MTG Product Distribution Baseline [MTGDIS]

Doc. Nr. : EUM/MTG/DOC/17/946090
Issue : 4B e-Signed
Date : 12 October 2021
WBS/DBS : MTG-831300

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Issue	Date	Changes
2C	06/12/2018	Version approved by 90th council in December 2018.

Issue	Date	Changes
3 Draft (pending Council approval)	22/07/2020	Version submitted to STG-SWG and STG-OPSWG for review in view of Council approval. Thus the document will exceptionally remains flagged as draft (but Read-only) until formally approved by Council. Internal Document Change Request: MTG_DCR_740. . * Updated according to decision of Council #91, EUM/C/92/19/LOD: - New service "EUMETCast Europe Non Restorable". This allows in particular to disseminate by satellite the High Resolution Channels of FCI in RSS mode with a lower guaranteed availability/cost. Clear presentation to distinguish between the FDSS or RSS services at Normal Resolution (NR/FDHSI) or High Resolution (HR/HRFI), and Africa Service. - All products disseminated via EUMETCast Europe (Restorable or Non-Restorable) are in addition disseminated via EUMETCast Terrestrial. . * Implementation of the System CDR-I decisions. . * Update of the GTS baseline according to GODEX_NWP and CGMS WG-II inputs. . * The list of products made available to NOAA has been defined. See related Open Issue for products which could be added during not yet completed discussions. . * Updated products for EUMETCast Africa (section 4) as per WMO recommendation expressed during RAIDEG meetings (status of June 2020), in order to fit in an envelope of 3.5Mbps, in particular: - Each FCI channels are sent individually with MSG resolution and a periodicity/coverage tuned to the needs. Plus HRV continuity. - one accumulated Lightning accumulated product - the FIRE product - 5 RGB products taking benefit of MTG resolution, tuned to the needs in term of coverage and periodicity. - a provision for SAF products - Updated cross-referenced documents (section 1.3). . * Open Issues:

Issue	Date	Changes
3 Draft (pending Council approval)	22/07/2020	(Continuation) . * Products: - SSD of products is more detailed. - Some clarifications related to FCI level 2. - IRS: Parameters in the IRS level 2 SVP product are explicitly described; IRS level 2 PRP and PWLR products are not disseminated [Note 04/09/2020: due to a mistake, COV was indicated instead of PWLR] - UVN level 1B CAL dataset (not disseminated, but available from Data Centre) has been split - H-SAF, according to H-SAF PDR recommendation - Updated timeliness of SAF products in section 5.1.3, in line with [L2SAF].
3A Draft (pending Council approval)	02/09/2020	Small update wrt version 3, still pending Council approval. Changes in IRS products: - Section 1.2.1 about Assumptions. For IRS L1, all 4 LACs are disseminated. For IRS L2, all LACs are disseminated, but see assumption for Q1, Q2, and Q3. - Section 2.6 about IRS L1 baseline. Inserted diagram with IRS operational scanning pattern, according to EURD IRS-04040. Updated periodicities according to diagram. - Section 3.4 about IRS L2 baseline. For clarity, IRS level 2 was been split per LAC (Q1, Q2, Q3, and Q4). Previously the 4 LACs were presented in a single row (Qn). Reference to section 2.6 for the scanning pattern.

Issue	Date	Changes
3B (e-signed - Council approved)	01/12/2020	The issue 3B corresponds to the issue 3A approved by Council plus the following minor corrections: . * an error on a name of a UVN product has been corrected: "Cloud optical thickness, fraction, altitude" has been renamed to "Cloud Properties" which is the term used by ESA in [S4HQ], the characteristics of the product are unchanged. Tables 3.5.1 and 3.5.2 . * Harmonisation with ESA [S4HQ]: four UVN products which are for internal use only "Background corrections for Formaldeyde, Glyoxal, Nitrogen Dioxide and Sulfur dioxide" and "ECMWF forecast and CAMS atmospheric composition datasets" have been removed from the table 3.5.1. . * A clarification on "Volcanic ash" has been added via an assumption in §1.2 to explain that the volcanic ash is a flag within CLM/CLA and therefore part of the output within CLM/CLA NC4E and in GRIB format. In addition a CAP file will be disseminated when requested by the VAAC (Volcanic Ash Advisory Center).

Issue	Date	Changes
4 Draft (pending Council approval)	26/07/2021	Updated as per MTG_DCR_897. Version aligned with the MTG-S System CDR, to be presented to Council by Q4/2021. . * New document structure. - Product IDs are now presented in every table, together with their dataset descriptions. - Updated Document Signature Table in page 2. . * RCM #199 about DCP (section 2.8), Bulletins are not available via Online Data Retrieval. Self-Timed messages periodicity updated from "60sec" to "accumulation period 360sec or when size>500KB". . * RCM #201 (section 1.2.2), new Assumption about EUMETCast Africa and its entry in routine operations. . * RCM #218 (section 2.8): NEWS and REG-RPT Service Messages are not disseminated via RMDCN/GTS. . * IWG #174, in section 3.1: - Removed FCI level 2 "Volcanic Ash" product, CAP formatted, because it is day-2. - Explicitly indicate the dissemination/archival of these FCI level 2 products in these particular data formats: ASR BUFR (All Sky Radiances), CLM GRIB2 (Cloud Mask), FIR CAP (Fire). - Clarify that FCI level 2 ASR BUFR (All Sky Radiances) is available via Online Data Retrieval. . * New Open Issue about "FCI level 2 TOZ" in section 1.2.1. . * New Assumption about the data format of the FCI level 2 Fire product disseminated via EUMETCast Africa in section 1.2.2. . * Description of chunk strategy for FCI L1c (sections 2.1.1, 2.2.1, 2.3.1, 2.4.1), IRS L1b (section 2.6.1), and IRS L2 (section 3.4.1). . * Clarified the dissemination periodicity of IRS datasets (L1 in section 2.6.1, L2 in section 3.4.1).

Issue	Date	Changes
4A Draft (pending Council approval)	11/09/2021	Following the 51st STG-SWG and the 50th STG-OPSWG, EUM agrees to update [MTGDIS] before submission to STG to ensure harmonisation of the Table 33 “List of SAF NWP Software” of §5.2 with Annex III of [L2SAF] by adding three software related to IRS. . Following SWG recommendation, the TOZ (FCI level 2 Total Ozone) product has been declared obsolete. TOZ was removed from list of Open Issues (section 1.2.1), table 21 and table 22.
4B e-Signed	12/10/2021	V4 Draft reviewed in Autumn 2021 by the 51st STG-SWG and the 50th STG-OPSWG. Identical to version 4A approved on 12/10/2021 by the 79th STG, on behalf of the Council,as non-significant and cost neutral.

Contents

1 Introduction

1.1 Purpose and Scope

The purpose of this document is to define the Level 1 and Level 2 datasets that will be disseminated and archived at EUMETSAT Headquarters as part of the Meteosat Third Generation (MTG) Programme. These are the datasets that will be available to End Users and to SAF for processing.

This document complements the [EURD] for all data distribution aspects and thus follows the same ownership/approval process as the [EURD] itself. [L2SAF] is kept as an annex of [MTGDIS] to ensure continuity for SAF development.

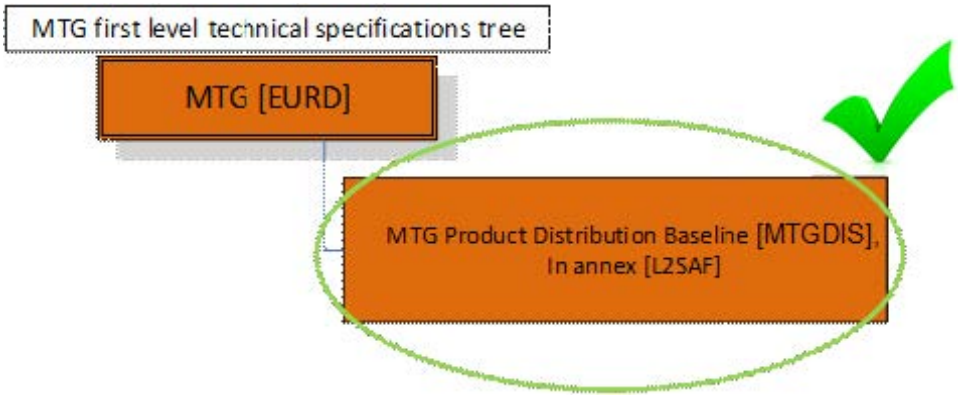

Figure 1: [MTGDIS] vs [EURD].

Dissemination of the datasets is foreseen through the corporate multimission data distribution system, e.g. EUMETCast (via satellite or terrestrial), RMDCN (Regional Meteorological Data Communication Network), GTS (Global Telecommunication System) network, and internet retrieval. Archiving services will be provided by the EUMETSAT Data Centre.

This document proposes the set of MTG day-1 products to be delivered at the time the new system goes into operations. The smooth transition from the second to the third generation requires a seamless continuity of MSG products and related services, taking into account the improvements of the faster repeat cycle, the higher spatial resolution and the improved signal to noise ratio. It also defines MTG specific day-1 products using the capabilities of the extended spectral coverage of the imager as well as the new capabilities of the hyperspectral sounder and the lightning imager.

The next step will be to further capitalise on the potential of the MTG extended capabilities within a continuously developing user environment, to develop and implement further MTG specific day-2 products to be approved by EUMETSAT Delegations. It is anticipated that the evolution of products and services from MTG will be a continuous process emerging from and enhancing the set of products defined for day-1.

1.1.1 MTG Programme

The MTG programme encompasses the following observation missions:

- Flexible Combined Imager (FCI) mission, providing:

  - 16 channels with a spatial sampling distance in the range 1-2km (also called "Normal Resolution" or Full Disc High Spectral resolution Imagery (FDHSI)), and/or
  - 4 channels with a spatial sampling distance in the range 0.5-1km (also called "High Resolution" or High spatial Resolution Fast Imagery (HRFI)).

  It is possible to configure the FCI to scan:

  - the earth disc in 10 minutes in support of the Full Disc Scanning Service (FDSS),
  - or a quarter of the disc in 2.5mn in support of the Rapid Scanning Service (RSS).

  The combination of channels and coverage areas are defined in the list of products. - *Implemented by MTG-I*.

- Lightning Imagery mission is achieved through the Lightning Imager (LI) instrument, detecting continuously over almost the full disc, the lightning discharges taking place in clouds or between cloud and ground with a Spatial Sampling Distance (SSD) of 4.5km at nadir. - *Implemented by MTG-I*.
- InfraRed Sounding mission is achieved through the Infrared Sounder (IRS) instrument, providing hyperspectral sounding information in two bands, a Long Wave InfraRed (LWIR: 700-1210 cm-1) and Mid Wave InfraRed (MWIR: 1600-2175 cm-1) band with a spatial sampling distance around 4km. The earth disc is split in 4 zones of equal size (called Local Area Coverage), and numbered LAC 1 to LAC 4, from south to north. The scan pattern repeat sequence is arranged to revisit each LAC zone in a manner adapted to the need of the End Users (Europe is revisited more often). - *Implemented by MTG-S*.

Moreover, the MTG missions comprise the accommodation of the Copernicus Sentinel-4 (S4) sounding mission, achieved through the Ultraviolet, Visible and Near-infrared (UVN) Instrument, covering Europe every hour taking measurements in three spectral bands (UV: 305 - 400 nm; VIS: 400 - 500 nm, NIR: 750 - 775 nm) with spatial sampling distance around 8km. - *Implemented by MTG-S*.

In addition, the MTG mission makes a major contribution to climate monitoring activities providing high quality radiances, reprocessed level 1 dataset as Fundamental Climate Data Records (FCDRs) supporting generation of Thematic Climate Data Records (TCDRs), providing also stewardship of decadal geostationary data records of the First and Second Generation of Meteosat. - *Implemented by reprocessing*

Complementary to the direct observation missions summarised above and yet essential to satisfy key user needs, the following objectives have also to be fulfilled by MTG System:

- Level 1 dataset generation in the context of above direct observation mission.
- Level 2 Product extraction.
- Data Collection System (DCS), for collecting and transmitting observations and data from surface, buoy, ship, balloon or airborne Data Collection Platforms (DCP).
- Long term archiving in the EUMETSAT Data Centre including reprocessing of instrument data (level 0) and level 1 dataset.
- Near Real Time Data Dissemination and Relay services to users – implemented by MME-DIS except for SAR:
  - EUMETCast services (by satellite and terrestrial);
  - RMDCN/GTS dissemination service;

  - Search And Rescue (SAR) relay service. Similarly to MSG, the MTG System has the capability to accommodate a GEOSAR transponder, enabling the operations of the mission under the aegis of the COSPAS-SARSAT System
  - Internet retrieval services;
- Archived dataset retrieval services continue to be provided as part of the multi-mission EUMETSAT Data Centre services.
- User support services are enhanced to address MTG as well.

The full nominal operational configuration includes:

- a prime MTG-I satellite (supporting FDSS services),
- a second MTG-I satellite (acting as in-orbit hot backup for the prime MTG-I satellite and supporting the RSS services),
- and an MTG-S satellite.

These three in-orbit satellites are needed to support the complete and total set of missions and functions listed above, also called the full operational capability (FOC).

1.1.2 This Document

The dissemination and archiving baseline for the FCI-FDSS, FCI-FDSS-HR, FCI-RSS, FCI-RSS-HR, LI, IRS, and UVN/S4 services can be found in chapters 2 and 3; depending on the data level (level 1 and level 2; respectively).

Information about the Algorithm Theoretical Basis Documents (ATBD), regarding level 2 products, can be found in section 3.6.

Datasets to be delivered to African users are presented in chapter 4.

Products related to SAFs, processed by SAFs and/or ingested from SAFs into MME-DIS, are provided in chapter 5.

The reader is referred to [EURD] for the definitions of Coverage, Science Data Level, etc.

1.2 Assumptions and Open Issues

The following tables provide short descriptions of details to be consider for each service and level, for example uncertainties in the periodicities, whether the list of products is under discussion, or how the observations are performed (delays, gaps in the transmission of information, etc.).

There are two groups of assumtions and open issues:

- related to service and data level (section 1.2.1), and
- related to each distribution mechanism (section 1.2.2).

1.2.1 Assumptions and Open Issues related to Services

These are assumptions and open issues related to specific services.

Service	Level	Comment
General	All	* Assumption: dissemination during operational scenario before the launch of MTG-I1 and the parallel dissemination around satellite replacement are not taken into account in the budget as the temporary addition of a large bandwidth on the EUMETCast Europe restorable service is not feasible. However such temporary provision, during months, could be made using EUMETCast Europe non restorable service and/or EUMETCast terrestrial. * Date: 21/07/2020
FCI-FDSS	L2	* Assumption: "FCI-2-CRM (Clear-sky Reflectance Map) dissemination". CRM is generated every 2h during daylight (from 4:00 to 20:00), and all these products are disseminated. However, the product used by End Users is the one at the required time of the day but from the previous day. Therefore the System end-to-end timeliness has been relaxed. In [SRD], CRM timeliness is indicated in the same group as daily products, although CRM is not strictly a daily product. * Date: 20/05/2020
FCI-FDSS	L2	* Open Issue: "FCI-2-OCA split". The OCA product may be split in 4 chunks, one per LAC, or split in one product per LAC in order to achieve timeliness. * Way forward: Decision will be taken after: (i) the assessment of the impacts to the Facility design by EUMETSAT and the L2PF Contractor once the L2PF V2 delivery has been secured, and (ii) the analysis of the benefits vs disadvantages. * Risk: Timeliness not achieved. * Date: 09/06/2020
FCI-FDSS	L2	Assumption: "Volcanic Ash". The volcanic ash is a flag within CLM/CLA and therefore part of the output within CLM/CLA NC4E and in GRIB format. In addition, a standalone “Volcanic Ash” day-2 product CAP formatted, will be disseminated when advised by the VAAC (Volcanic Ash Advisory Center). Date: 16/07/2021

Service	Level	Comment
FCI-FDSS-HR	L1c	* Topic: "FCI-1C dataset, Full Disc, 4 channels at high resolution (HRFI)". * Assumptions: This dataset is disseminated via EUMETCast terrestrial and retrievable via Online Data Retrieval. * Way forward: Based on MTG-I1 commissioning experience, revisit the need to add it to the EUMTECast Europe Non Restorable service. * Date: 27/05/2020
FCI-RSS	L2	* Assumption: “FCI L2 RSS products”. The FCI level 2 RSS products (MTG-I2) will be defined based on in-orbit experience with MTG-I1. * Risk: Additional bandwidth. * Way forward: RSS L2 products to be discussed within FCI MAG, after FCI level 2 FDSS products are operational. * Date: 12/05/2020
LIS	L2	* Assumption "LI level 2 products required to declare the entry in operational service". * Way forward: The minimum set of products to declare the entry in operational service and to be disseminated will be defined in agreement with LI MAG. Considering how data is processed, these products are LGR (Lightning Groups), LFL (Lightning Flashes) and AFA (Accumulated Flash Area). * Date: 12/05/2020
LIS	L2	* Assumption: "LI accumulation window" for acumulated products is 30 seconds. * Way forward: the duration of the accumulation window may vary between 10s and 30s. The situation will be re-assesed after gaining experience with MTG-I1 in orbit and in consultation of LI-MAG. * Date: 15/07/2020

Service	Level	Comment
LIS	L2	* Open issue “LI timeliness”: The requirement is for 120s but the goal of the users (recalled in LI-MAG of spring 2018) is for 30s. * Assumption: the current design, considered as challenging, is for 60s. * Way forward: During development phase, the design will be scrutinized. Should there be a risk that one minute is not achievable, the situation will be reported and reconsidered. During AIV and Commissioning, reasonable attempts will be made to tune the configuration parameters to try to improve the timeliness to achieve the 30s target (in particular over Europe). If not sufficient, bottleneck will be identified and a further design improvement will be considered taking benefit of technology evolution. * Date: 15/07/2020
LIS	L2	Open Issue "LI modelled detection probability product for Day 2", following SWG 49 (year 2020): Recommendation 49-3: The STG-SWG recommended that the EUMETSAT Secretariat consider the inclusion of the modelled detection probability and radiometric accuracy information for MTG LI within the Day 2 product dissemination baseline. Action 49-2: The EUMETSAT Secretariat will consider the inclusion of the modelled detection probability and radiometric accuracy information for MTG LI within the Day 2 product dissemination baseline. Date: 25/01/2021
IRS	L1	* Open Issue: "IRS Level 1 timeliness". The goal is to have a timeliness better than 15 min but this remains to be tested by EUM on the operational configuration to confirm feasibility. * Assumption: Timeliness of 15 min. * Risk: Achieved timeliness may be more than 15 min (but less than 30 min). * Date: 21/07/2021

Service	Level	Comment
IRS	L2	* Assumption "all LACs to be disseminated", not only LAC 4. The availability of LAC 1, LAC 2, and LAC 3 is not a condition for declaring the readiness to enter routine operations. * Date: 01/09/2020
IRS	L2	* Open Issue "IRS Level 2 timeliness". The goal is to have a timeliness better than 30 min but this remains to be tested by EUM on the operational configuration to confirm feasibility. * Assumption: Timeliness of 30 min. * Risk: Achieved timeliness may be more than 30 min (but less than 60 min). * Date: 21/07/2021
UVN	All	* Assumption: "datasets during daylight". The scanned area in the E-W direction is shifted during the day to follow the illuminated portion of the Earth (18h/day). During night there is no generated data. * Date: 06/07/2018
UVN	All	Open Issue: "Copernicus/UVN data distribution baseline remains to be formally endorsed by the EU commission". Associated requirements: [MTGDIS] §2.7 and §3.5. Date: 21/07/2021
Service Messages	n/a	Open Issue "Service Messages via GTS/RMDCN". The exact subset of the service messages disseminated via GTS/RMDCN remains to be confirmed. Way forward baseline as per [OSS] of MSG to ensure service continuity. Date: 15/07/2021

1.2.2 Assumptions and Open Issues related to Distribution Mechanisms

These are assumptions and open issues related to specific distribution mechanisms. They could affect to multiple services and levels.

Distribution	Level	Comment
EUMETCast Africa	All	* Open Issue “Dissemination to Africa”: The dissemination baseline over Africa is not yet finalised for the SAFs. Feedback of station manufacturer is missing. The margin necessary to achieve timeliness remains to be clarified. Status: The FCI L1, RGB, LIS and the FCI L2 products have a good level of maturity (coverage and periodicity can be configured). They have been recommended by RAIDEG and approved by EUM Council in Dec 2020. Way forward: Discussion to continue with RAIDEG to determine which L2 Product for nowcasting and which SAF subset are disseminated. To be approved by Delegate Bodies once a recommendation is available. . * Assumption: An aggregate bitrate of 4.5Mbps is currently assumed which will be revisited depending on the capacities, affordability and priorities. Associated requirements: [MTGDIS] §4 (section about EUMETCast Africa). Way forward: Reception Station Manufacturers consulted in Spring 2021. To be reviewed during the EUMETSAT User forum in September 2021. To be approved by Delegate Bodies in Autumn 2021. Risk: Minor adjustment (e.g. on coverage, periodicity...). Bit rate increase (operational cost). Date: 21/07/2021

Distribution	Level	Comment
EUMETCast Africa	All	* Assumption: The data disseminated via EUMETCast Africa are not duplicated via EUMETCast Terrestrial. * Rationale: No use case identified for reception of EUMETCast Africa data via EUMETCast Terrestrial. If a user in Africa has access to EUMETCast Terrestrial with enough bandwidth, the user should retrieve from it a copy of the EUMETCast Europe data due to the higher quality (resolution, coverage, periodicity. . .). * Way Forward: It will be re-addressed nearer the time when we see how many users are able to connect to the Terrestrial service and the associated performance. Should this assumption be erroneous, it will be easy to reconfigure EUMETCast at any time, to add a copy of EUMETCast Africa on EUMETCast Terrestrial. * Date: 16/07/2020
EUMETCast Africa	All	* Assumption: The dissemination over Africa will start after the entry in routine operation of MTG-I1 and is not part of the SAF::EUM ground segment tests planned to verify the SAF achievement. * Date: 09/07/2021
EUMETCast Africa	L2	* Assumption: “FCI level 2 Fire Product disseminated via EUMETCast Africa, is provided in netCDF data format”. The fire product could be disseminated to End Users in Africa either in netCDF or in CAP (XML) data format. Current baseline is the netCDF data format, because it is a more general product. * Date: 15/07/2021
EUMETCast Terrestrial	All	See [EURD] §1.3

Distribution	Level	Comment
Global NWP Centres	All	Assumption: If after Commissioning, the global NWP centres require specific data not currently distributed via EUMETCast Europe or EUMETCast Terrestrial, this will be done as follows: a) For initial IOC version (after MTG-I1 launch), EUM would use EUMETCast terrestrial. b) For MTG-S1 and MTG-I2, any evolution of the corporate data distribution mechanism would benefit to MTG. The specific data include the IRS L1 sounding dataset (the Principal Component Scores are already disseminated). In any case, these datasets are retrievable from the archive. * Date: 10/06/2020
NOAA	All	* Assumptions: The datasets and products listed in this document represent the kernel of products that will be made available to NOAA. * Way forward: Discussion with NOAA will continue. On top of that, the followings products could be added in the course of the on-going discussion if deemed relevant: FCI level 1c radiances RSS 16 FDHSI channels, FCI level 2, and IRS level 2. * Date: 07/09/2020
NOAA	All	Open Issue: NOAA has the intention to move its services to the cloud. This should not change the way MTG makes the data available to NOAA. The interface between EUM and NOAA remains at the level of providing the MTG data on a EUM server (currently MMDS IDS server). Data has to be pulled by NOAA (as per corresponding OICD). The existing operational corporate mechanism is used (JE-UNO). MTG will follow the corporate evolution of this service. Date: 26/02/2021

1.3 Documents

This is the list of documents that are referenced in this report.

1.3.1 Applicable Documents

These are documents that have been used to produce this document. Applicable documents incorporate additional provisions to the source document. A provision may be in the form of requirements, statements, instructions or recommendations.

Acronym	Title	Reference
[EURD]	MTG End User Requirements Document	EUM/MTG/SPE/07/0036
[H-SAF-DCOP3]	SAF CDOP-3 Agreement with H-SAF (see [L2SAF])	EUM/C/72/11/DOC/18
[H-SAF-PRD]	H-SAF CDOP-3 Product Requirement Document (see [L2SAF])	SAF/HSAF/CDOP3/PRD
[L2SAF]	SAF Level 2 Products Generation and Dissemination Baseline for MTG	EUM/PPS/DOC/09/0032
[LSA-SAF-CDOP3]	SAF CDOP-3 Agreement with LSA-SAF (see [L2SAF])	EUM/C/72/11/DOC/17
[LSA-SAF-PRD]	LSA-SAF CDOP-3 Product Requirement Document (see [L2SAF])	SAF/LAND/PRD/3.2
[MWC-SAF-CDOP3]	SAF CDOP-3 Agreement with NWC SAF (see [L2SAF])	EUM/C/72/11/DOC/11
[NWC-SAF-PRD]	NWC-SAF CDOP-3 Product Requirement Document (see [L2SAF])	NWC/CDOP3/SAF/AEMET/MTG/PRD
[NWP-SAF-CDOP3]	SAF CDOP-3 Agreement with NWP-SAF (see [L2SAF])	EUM/C/72/11/DOC/12
[NWP-SAF-PRD]	NWP-SAF CDOP-3 Product Requirement Document (see [L2SAF])	Captured in EUM/C/72/11/DOC/12
[OSI-SAF-CDOP3]	SAF CDOP-3 Agreement with OSI-SAF (see [L2SAF])	EUM/C/72/11/DOC/13
[OSI-SAF-PRD]	OSI-SAF CDOP-3 Product Requirement Document (see [L2SAF])	SAF/OSI/CDOP3/MF/MGT/PL/2-001
[S4L2SRS]	Sentinel-4 L2 Software Requirements Specification	S4-L2-DLR-SRS-4003
[TD16]	TD 16 - Meteosat Data Collection and Distribution Service	EUM/OPS/DOC/08/0325

1.3.2 Reference Documents

These are documents that have been used to produce this document. Applicable documents incorporate additional provisions to the source document. A provision may be in the form of requirements, statements, instructions or recommendations.

Acronym	Title	Reference
[AfricaPUG]	MTG EUMETCast Africa Product User Guide	EUM/MTG/USR/19/1148454
[AMV]	MTG-FCI: ATBD for Atmospheric Motion Vector Product	EUM/MTG/DOC/10/053
[ASR]	MTG-FCI: ATBD for All Sky Radiance Product	EUM/MTG/DOC/10/0612
[CLA]	MTG-FCI: ATBD for Cloud mask and Cloud Analysis Product	EUM/MTG/DOC/10/0542
[CONV]	MTG Conventions and Terms Document	EUM/MTG/DEF/08/0034

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Acronym	Title	Reference
[CRM]	MTG-FCI: ATBD for Clear Sky Reflectance Map Product	EUM/MTG/DOC/10/0559
[FIR]	MTG-FCI: ATBD for Active Fire Monitoring Product	EUM/MTG/DOC/10/0613
[GII]	MTG-FCI: ATBD for Global Instability Indices Product	EUM/MTG/DOC/10/0381
[IRSL2ATBD]	MTG-IRS L2 ATBD	EUM/RSP/TEN/17/935387
[L2LI]	Algorithm Theoretical Basis Document (ATBD) for L2 processing of the MTG Lightning Imager data	EUM/MTG/DOC/11/0155
[NUG]	The netCDF Users' Guide	704177
[OCA]	MTG-FCI: ATBD for Optimal Cloud Analysis Product	EUM/MTG/DOC/11/0654
[OLR]	MTG-FCI: ATBD for Outgoing Longwave Radiation Product	EUM/MTG/DOC/10/0527
[RTM]	MTG-FCI: ATBD for Radiative Transfer Model	EUM/MTG/DOC/10/0382
[S4L1ATBD]	Sentinel-4 UVN Algorithm Theoretical Baseline Document for Level 0-1b data processing	EUM/MTG/SPE/16/860498
[S4HQ]	S4/UVN Datasets and Products Generation and Dissemination baseline at EUM HQ	EUM/MTG/SPE/12/0767
[UNS]	User Notification Service (UNS) End User Guide	EUM/OPS/TEN/12/0134
[VOL]	MTG-FCI: ATBD for Volcanic Ash Product	EUM/MTG/DOC/10/0560

1.4 List of Acronyms

The following table presents the definition of the acronyms inserted in the text. In addition, the reader is referred to conventions and terms [CONV] that are used frequently in the MTG programme.

Acronym	Description
ACDC	Archiving and Circulation Dataset Catalogue
ATBD	Algorithm Theoretical Basis Document
CDOP	Continuous Development and Operations Phase (related to SAF)
CrIS	Cross-track Infrared Sounder
ECMWF	European Centre for Medium-Range Weather Forecasts
FAR	False AlaRm (regarding SAF software specifications)
FCI	Flexible Combined Imager
FD	Full Disc
FDC	Full Disc Coverage
FDHSI	Full Disk High Spectral Imagery
FDSS	Full Disc Scanning Service
FOC	Full Operational Capacity
GFS	Generic Format Specification
GIIRS	Geostationary Interferometric InfraRed Sounder (instrument on-board FY-4 satellites)
GTS	Global Telecommunication System
HRFI	High Resolution Fast Imagery
IASI	Infrared Atmospheric Sounding Interferometer
IDPF	Instrument Data Processing Facility
IRS	InfraRed Sounder
KNMI	Koninklijk Nederlands Meteorologisch Instituut (Royal Netherlands Meteorological Institute)
L2PF	Level 2 Processing Facility
LAC	Local Area Coverage

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Acronym	Description
LI	Lightning Imager
LIS	Lightning Imager Service
LIST	Lightning Imager Science Team
MB	Management Board
MME	Multi-Mission Element
MTG	Meteosat Third Generation
NOAA	National Oceanic and Atmospheric Administration (USA)
NWP	Numerical Wheather Prediction (Centre)
OLDA	On-Line Data Access (formerly Internet Rolling Buffer, currently On-line Data Retrieval)
PGS	Product Generation Specification
POD	Probability Of Detection (regarding SAF software specifications)
RC	Repeat Cycle
RMDCN	Regional Meteorological Data Communication Network
RSS	Rapid Scanning Service
S4	UVN / Sentinel 4
SDQAR	Scientific Data Quality Analysis and Reporting
SIR	System Intermediate Review
SSD	Spatial Sampling Distance
SWG	Science Working Group
UVN	Ultraviolet-Visible-Near infrared sounder / S4

1.5 Definitions

1.5.1 Dissemination Mechanisms

The following dissemination mechanisms are considered in this document:

- *EUMETCast Europe*. Also referred as *EUMETCast Satellite* because MTG products are generated at EUMETSAT HQ and broadcasted using a third-party telecom satellite

service. The aim is to provide data in near real time to European users using standard size parabolic antennae.

  - *EUMETCast Europe Restorable*, provides redundancy of the third party telecom satellite (which means that in case of transponder or satellite failure, another transponder or satellite is used).
  - *EUMETCast Europe Non-Restorable* is similar to EUMETCast Europe Restorable except the lack of third-party telecom satellite or transponder redundancy.
  - Should a problem affect the telecom satellite service, the priority will be given to EUMETCast Europe Restorable to the detriment of EUMETCast Europe Non-Restorable (which means that in case of transponder or satellite failure, the dissemination of EUMETCast Europe Non-Restorable may be interrupted).

- *EUMETCast Africa*. It refers to the broadcast by third-party satellites of MTG products for users in Africa. The data rate would be smaller than for EUMETCast Europe.
- *EUMETCast Terrestrial*. High data rate dissemination using a terrestrial infraestructure for a small number of users.
- *On-Line Data Retrieval*. Users can retrieve small volumes of data via internet.
- *NOAA*. It refers to the data specifically provided to NOAA, for which cross support agreement exists.
- Regional Meteorological Data Communication Network/Global Telecommunication System (*RMDCN/GTS*). The Global Telecommunications System (GTS) was established by the World Meteorological Organization and is used by National Meteorological Services (NMS) throughout the world. The Regional Meteorological Data Communication Network (RMDCN) is used by the meteorological community in WMO Region RA-VI (Europe) and RA-II (Asia and the South-West Pacific).
- *Data Centre*. This is not a dissemination mechanism, it just indicates the availability of products at EUMETSAT HQ for retrieval by End Users.

1.5.2 Timeliness

According to [CONV], timeliness is the time difference between the foreseen end of acquisition of the last contributing data (e.g. from a sample, a dwell, a swath, granule, a segment, an image, a file) by EUMETSAT (at satellite level for FCI, LI, IRS and UVN/S4; or at Ground Segment for external data like SAF), and the end of reception of the corresponding data (possibly processed) by the users (i.e. before decryption and decompression). The section 5.1 of [EURD] defines to what apply the timeliness (repeat cycle, chunk, dwell, flash, product, etc.).

It excludes delay introduced by transmission lines and networks outside EUMETSAT control (e.g. internet, RMDCN, GTS, WIS). It excludes also the processing time outside EUMETSAT control (e.g. SAF processing time).

In this document, the reference to "timeliness" is equivalent to "system end-to-end timeliness specification" in other MTG documentation.

2 EUMETSAT HQ Level 1 Products Generation and Dissemination Baseline

The MTG Level 1 Datasets generation and dissemination baseline is provided in the following tables.

Note that there are no LI Level 1 datasets to be disseminated (only Level 2).

2.1 FCI-FDSS L1 Baseline (Normal Resolution)

2.1.1 Dissemination and Retrieval from Data Center

The dissemination and archiving baseline for the Flexible Combined Imager Level 1 dataset is presented here. This is the Normal Resolution FDSS Service.

In the table, an empty cell indicates that the dataset is not diseminated by that mechanism.

This is the periodicity of the full products, for a full Repeat Cycle. These products are provided in chunks and currently there are 40 body chunks per Repeat Cycle (approx. 15 seconds per body chunk) and a trailer chunk at the end of the Repeat Cycle. The number of chunks is a configurable parameter and may change.

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
FCI-1C-RRAD-FDHSI-FD FCI-FDSS rectified L1c radiance, 16 FDHSI channels	L1c	FD	1km(VIS) and 2km(IR)	netCDF-4	10min	10min		10min	10min		10min	10min

Table 7: Summary of FCI-FDSS L1 datasets

2.1.2 Timeliness and Volume of Data

This table presents the timelines of the different datasets. In addition, the approximated volume of distributed data per day is also indicated. This volume of data is provided after compression, if applicable to the dataset.

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
EUMETCast Europe	FCI-1C-RRAD-FDHSI-FD FCI-FDSS rectified L1c radiance, 16 FDHSI channels	900	218.4
EUMETCast Terrestrial	FCI-1C-RRAD-FDHSI-FD FCI-FDSS rectified L1c radiance, 16 FDHSI channels	900	218.4

Table 8: Summary of FCI-FDSS L1 timeliness and volume of data

2.2 FCI-FDSS-HR L1 Baseline (High Resolution)

2.2.1 Dissemination and Retrieval from Data Center

The dissemination and archiving baseline for the Flexible Combined Imager Level 1 dataset is presented here. This is the High Resolution FDSS Service.

In the table, an empty cell indicates that the dataset is not diseminated by that mechanism.

This is the periodicity of the full products, for a full Repeat Cycle. These products are provided in chunks and currently there are 40 body chunks per Repeat Cycle (approx. 15 seconds per body chunk) and a trailer chunk at the end of the Repeat Cycle. The number of chunks is a configurable parameter and may change.

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
FCI-1C-RRAD-HRFI-FD FCI-FDSS rectified L1c radiance, 4 HRFI channels	L1c	FD	0.5km(VIS) and 1km(IR)	netCDF-4	10min			10min	10min			10min

Table 9: Summary of FCI-FDSS-HR L1 datasets

2.2.2 Timeliness and Volume of Data

This table presents the timelines of the different datasets. In addition, the approximated volume of distributed data per day is also indicated. This volume of data is provided after compression, if applicable to the dataset.

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
EUMETCast Terrestrial	FCI-1C-RRAD-HRFI-FD FCI-FDSS rectified L1c radiance, 4 HRFI channels	900	218.1

Table 10: Summary of FCI-FDSS-HR L1 timeliness and volume of data

2.3 FCI-RSS L1 Baseline (Normal Resolution)

2.3.1 Dissemination and Retrieval from Data Center

The dissemination and archiving baseline for the Flexible Combined Imager Level 1 dataset is presented here. This is the Normal Resolution RSS Service.

In the table, an empty cell indicates that the dataset is not diseminated by that mechanism.

This is the periodicity of the full products, for a full Repeat Cycle. These products are provided in chunks and currently there are 10 body chunks per Repeat Cycle (approx. 15 seconds per body chunk) and a trailer chunk at the end of the Repeat Cycle. The number of chunks is a configurable parameter and may change.

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
FCI-1C-RRAD-FDHSI-Qn FCI-RSS rectified L1c radiance, 16 FDHSI channels	L1c	FDC/4	1km(VIS) and 2km(IR)	netCDF-4	2.5min	2.5min		2.5min	2.5min			2.5min

Table 11: Summary of FCI-RSS L1 datasets

2.3.2 Timeliness and Volume of Data

This table presents the timelines of the different datasets. In addition, the approximated volume of distributed data per day is also indicated. This volume of data is provided after compression, if applicable to the dataset.

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
EUMETCast Europe	FCI-1C-RRAD-FDHSI-Qn FCI-RSS rectified L1c radiance, 16 FDHSI channels	300	218.5
EUMETCast Terrestrial	FCI-1C-RRAD-FDHSI-Qn FCI-RSS rectified L1c radiance, 16 FDHSI channels	300	218.5

Table 12: Summary of FCI-RSS L1 timeliness and volume of data

2.4 FCI-RSS-HR L1 Baseline (High Resolution)

2.4.1 Dissemination and Retrieval from Data Center

The dissemination and archiving baseline for the Flexible Combined Imager Level 1 dataset is presented here. This is the High Resolution RSS Service.

In the table, an empty cell indicates that the dataset is not diseminated by that mechanism.

This is the periodicity of the full products, for a full Repeat Cycle. These products are provided in chunks and currently there are 10 body chunks per Repeat Cycle (approx. 15 seconds per body chunk) and a trailer chunk at the end of the Repeat Cycle. The number of chunks is a configurable parameter and may change.

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
FCI-1C-RRAD-HRFI-Qn FCI-RSS rectified L1c radiance, 4 HRFI channels	L1c	FDC/4	0.5km(VIS) and 1km(IR)	netCDF-4	2.5min		2.5min	2.5min	2.5min			2.5min

Table 13: Summary of FCI-RSS-HR L1 datasets

2.4.2 Timeliness and Volume of Data

This table presents the timelines of the different datasets. In addition, the approximated volume of distributed data per day is also indicated. This volume of data is provided after compression, if applicable to the dataset.

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
EUMETCast Europe	FCI-1C-RRAD-HRFI-Qn FCI-RSS rectified L1c radiance, 4 HRFI channels	300	218.1
EUMETCast Terrestrial	FCI-1C-RRAD-HRFI-Qn FCI-RSS rectified L1c radiance, 4 HRFI channels	300	218.1

Table 14: Summary of FCI-RSS-HR L1 timeliness and volume of data

2.5 LI L1 Baseline

There are no LI level 1 datasets to be disseminated. This section is kept here for convenience.

2.6 IRS L1 Baseline

2.6.1 Dissemination and Retrieval from Data Center

The dissemination and archiving baseline for the InfraRed Sounder Level 1 datasets is presented here.

The generation periodicity is a long-term average. The acquisition time of every LAC is 15 minutes, but there is a very particular scanning pattern, having observations and gaps that depend on the LAC. Please refer to the [EURD], section 1.5, for more details.

These products are provided in chunks. Currently there are approx. 70 body chunks per Repeat Cycle (approx. 13 seconds per body chunk) and a trailer chunk at the end of the repeat cycle. The number of chunks is a configurable parameter and may change.

In the table, an empty cell indicates that the dataset is not diseminated by that mechanism.

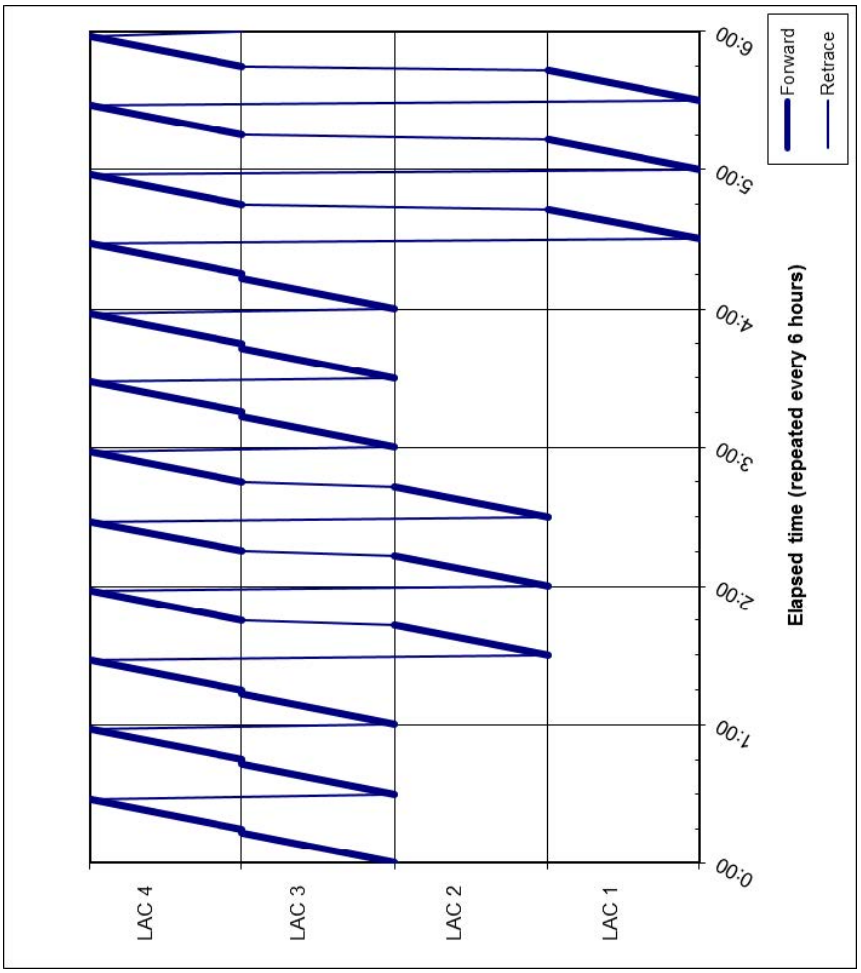

Figure 2: Operational practice for IRS scanning pattern.

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
IRS-1B-PC-x-Q1 IRS-LAC1 reduced sub-set of 300 Principal Components	L1b	LAC1	4km x 4km	netCDF-4	15min	15min		15min	15min		15min	15min
IRS-1B-PC-x-Q2 IRS-LAC2 reduced sub-set of 300 Principal Components	L1b	LAC2	4km x 4km	netCDF-4	15min	15min		15min	15min		15min	15min
IRS-1B-PC-x-Q3 IRS-LAC3 reduced sub-set of 300 Principal Components	L1b	LAC3	4km x 4km	netCDF-4	15min	15min		15min	15min		15min	15min
IRS-1B-PC-x-Q4 IRS-LAC4 reduced sub-set of 300 Principal Components	L1b	LAC4	4km x 4km	netCDF-4	15min	15min		15min	15min		15min	15min
IRS-1B-SSS-x-Q1 IRS-LAC1 spectral soundings	L1b	LAC1	4km x 4km	netCDF-4	15min				15min			15min
IRS-1B-SSS-x-Q2 IRS-LAC2 spectral soundings	L1b	LAC2	4km x 4km	netCDF-4	15min				15min			15min
IRS-1B-SSS-x-Q3 IRS-LAC3 spectral soundings	L1b	LAC3	4km x 4km	netCDF-4	15min				15min			15min
IRS-1B-SSS-x-Q4 IRS-LAC4 spectral soundings	L1b	LAC4	4km x 4km	netCDF-4	15min				15min			15min

Table 15: Summary of IRS L1 datasets

2.6.2 Timeliness and Volume of Data

This table presents the timelines of the different datasets. In addition, the approximated volume of distributed data per day is also indicated. This volume of data is provided after compression, if applicable to the dataset.

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
EUMETCast Europe	IRS-1B-PC-x-Q1 IRS-LAC1 reduced sub-set of 300 Principal Components	900	12.78
	IRS-1B-PC-x-Q2 IRS-LAC2 reduced sub-set of 300 Principal Components	900	12.78
	IRS-1B-PC-x-Q3 IRS-LAC3 reduced sub-set of 300 Principal Components	900	25.56
	IRS-1B-PC-x-Q4 IRS-LAC4 reduced sub-set of 300 Principal Components	900	51.79
EUMETCast Terrestrial	IRS-1B-PC-x-Q1 IRS-LAC1 reduced sub-set of 300 Principal Components	900	12.78
	IRS-1B-PC-x-Q2 IRS-LAC2 reduced sub-set of 300 Principal Components	900	12.78
	IRS-1B-PC-x-Q3 IRS-LAC3 reduced sub-set of 300 Principal Components	900	25.56
	IRS-1B-PC-x-Q4 IRS-LAC4 reduced sub-set of 300 Principal Components	900	51.79

Table 16: Summary of IRS L1 timeliness and volume of data

2.7 UVN/S4 L1 Baseline

2.7.1 Dissemination and Retrieval from Data Center

The dissemination and archiving baseline for the UVN / Sentinel 4 Level 1 datasets is presented here. UVN provides the radiance datasets (NIR and UVVVIS) during daylight, approximately 18h per day. These datasets are not generated during night.

Most datasets are generated covering 5 minute intervals corresponding to a fraction of the E/W scan of 60 min repeat cycle. The 5 minute datasets are disseminated as individual files (called chunks or granules) in order to maintain the timeliness to the End Users. The 5 minute datasets are aggregated into 60 min repeat cycle datasets for archival; however the End Users will still be able to retrieve the original, individual 5 minute (L1b and L2) datasets from the archive.

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
UVN-1-DPP-RADDAY-xx UVN Level 1 Data Processing Parameters - Radiances (all parameters not related to geolocation nor INR) - Daily	L1	n/a	n/a	netCDF-4	1days				1days			1days
UVN-1-DPP-STATIC-xx UVN Level 1 Data Processing Parameters - Static	L1	n/a	n/a	netCDF-4	On Event				On Event			On Event
UVN-1B-EARTH-NIR-ZU UVN Earth radiance - NIR band	L1b	Europe	8km x 8km	netCDF-4	60min			60min	60min			60min
UVN-1B-EARTH-UVVIS-ZU UVN Earth radiance - UVVIS band	L1b	Europe	8km x 8km	netCDF-4	60min			60min	60min			60min
UVN-1B-IRR-x-xx UVN solar irradiance for UVVIS and NIR	L1b	Europe	8km x 8km	netCDF-4	1days			1days	1days			1days

Table 17: Summary of UVN/S4 L1 datasets

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**

2.7.2 Timeliness and Volume of Data

This table presents the timelines of the different datasets. In addition, the approximated volume of distributed data per day is also indicated. This volume of data is provided after compression, if applicable to the dataset.

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
EUMETCast Terrestrial	UVN-1B-EARTH-NIR-ZU UVN Earth radiance - NIR band	3600	87.12
	UVN-1B-EARTH-UVVIS-ZU UVN Earth radiance - UVVIS band	3600	160.3
	UVN-1B-IRR-x-xx UVN solar irradiance for UVVIS and NIR	3600	0.03

Table 18: Summary of UVN L1 timeliness and volume of data

2.8 DCP and Service Messages

2.8.1 Dissemination and Retrieval from Data Center

The dissemination and archiving baseline for the DCP and Service Messages are presented here.

The generation periodicity is a long-term average.

In the table, an empty cell indicates that the dataset is not diseminated by that mechanism.

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
DCP_AlertMessages DCP Alert Messages	n/a	Earth Disc	n/a	GTS-WMO	on-event	on-event		on-event	on-event			
DCP_Bulletins DCP Bulletins	n/a	Earth Disc	n/a	GTS-WMO	600sec					600sec		
DCP_SelfTimedMessages DCP Self-Timed Messages	n/a	Earth Disc	n/a	GTS-WMO	360sec accumulation or when size>500KB	360sec accumulation or when size>500KB		360sec accumulation or when size>500KB	360sec accumulation or when size>500KB			
SM_ADMIN Service details for the previous calendar day (24 hours). MTG Specific.	n/a	n/a	n/a	Text	1day	1day		1day	1day	1day		
SM_NEWS Used to inform users in real time of problems that have occurred, issuing further messages when problems are resolved. EUMETSAT multi-mission news.	n/a	n/a	n/a	Text	ad-hoc	ad-hoc		ad-hoc	ad-hoc			

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
SM_REG-RPT This report contains scheduled announcements for the following week. EUMETSAT multi-mission report.	n/a	n/a	n/a	Text	updated weekly (thursday) disseminated daily	updated weekly (thursday) disseminated daily		updated weekly (thursday) disseminated daily	updated weekly (thursday) disseminated daily			

Table 19: Summary of DCP and Service Messages datasets

2.8.2 Timeliness and Volume of Data

This table presents the timelines of the different datasets. In addition, the approximated volume of distributed data per day is also indicated.

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
EUMETCast Europe	DCP_AlertMessages DCP Alert Messages	180	0.0
	DCP_SelfTimedMessages DCP Self-Timed Messages	600	0.114
	SM_ADMIN Service details for the previous calendar day (24 hours). MTG Specific.	3600	0.0

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	SM_NEWS Used to inform users in real time of problems that have occurred, issuing further messages when problems are resolved. EUMETSAT multi-mission news.	3600	0.0
	SM_REG-RPT This report contains scheduled announcements for the following week. EUMETSAT multi-mission report.	3600	0.0
EUMETCast Terrestrial	DCP_AlertMessages DCP Alert Messages	180	0.0
	DCP_SelfTimedMessages DCP Self-Timed Messages	600	0.114
	SM_ADMIN Service details for the previous calendar day (24 hours). MTG Specific.	3600	0.0
	SM_NEWS Used to inform users in real time of problems that have occurred, issuing further messages when problems are resolved. EUMETSAT multi-mission news.	3600	0.0
	SM_REG-RPT This report contains scheduled announcements for the following week. EUMETSAT multi-mission report.	3600	0.0

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
RMDCN	DCP_Bulletins DCP Bulletins	3600	0.068
	SM_ADMIN Service details for the previous calendar day (24 hours). MTG Specific.	3600	0.0

Table 20: Summary of DCPandSM n/a timeliness and volume of data

3 EUMETSAT HQ Level 2 Products Generation and Dissemination Baseline

The following tables show the list, characteristic and dissemination periodicity of level 2 products to be generated at the EUMETSAT Central Application Facility.

For every mission and data level, there are two tables of products.

- A first table presenting all the products and their dissemiantion mechanisms.
- A second table presenting a the System end-to-end timeliness specification.

As a general rule, products disseminated via EUMETCast are provided in netCDF format, which is the format for most of the products. On the other hand, products disseminated via RMDCN/GTS will have the BUFR, GRIB and/or CAP format, reflecting the current needs as specificed for the SEVIRI product dissemination.

3.1 FCI-FDSS L2 Baseline

3.1.1 Dissemination and Retrieval from Data Center

The dissemination and archiving baseline for the Flexible Combined Imager Level 2 dataset is presented here.

The generation periodicity is a long-term average.

In the table, an empty cell indicates that the dataset is not diseminated by that mechanism.

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMET-Cast Europe (Restorable)**	**EUMET-Cast Europe (Non-Res-torable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Cen-tre**
FCI-2-AMV-IR105-FD Atmospheric Motion Vectors (AMV) - (IR10.5)	L2	FD	Synoptic Scale	netCDF-4	30min	30min		30min	30min			30min
FCI-2-AMV-IR38-FD Atmospheric Motion Vectors (AMV) - (IR3.8, night only)	L2	FD	Synoptic Scale	netCDF-4	30min	30min		30min	30min			30min
FCI-2-AMV-VIS08-FD Atmospheric Motion Vectors (AMV) - (VIS0.8, daylight only)	L2	FD	Synoptic Scale	netCDF-4	30min	30min		30min	30min			30min
FCI-2-AMV-WV63-FD Atmospheric Motion Vectors (AMV) - (WV6.3)	L2	FD	Synoptic Scale	netCDF-4	30min	30min		30min	30min			30min

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMET-Cast Europe (Restorable)**	**EUMET-Cast Europe (Non-Res-torable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Cen-tre**
FCI-2-AMV-WV73-FD Atmospheric Motion Vectors (AMV) - (WV7.3)	L2	FD	Synoptic Scale	netCDF-4	30min	30min		30min	30min			30min
FCI-2-AMV-x-FD Atmospheric Motion Vectors (AMV) - (VIS0.8 [day only], WV6.3, WV7.3, IR3.8 [night only], IR10.5 channels)	L2	FD	Synoptic Scale	BUFR	30min				30min	30min		30min
FCI-2-ASR-x-FD All Sky Radiance (ASR)	L2	FD	16*16 IR pix, 32*32 VIS pix	netCDF-4	10min	10min		10min	10min			10min
FCI-2-ASR-x-FD All Sky Radiance (ASR)	L2	FD	16*16 IR pix, 32*32 VIS pix	BUFR	10min				10min	10min		10min
FCI-2-CLM-x-FD Scene: Clear/Cloud Flag/Dust/Ashes Flag (CLM)	L2	FD	FCI IR Pixel (2km)	netCDF-4	10min	10min		10min	10min			10min
FCI-2-CLM-x-FD Scene: Clear/Cloud Flag/Dust/Ashes Flag (CLM)	L2	FD	FCI IR Pixel (2km)	GRIB	10min				10min			10min
FCI-2-CRM-x-FD Clear Sky Reflectance Map (CRM)	L2	FD	FCI SW Pixel	netCDF-4	2h, from 4:00 to 20:00	2h, from 4:00 to 20:00		2h, from 4:00 to 20:00	2h, from 4:00 to 20:00			2h, from 4:00 to 20:00
FCI-2-CT-x-FD FCI Cloud Analysis - Cloud Type - Cloud Phase - Cloud height layer	L2	FD	FCI IR Pixel (2km)	netCDF-4	10min	10min		10min	10min			10min
FCI-2-CTTH-x-FD FCI Cloud Analysis - Cloud top temperature and height, pressure and effective cloud amount	L2	FD	FCI IR Pixel (2km)	netCDF-4	10min	10min		10min	10min			10min
FCI-2-FIR-x-FD Scene: Fire Detection (FIRA)	L2	FD	FCI IR Pixel (2km)	netCDF-4	10min	10min		10min	10min			10min
FCI-2-FIR-x-FD Scene: Fire Detection (FIRA)	L2	FD	FCI IR Pixel (2km)	CAP	10min				10min			10min
FCI-2-GII-x-FD Global Instability Indices: 2 GII indices + Precipitable Water - Lower Troposphere Precipitable Water - Middle Troposphere Precipitable Water - Upper Troposphere Precipitable Water - Total column	L2	FD	3x3 FCI IR Pixels	netCDF-4	10min	10min		10min	10min			10min

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMET-Cast Europe (Restorable)**	**EUMET-Cast Europe (Non-Res-torable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Cen-tre**
FCI-2-OCA-x-FD Optimal Cloud Analysis: Cloud drop effective radius - Cloud top, Cloud optical depth, Cloud sub-pixel fraction, Cloud top phase, Cloud top pressure and temperature	L2	FD	FCI IR Pixel (2km)	netCDF-4	10min	10min		10min	10min			10min
FCI-2-OLR-x-FD Outgoing LW irradiance at TOA	L2	FD	FCI IR Pixel (2km)	netCDF-4	10min							10min

Table 21: Summary of FCI-FDSS L2 datasets

3.1.2 Timeliness and Volume of Data

This table presents the timelines of the different datasets. In addition, the approximated volume of distributed data per day is also indicated. This volume of data is provided after compression, if applicable to the dataset.

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
EUMETCast Europe	FCI-2-AMV-IR105-FD Atmospheric Motion Vectors (AMV) - (IR10.5)	1200	0.96
	FCI-2-AMV-IR38-FD Atmospheric Motion Vectors (AMV) - (IR3.8, night only)	1200	0.96
	FCI-2-AMV-VIS08-FD Atmospheric Motion Vectors (AMV) - (VIS0.8, daylight only)	1200	0.96
	FCI-2-AMV-WV63-FD Atmospheric Motion Vectors (AMV) - (WV6.3)	1200	0.96

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	FCI-2-AMV-WV73-FD Atmospheric Motion Vectors (AMV) - (WV7.3)	1200	0.96
	FCI-2-ASR-x-FD (netCDF-4) All Sky Radiance (ASR)	1200	8.352
	FCI-2-CLM-x-FD (netCDF-4) Scene: Clear/Cloud Flag/Dust/Ashes Flag (CLM)	1200	1.116
	FCI-2-CRM-x-FD Clear Sky Reflectance Map (CRM)	41400	8.183
	FCI-2-CT-x-FD FCI Cloud Analysis - Cloud Type - Cloud Phase - Cloud height layer	1200	9.497
	FCI-2-CTTH-x-FD FCI Cloud Analysis - Cloud top temperature and height, pressure and effective cloud amount	1200	16.72
	FCI-2-FIR-x-FD (netCDF-4) Scene: Fire Detection (FIRA)	1200	0.892

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	FCI-2-GII-x-FD Global Instability Indices: 2 GII indices + Precipitable Water - Lower Troposphere Precipitable Water - Middle Troposphere Precipitable Water - Upper Troposphere Precipitable Water - Total column	1200	2.976
	FCI-2-OCA-x-FD Optimal Cloud Analysis: Cloud drop effective radius - Cloud top, Cloud optical depth, Cloud sub-pixel fraction, Cloud top phase, Cloud top pressure and temperature	1200	22.97
EUMETCast Terrestrial	FCI-2-AMV-IR105-FD Atmospheric Motion Vectors (AMV) - (IR10.5)	1200	0.96
	FCI-2-AMV-IR38-FD Atmospheric Motion Vectors (AMV) - (IR3.8, night only)	1200	0.96
	FCI-2-AMV-VIS08-FD Atmospheric Motion Vectors (AMV) - (VIS0.8, daylight only)	1200	0.96
	FCI-2-AMV-WV63-FD Atmospheric Motion Vectors (AMV) - (WV6.3)	1200	0.96

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	FCI-2-AMV-WV73-FD Atmospheric Motion Vectors (AMV) - (WV7.3)	1200	0.96
	FCI-2-ASR-x-FD (netCDF-4) All Sky Radiance (ASR)	1200	8.352
	FCI-2-CLM-x-FD (netCDF-4) Scene: Clear/Cloud Flag/Dust/Ashes Flag (CLM)	1200	1.116
	FCI-2-CRM-x-FD Clear Sky Reflectance Map (CRM)	41400	8.183
	FCI-2-CT-x-FD FCI Cloud Analysis - Cloud Type - Cloud Phase - Cloud height layer	1200	9.497
	FCI-2-CTTH-x-FD FCI Cloud Analysis - Cloud top temperature and height, pressure and effective cloud amount	1200	16.72
	FCI-2-FIR-x-FD (netCDF-4) Scene: Fire Detection (FIRA)	1200	0.892

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	FCI-2-GII-x-FD Global Instability Indices: 2 GII indices + Precipitable Water - Lower Troposphere Precipitable Water - Middle Troposphere Precipitable Water - Upper Troposphere Precipitable Water - Total column	1200	2.976
	FCI-2-OCA-x-FD Optimal Cloud Analysis: Cloud drop effective radius - Cloud top, Cloud optical depth, Cloud sub-pixel fraction, Cloud top phase, Cloud top pressure and temperature	1200	22.97
RMDCN	FCI-2-AMV-x-FD (BUFR) Atmospheric Motion Vectors (AMV) - (VIS0.8 [day only], WV6.3, WV7.3, IR3.8 [night only], IR10.5 channels)	3600	1.248
	FCI-2-ASR-x-FD (BUFR) All Sky Radiance (ASR)	3600	8.352

Table 22: Summary of FCI-FDSS L2 timeliness and volume of data

3.2 FCI-RSS L2 Baseline

There are no FCI-RSS level 2 datasets to be generated for day 1.

3.3 LI L2 Baseline

3.3.1 Dissemination and Retrieval from Data Center

The dissemination and archiving baseline for the Lighning Imager level 2 datasets is presented here.

The generation periodicity is a long-term average.

In the table, an empty cell indicates that the dataset is not diseminated by that mechanism.

Both Lightning Flashes and Lightning Groups are not gridded products, their longitude and latitude measurements are weighted averages of the events.

The periodicity of the LI level 2 products is 10 minutes, as indicated in the following table, and this is called a *repeat cycle*. These products are split in *chunks*:

- there are many *body* chunks per product, and they contain the core of the data; and
- there is a *trailer* chunk sent at the end of the repeat cycle, and it contains auxiliary information.

The periodicity of the body chunks is:

- 10 seconds for the event-based products, and
- 30 seconds for the accumulated products.

All these time durations (chunks, full product) are configurable parameters and may change.

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
LI-2-AF-x-FD LI Accumulated Flashes	L2	>80% Earth	2km	netCDF-4	10min	10min		10min	10min		10min	10min

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMET-Cast Europe (Restorable)**	**EUMET-Cast Europe (Non-Res-torable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Cen-tre**
LI-2-AFA-x-FD LI Accumulated Flash Area	L2	>80% Earth	2km	netCDF-4	10min	10min		10min	10min		10min	10min
LI-2-AFR-x-FD LI Accumulated Flash Radiance	L2	>80% Earth	2km	netCDF-4	10min	10min		10min	10min		10min	10min
LI-2-LFL-x-FD Lightning Flashes	L2	>80% Earth	LI pixel (not gridded)	netCDF-4	10min	10min		10min	10min		10min	10min
LI-2-LGR-x-FD Lightning Groups	L2	>80% Earth	LI pixel (not gridded)	netCDF-4	10min	10min		10min	10min		10min	10min

Table 23: Summary of LI L2 datasets

3.3.2 Timeliness and Volume of Data

This table presents the timelines of the different datasets. In addition, the approximated volume of distributed data per day is also indicated. This volume of data is provided after compression, if applicable to the dataset.

The LI products are disseminated in either 10-second chunks (event based products) or 30-second (accumulated products). On top of that, the full repeat cycle is a configurable time interval between 1 minute and 20 minutes, being 10 minutes the default.

Due to timeliness constrains, LI level 2 products are disseminated per chunk (not per repeat cycle).

Dissemination Mechanism	**Dataset**	**System End-to-End Timeliness [sec]**	**Daily Volume [GBytes/day]**
EUMETCast Europe	LI-2-AF-x-FD LI Accumulated Flashes	120	4.104
	LI-2-AFA-x-FD LI Accumulated Flash Area	120	5.328

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	LI-2-AFR-x-FD LI Accumulated Flash Radiance	120	4.104
	LI-2-LFL-x-FD Lightning Flashes	120	0.417
	LI-2-LGR-x-FD Lightning Groups	120	3.888
EUMETCast Terrestrial	LI-2-AF-x-FD LI Accumulated Flashes	120	4.104
	LI-2-AFA-x-FD LI Accumulated Flash Area	120	5.328
	LI-2-AFR-x-FD LI Accumulated Flash Radiance	120	4.104
	LI-2-LFL-x-FD Lightning Flashes	120	0.417
	LI-2-LGR-x-FD Lightning Groups	120	3.888

Table 24: Summary of LI L2 timeliness and volume of data

3.4 IRS L2 Baseline

3.4.1 Dissemination and Retrieval from Data Center

The dissemination and archiving baseline for the InfraRed Sounder Level 2 datasets is presented here.

The generation periodicity is a long-term average. The scanning sequence is the same as for IRS L1, and it is described in section 2.6.

In the table, an empty cell indicates that the dataset is not diseminated by that mechanism.

IRS level 2 products cover the full disk in four LACs: LAC1 (southernmost), LAC2, LAC3, and LAC4 (nothernmost, Europe). The four LACs are generated and disseminated (see assumption "all LACs to be disseminated" in section 1.2). See the operational practice for IRS scanning pattern in figure 2.

These products are provided in chunks. Currently there are approx. 70 body chunks per Repeat Cycle (approx. 13 seconds per body chunk) and a trailer chunk at the end of the Repeat Cycle. The number of chunks is a configurable parameter and may change.

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
IRS-2-COV-x-Q1 COV, a posteriori error covariance matrix, LAC1	L2	LAC1	4km x 4km	netCDF-4	15min	15min		15min	15min			15min
IRS-2-COV-x-Q2 COV, a posteriori error covariance matrix, LAC2	L2	LAC2	4km x 4km	netCDF-4	15min	15min		15min	15min			15min
IRS-2-COV-x-Q3 COV, a posteriori error covariance matrix, LAC3	L2	LAC3	4km x 4km	netCDF-4	15min	15min		15min	15min			15min
IRS-2-COV-x-Q4 COV, a posteriori error covariance matrix, LAC4	L2	LAC4	4km x 4km	netCDF-4	15min	15min		15min	15min			15min

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
IRS-2-SVP-x-Q1 SVP, State Vector Product, LAC1. Parameters: * Profiles (temperature, humidity, ozone) * Surface parameters * Instability indexes and total vertical columns, * Cloud products * Contextual parameters	L2	LAC1	4km x 4km	netCDF-4	15min	15min		15min	15min			15min
IRS-2-SVP-x-Q2 SVP, State Vector Product, LAC2. Parameters: * Profiles (temperature, humidity, ozone) * Surface parameters * Instability indexes and total vertical columns, * Cloud products * Contextual parameters	L2	LAC2	4km x 4km	netCDF-4	15min	15min		15min	15min			15min

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
IRS-2-SVP-x-Q3 SVP, State Vector Product, LAC3. Parameters: * Profiles (temperature, humidity, ozone) * Surface parameters * Instability indexes and total vertical columns, * Cloud products * Contextual parameters	L2	LAC3	4km x 4km	netCDF-4	15min	15min		15min	15min			15min
IRS-2-SVP-x-Q4 SVP, State Vector Product, LAC4. Parameters: * Profiles (temperature, humidity, ozone) * Surface parameters * Instability indexes and total vertical columns, * Cloud products * Contextual parameters	L2	LAC4	4km x 4km	netCDF-4	15min	15min		15min	15min			15min

Table 25: Summary of IRS L2 datasets

3.4.2 Timeliness and Volume of Data

This table presents the timelines of the different datasets. In addition, the approximated volume of distributed data per day is also indicated. This volume of data is provided after compression, if applicable to the dataset.

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
EUMETCast Europe	IRS-2-COV-x-Q1 COV, a posteriori error covariance matrix, LAC1	1800	6.816
	IRS-2-COV-x-Q2 COV, a posteriori error covariance matrix, LAC2	1800	6.816
	IRS-2-COV-x-Q3 COV, a posteriori error covariance matrix, LAC3	1800	13.63
	IRS-2-COV-x-Q4 COV, a posteriori error covariance matrix, LAC4	1800	27.26
	IRS-2-SVP-x-Q1 SVP, State Vector Product, LAC1. Parameters: * Profiles (temperature, humidity, ozone) * Surface parameters * Instability indexes and total vertical columns, * Cloud products * Contextual parameters	1800	12.96

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	IRS-2-SVP-x-Q2 SVP, State Vector Product, LAC2. Parameters: * Profiles (temperature, humidity, ozone) * Surface parameters * Instability indexes and total vertical columns, * Cloud products * Contextual parameters	1800	12.96
	IRS-2-SVP-x-Q3 SVP, State Vector Product, LAC3. Parameters: * Profiles (temperature, humidity, ozone) * Surface parameters * Instability indexes and total vertical columns, * Cloud products * Contextual parameters	1800	25.92

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	IRS-2-SVP-x-Q4 SVP, State Vector Product, LAC4. Parameters: * Profiles (temperature, humidity, ozone) * Surface parameters * Instability indexes and total vertical columns, * Cloud products * Contextual parameters	1800	51.84
EUMETCast Terrestrial	IRS-2-COV-x-Q1 COV, a posteriori error covariance matrix, LAC1	1800	6.816
	IRS-2-COV-x-Q2 COV, a posteriori error covariance matrix, LAC2	1800	6.816
	IRS-2-COV-x-Q3 COV, a posteriori error covariance matrix, LAC3	1800	13.63
	IRS-2-COV-x-Q4 COV, a posteriori error covariance matrix, LAC4	1800	27.26

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	IRS-2-SVP-x-Q1 SVP, State Vector Product, LAC1. Parameters: * Profiles (temperature, humidity, ozone) * Surface parameters * Instability indexes and total vertical columns, * Cloud products * Contextual parameters	1800	12.96
	IRS-2-SVP-x-Q2 SVP, State Vector Product, LAC2. Parameters: * Profiles (temperature, humidity, ozone) * Surface parameters * Instability indexes and total vertical columns, * Cloud products * Contextual parameters	1800	12.96

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	IRS-2-SVP-x-Q3 SVP, State Vector Product, LAC3. Parameters: * Profiles (temperature, humidity, ozone) * Surface parameters * Instability indexes and total vertical columns, * Cloud products * Contextual parameters	1800	25.92
	IRS-2-SVP-x-Q4 SVP, State Vector Product, LAC4. Parameters: * Profiles (temperature, humidity, ozone) * Surface parameters * Instability indexes and total vertical columns, * Cloud products * Contextual parameters	1800	51.84

Table 26: Summary of IRS L2 timeliness and volume of data

3.5 UVN/S4 L2 Baseline

3.5.1 Dissemination and Retrieval from Data Center

The dissemination and archiving baseline for the UVN / Sentinel 4 Level 2 datasets is presented here.

Most datasets are generated covering 5 minute intervals corresponding to a fraction of the E/W scan of 60 min repeat cycle. The 5 minute datasets are disseminated as individual files (called chunks or granules) in order to maintain the timeliness to the End Users. The 5 minute datasets are aggregated into 60 min repeat cycle datasets for archival; however the End Users will still be able to retrieve the original, individual 5 minute (L1b and L2) datasets from the archive.

UVN only provides observational data during daylight, approximately 18h per day. Therefore the generation periodicities are only meaningful during daylight (exception: products generated only once per day).

In the table, an empty cell indicates that the dataset is not diseminated by that mechanism.

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
UVN-2-ALH-x-ZU Aerosol layer height	L2	ZU (UVN nominal)	8km x 8km	netCDF-4	60min	60min		60min	60min			60min
UVN-2-AUI-x-ZU UV Aerosol Absorbing Index	L2	ZU (UVN nominal)	8km x 8km	netCDF-4	60min	60min		60min	60min			60min
UVN-2-CLD-x-ZU Cloud Properties	L2	ZU (UVN nominal)	8km x 8km	netCDF-4	60min	60min		60min	60min			60min
UVN-2-FCS-CLM-ZU Cloud Mask Support. FCI-L2 Cloud Mask data regridded to the spatial sampling of S4 L1b Earth radiance	L2	ZU (UVN nominal)	8km x 8km	netCDF-4	60min	60min		60min	60min			60min

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
UVN-2-FCS-HET-ZU Cloud Imager Support. FCI-L1c spectral subset data regridded to the spatial sampling of S4 L1b Earth radiance. Heterogeneity.	L2	ZU (UVN nominal)	8km x 8km	netCDF-4	60min	60min		60min	60min			60min
UVN-2-FCS-OCA-ZU Cloud Analysis Support. FCI-L2 Optimal Cloud Analysis data regridded to the spatial sampling of S4 L1b Earth radiance	L2	ZU (UVN nominal)	8km x 8km	netCDF-4	60min	60min		60min	60min			60min
UVN-2-FDY-x-ZU Formaldehyde (HCHO) Total Column	L2	ZU (UVN nominal)	8km x 8km	netCDF-4	60min	60min		60min	60min			60min
UVN-2-GLY-x-ZU Glyoxal Total Column	L2	ZU (UVN nominal)	8km x 8km	netCDF-4	60min	60min		60min	60min			60min
UVN-2-GSR-x-ZU Gapless Surface Reflectance (Lambertian equivalent albedo and bi-directional reflectance factor), aerosol optical thickness	L2	ZU (UVN nominal)	8km x 8km	netCDF-4	1days	1days		1days	1days			1days
UVN-2-NO2-x-ZU NO2 (Nitrogen Dioxide) total column, tropospheric subcolumn	L2	ZU (UVN nominal)	8km x 8km	netCDF-4	60min	60min		60min	60min			60min
UVN-2-O3-TSC-ZU Tropospheric Ozone (O3) Subcolumn	L2	ZU (UVN nominal)	8km x 8km	netCDF-4	60min	60min		60min	60min			60min
UVN-2-O3-x-ZU Total Ozone (O3) Column	L2	ZU (UVN nominal)	8km x 8km	netCDF-4	60min	60min		60min	60min			60min

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
UVN-2-SO2-x-ZU Sulfur dioxide (SO2) total column	L2	ZU (UVN nominal)	8km x 8km	netCDF-4	60min	60min		60min	60min			60min
UVN-2-SR-x-ZU Surface Reflectance (Lambertian equivalent albedo and bi-directional reflectance factor), aerosol optical thickness	L2	ZU (UVN nominal)	8km x 8km	netCDF-4	1days	1days		1days	1days			1days

Table 27: Summary of UVN/S4 L2 datasets

3.5.2 Timeliness and Volume of Data

This table presents the timelines of the different datasets. In addition, the approximated volume of distributed data per day is also indicated. This volume of data is provided after compression, if applicable to the dataset.

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
EUMETCast Europe	UVN-2-ALH-x-ZU Aerosol layer height	3600	4.104
	UVN-2-AUI-x-ZU UV Aerosol Absorbing Index	3600	1.08

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	UVN-2-CLD-x-ZU Cloud Properties	3600	9.72
	UVN-2-FCS-CLM-ZU Cloud Mask Support. FCI-L2 Cloud Mask data regridded to the spatial sampling of S4 L1b Earth radiance	3600	3.456
	UVN-2-FCS-HET-ZU Cloud Imager Support. FCI-L1c spectral subset data regridded to the spatial sampling of S4 L1b Earth radiance. Heterogeneity.	3600	2.592
	UVN-2-FCS-OCA-ZU Cloud Analysis Support. FCI-L2 Optimal Cloud Analysis data regridded to the spatial sampling of S4 L1b Earth radiance	3600	3.024
	UVN-2-FDY-x-ZU Formaldehyde (HCHO) Total Column	3600	9.072
	UVN-2-GLY-x-ZU Glyoxal Total Column	3600	7.128
	UVN-2-GSR-x-ZU Gapless Surface Reflectance (Lambertian equivalent albedo and bi-directional reflectance factor), aerosol optical thickness	86400	0.1

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	UVN-2-NO2-x-ZU NO2 (Nitrogen Dioxide) total column, tropospheric subcolumn	3600	7.128
	UVN-2-O3-TSC-ZU Tropospheric Ozone (O3) Subcolumn	3600	6.48
	UVN-2-O3-x-ZU Total Ozone (O3) Column	3600	8.424
	UVN-2-SO2-x-ZU Sulfur dioxide (SO2) total column	3600	6.48
	UVN-2-SR-x-ZU Surface Reflectance (Lambertian equivalent albedo and bi-directional reflectance factor), aerosol optical thickness	86400	1.6
EUMETCast Terrestrial	UVN-2-ALH-x-ZU Aerosol layer height	3600	4.104
	UVN-2-AUI-x-ZU UV Aerosol Absorbing Index	3600	1.08
	UVN-2-CLD-x-ZU Cloud Properties	3600	9.72
	UVN-2-FCS-CLM-ZU Cloud Mask Support. FCI-L2 Cloud Mask data regridded to the spatial sampling of S4 L1b Earth radiance	3600	3.456

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	UVN-2-FCS-HET-ZU Cloud Imager Support. FCI-L1c spectral subset data re-gridded to the spatial sampling of S4 L1b Earth radiance. Heterogeneity.	3600	2.592
	UVN-2-FCS-OCA-ZU Cloud Analysis Support. FCI-L2 Optimal Cloud Analysis data regridded to the spatial sampling of S4 L1b Earth radiance	3600	3.024
	UVN-2-FDY-x-ZU Formaldehyde (HCHO) Total Column	3600	9.072
	UVN-2-GLY-x-ZU Glyoxal Total Column	3600	7.128
	UVN-2-GSR-x-ZU Gapless Surface Reflectance (Lambertian equivalent albedo and bi-directional reflectance factor), aerosol optical thickness	86400	0.1
	UVN-2-NO2-x-ZU NO2 (Nitrogen Dioxide) total column, tropospheric subcolumn	3600	7.128
	UVN-2-O3-TSC-ZU Tropospheric Ozone (O3) Subcolumn	3600	6.48

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	UVN-2-O3-x-ZU Total Ozone (O3) Column	3600	8.424
	UVN-2-SO2-x-ZU Sulfur dioxide (SO2) total column	3600	6.48
	UVN-2-SR-x-ZU Surface Reflectance (Lambertian equivalent albedo and bi-directional reflectance factor), aerosol optical thickness	86400	1.6

Table 28: Summary of UVN L2 timeliness and volume of data

3.6 Algorithm Theroretical Basis Document

The list of Algorithm Theoretical Basis Documents (ATBD) is provided in the list of "Applicable Documents", at the beginning of this document.

They describe the scientific basis for the EUMETSAT HQ Level 2 Products to be generated in the EUM ground segment at Day-1.

3.6.1 FCI Day-1 Level 2 Product Baseline

For the FCI mission product chains day-1 is defined as the date on which the part of the MTG system connected to the first imaging satellite MTG-I1 is declared operational following its one year commissioning time after the launch of MTG-I1.

There are eleven ATBDs as baseline for the MTG-I1 FCI day-1 product chains to derive the related Product Generation Specification (PGS) all required as input to the procurement of the Level 2 Processing Facility (L2PF). These FCI related ATBDs are linked to the FCI product generation processing chains as listed in paragraph 2.1. The [ASR] and [CRM] ATBDs detail the FCI All Sky Radiance and FCI Clear Sky Reflectance Map, respectively. The FCI SCENE product generation processing chain is split into three ATBDs [CLA], [VOL] and [FIR]. The product generation processing chains FCI OCA, FCI AMVs and FCI GII are detailed in the related [OCA], [AMV] and [GII] ATBDs.

Additionally there is an ATBD [RTM] in support of the required radiative transfer forward calculations contributing to more than one product generation processing chain and an ATBD [GSICS] in support of calibrating the Level 1 radiances on the basis of products derived in the L2PF.

In line with the proposed way forward the FCI Aerosol product generation processing chain is not committed as a day-1 product and its development is treated in a similar way to the IRS AMVs, considered as an aspirational product by STG-SWG.

An MTG-FCI Mission Advisory Group (FCI MAG) has been established to support EUMETSAT with the continuous development of the MTG-FCI operational processors and writing the Algorithm Theoretical Basis Document (ATBD)

3.6.2 IRS Day-1 Level 2 Product Baseline

For the IRS mission, Day-1 is defined as the date on which the part of the MTG system connected to the first sounding satellite MTG-S1 is declared operational following its one-year commissioning period after the launch of MTG-S1.

The IRS has no operational predecessors in the geostationary orbit (GEO); pioneering experiments of an imaging infrared spectrometer in GEO are just being made with the first GIIRS instruments on the FY4 Chinese platforms. However, long relevant experience in retrieving geophysical parameters from hyperspectral satellite data has been made for soon two decades from Low Earth Orbits (LEO), starting with AIRS and continued with IASI and CrIS. The development of the IRS Level 2 (L2) product processing chain will capitalise on this very valuable heritage and in particular on IASI operational experience within EUMETSAT.

On the request of Delegations, an MTG-IRS Mission Advisory Group (IRS MAG) has been established to support EUMETSAT with the continuous development of the MTG-IRS operational processors and writing the Algorithm Theoretical Basis Document (ATBD). In particular as concerns the L2 products, the Terms of Reference (ToR) state:

- Advice EUMETSAT on novel scientific concepts or methods to process MTG-IRS observations.
- Advice EUMETSAT on potential MTG-IRS level-2 products for operational applications.
- Advice and support EUMETSAT on requirements, methodologies and data for analysis, calibration and validation of MTG-IRS level-2 products.

As per the overall Hyperspectral Roadmap presented at the STG-SWG 43th meeting in Autumn 2017, the Day-1 baseline for the IRS L2 algorithms and products includes direct heritage from the demonstrated IASI L2 operational processor at EUMETSAT. The IRS L2 products will hence be generated at Day-1 consistently with algorithms operated for IASI (and planned for IASI-NG). These algorithms are also being adapted and completed to address the specific User needs in regional applications from MTG and to account for the specificities of the IRS mission, e.g. near limb sounding in the outer ring of the Earth disc, absence of collocated microwave information, higher spatial resolution but coarser spectral coverage as compared to EPS/IASI.

3.6.3 LI Day-1 Level 2 Product Baseline

For the LI mission, day-1 products refer to the list of products that are declared operational following its one year commissioning time after the launch of MTG-I1.

The LI is a new mission in the geostationary orbit, and there is no MSG heritage on the processing chain for LI Level 2 product generation.

See list of Open Issues in section 1.2 for LI-related comments.

An MTG-LI Mission Advisory Group (LI MAG) has been established to support EUMETSAT with the continuous development of the MTG-LI operational processors and writing the Algorithm Theoretical Basis Document (ATBD).

3.6.4 UVN/S4 Day-1 Level 2 Product Baseline

For the UVN mission product chains day-1 is defined as the date on which the part of the MTG system connected to the first sounding satellite MTG-S1 is declared operational following its one year commissioning time after the launch of MTG-S1.

The concept for the UVN Instrument will be developed as part of Copernicus in compliance with MTG interfaces to fulfil the Sentinel 4 mission.

4 Datasets and Products for Users in Africa

This is the list of datasets to be disseminated to users in Africa, using the EUMETCast Africa mechanism.

The list of MTG products disseminated via EUMETCast Africa has been discussed during successive WMO RA-I-DEG sessions over the last years. The driver of the discussionas was a compromise between the suitability for the users, the feasibility and a fixed bandwidth allocation (for cost reasons). Should additional funding be available, more products or products with improved quality/usefulness would be included.

The products disseminated to End Users in Africa are detailed in the EUMETCast Africa Product User Guide [AfricaPUG]. They are classified in two groups:

- Native products: These are standard MTG products and default documentation is applicable.
- Customised products: These products are generated specifically for End Users in Africa, native products have been tailored for this purpose.

Coverage:

- "FD" refers to Full Disk.
- "Africa" refers to a subset of the full disc coverage, in order to reduce the volume transferred. This subset is a configurable parameter and varies from one product to the other as indicated in [AfricaPUG].
- There are other converage possibilities ddepending on the instrument.

Please have a look in section 1.2.2 to the Open Issues and Assumptions related to the products disseminated via EUMETCast Africa.

Instrument / SAF	Data Level	Dataset	Coverage	Resolution	Data Format	Generation Periodicity
FCI	L1c	FCI-1C-RGB-CPHAS-AF Cloud Phase RGB	Africa	1km	GeoTIFF	10min
		FCI-1C-RGB-FIRET-AF Fire Temperature RGB	Africa	1km	GeoTIFF	30min
		FCI-1C-RGB-NMPHYS-AF Night Microphysics (fog) RGB	Africa	1km	GeoTIFF	20min
		FCI-1C-RGB-SCON-AF Severe Convection RGB, also referred as Severe Storm product	Africa	1km	GeoTIFF	10min

Instrument / SAF	Data Level	Dataset	Coverage	Resolution	Data Format	Generation Periodicity
		FCI-1C-RGB-TCOL-AF True colour RGB	Africa	3km	GeoTIFF	20min
		FCI-1C-RRAD-1KM-AF-VIS06 SEVIRI HRV continuity	Africa	1km	netCDF-4	10min
		FCI-1C-RRAD-3KM-AF-IR105 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	10min
		FCI-1C-RRAD-3KM-AF-IR123 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	10min
		FCI-1C-RRAD-3KM-AF-IR133 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	360min
		FCI-1C-RRAD-3KM-AF-IR38 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	10min
		FCI-1C-RRAD-3KM-AF-IR63 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	20min
		FCI-1C-RRAD-3KM-AF-IR73 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	20min
		FCI-1C-RRAD-3KM-AF-IR87 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	10min
		FCI-1C-RRAD-3KM-AF-IR97 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	10min
		FCI-1C-RRAD-3KM-AF-NIR13 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	30min
		FCI-1C-RRAD-3KM-AF-NIR16 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	10min

Instrument / SAF	Data Level	Dataset	Coverage	Resolution	Data Format	Generation Periodicity
		FCI-1C-RRAD-3KM-AF-NIR22 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	30min
		FCI-1C-RRAD-3KM-AF-VIS04 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	360min
		FCI-1C-RRAD-3KM-AF-VIS05 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	360min
		FCI-1C-RRAD-3KM-AF-VIS06 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	10min
		FCI-1C-RRAD-3KM-AF-VIS08 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	10min
		FCI-1C-RRAD-3KM-AF-VIS09 FCI radiance channels for End Users in Africa	Africa	3km	netCDF-4	30min
	L2	FCI-2-FIR-x-FD Scene: Fire Detection (FIRA)	FD	FCI IR Pixel (2km)	netCDF-4	10min
		FCI-2-GII-AFRICA-FD FCI-2-GII subset for End Users in Africa. Global Instability Indices for African users: lifted_index and k_index	Africa	6x6 km2	netCDF-4	10min
NWC	L2	L2 products for NWC (placeholder) Candidate level 2 products for Nowcasting, generated at EUMETSAT HQ	Many Products	Many Products	netCDF-4	Many Products
H,LSA,OSI	L2	L2 SAF products (placeholder) Candidate level 2/3 products generated by SAFs and disseminated via EUMETSAT HQ	Many Products	Many Products	netCDF-4	Many Products
LI	L2	LI-2-AFA-x-FD LI Accumulated Flash Area	>80% Earth	2km	netCDF-4	10min

Table 29: Summary of products to End Users in Africa

5 EUMETSAT HQ SAF Product Generation and Dissemination Baseline

Regarding the contribution of the SAF network to the overall list of MTG products, several constraints have to be considered. These constrains and the evolution of the SAF contribution is provided in the framework of the Continuous Development and Operations Phase (see [CDOP-3]).

The CDOP-3 started on 1st March 2017 and will finish on the 28th February 2022, i.e. it will end shortly before the launch of the first MTG satellite (end of 2022). Consequently, the final plans of the SAFs with respect to the full operation of MTG based products will only be deployed in the CDOP-4, i.e. in the 2022 timeframe. Nevertheless, for a smooth transition from MSG to MTG it is has been crucial to plan for and start the necessary scientific and engineering activities well in advance, i.e. within CDOP-2 and CDOP-3.

The products covered in this document are all expected to be processed to Level 2/3 by the SAFs based on the Level 1 MTG products, which are essentially the geo-located, spectrally and radio-metrically calibrated instrument data centrally produced. This approach ensures readiness of the SAFs to validate SAF MTG based products in the commissioning period of the MTG-I1 Satellite, as Day-1 Products.

5.1 SAF Datasets Baseline

The dissemination and archiving baseline for SAF products is presented here. These products in this subsection are disseminated and made available to End Users from EUMETSAT HQ.

The generation periodicity is a long-term average.

In the table, an empty cell indicates that the dataset is not diseminated by that mechanism.

The "ZC (SAF Central)" coverage corresponds to the standard SAF central area which is nominally (note: it may extend beyond this region):

- From 60 degrees east to 60 degrees west
- From 60 degrees north to 60 degrees south.

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
H-2-H40-x-ZC Hydrology SAF - Precipitation rate at ground by GEO/IR supported by LEO/MW and MTG FCI - Coverage Centre	L2	60S-67.5N 80W-80E	2km	netCDF-4	10min	10min		10min				
H-2-H42-DAY-ZC Hydrology SAF - Accumulated precipitation at ground by blended MW+IR and MTG FCI - Daily	L2	60S-67.5N 80W-80E	2km	netCDF-4	1days	1days		1days				
H-2-H42-HOUR-ZC Hydrology SAF - Accumulated precipitation at ground by blended MW+IR and MTG FCI - Hourly	L2	60S-67.5N 80W-80E	2km	netCDF-4	60min	60min		60min				
H-2-H43-x-FD Hydrology SAF - Snow detection and coverage	L2	FD	2km	netCDF-4	1days	1days		1days				
H-2-H50-x-FD Hydrology SAF - Rainfall intensity from MTG LI	L2	60W-60E 60S-60N	4.5km at SSP	netCDF-4	10min	10min		10min				
LSA-2-ALBEDO-x-ZC Land SAF - Surface Albedo	L2	ZC (SAF Central)	2km	netCDF-4	1days	1days		1days				
LSA-2-LST-x-ZC Land SAF - Land Surface Temperature	L2	ZC (SAF Central)	2km	netCDF-4	10min	10min		10min				
OSI-3-DLISSID-x-ZC Ocean Sea Ice (OSI) SAF - Downward Longwave Irradiance (DLI) combined with the Solar Surface Irradiance (SSI) - Daily [2 products in 1 file]	L3	ZC (SAF Central)	0.05deg x 0.05deg SSD	netCDF-4	1days	1days		1days				1days

Product Characteristics						Product Dissemination Periodicity						
Dataset	**Data Level**	**Coverage**	**Resolution**	**Format**	**Generation Periodicity**	**EUMETCast Europe (Restorable)**	**EUMETCast Europe (Non-Restorable**	**EUMETCast Terrestrial**	**On-line Data Retrieval**	**RMDCN**	**NOAA**	**Data Centre**
OSI-3-DLISSIH-x-ZC Ocean Sea Ice (OSI) SAF - Downward Longwave Irradiance (DLI) combined with the Solar Surface Irradiance (SSI) - Hourly [2 products in 1 file]	L3	ZC (SAF Central)	0.05deg x 0.05deg SSD	netCDF-4	60min	60min		60min				60min
OSI-3-SST-x-ZC Ocean Sea Ice (OSI) SAF - Sea Surface Temperature	L3	ZC (SAF Central)	0.05deg x 0.05deg SSD	netCDF-4	60min	60min		60min				60min

Table 30: Summary of SAF datasets

5.1.1 Extra Information about SAF Products

This table prsents additional information about SAF products that could be relevant for End Users.

SAF	Dataset	Type	Size [MB]	Accuracy
H	H-2-H40-x-ZC_1 Hydrology SAF - Precipitation rate at ground by GEO/IR supported by LEO/MW and MTG FCI - Coverage Centre	NRT	4.0	90% for >10mm/h; 120% for 1-10mm/h; 240% for <1mm/h
	H-2-H42-DAY-ZC_1 Hydrology SAF - Accumulated precipitation at ground by blended MW+IR and MTG FCI - Daily	NRT	3.2	RR>1mm/24h FSE%=200% 190% for all accumulation

SAF	Dataset	Type	Size [MB]	Accuracy
	H-2-H42-HOUR-ZC_1 Hydrology SAF - Accumulated precipitation at ground by blended MW+IR and MTG FCI - Hourly	NRT	13.	RR>1mm/24h FSE%=200% 190% for all accumulation
	H-2-H43-x-FD_1 Hydrology SAF - Snow detection and coverage	NRT	5.0	Probability of Detection (POD): Flat/Forested Area 70%, and Mountainous areas 60%. False Alarm (FAR): Flat/Forested areas 25% and Mountainous areas 30%.
	H-2-H50-x-FD_1 Hydrology SAF - Rainfall intensity from MTG LI	NRT	4.0	40% for >10mm/h; 60% for 1-10mm/h; 200% for <1mm/h
LSA	LSA-2-ALBEDO-x-ZC_1 Land SAF - Surface Albedo	NRT	542	20%
	LSA-2-LST-x-ZC_1 Land SAF - Land Surface Temperature	NRT	12.	4K
OSI	OSI-3-DLISSID-x-ZC_1 Ocean Sea Ice (OSI) SAF - Downward Longwave Irradiance (DLI) combined with the Solar Surface Irradiance (SSI) - Daily [2 products in 1 file]	NRT	12.	DLI product (thresholds): * Monthly Relative bias: 10% * Monthly Relative std. dev.: 20% SSI product (thresholds): * Monthly relative bias: 20% * Monthly relative std. dev.: 25%

SAF	Dataset	Type	Size [MB]	Accuracy
	OSI-3-DLISSIH-x-ZC_1 Ocean Sea Ice (OSI) SAF - Downward Longwave Irradiance (DLI) combined with the Solar Surface Irradiance (SSI) - Hourly [2 products in 1 file]	NRT	15.	DLI product (thresholds): * Monthly Relative bias: 10% * Monthly Relative std. dev.: 20% SSI product (thresholds): * Monthly relative bias: 20% * Monthly relative std. dev.: 50%
	OSI-3-SST-x-ZC_1 Ocean Sea Ice (OSI) SAF - Sea Surface Temperature	NRT	11.	Std. Deviation: 1.5C; Monthly bias: 1C

Table 31: Extra information about SAF products

5.1.2 SAF Datasets Timeliness

The main difference between product processing at the L2PF and within the SAF network is the fact that the latter involves two additional dissemination loops: first the dissemination of Level 1 data from the EUMETSAT HQ to the SAF network, and secondly the transmission of Level 2 data from the SAF network back the EUMETSAT HQ for the purpose of further dissemination to the End Users.

Timeliness in the [EURD] is defined as the time difference between end of image acquisition (of the last contributing image) at satellite level and end of data reception at the End User. Explicit MTG SAF end-to-end timeliness requirements are provided, taking into account the SAF Day-1 estimated products generation time at SAF sites, and the level 1 processing time and dissemination time at EUM HQ, plus the relevant dissemination time towards the EUMETCast transmission to the End Users (see diagram below).

The respective contributions to the end-to-end availability and timeliness requirements for the SAF products are covered by the EURD for the dissemination to the SAF (98% within 15 minutes for the FCI), and must be allocated to the SAFs for the transmission to the EUMETSAT

HQ. The availability and timeliness requirements specific to the SAF are therefore considered to cover both the local processing and the transmission of the data.

The individual contributions and the overall values for the end-to-end product availability and timeliness are detailed in the next tables for the FCI, LI and UVN instruments.

For timeliness, SAF apportionment requirements are calculated such that the end-to-end timeliness for the End Users is comparable to centrally generated products and SAF products.

These are steps presented in the following diagram:

- From T0 to T7: Acquisition, processing at EUMETSAT headquarters (up to level 1 or up to level 2) and dissemination to SAF.
- From T7 to T8: SAF acquisition and processing.
- From T8 to T9: Retransmission of data from SAF to EUMETSAT headquarters.
- From T9 to T10: Dissemination to End Users by EUMETSAT headquarters.
- From T10 to T11: Additional system margin.

Steps from T7 to T9 are under SAF responsibility.

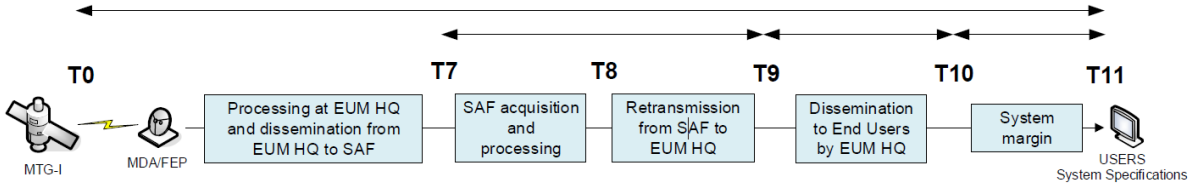

Figure 3: SAF timeliness diagram.

This table presents the timeliness of the different datasets, and the approximated volume of distributed data per day is also indicated. This volume of data is provided after compression, if applicable to the datasets.

These are the System End-to-End timeliness, considering processing at EUMETSAT, transmission to SAF, processing in SAF, transmission back to EUMETSAT, and dissemination to End Users. It is measured in seconds.

In addition, some products are made available via On-Line Data Retrieval, and this is subject to specific data policies.

Timeliness of SAF products related to FCI				
Product Generation Frequency	T0 to T11 end to end (see table 5.1.3)	T7 to T9 SAF acquisition and processing, and SAF to EUM HQ retransmission	T9 to T10 dissemination to end users by EUM HQ (EUMETCast)	T10 to T11 System Margin
Less than hourly	< 45 min	15 min	10 min	5 min
Hourly products	< 90 min	35 min	20 min	20 min
3 hours or more	< 180 min	65 min	60 min	40 min

Timeliness of SAF products related to LI			
T0 to T11 end to end (see table 5.1.3)	T7 to T9 SAF acquisition and processing, and SAF to EUM HQ retransmission	T9 to T10 dissemination to end users by EUM HQ (EUMETCast)	T10 to T11 System Margin
< 10 min	4 min	2 min	2 min

Timeliness of SAF products related to UVN			
T0 to T11 end to end (see table 5.1.3)	T7 to T9 SAF acquisition and processing, and SAF to EUM HQ retransmission	T9 to T10 dissemination to end users by EUM HQ (EUMETCast)	T10 to T11 System Margin
< 120 min	35 min	20 min	5 min

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
EUMETCast Europe	H-2-H40-x-ZC Hydrology SAF - Precipitation rate at ground by GEO/IR supported by LEO/MW and MTG FCI - Coverage Centre	2700	0.576

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	H-2-H42-DAY-ZC Hydrology SAF - Accumulated precipitation at ground by blended MW+IR and MTG FCI - Daily	10800	0.003
	H-2-H42-HOUR-ZC Hydrology SAF - Accumulated precipitation at ground by blended MW+IR and MTG FCI - Hourly	5400	0.312
	H-2-H43-x-FD Hydrology SAF - Snow detection and coverage	10800	0.005
	H-2-H50-x-FD Hydrology SAF - Rainfall intensity from MTG LI	2700	0.576
	LSA-2-ALBEDO-x-ZC Land SAF - Surface Albedo	10800	0.542
	LSA-2-LST-x-ZC Land SAF - Land Surface Temperature	2700	1.728
	OSI-3-DLISSID-x-ZC Ocean Sea Ice (OSI) SAF - Downward Longwave Irradiance (DLI) combined with the Solar Surface Irradiance (SSI) - Daily [2 products in 1 file]	10800	0.012
	OSI-3-DLISSIH-x-ZC Ocean Sea Ice (OSI) SAF - Downward Longwave Irradiance (DLI) combined with the Solar Surface Irradiance (SSI) - Hourly [2 products in 1 file]	5400	0.36

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	OSI-3-SST-x-ZC Ocean Sea Ice (OSI) SAF - Sea Surface Temperature	5400	0.264
EUMETCast Terrestrial	H-2-H40-x-ZC Hydrology SAF - Precipitation rate at ground by GEO/IR supported by LEO/MW and MTG FCI - Coverage Centre	2700	0.576
	H-2-H42-DAY-ZC Hydrology SAF - Accumulated precipitation at ground by blended MW+IR and MTG FCI - Daily	10800	0.003
	H-2-H42-HOUR-ZC Hydrology SAF - Accumulated precipitation at ground by blended MW+IR and MTG FCI - Hourly	5400	0.312
	H-2-H43-x-FD Hydrology SAF - Snow detection and coverage	10800	0.005
	H-2-H50-x-FD Hydrology SAF - Rainfall intensity from MTG LI	2700	0.576
	LSA-2-ALBEDO-x-ZC Land SAF - Surface Albedo	10800	0.542
	LSA-2-LST-x-ZC Land SAF - Land Surface Temperature	2700	1.728

Dissemination Mechanism	Dataset	System End-to-End Timeliness [sec]	Daily Volume [GBytes/day]
	OSI-3-DLISSID-x-ZC Ocean Sea Ice (OSI) SAF - Downward Longwave Irradiance (DLI) combined with the Solar Surface Irradiance (SSI) - Daily [2 products in 1 file]	10800	0.012
	OSI-3-DLISSIH-x-ZC Ocean Sea Ice (OSI) SAF - Downward Longwave Irradiance (DLI) combined with the Solar Surface Irradiance (SSI) - Hourly [2 products in 1 file]	5400	0.36
	OSI-3-SST-x-ZC Ocean Sea Ice (OSI) SAF - Sea Surface Temperature	5400	0.264

Table 32: Summary of SAF timeliness and volume of data

5.2 SAF Software

The following tables present the list of SAF software that will be developed together with the SAF products indicated in previous sections.

- Table 33 presents the software provided by the Numerical Weather Prediction SAF.
- Table 34 presents the software provided by the Nowcasting SAF.

In the SAF context, "product" refers to both data and software. Data has been presented in previous section, and software is presented here.

SAF	SW group	Characteristic
NWP	RTTOV	Radiative transfer package to simulate radiances from MTG FCI
NWP	RTTOV	Radiative transfer package to simulate radiances from MTG IRS
NWP	Radiance Simulator SW	Standalone Tool to simulate realistic radiances from the MTG FCI Instrument in advance of real data becoming available
NWP	Radiance Simulator SW	Standalone Tool to simulate realistic radiances from the MTG Sounder Instrument in advance of real data becoming available
NWP	Cloud and Aerosol Detection SW	Cloud + Aerosol detection package to cover MTG/IRS
NWP	1-D Var –NWP	1-D Var Software for IRS retrieval and analysis
NWP	Satellite data pre-processors - IRSPP	Pre-processor software for data from MTG-IRS producing reconstructed radiances from input level 1 principal components

Table 33: List of SAF NWP Software.

SAF	Product Group	Parameter	Format	Coverage	Resolution at SSD	Accuracy (Threshold) #1
NWC	Clouds	Cloud Mask	The SW will generate product in netCDF	Configurable inside full disc	GEO imager spatial resolution (IR)	Cloud (full disc): POD 85%, FAR 20% Cloud (Europe): POD 85%, FAR 20% Dust flag: POD 20%, FAR 15%
NWC	Clouds	Cloud Microphysics	The SW will generate product in netCDF	Configurable inside full disc	GEO imager spatial resolution (IR)	Cloud phase: Water: POD 0.70, FAR 0.35 Ice: POD 0.60, FAR 0.35 Liquid cloud water path: RMS: 100 g/m2 Bias: 20 g/m3
NWC	Clouds	Cloud Top Temperature & Height	The SW will generate product in netCDF	Configurable inside full disc	GEO imager spatial resolution (IR)	Opaque clouds: bias<1000m std<2000m Semi-transparent clouds: bias<2000m std<2000m
NWC	Clouds	Cloud Type	The SW will generate product in netCDF	Configurable inside full disc	GEO imager spatial resolution (IR)	POD > 50%
NWC	Precipitation	Precipitating Clouds	The SW will generate product in netCDF	Configurable inside full disc	GEO imager spatial resolution (IR)	DAY TIME: POD>55%; FAR<70% NIGHT TIME: POD>45%; FAR<70%
NWC	Precipitation	Convective Rainfall Rate	The SW will generate product in netCDF	Configurable inside full disc	GEO imager spatial resolution (IR)	DAY TIME: Instantaneous rates: POD >40%, FAR <60% Hourly accumulations: POD >45%, FAR <65% NIGHT TIME: Instantaneous rates: POD >35%, FAR <65% Hourly accumulations: POD >37%, FAR <70%
NWC	Precipitation	Precipitating Clouds from Cloud Physical Properties	The SW will generate product in netCDF	Configurable inside full disc	GEO imager spatial resolution (IR)	DAY TIME: POD>55%; FAR<70%
NWC	Precipitation	Convective Rainfall Rate from Physical Properties	The SW will generate product in netCDF	Configurable inside full disc	GEO imager spatial resolution (IR)	DAY TIME: Instantaneous rates: POD >50%, FAR <50% Hourly accumulations: POD >60%, FAR <60%
NWC	Clear Air	Temperature/humidity Physical Retrieval	The SW will generate product in netCDF	Configurable inside full disc	GEO imager spatial resolution (IR)	TPW rms=3.5 mm LPW: BL rms=2.5mm, ML rms=2.5mm, HL rms=0.5mm Lifted Index: rms=3.0ºC Showalter Index: rms=3.0 K Index: rms=6 SKT: rms=4 K TOZ: rms=20 DU
NWC	Winds	High Resolution Winds	The SW will generate product in netCDF and BUFR	Configurable inside full disc	Separation between and dimension of tracers configurable	Normalised RMSVD: <0.42 (High levels) <0.56 (Med. levels) <0.63 (Low levels)
NWC	Winds	Extrapolated Satellite imagery	The SW will generate product in netCDF	Configurable inside full disc	Imager Pixel resolution	On average better than persistence forecast
NWC	Meteorological Systems	Automatic Satellite Image Interpretation	The SW will generate product in netCDF	Configurable	Pixel fine	POD >50 %
NWC	Convection	Convection Initiation	The SW will generate product in netCDF/BUFR (TBC)	Full disc or configurable inside full disc	Imager spatial resolution (both VIS and IR)	FAR <0.6 POD >0.4
NWC	Convection	Rapid Development Thunderstorms-Convection Warning	The SW will generate product in netCDF/BUFR (TBC)	full disc or configurable inside full disc	Imager spatial resolution (both VIS and IR)	1) early detection (before first lightning occurrence) 10% 2) 30 minutes after first lightning occurrence 30% 3) overall thunderstorm detection skill 50%

Note: POD refers to Probability Of Detection, FAR refers to False AlaRm.

Table 34: List of SAF NWC Software.

5.3 Ingested Products from SAFs to MME-DIS

The following is the list of products provided by SAFs to MME-DIS.

These are products that have been processed by SAFs and are sent back to EUMETSAT for redistribution.

Dataset	Level	Coverage	Resolution	Data Format
H-2-H40-x-ZC Hydrology SAF - Precipitation rate at ground by GEO/IR supported by LEO/MW and MTG FCI - Coverage Centre	L2	60S-67.5N 80W-80E	2km	netCDF-4
H-2-H42-DAY-ZC Hydrology SAF - Accumulated precipitation at ground by blended MW+IR and MTG FCI - Daily	L2	60S-67.5N 80W-80E	2km	netCDF-4
H-2-H42-HOUR-ZC Hydrology SAF - Accumulated precipitation at ground by blended MW+IR and MTG FCI - Hourly	L2	60S-67.5N 80W-80E	2km	netCDF-4
H-2-H43-x-FD Hydrology SAF - Snow detection and coverage	L2	FD	2km	netCDF-4
H-2-H50-x-FD Hydrology SAF - Rainfall intensity from MTG LI	L2	60W-60E 60S-60N	4.5km at SSP	netCDF-4
LSA-2-ALBEDO-x-ZC Land SAF - Surface Albedo	L2	ZC (SAF Central)	2km	netCDF-4
LSA-2-LST-x-ZC Land SAF - Land Surface Temperature	L2	ZC (SAF Central)	2km	netCDF-4
OSI-3-DLISSID-x-ZC Ocean Sea Ice (OSI) SAF - Downward Longwave Irradiance (DLI) combined with the Solar Surface Irradiance (SSI) - Daily [2 products in 1 file]	L3	ZC (SAF Central)	0.05deg x 0.05deg SSD	netCDF-4
OSI-3-DLISSIH-x-ZC Ocean Sea Ice (OSI) SAF - Downward Longwave Irradiance (DLI) combined with the Solar Surface Irradiance (SSI) - Hourly [2 products in 1 file]	L3	ZC (SAF Central)	0.05deg x 0.05deg SSD	netCDF-4
OSI-3-SST-x-ZC Ocean Sea Ice (OSI) SAF - Sea Surface Temperature	L3	ZC (SAF Central)	0.05deg x 0.05deg SSD	netCDF-4

Table 35: SAF products delivered to MME-DIS