.nc	Solar Zemith Angle	0,5522
ag.nc	Aerosol Optical thickness	0,5522
og.nc	Total Ozone Column	0,5522
wvg.nc	Total column water vapour	0,5522
tg.nc	Synthesis Time	2,2050
sm.nc	Status flags	0,5522
Total		12,139311,5871

Table 102:SY_2_VG1___ ~~and SY_2_V10___~~ product size

Element name	Description	Size in Gbytes
xfdumanifest.safe	Sentinel-SAFE product manifest	
B0.nc	Surface reflectance associated with VGT- B0 channel	1,1031
B2.nc	Surface reflectance associated with VGT- B2 channel	1,1031
B3.nc	Surface reflectance associated with VGT- B3 channel	1,1031
MIR.nc	Surface reflectance associated with VGT- MIR channel	1,1031
NDVI.nc	Normalised difference vegetation index	0,5522
vaa.nc	View Azimuth Angle	0,5522
vza.nc	View Zenith Angle	0,5522
saa.nc	Solar Azimuth Angle	0,5522
sza.nc	Solar Zemith Angle	0.5522
ag.nc	Aerosol Optical thickness	0,5522
og.nc	Total Ozone Column	0,5522
wvg.nc	Total column water vapour	0,5522
tg.nc	Synthesis Time	2,2050
sm.nc	Status flags	0,5522
Total		11,5871

Table 103: SY_2_V10___ product size

7.3 Browse products

Due to the type and level of compression used in the processing, the size of the browse products cannot be easily defined. Compared to the volume of data of the measurement/annotation, this size is negligible.

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