


**EUMETSAT Satellite Application Facility
On Support to Operational Hydrology
and Water Management
(H SAF)**

Service Specifications

Reference Number: SAF/HSAF/SeSpe/ 1.9

Issue/Revision Index: Issue 1.9

Last Change: 28/01/2019


	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 2/33
---	-----------------------	---

DOCUMENT SIGNATURE TABLE

	Name	Date	Signature
Prepared by :	H SAF Project Team	28/01/2019	
Approved by :	H SAF Project Manager	28/01/2019	


DOCUMENT CHANGE RECORD

Issue / Revision	Date	Description
1.0	26/11/2010	Release prepared for CDOP services specification
1.1	16/05/2011	Updated version
1.2	13/06/2011	Updated version prepared for CDOP ORR-1 Part 2
1.3	03/08/2011	Updates and corrections after EUMETSAT comments: <ul style="list-style-type: none"> • Correction of the document purpose description (no reference period) • Revision of the acronyms for service specification identifiers (“PRD” removed) • Products in development removed from the document • Individual service specification commitments for products provided • Definition of timeliness provided in section 2.2.3 • Addition of requirement SS-ARC-0030 for users orders of products • SS-EUM-0010 modified with reference to timeliness requirements • Explanation on quality monitoring feedback provision in section 2.2.4 • Section 2 : a definition of end-to-end availability is provided • Section 3 targeted to product archiving; Section 4 targeted to EUMETCAST dissemination • TBC for H03 and H08 products are removed • SS-USR-0010 requirement refined with information on speed to answer a query • Product status specification removed • A Service Specification for product user documents is added (SS-DOC-0010) • Training and User Workshop removed from the document • Modification of specification of web portal service • Improvement of notions regarding validation (SS-VAL-0020) • Timeliness values corrected with end-to-end requirement due to the EUMETCAST system
1.4	16/01/2012	Updated version prepared for CDOP2 OR:


	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 3/33
--	-----------------------	---

Issue / Revision	Date	Description
1.5	02/04/2014	<ul style="list-style-type: none"> • Addition of commitments for new operational products <p>Reflection of changes of the Product Requirement Document approved by Steering Group (December 2012) and further updates. Specifically:</p> <p>Introduction of operational products:</p> <ul style="list-style-type: none"> • Precipitation products: H01 new rel., H02A new rel., H04, H05 • Soil moisture product. H14 • Snow products: H11,H12, H13 <p>Discontinuation of products, specifically:</p> <ul style="list-style-type: none"> • H06 (service requirements deleted from SeSpe) • H01 (replaced by H01 new rel.; service requirements maintained) • H02 (replaced by H02 new rel. ; service requirements maintained) <p>Update of requirements:</p> <ul style="list-style-type: none"> • Accuracy requirements for h08, h10; • Timeliness requirements for h03, h08 <p>Other changes:</p> <ul style="list-style-type: none"> • Renumbering of product requirements • Additional explanation in section 2.1.2 regarding discontinued products
1.6	20/07/2015	<p>Reflection of changes of the Product Requirement Document following MTG-RR and approved by Steering Group (rel. 1.2). Specifically</p> <ul style="list-style-type: none"> • Resolution of TBDs (punctual assessment of precipitation accuracy, validation methods, input data, resolution), as follows: <ul style="list-style-type: none"> ○ Accuracy and Timeliness characteristics for Precipitation product H15 ○ Accuracy POD and FAR for Precipitation product H02B, H03B, H04B, H41A, H41B, H05B, H42A, H42B ○ Generation Frequency and Accuracy POD and FAR for Precipitation product H40A and H40B, H17, H18, H21, H22, H50 ○ Accuracy values for Precipitation product H19, H20, ○ Generation Frequency, Accuracy values, Validation method, Spatial resolution and Timeliness for Snow product H43 • Combination of products H41A and H41B into a single product, and change of product type in “Offline” (Recommendation R1) • Use of a single accuracy value as a requirement of MTG day-1 products (Recommendation R5). It is noted that Target and Optimal accuracy values are maintained and assessed in the relevant Algorithm Theoretical Baseline Documents (ATBDs) • adoption of RMSE as unique statistical score for precipitation products and the disregarding of POD and FAR. • Change in the input of H05 <p>Please Note: all the technical motivations and justifications for the proposed changes are included in the Technical Note SAF/HSAF/CDOP2/TN1/1.1, ([RD 6] in the reference documents list). It is noted that in such document more explanations have been provided on the proposed changes related to H04 and H05.</p>

Issue / Revision	Date	Description
1.7 Draft1	15/03/2016	<p>Reflection of changes of the Product Requirement Document v1.3 and following the SM ORR-DRR. Specifically:</p> <ul style="list-style-type: none"> • Change title of section 2 • Update of table 1 according to the outcomes of OR4 • Addition to table 1 of the Soil Moisture products under ORR-DRR reviews and of the product type (NRT, DR, Offline) • Update of section 2.2 Highlighting the validity of general requirements for all types of products • Update of SS-PRQ-0040 according to OR4 outcomes • Update of SS-PRQ-0060 (Spatial Resolution) • Addition of SS-PRQ-0071 for H25, SS-PRQ-0072 for H108, SS-PRQ-0073 for H109 and SS-PRQ-0074 for H27 • Update of section 2.2.2 according to introduction of products H25, H108 and H109 • Update of SS-NRT-0060 specifying “full geographical coverage” for Observing cycle over Europe” • Update of SS-PRQ-1000 with the full list of PRQ requirements • Update of section 3.1 • Update of SS-ARC-0010, SS-ARC-0020 and SS-ARC-0030 to be compliant with the DR archiving needs • Addition of SS-ARC-0025 to specify the access modality to NRT, Offline and DR archived products. • Update of SS-EUM.0010 and SS-UMA-0010 specifying the NRT nature of products • Update SS-DOC-0010 deleting reference to DOF documentation (according to the OR4 recommendations) • Addition of DR (Data Record) to the glossary • Update of SS-PQR-0040 and SS-PQR-0050 – Spatial coverage, resolution and details on product format • Update of SS-PQR-0051 and SS-PQR-0060 – details on product format • Update of SS-PQR-0080 –details about spatial coverage and product format • Update of SS-PQR-0110 – details about spatial resolution
1.7 Draft	10/02/2017	<p>Modifications for H27 DRR close-out</p> <ul style="list-style-type: none"> • Typo correction of H27 acronym • Update of section 2.2.1, 2.2.2 and 2.4 according to introduction of products H16, H101, H102 and H103
1.8 Draft	30/04/2018	<p>Updates for Soil Moisture DRR-ORR and ORR precipitation full disc close out</p> <ul style="list-style-type: none"> • Introduction of Soil Moisture Data Records H111 and H112 (Table 1, section 2.2 req. SS-PRQ-0079 and SS-PRQ-0081) • Introduction of precipitation full disc products H02B, H03B and H05B H112 (Table 1, section 2.2.1 req. SS-PRQ-0021, SS-PRQ-0031 and SS-PRQ-0052, section 2.2.2 req. SS-NRT-0021, SS-NRT-0031 and SS-NRT-0052) • Update of section 2.2.1, 2.2.2 and 2.4 according to introduction of mentioned products • Inclusion of NetCDF in H08 format definition (req. SS-PRQ-0060)

	<p>Service Specification</p>	<p>Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 5/33</p>
--	------------------------------	--

Issue / Revision	Date	Description																																				
1.8 draft 2	25/05/2018	<p>Updates for Soil Moisture DRR-ORR 2018</p> <ul style="list-style-type: none"> • Introduction of Soil Moisture Data Records H113 and H140 (Table 1, section 2.2 req. SS-PRQ-0079 and SS-PRQ-0081) 																																				
1.8	02/07/2018	<p>Updated version, which implements following main updates:</p> <ul style="list-style-type: none"> • Precipitation products list and requirements definition (section 2.2) updated according to the outcomes of the ORR full disc (ref. EUM/TSS/REP/17/922340 v1A) and subsequent SG Decision HSAF_CDOP3_SG3_D01, in details: <ul style="list-style-type: none"> ○ Removal of products 15A/B, H60A and H61A; ○ Change of the product definition change of the product definition of the H03B and H05B to be validated over H SAF area only ○ removal of the quantitative requirements for light precipitation category for related precipitation products (H02B, H03B and H05B) ○ adjustments for H60B and H61B • Precipitation products accuracy scores and values (section 2.2) updated according to SG Decision HSAF_CDOP3_SG3_D02, in details: <ul style="list-style-type: none"> ○ Adoption of the “Root Mean Square Error Percentage (to the mean true value)”, often referred to as “FSE% (Fractional Standard Error), for the validation of the accuracy requirements of the H SAF precipitation products; ○ Adoption of the following values as accuracy thresholds for FSE: <table border="0" data-bbox="766 1153 1300 1545"> <tr> <td colspan="3">Precipitation Rate Accuracy</td> </tr> <tr> <td>Threshold</td> <td>RR ≥ 1 mm/h</td> <td>FSE% = 200%,</td> </tr> <tr> <td>Target</td> <td>RR ≥ 1 mm/h</td> <td>FSE% = 150%,</td> </tr> <tr> <td>Optimal</td> <td>RR ≥ 1 mm/h</td> <td>FSE% = 100%</td> </tr> <tr> <td colspan="3">Convective Precipitation Accuracy</td> </tr> <tr> <td>Threshold</td> <td>RR ≥ 5 mm/h</td> <td>FSE% = 200%,</td> </tr> <tr> <td>Target</td> <td>RR ≥ 5 mm/h</td> <td>FSE% = 170%</td> </tr> <tr> <td>Optimal</td> <td>RR ≥ 5 mm/h</td> <td>FSE% = 120%</td> </tr> <tr> <td colspan="3">Accumulated Precipitation Accuracy</td> </tr> <tr> <td>Threshold</td> <td>> 1 mm/24h</td> <td>FSE% = 200%</td> </tr> <tr> <td>Target</td> <td>> 1 mm/24h</td> <td>FSE% = 150%</td> </tr> <tr> <td>Optimal</td> <td>> 1 mm/24h</td> <td>FSE% = 100%</td> </tr> </table> 	Precipitation Rate Accuracy			Threshold	RR ≥ 1 mm/h	FSE% = 200%,	Target	RR ≥ 1 mm/h	FSE% = 150%,	Optimal	RR ≥ 1 mm/h	FSE% = 100%	Convective Precipitation Accuracy			Threshold	RR ≥ 5 mm/h	FSE% = 200%,	Target	RR ≥ 5 mm/h	FSE% = 170%	Optimal	RR ≥ 5 mm/h	FSE% = 120%	Accumulated Precipitation Accuracy			Threshold	> 1 mm/24h	FSE% = 200%	Target	> 1 mm/24h	FSE% = 150%	Optimal	> 1 mm/24h	FSE% = 100%
Precipitation Rate Accuracy																																						
Threshold	RR ≥ 1 mm/h	FSE% = 200%,																																				
Target	RR ≥ 1 mm/h	FSE% = 150%,																																				
Optimal	RR ≥ 1 mm/h	FSE% = 100%																																				
Convective Precipitation Accuracy																																						
Threshold	RR ≥ 5 mm/h	FSE% = 200%,																																				
Target	RR ≥ 5 mm/h	FSE% = 170%																																				
Optimal	RR ≥ 5 mm/h	FSE% = 120%																																				
Accumulated Precipitation Accuracy																																						
Threshold	> 1 mm/24h	FSE% = 200%																																				
Target	> 1 mm/24h	FSE% = 150%																																				
Optimal	> 1 mm/24h	FSE% = 100%																																				
1.9	28/01/2019	<p>Updated version which implements what follows:</p> <ol style="list-style-type: none"> 1) the corrections according to OR7 RIDs’ dispositions (RID 010): <ul style="list-style-type: none"> • H015A included in Product List (table 1) • Requirements for product H015A inserted (SS-PRQ-0051, SS-NRT-0051) • Removal of H15A from the Discontinued Product List (table 2) 2) The alignment of the accuracy values of H111 and H113 with the PRD 1.1 (Signal-to-noise Ratio instead of Correlation Coefficient) 3) The inclusion of H113 and H140 product tables according to Recommendation 03 of the Soil Moisture ORR-DRR Report and related SG Action HSAF_CDOP3_SG4_A04 4) The inclusion of Soil Moisture DR extension offline product H114, authorized to be Operational following SG Decision HSAF_CDOP3_SG4_D01 5) The inclusion of precipitation full disc products H03B and H05B, authorized 																																				

	<p>Service Specification</p>	<p>Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 6/33</p>
---	------------------------------	--

Issue / Revision	Date	Description
		<p>to be Operational, and H02B, authorized to be Pre-Operational according to SG Decision HSAF_CDOP3_SG4_EMD05</p> <ul style="list-style-type: none"> 6) The setting of timeliness of products H03B and H05B to 30 minutes, according to estimates made in coordination by H SAF Operations and EUMETSAT Operations 7) The removal of precipitation products H03A and H05A, declared superseded according to SG Decision HSAF_CDOP3_SG4_EMD05 8) The setting of timeliness of product H14 to 36 hours, according to email discussion at SG and PT level during SeSpe approval process.




	<p>Service Specification</p>	<p>Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 7/33</p>
---	------------------------------	--

TABLE OF CONTENTS

1	INTRODUCTION	9
1.1	Purpose of the document	9
1.2	Overview	9
2	H SAF PRODUCT GENERATION	10
2.1	Products list	10
2.1.1	Operational products	10
2.1.2	Discontinued/Superseded products	11
2.2	Commitments related to Product Requirements	12
2.2.1	Product characteristics	12
2.2.2	NRT production requirements	21
2.3	System availability	24
2.4	Monitoring and control	25
3	PRODUCT ARCHIVING	25
3.1	Description	25
3.2	Commitments related to Archiving Requirements	25
4	EUMETCAST DISSEMINATION	26
4.1	Description	26
4.2	Commitments related to EUMETCAST Requirements	26
5	UMARF.....	26
5.1	Commitments related to UMARF Requirements.....	26
6	USER SUPPORT AND DOCUMENTATION.....	26
6.1	Description	26
6.2	Commitments related to User Support Requirements.....	27
6.3	Commitments related to Documentation.....	27
7	WEB-PORTAL	27
7.1	Description	27
7.2	Commitments related to the Web Requirements	28
8	QUALITY OF SERVICES, QUALITY MONITORING AND VALIDATION	28

	<p>Service Specification</p>	<p>Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 8/33</p>
---	------------------------------	--

8.1	Description	28
8.2	Commitments related to QoS	28
8.3	Commitments related to Product quality monitoring	28
8.4	Commitments related to Hydrological validation	29
APPENDIX 1	GLOSSARY	30
APPENDIX 2	REFERENCES	33
2.1	Applicable documents	33
2.2	Reference documents	33

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 9/33
---	-----------------------	---

1 Introduction

1.1 Purpose of the document

The purpose of this document is the provision of information and data regarding the services of the H SAF Facility towards the users. Target products for this document are those in operational status.

1.2 Overview


Sections of this document specify the services divided in category, as follows:

- H SAF Product generation
- Central Archive
- User Support
- Web Portal
- Quality of Services

For each section a formal specification of the commitments is provided in terms of requirements.

Each requirement is identified by the acronym SS-XXX-yyyy, where:

- “SS” stands for “Service Specification”
- The XXX acronym specifies the requirement classification, which can be:
 - PRQ for product requirements (main characteristics);
 - NRT for NRT production requirements;
 - ARC for archiving and dissemination requirements;
 - EUM for EUMETCAST dissemination requirements;
 - UMA for UMARF requirements;
 - USR for user support requirements;
 - DOC for documentation;
 - WEB for web page requirements;
 - QUA for quality of services;
 - VAL for product validation and hydro validation services.
- yyyy is a progressive number, unique within its own category of requirements.

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 10/33
--	-----------------------	--

2 H SAF Product generation


2.1 Products list

2.1.1 Operational products

Operational products are provided by the H SAF to primary users.

List is reported in next table:

Identifier	Acronym	Name	Type
Precipitation products			
H01 new rel.	P-IN-SSMIS	Precipitation rate at ground by MW conical scanner (new rel.)	NRT
H02A new rel.	P-IN-MHS	Precipitation rate at ground by MW cross-track scanners (new rel.)	NRT
H02B	P-IN-MHS	Precipitation rate at ground by GEO/IR supported by LEO/MW	NRT
H03B	P-IN-SEVIRI	Precipitation rate at ground by GEO/IR supported by LEO/MW	NRT
H05B	P-AC-SEVIRI	Accumulated precipitation at ground by blended MW and IR	NRT
H15A	P-IN-SEVIRI-CO	Blended SEVIRI Convection area / LEO MW Convective Precipitation	NRT
Soil Moisture products			
H08	SSM ASCAT NRT DIS	Small-scale surface soil moisture by radar scatterometer	NRT
H14	SM-DAS-2	Soil Moisture Profile Index in the roots region retrieved by surface wetness scatterometer assimilation method	NRT
H27	SM-DAS-3	Soil Wetness Index in the roots region by scatterometer assimilation in a NWP model	DR
H140	SM-DAS-DR2018-EXT-16km	Scatterometer Root Zone Soil Moisture (RZSM) Data Record, based on ERS-SCAT and ASCAT-A assimilation, at 16km resolution - Extension of H27 for 2015-2016	DR
H16	SSM ASCAT-B NRT O12.5	Metop-B ASCAT NRT SSM orbit geometry 12.5 km sampling	NRT
H101	SSM ASCAT-A NRT O12.5	Metop-A ASCAT NRT SSM orbit geometry 12.5 km sampling	NRT
H102	SSM ASCAT-A NRT O25	Metop-A ASCAT NRT SSM orbit geometry 25 km sampling	NRT


	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 11/33
--	-----------------------	--

H103	SSM ASCAT-B NRT O25	Metop-B ASCAT NRT SSM orbit geometry 25 km sampling	NRT
H25	SM ASCAT TS12.5 DR2015	MetOp ASCAT soil moisture time series DR2015 12.5 km sampling	DR
H108	SM ASCAT TS12.5 DR2015 EXT	MetOp ASCAT soil moisture time series DR2015 12.5 km sampling extension	Offline
H109	SM ASCAT TS12.5 DR2016	MetOp ASCAT soil moisture time series DR2016 12.5 km sampling	DR
H111	SM ASCAT TS12.5 DR2017	MetOp ASCAT soil moisture time series DR2017 12.5 km sampling	DR
H112	SM ASCAT TS12.5 DR2017 EXT	MetOp ASCAT soil moisture time series DR2017 12.5 km sampling extension	Offline
H113	SSM ASCAT DR2018 TS12.5	Metop ASCAT DR2018 SSM time series 12.5 km sampling - SSM data record for the period 2007-01-01 to 2017-12-31	DR
H114	SSM ASCAT DR2018 EXT TS12.5	Metop ASCAT DR2018EXT SSM time series 12.5 km sampling	Offline
Snow products			
H10	S-SE-SEVIRI	Snow detection (snow mask) by VIS/IR radiometry	NRT
H11	WS-E	Snow status (dry/wet) by MW radiometry	NRT
H12	FSC-E	Effective snow cover by VIS-IR radiometry	NRT
H13	SWE-E	Snow water equivalent by MW radiometry	NRT

Table 1 H SAF products list

2.1.2 Discontinued/Superseded products

Identifier	Acronym	Name	Operations period		Reason for discontinuation
			Start date	End date	
H01	PR-OBS-1	Precipitation rate at ground by MW conical scanner	November 2011	July 2013	Replaced by H01 new rel.
H02A	PR-OBS-2A	Precipitation rate at ground by MW cross-track scanners	November 2011	July 2013	Replaced by H02A new rel.
H03A	P-IN-SEVIRI	Precipitation rate at ground by GEO/IR supported by LEO/MW (H-SAF Area)	April 2011	December 2018	Replaced by full disc product H03B
H05A	P-AC-SEVIRI	Accumulated precipitation at ground by blended MW and IR (H-SAF Area)	March 2013	December 2018	Replaced by full disc product H05B

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9
		Issue: Version 1.9 Date: 28/01/2019 Page: 12/33

Identifier	Acronym	Name	Operations period		Reason for discontinuation
H06	PR-ASS-1	Instantaneous and accumulated precipitation at ground computed by a NWP model	Development Phase	February 2012 (beginning of CDOP2)	Product used only as auxiliary data
H04A	PR-OBS-A	Precipitation rate at ground by LEO/MW supported by GEO/IR (with flag for phase)	March 2013	October 2015 (declared offline)	Outdated product

Table 2 Discontinued products

2.2 Commitments related to Product Requirements

Commitments are here expressed in term of:

- General requirements(valid for all NRT, DR and Offline products): accuracy, spatial coverage and resolution, product format
- NRT requirements: generation frequency, timeliness.


Note on spatial coverage:

- the **H SAF area** is delimited to the following coordinates: 25°N to 75°N latitude, 25°W to 45°E longitude;
- the **H SAF area with extension to Africa and southern Atlantic** is delimited to the following coordinates: LAT 60°S - 67.5°N, LON 60°W - 60°E

2.2.1 Product characteristics

SS-PRQ-0010 The product P-IN-SSMIS (H01 new rel.) “Precipitation rate at ground by MW conical scanners SSMIS – new rel.” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
RR > 1 mm/h FSE% = 200%	RR > 1 mm/h FSE% = 150%	RR > 1 mm/h FSE% = 100%
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
H SAF area extended to Africa and southern Atlantic : LAT 60°S - 75°N, LON 60°W - 60°E	Resolution: 13.2 x 15.5 since Jan. 2013 Sampling: 12.5 km	Values in grid points of specified coordinates in the orbital projection (BUFR)

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 13/33
---	-----------------------	--

SS-PRQ-0020 The product P-IN-MSH (H02A new rel.) “Precipitation rate at ground by MW cross-track scanners AMSU-MHS – new rel.” shall be provided with the following characteristics:


Accuracy requirements		
Threshold	Target	Optimal
RR > 1 mm/h FSE% = 200%	RR > 1 mm/h FSE% = 150%	RR > 1 mm/h FSE% = 100%
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
H SAF area	Changing along the scan: varying from 16 x 16 km ² / circular at nadir to 26 x 52 km ² / oval at scan edge. Sampling: 16 km	Values in grid points of specified coordinates in the orbital projection (BUFR)

SS-PRQ-0021 The product P-IN-MSH (H02B) “Precipitation rate at ground by MW cross-track scanners AMSU-MHS” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
RR > 1 mm/h FSE% = 200%	RR > 1 mm/h FSE% = 150%	RR > 1 mm/h FSE% = 100%
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
H SAF area extended to Africa and southern Atlantic: LAT 60°S - 75°N, LON 60°W - 60°E (also named “full disc”)	Changing along the scan: varying from 16 x 16 km ² / circular at nadir to 26 x 52 km ² / oval at scan edge. Sampling: 16 km	Values in grid points of specified coordinates in the orbital projection (BUFR)

SS-PRQ-0031 The product P-IN-SEVIRI H03B “Precipitation rate at ground by GEO/IR supported by LEO/MW” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
RR > 1 mm/h FSE% = 200%	RR > 1 mm/h FSE% = 150%	RR > 1 mm/h FSE% = 100%
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
H SAF area extended to Africa and southern Atlantic: LAT 60°S - 75°N, LON 60°W - 60°E (also named “full disc”)	Resolution changes across the Full Disk from 3 km near the sub-satellite point to 8 km on average over Europe. Sampling dependent of SEVIRI IFOV	GRIB-2

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 14/33
---	-----------------------	--

SS-PRQ-0051 The product P-AC-SEVIRI H05B “Accumulated precipitation at ground by blended MW and IR” shall be provided with the following characteristics:


Accuracy requirements		
Threshold	Target	Optimal
RR > 1 mm/24h FSE% = 200%	RR > 1 mm/24h FSE% = 150%	RR > 1 mm/24h FSE% = 100%
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
H SAF area extended to Africa and southern Atlantic: LAT 60°S - 75°N, LON 60°W - 60°E (also named “full disc”)	Resolution: ~ 30 km Sampling: 5 km in average Sampling dependent of SEVIRI IFOV	Values in grid points of the Meteosat projection (GRIB-2)

SS-PRQ-0051 The product H15A (P-IN-SEVIRI-CO) “Accumulated precipitation at ground by blended MW and IR” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
RR ≥ 5 mm/h FSE% = 200%	RR ≥ 5 mm/h FSE% = 170%	RR ≥ 5 mm/h FSE% = 120%
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
H-SAF area (degradation expected at very high latitude)	Resolution changing cross Europe: 8 km in average Sampling: 5 km in average Sampling dependent of SEVIRI IFOV	Values in grid points of the Meteosat projection (GRIB-2)

SS-PRQ-0060 The product H08 (SM-OBS-2) “Small-scale surface soil moisture by radar scatterometer” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
Correlation coefficient (CC): 0.50	Correlation coefficient (CC): 0.65	Correlation coefficient (CC): 0.80
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
H SAF area	Resolution resulting from disaggregation starting from 50 km x 50 km. Spatial sampling: 0.5 km	<ul style="list-style-type: none"> - Values in grid points of specified coordinates in the orbital projection (BUFR) - NetCDF

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9
		Issue: Version 1.9 Date: 28/01/2019 Page: 15/33

SS-PRQ-0070 The product H14 (SM-DAS-2) “Soil Moisture Profile Index in the roots region retrieved by surface wetness scatterometer assimilation method shall be provided with the following characteristics:


Accuracy requirements		
Threshold	Target	Optimal
Correlation coefficient (CC): 0.50	Correlation coefficient (CC): 0.65	Correlation coefficient (CC): 0.80
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
Global	Horizontal resolution: 25km Vertical resolution: 4 layers in the range surface to 2.89m: <ul style="list-style-type: none"> • layer-1 (0-7cm) • layer-2 (7-28cm) • layer-3 (28-100cm) • layer-4 (100-289cm) 	Values in grid points on a Gaussian grid

SS-PRQ-0071 The product H25 (SM ASCAT TS12.5 DR2015) “MetOp ASCAT soil moisture time series DR2015 12.5 km sampling” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
Signal to noise ratio: 0 dB	Signal to noise ratio: 3 dB	Signal to noise ratio: 6 dB
Temporal coverage	2007-01-01 to 2014-12-31	
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
Global	Resolution: 25-34 km x 25-34 km Sampling: 12.5 km	NetCDF

SS-PRQ-0072 The product H108 (SM ASCAT TS12.5 DR2015 EXT) “MetOp ASCAT soil moisture time series DR2015 12.5 km sampling extension” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
Correlation coefficient (CC): 0.50	Correlation coefficient (CC): 0.65	Correlation coefficient (CC): 0.80
Temporal coverage	2015-01-01 to 2015-06-30	
Spatial coverage and resolution, product format		

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 16/33
---	-----------------------	--

Spatial coverage	Spatial resolution	Product format
Global	Resolution: 25-34 km x 25-34 km Sampling: 12.5 km	NetCDF

SS-PRQ-0073 The product H109 (SM ASCAT TS12.5 DR2016) “MetOp ASCAT soil moisture time series DR2016 12.5 km sampling” shall be provided with the following characteristics:


Accuracy requirements		
Threshold	Target	Optimal
Signal to noise ratio: 0 dB	Signal to noise ratio: 3 dB	Signal to noise ratio: 6 dB
Temporal coverage	2007-01-01 to 2015-12-31	
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
Global	Resolution: 25-34 km x 25-34 km Sampling: 12.5 km	NetCDF

SS-PRQ-0079 The product H111 (SM ASCAT TS12.5 DR2017) “MetOp ASCAT soil moisture time series DR2017 12.5 km sampling” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
Signal to noise ratio: 0 dB	Signal to noise ratio: 3 dB	Signal to noise ratio: 6 dB
Temporal coverage	2007-01-01 to 2016-12-31	
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
Global	Resolution: 25-34 km x 25-34 km Sampling: 12.5 km	NetCDF

SS-PRQ-0081 The product H112 (SM ASCAT TS12.5 DR2017) “MetOp ASCAT soil moisture time series DR2017 12.5 km sampling” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
Signal to noise ratio: 0 dB	Signal to noise ratio: 3 dB	Signal to noise ratio: 6 dB
Temporal coverage	2017-01-01 to 2017-06-30	
Spatial coverage and resolution, product format		

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 17/33
---	-----------------------	--

Spatial coverage	Spatial resolution	Product format
Global	Resolution: 25-34 km x 25-34 km Sampling: 12.5 km	NetCDF

SS-PRQ-0082 The product H113 (SSM ASCAT DR2018 TS12.5) “Metop ASCAT DR2018 SSM time series 12.5 km sampling” shall be provided with the following characteristics:


Accuracy requirements		
Threshold	Target	Optimal
Signal to noise ratio: 0 dB	Signal to noise ratio: 3 dB	Signal to noise ratio: 6 dB
Temporal coverage	2007-01-01 to 2017-12-31	
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
Global	Resolution: 25-34 km x 25-34 km Sampling: 12.5 km	NetCDF

SS-PRQ-0082 The product H114 (SSM ASCAT DR2018 EXT TS12.5) “Metop ASCAT DR2018EXT SSM time series 12.5 km sampling” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
Signal to noise ratio: 0 dB	Signal to noise ratio: 3 dB	Signal to noise ratio: 6 dB
Temporal coverage	2018-01-01 to 2018-06-30	
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
Global	Resolution: 25-34 km x 25-34 km Sampling: 12.5 km	NetCDF

SS-PRQ-0074 The product H27 (SM-DAS-3) “Soil Wetness Index in the roots region Data Record” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
Correlation coefficient (CC): 0.50	Correlation coefficient (CC): 0.65	Correlation coefficient (CC): 0.80
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 18/33
---	-----------------------	--

Global	Horizontal resolution: ~16 km	GRIB1
--------	-------------------------------	-------

SS-PRQ-0083 The product H140 (SM-DAS-DR2018-EXT-16km) “Scatterometer Root Zone Soil Moisture (RZSM) Data Record, based on ERS-SCAT and ASCAT-A assimilation, at 16km resolution extension” shall be provided with the following characteristics:


Accuracy requirements		
Threshold	Target	Optimal
Correlation coefficient (CC): 0.50	Correlation coefficient (CC): 0.65	Correlation coefficient (CC): 0.80
Temporal coverage	01-2015 / 12-2016	
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
Global	Horizontal resolution: ~16 km	GRIB1

SS-PRQ-0075 The product H16 (SSM ASCAT-B NRT O12.5) “Metop-B ASCAT NRT SSM orbit geometry 12.5 km sampling” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
Signal to noise ratio: 0 dB	Signal to noise ratio: 3 dB	Signal to noise ratio: 6 dB
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
Global	Resolution: 25-34 km x 25-34 km Spatial sampling: 12.5 km	Values in grid points of specified coordinates in the orbital projection (BUFR)

SS-PRQ-0076 The product H101 (SSM ASCAT-A NRT O12.5) “Metop-A ASCAT NRT SSM orbit geometry 12.5 km sampling” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
Signal to noise ratio: 0 dB	Signal to noise ratio: 3 dB	Signal to noise ratio: 6 dB
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
Global	Resolution: 25-34 km x 25-34 km Spatial sampling: 12.5 km	Values in grid points of specified coordinates in the orbital projection (BUFR)

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9
		Issue: Version 1.9 Date: 28/01/2019 Page: 19/33

SS-PRQ-0077 The product H102 (SSM ASCAT-A NRT O25) “Metop-A ASCAT NRT SSM orbit geometry 25 km sampling” shall be provided with the following characteristics:


Accuracy requirements		
Threshold	Target	Optimal
Signal to noise ratio: 0 dB	Signal to noise ratio: 3 dB	Signal to noise ratio: 6 dB
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
Global	Resolution: 50 km x 50 km Spatial sampling: 25 km	Values in grid points of specified coordinates in the orbital projection (BUFR)

SS-PRQ-0078 The product H103 (SSM ASCAT-B NRT O25) “Metop-B ASCAT NRT SSM orbit geometry 25 km sampling” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
Signal to noise ratio: 0 dB	Signal to noise ratio: 3 dB	Signal to noise ratio: 6 dB
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
Global	Resolution: 50 km x 50 km Spatial sampling: 25 km	Values in grid points of specified coordinates in the orbital projection (BUFR)

SS-PRQ-0080 The product SE-EH-SEVIRI H10 “Snow detection (snow mask) by VIS/IR radiometry” shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
POD: <ul style="list-style-type: none"> Flat / Forested areas: 80% Mountainous areas: 60% FAR: <ul style="list-style-type: none"> Flat / Forested areas: 20% Mountainous areas: 30% 	POD: <ul style="list-style-type: none"> Flat / Forested areas: 85% Mountainous areas: 70% FAR: <ul style="list-style-type: none"> Flat / Forested areas: 15% Mountainous areas: 20% 	POD: 99% FAR: 5%
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
H SAF area (degradation expected at	SEVIRI pixel resolution and grid	Values in grid points of the Meteosat

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 20/33
---	-----------------------	--

very high latitudes)		projection (HDF5)
----------------------	--	-------------------

PRQ-0090 The product WS-EH H11 “Snow status (dry/wet) by MW radiometry” shall be provided with the following characteristics:


Accuracy requirements		
Threshold	Target	Optimal
Hit Rate (HR): 60 % FAR: 20 %	Hit Rate (HR): 80 % FAR: 10 %	Hit Rate (HR): 90 % FAR: 5 %
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
H SAF area	Resolution: ~ 20 km Sampling: 0.25 degrees	GRIB-2

SS-PRQ-0100 The product FSC-EH H12 “Effective snow cover by VIS/IR radiometry “ shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
Flat / Forested areas: 40 % (RMSE) Mountainous areas: 45% (Overall accuracy)	Flat / Forested areas: 20 % (RMSE) Mountainous areas: 66% (Overall accuracy)	Flat / Forested areas: 10 % (RMSE) Mountainous areas: 95% (Overall accuracy)
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
H SAF area	1 - 2 km. Sampling:0.01 degrees	GRIB-2

SS-PRQ-0110 The product SWE-EH H13 “Snow water equivalent by MW radiometry “ shall be provided with the following characteristics:

Accuracy requirements		
Threshold	Target	Optimal
<ul style="list-style-type: none"> • Flat / Forested areas: 40mm • Mountainous areas: 45mm 	<ul style="list-style-type: none"> • Flat / Forested areas: 20mm • Mountainous areas: 25mm 	<ul style="list-style-type: none"> • Flat / Forested areas: 10mm • Mountainous areas: 15mm
Spatial coverage and resolution, product format		
Spatial coverage	Spatial resolution	Product format
H SAF area	Resolution: ~ 20 km Sampling: 0.25 degrees	GRIB-2

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 21/33
---	-----------------------	--

2.2.2 NRT production requirements

Characteristics of the NRT distribution in term of generation frequency and timeliness are reported in this section.

Please note that timeliness corresponds to the time elapsed from beginning of sensing time to reception by the user via EUMETCast.

Please note: the products H04A (PR-OBS-4A) and H108 (SM ASCAT TS12.5 DR2015 EXT) are generated as Offline products so do not have NRT production requirements.

Please note: the products H25 (PR-OBS-4A), H109 (SM ASCAT TS12.5 DR2016) H111 and H27 (SM-DAS-3) are generated as Data Record so do not have NRT production requirements.

SS-NRT-0010 The product P-IN-SSMIS (H01 new rel.) “Precipitation rate at ground by MW conical scanners – new rel.” shall be disseminated basing on the following NRT production characteristics:

Generation frequency	Timeliness
Up to six passes/day in the intervals 06-12 and 18-24 UTC. Observing cycle over Europe: ~ 10 h	2.5 h


SS-NRT-0020 The product P-IN-MHS (H02A new rel.) “Precipitation rate at ground by MW cross-track scanners – new rel.” shall be disseminated basing on the following NRT production characteristics:

Generation frequency	Timeliness
Up to six passes/day with somewhat irregular distribution across the day. Observing cycle over Europe: ~ 5 h	1 hour

SS-NRT-0021 The product P-IN-MHS (H02B) “Precipitation rate at ground by MW cross-track scanners” shall be disseminated basing on the following NRT production characteristics:

Generation frequency	Timeliness
Up to six passes/day with somewhat irregular distribution across the day. Observing cycle over Europe: ~ 5 h	1 hour

SS-NRT-0031 The product P-IN-SEVIRI H03B “Precipitation rate at ground by GEO/IR supported by LEO/MW” shall be disseminated basing on the following NRT production characteristics:

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 22/33
---	-----------------------	--

Generation frequency	Timeliness
Every new SEVIRI image (at 15 min intervals) Observing cycle over Europe: 15 min	30 minutes

SS-NRT-0052 The product P-AC-SEVIRI H05B “Accumulated precipitation at ground by blended MW and IR” shall be disseminated basing on the following NRT production characteristics:

Generation frequency	Timeliness
Four products (integrals over 3, 6, 12 and 24 h) every three hours (rolling) Observing cycle over Europe: 3 h	30 minutes

SS-NRT-0051 The product H15A (P-IN-SEVIRI-CO) “Blended SEVIRI Convection area/LEO MW Convective Precipitation” shall be disseminated basing on the following NRT production characteristics:


Generation frequency	Timeliness
Every new SEVIRI image (at 15 min intervals) Observing cycle over Europe: 15 min	15 mn

SS-NRT-0060 The product H08 (SM-OBS-2) “Small-scale surface soil moisture by radar scatterometer” shall be disseminated basing on the following NRT production characteristics:

Generation frequency	Timeliness
On completion of each orbit Each orbit lasts 101 minutes (orbital period), resulting in ca. 14 orbits/day. The orbital files are split into 3-minute-files, over the H SAF area (Europe) there are ca. 42 files/day available Observing cycle over Europe: 36 h (full geographical coverage)	130 minutes

SS-NRT-0061 The product H16 (SSM ASCAT-B NRT O12.5) “Metop-B ASCAT NRT SSM orbit geometry 12.5 km sampling” shall be disseminated basing on the following NRT production characteristics:

Generation frequency	Timeliness
On completion of each orbit Each orbit lasts 101 minutes (orbital period), resulting in ca. 14 orbits/day. The orbital files are split into 3-minute-files, over the H SAF area (Europe) there are ca. 42 files/day available Observing cycle over Europe: 36 h (full geographical coverage)	120 minutes

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 23/33
--	-----------------------	--

SS-NRT-0062 The product H101 (SSM ASCAT-A NRT O12.5) “Metop-A ASCAT NRT SSM orbit geometry 12.5 km sampling “ shall be disseminated basing on the following NRT production characteristics:

Generation frequency	Timeliness
On completion of each orbit Each orbit lasts 101 minutes (orbital period), resulting in ca. 14 orbits/day. The orbital files are split into 3-minute-files, over the H SAF area (Europe) there are ca. 42 files/day available Observing cycle over Europe: 36 h (full geographical coverage)	120 minutes

SS-NRT-0062 The product H102 (SSM ASCAT-A NRT O25) “Metop-A ASCAT NRT SSM orbit geometry 25 km sampling “ shall be disseminated basing on the following NRT production characteristics:


Generation frequency	Timeliness
On completion of each orbit Each orbit lasts 101 minutes (orbital period), resulting in ca. 14 orbits/day. The orbital files are split into 3-minute-files, over the H SAF area (Europe) there are ca. 42 files/day available Observing cycle over Europe: 36 h (full geographical coverage)	120 minutes

SS-NRT-0063 The product H103 (SSM ASCAT-B NRT O25) “Metop-B ASCAT NRT SSM orbit geometry 25 km sampling“ shall be disseminated basing on the following NRT production characteristics:

Generation frequency	Timeliness
On completion of each orbit Each orbit lasts 101 minutes (orbital period), resulting in ca. 14 orbits/day. The orbital files are split into 3-minute-files, over the H SAF area (Europe) there are ca. 42 files/day available Observing cycle over Europe: 36 h (full geographical coverage)	120 minutes

SS-NRT-0070 The product H14 (SM-DAS-2) “Soil Moisture Profile Index in the roots region retrieved by surface wetness scatterometer assimilation method“ shall be disseminated basing on the following NRT production characteristics:

Generation frequency	Timeliness
Model output at 24-h intervals Observing cycle ~ 24 h (NWP model assimilation / stabilization process)	36h

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 24/33
---	-----------------------	--

SS-NRT-0080 The product SE-E-SEVIRI H10 “Snow detection (snow mask) by VIS/IR radiometry” shall be disseminated basing on the following NRT production characteristics:

Generation frequency	Timeliness
Output result every 24 h	3 hours

SS-NRT-0090 The product WS-E H11 “Snow status (dry/wet) by MW radiometry” shall be disseminated basing on the following NRT production characteristics:

Generation frequency	Timeliness
After each orbit, but then merging with daily SN-OBS-1 maps; therefore: output result every 24 h	6h

SS-NRT-0100 The product FSC-E H12 “Effective snow cover by VIS/IR radiometry “ shall be disseminated basing on the following NRT production characteristics:

Generation frequency	Timeliness
Output result every 24 h After each AVHRR pass, then multi-temporal analysis for cloud-free pixels	3 hours


SS-NRT-0110 The product SWE-E H13 “Snow water equivalent by MW radiometry” shall be disseminated basing on the following NRT production characteristics:

Generation frequency	Timeliness
Output result every 24 h	6 hours

2.3 System availability

Please note that end-to-end availability is intended as the product availability to the end user, whatever the cause of the unavailability is.

SS-PRQ-1000 Within the specified characteristics (see SS-PRQ-0010 to SS-PRQ-0110 for NRT products), the end-to-end availability of the H SAF products shall be higher than 95% with the nominal level of quality

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 25/33
--	-----------------------	--

2.4 Monitoring and control

Products are generated at the generation chains in Italy (precipitation products), in Finland (snow products), Austria (soil moisture observed products, with the exception of H16, H101, H102 and H103) and ECMWF (soil moisture assimilated products); products H16, H101, H102 and H103 (Large Scale Soil Moisture NRT) are generated c/o EUMETSAT HQ.

The quality control is performed automatically during the product generation at the generation chains, where specific quality flags are attached and further, punctual information provided about the quality of single products.

Product validation monitoring and control is also performed by the Product Validation cluster at off-line basis: the approach of this cluster is giving a feedback to the generation chains responsible people in order to continuously improve the quality of the products.

Quality monitoring and feedback provision is a continuous process which make products to be improved. Significant improvements or modifications, addressed by the quality monitoring reports, generate new releases or versions of the products themselves.

3 Product archiving

3.1 Description

Product distribution in a near-real-time basis is achieved centrally at COMET.

H SAF products are firstly collected at the central facilities located in Italy, at COMET, through a FTP front-end host server.

The products are organized in the front-end by the product's identifier and made available at off-line basis directly at the FTP front-end.


Authorized users can access to the off-line distribution and download products which are available for a temporal window of 2 months.

Older products are archived externally to the FTP front-end and can be obtained by the users with a specific request, through an order to be submitted through the web-site.

3.2 Commitments related to Archiving Requirements

SS-ARC-0010 All NRT products generated in H SAF shall be collected in near-real-time in the central archive

SS-ARC-0020 All H SAF NRT products shall be made available via FTP, limiting the access to temporal windows of the last 2 months of production ("on-line" data)

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 26/33
--	-----------------------	--

SS-ARC-0025 All H SAF products (NRT, Offline and DR), archived externally to the FTP front-end, shall be available to the user by mean of an order

SS-ARC-0030 A user shall have any standard order (maximum of 20GB/day per user) available on a FTP or HTTP within 5 working days

4 EUMETCAST dissemination

4.1 *Description*

Products are systematically collected and uplinked to the EUMETCast server.

4.2 *Commitments related to EUMETCAST Requirements*

SS-EUM-0010 The NRT products generated in the H SAF production centres shall be regularly transmitted via EUMETCast. Timeliness requirement are expressed section 2.2.2

5 UMARF

5.1 *Commitments related to UMARF Requirements*

SS-UMA-0010 The catalogue of the H SAF NRT products shall be made available to the users through the EUMETSAT UMARF system

6 User Support and Documentation


6.1 *Description*

A user help-desk service is provided during CDOP. It is located at ITAF COMET and it is web-based, embedded in the H SAF web portal.

There is a specific section in the web portal which guides the user to address its request to the most appropriate responsibility area of the H SAF programme.

The users are able to address the typology of their own request among:

- products quality;
- products requirements;
- performance, reliability and availability of the generation chains;
- programme and organization;
- validation services.

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 27/33
--	-----------------------	--

The web site acknowledges the request and forwards it to the appropriate responsible person or expert.

A track of the requests and the consequent actions and feedback are kept.

6.2 Commitments related to User Support Requirements

SS-USR-0010 A help-desk service shall be provided for H SAF user requests. This service shall be provided to users through a web-based interface embedded in the H SAF portal. A message to communicate that the request is processed will be immediately sent to the users, via email. The answer to the request will be provided within 5 working days; if not possible, a message explaining the difficulty shall be provided

6.3 Commitments related to Documentation

SS-DOC-0010 For each operational product the following user documents shall be provided: ATBD (Algorithm Theoretical Baseline Document), PUM (Product User Manual), PVR (Product Validation Report).

7 Web-portal

7.1 Description

One of the fundamental central services for the H SAF users is the web portal: it is continuously maintained and evolved following the project phases and it is subject to refinements and improvements whenever considered useful for the user community and the consortium as well.

The H SAF web-site, hosted by ITAF COMET server, is available at the following URL: <http://hsaf.meteoam.it>.

The web portal, whose re-engineering is in progress, contains information on the products and their operational status, documentation, information on Visiting scientist, overview about SAF and the H SAF partners.


A restricted area is maintained for internal communications.

A contact area is managed for any kind of requests. Moreover, an access control and monitoring of the H SAF web portal is planned in order to trace users.

The validation results are available as reports via web interface with possibility to give feedback.

Calibration methods and product characterization as well as quality indicators are part of the meta data content, but also available as web documents with time line showing the evolution of the products.

Teaching material is available from the H SAF web site, and is progressively growing.

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 28/33
--	-----------------------	--

A web site holds general information (including certain basic project documents) as well as near-real-time quick looks of H SAF products.

The maintenance of the web site follows the approach of making the site always updated with the project phases: this means to upload documentation (baseline and draft), product snapshots, events description and to make visible the result of the ongoing validation services activities.

7.2 Commitments related to the Web Requirements

SS-WEB-0010 The H SAF web portal contain updated information on products, documentation, Visiting scientists, validation results, quick look of products

SS-WEB-0020 The H SAF web portal shall contain a public area and a restricted area. Users shall be able to access after registration

8 Quality of Services, quality monitoring and validation

8.1 Description

Monitoring and reporting of the Quality of the Services is planned to be performed regularly at half-yearly basis.

Product validation description and results are documented in the Product Validation Report (ref. SAF/HSAF/PVR) which is available for each product belonging to the H SAF CDOP3 Product List.

The H SAF Hydrovalidation Programme description and results are documented in the Hydrological Validation Report.


8.2 Commitments related to QoS

SS-QUA-0010 Availability and quality control shall be regularly provided for the H SAF operational products, in the H SAF Operations Report delivered twice a year

8.3 Commitments related to Product quality monitoring

SS-VAL-0020 Continuous product quality monitoring, functional to development (calibration and characterisation), shall be achieved for each product. This shall include maintenance and updating of procedures for online quality control. Results of product quality monitoring shall be made available to users through the H SAF web site

SS-VAL-0025 Continuous product quality monitoring, functional to demonstrate the non-degradation of the product performances, shall be achieved for each operational product. Results of product quality monitoring shall be made available to users in the Operation Report, by means

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 29/33
--	-----------------------	--

of statistics (continuous and multi-categorical), graphs and tables. Continuous statistics shall be based on an adequate subset the following scores:

- Mean Error, Mean Absolute Error, Standard Deviation, Multiplicative Bias, Correlation Coefficient, Root Mean Square Error, Root Mean Square Error percent

Multi-categorical statistics shall be based on an adequate subset of the following scores:

- Probability Of Detection, False Alarm Rate, Critical Success Index, Equitable Threat Score, Frequency Bias, Probability Of False Detection, Fraction correct Accuracy, Heidke skill score, Dry-to-Wet Ratio

SS-VAL-0030 Product quality monitoring shall be performed as independent product validation and assessment of the usefulness of the products for fighting against floods, landslides, avalanches, and evaluating water resources; the activity shall include:

- validation of products quality by comparing satellite measurements with ground reference;
- fusion of satellite-derived measurements with data from radar and raingauge networks;

Results of these activities shall be included in the Product Validation Report provided for each product.


8.4 Commitments related to Hydrological validation

SS-VAL-0040 Hydrological validation shall be provided to assess the impact of H SAF products on hydrological applications. H SAF Hydrological Programme shall be carried on and it shall be focused on assessment of H SAF products by validation, product evaluation and interfacing with hydrological models, with the main objective of improving products and their usability in operational hydrology. Results of hydrological validation shall be made available to users through the H SAF web site

SS-VAL-0050 Hydrological validation shall be performed as independent product validation and assessment of the usefulness of the products for fighting against floods, landslides, avalanches, and evaluating water resources; the activity shall include:


- downscaling/upscaling modelling from observed/predicted fields to basin level;
- assimilation of satellite-derived products in hydrological models;
- assessment of the impact of satellite measurements on hydrology and related applications.

Results of these activities shall be included in the Hydrological Validation Report provided for each product.

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 30/33
--	-----------------------	--


Appendix 1 Glossary

AAPP	AVHRR and ATOVS Processing Package
ADEOS	Advanced Earth Observation Satellite (I and II)
ALOS	Advanced Land Observing Satellite
AMIR	Advanced Microwave Imaging Radiometer
AMSR	Advanced Microwave Scanning Radiometer
AMSU	Advanced Microwave Sounding Unit
ASAR	Advanced SAR (on ENVISAT)
ASCAT	Advanced Scatterometer (on MetOp)
ATDD	Algorithms Theoretical Definition Document
ATMS	Advanced Technology Microwave Sounder (on NPP and NPOESS)
ATOVS	Advanced TIROS Operational Vertical Sounder (on NOAA and MetOp)
AVHRR	Advanced Very High Resolution Radiometer (on NOAA and MetOp)
BRDF	Bi-directional Reflectance Distribution Function
CC	Correlation Coefficient
CDR	Critical Design Review
CVS	Concurrent Versions System
DOF	Data Output Format
DR	Data Record
EARS	EUMETSAT Advanced Retransmission Service (station)
ECSS	European Cooperation on Space Standardization
EPS	EUMETSAT Polar System
ERS	European Remote-sensing Satellite (1 and 2)
FAR	False Alarm Rate
GEO	Geostationary Earth Orbit
GIS	Geographical Information System
GMES	Global Monitoring for Environment and Security
GPM	Global Precipitation Measurement mission
GTS	Global Telecommunication System
ICT	Information and Communication Technology
LEO	Low Earth Orbit
MetOp	Meteorological Operational satellite
METU	Middle East Technical University (of Turkey)
MHS	Microwave Humidity Sounder (on NOAA N/N' and MetOp)
MIMR	Multi-frequency Imaging Microwave Radiometer
MODIS	Moderate-resolution Imaging Spectro-radiometer (on EOS Terra and Aqua)
MSG	Meteosat Second Generation
MTG	Meteosat Third Generation

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 31/33
---	-----------------------	--

MVIRI	Meteosat Visible Infra-Red Imager (on Meteosat 1 to 7)
N/A	Not Available
N.A.	Not Applicable
NMS	National Meteorological Service
NOAA	National Oceanic and Atmospheric Organisation (intended as a satellite series)
NPOESS	National Polar-orbiting Operational Environmental Satellite System
NRT	Near-Real Time
NWP	Numerical Weather Prediction
ORR	Operations Readiness Review
PDR	Preliminary Design Review
POD	Probability of Detection
PP	Project Plan
QoS	Quality of Service
R&D	Research and Development
RT	Real Time
SAG	Science Advisory Group
SAR	Synthetic Aperture Radar
SCAT	Scatterometer (on ERS-1 and 2)
SEVIRI	Spinning Enhanced Visible Infra-Red Imager (on MSG)
SIRR	System Integration Readiness Review
SIVVP	System Integration, Verification & Validation Plan
SLAs	Service-Level Agreements
SMMR	Scanning Multichannel Microwave Radiometer (on SeaSat and Nimbus VII)
SMOS	Soil Moisture and Ocean Salinity
SN	Snow Parameters (referred to Snow Parameters Subsystem products)
SOA	Service-Oriented Architecture
SSM/I	Special Sensor Microwave / Imager (on DMSP up to F-15)
SSMIS	Special Sensor Microwave Imager/Sounder (on DMSP starting with F-16)
SSVD	System/Software Version Document
STRR	System Test Results Review
SVALF	System Validation File
SVERF	System Verification File
SVRR	System Validation Results Review
SW	Software
SWE	Snow Water Equivalent
TBC	To be confirmed
TBD	To be defined
TKK/LST	Helsinki University of Technology / Laboratory of Space Technology
TMI	TRMM Microwave Imager (on TRMM)

TRMM	Tropical Rainfall Measuring Mission
TSMS	Turkish State Meteorological Service
TU Wien	Technische Universität Wien
U-MARF	Unified Meteorological Archive and Retrieval Facility
UML	Unified Modelling Language
UR	User Requirement
URD	User Requirements Document
VIIRS	Visible/Infrared Imager Radiometer Suite (on NPP and NPOESS)
VS	Visiting Scientist
WBS	Work Breakdown Structure
WP	Work Package
WS	Workshop
ZAMG	Zentral Anstalt für Meteorologie und Geodynamik

	Service Specification	Doc. No: SAF/HSAF/SeSpe/1.9 Issue: Version 1.9 Date: 28/01/2019 Page: 33/33
--	-----------------------	--

Appendix 2 References

2.1 *Applicable documents*

- [AD 1] Cooperation Agreement between EUMETSAT and the NMS of Italy on the Third Continuous Development and Operations Phase of the Satellite Application Facility on Support to Hydrology and Operational Water Management
- [AD 2] Definition of Product Status Categories for the SAF Network Ref: EUM/PPS/TEN/07/0036H SAF Configuration Management Plan (CMP). Ref.: SAF/HSAF/CMP/1.0

2.2 *Reference documents*

- [RD 1] Soutter M, R. Caloz and A. Beney, 2001: "Potential Contribution of EUMETSAT Space Systems in the Fields of Hydrology and Water Management". Final report to EUMETSAT dated 21 August 2001.
- [RD 2] Conclusions from the Working Group on a Potential SAF on Support to Operational Hydrology and Water Management - Annex 1 to EUM/C/53/03/DOC/48, 2002.
- [RD 3] Summary Report of the SAF Hydrology Framework Working Group - EUM/PPS/REP/04/0002.
- [RD 4] Proposal for the development of a "Satellite Application Facility on Support to Operational Hydrology and Water Management (H SAF)", submitted by the Italian Meteorological Service on behalf of the H SAF Consortium - Issue 2.1 dated 15 May 2005
- [RD 5] Definition of Product Status Categories for the SAF Network. EUM/PPS/TEN/07/0036 - Issue v1A dated 14 May 2007
- [RD 6] Technical Note on changes proposed in the H SAF PRD release 1.2 (SAF/HSAF/CDOP2/TN1/1.1)