

RMIB GERB Processing: Data products description

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CHANGE RECORD

Issue	Date	Changed by	Reason for change
Draft version 0.1	29/10/1999		new document
Draft version 0.2	26/01/2000		update
Draft version 0.3	13/04/2000	S. Dewitte	calculated new file sizes with inclusion of ADM sets
Draft version 0.4	19/05/2000	G. Sadowski	update
Draft version 0.5	29/06/2000	G. Sadowski	LOS NS Speed, Viewing Az -> Relative Az, GGSPS
Draft version 0.6	22/05/2002	L. Gonzalez	Full description added duplication flag removed merging of flux and radiance files
Draft version 0.7	28/05/2002	L. Gonzalez	LOS E-W Histogram changed to PSF parameters
			Solar azimuth angle -> Viewing azimuth angle

1 Introduction

1.1 Purpose of this document

The purpose of this document is to give a description of the data products that will be provided by the RMIB to external users. External users include the RAL based GGSPS for the level 2 non real time flux product and real time users for real time flux products.

1.2 Scope

This document unifies information extracted from the RMIB-GGSPS ICD [1] and from the ROLLS ICD [2] and details this information.

2 Image fields

The following image fields are defined (see also [1]):

Id	Description	Range	Quantisation	number bits	bpp
I1	Thermal flux	0-450 W/m ²	0.25 W/m ²	sign+11+2	6
I2	Solar flux	0-1500 W/m ²	0.25 W/m ²	sign+11+2	6
I3	Thermal radiance	0-150 W/m ² sr	0.05 W/m ² sr	sign+11+2	6
I4	Solar radiance	0-500 W/m ² sr	0.05 W/m ² sr	sign+11+2	6
I5	Cloud cover	0-100 (error=255)		8	2
I6	Cloud phase	water=0,mixed,ice=100 (error=255)		8	1
I7	Cloud amount	0-100 (error=255)		8	2
I8	Surface type	* (error=255)		8	2
I9	Viewing zenith angle	0-90°	1°	8	< 1
I10	Solar zenith angle	0-180°	1°	8	< 1
I11	Relative azimuth angle	0-360°	1°	sign + 9	< 1
I12	Viewing azimuth angle	0-360°	1°	sign + 9	< 1
I13	latitude	-90 - 90°	1/128°	sign + 7 + 7	< 1
I14	longitude	-180 - 180°	1/128°	sign + 8 + 7	< 1
I15	LW Correction	-100 - 100%	0.5 %	sign+ 7 +1	2
I16	SW Correction	-100 -100%	0.5 %	sign + 7 + 1	2
I17	Thermal ADM	0-254 (error=255)		8	
I18	Solar ADM	0-1024 (error=255)		16	
<i>I19</i>	<i>PSF parameters</i>	<i>TBD</i>			

*:undefined=0, ocean, dark vegetation, bright vegetation,dark desert, bright desert, snow

bpp: bits per pixel after compression

The presence of the fields in italic is still TBD.

3 Additional fields

The following additional fields are defined (see also [1]):

Id	Description	Units	Type	Size (octets)
A1	File name	N/A	char	
A2	<i>GGSPS s/w version number</i>	N/A	char	
A3	GGSPS product version	N/A	int	
A4a	<i>GGSPS table names (x 40)</i>	N/A	char	
A4b	<i>GGSPS table version numbers (x 40)</i>	N/A	char	
A5	RMIB s/w identifier	N/A	char	
A6	Data and time of file creation*	UTC	char	
A7	GERB instrument identifier	N/A	int	2
A8a	Imager type	N/A	int	2
A8b	Imager identifier	N/A	char	
A9a	UTC time of first GERB packet**	UTC	char	
A9b	Start of integration**			
A10	UTC time at start of integration, per column**	UTC	char	
A11a	UTC time of last GERB packet**	UTC	char	
A11b	End of integration**			
A12	UTC time at end of integration, per column**	UTC	char	
A13	UTC time, per row **	UTC	char	
A14	File name for geolocation data	N/A	char	
A15	Geolocation parameters	N/A	N/A	84
A26	Product confidence flags	N/A	int	TBD
A28	LOS N-S speed	degree/s	double	8
A30	A values per GERB detector cell***		double	256*8
A31	C values per GERB detector cell***		double	256*8
A32	Spectral regression parameters per SEVIRI detector cell		double	TBD
A33	Resolution enhancement parameters			TBD
A34	Thermal ADM set version	N/A	char	
A35	Solar ADM set version	N/A	char	

*: in format YYYYMMDD HH:MM:SS

** : in format YYYYMMDD HH:MM:SS.SSS

***:It is still TBD when more than one set of A/C values have been used

The geolocation parameters are:

Id	Description	Units	Type	Size (octets)
G1	Rectified grid data: Nx	N/A	int	2
G2	Rectified grid data: Ny	N/A	int	2
G3	Rectified grid data: Lap	degree	double	8
G4	Rectified grid data: Lop	degree	double	8
G5a	Rectified grid data: Resolution flag: N-S	degree	double	8
G5b	Rectified grid data: Resolution flag: E-W	degree	double	8
G6	Rectified grid data: dx	Grid length	float	8
G7	Rectified grid data: dy	Grid length	float	8
G8	Rectified grid data: Xp	Grid length	double	8
G9	Rectified grid data: Yp	Grid length	double	8
G10	Rectified grid data: Grid orientation	Millidegree	double	8
G11	Rectified grid data: Nr	Earth radius	double	8

The presence of the fields in italic is still TBD.

4 Time and space sampling

Four categories of space and time sampling exist (see also [2]):

- N: nominal GERB resolution. These products are defined as a 15 minute average, obtained by averaging three consecutive GERB measurements. The products have GERB spatial resolution, geolocated on the Rectified Grid computed by RAL (cf. L1.5 ARG product). The spatial shape of one pixel is the average of the 3 GERB footprints that have contributed to it.

In this category, thermal and solar products (containing fluxes and unfiltered radiances) for distribution by the GGSPS, L2_F_th and L2_F_sol, are defined. These products are defined to be compatible with the GERB filtered radiances derived by the GGSPS.

- F: fixed GERB resolution. These products are defined as averages over exact 15 minute bins (first bin: 00:00-00:15 UTC etc.). The products have *roughly* GERB spatial resolution, i.e. the pixels are geolocated on a rectified grid and are an average of 5x5 SHI pixels (see below); the grid resolution is thus 247x247. The spatial shape of one pixel is an exact square at nadir. The dimension of this square is the GERB sampling distance, i.e. close to 50 km.

In this category, thermal and solar fluxes and radiances, L2_50_F_th, L2_50_L_th, L2_50_F_sol and L2_50_L_sol, are defined. These fluxes and radiances are defined for easy comparison with model output.

- SHI: standard high resolution. These products are defined as 15 minute snapshots at SEVIRI acquisition times. The products have 3x3 spatial resolution. The product is defined in a window over Europe.

In this category, thermal and solar fluxes and radiances, L2_h_F_th, L2_h_L_th, L2_h_F_sol and L2_h_L_sol, are defined. These fluxes and radiances are defined to be compatible with the SEVIRI radiance images. They can e.g. be used together with SEVIRI derived cloud products.

- NSHI: non standard high resolution.

In this category, an archive product, L2_archive, is defined. This is not intended for routine distribution. This product is defined over the full MSG disc, as 15 minute snapshots at SEVIRI acquisition times. The product has 3x3 spatial resolution.

5 Product contents

The following table gives the detailed fields that can be found in the different products:

Product Id	Image fields	Additional Fields	width x height	size (octets)
L2_F_th	1,3,15,19-20	1-8,9a,10,11a,12,14-34	256 x 256	TBD
L2_F_sol	2,4-8,16,19-20	1-8,9a,10,11a,12,14-33,35	256 x 256	TBD
L2_geo	13-14	1,5-7,9a,15-25	256 x 256	TBD
L2_50_th	1,3,9,11,15,19-20	1-8,9b,11b,14-34	256 x 256	TBD
L2_50_sol	2,4-12,16,19-20	1-8,9b,11b,14-33,35	256 x 256	TBD
L2_50_geo	13-14	1,5-7,9a,15-25	256 x 256	TBD
L2_h_th	1,3,9,11,15,17,19-20	1-8,13-34	800 x 400	TBD
L2_h_sol	2,4-12,16,18-20	1-8,13-33,35	800 x 400	TBD
L2_h_geo	13-14	1,5-7,9a,15-25	800 x 400	TBD
L2_archive	1-20	1-8,13-35	1237 x 1237	TBD
L2_archive_geo	13-14	1,5-7,9a,15-25	1237 x 1237	TBD

6 Products Filenames

The following table gives the names of the files by which the L2 products will be referred to in the ROLLS archive.

Product ID	Filename
L2_F_th	L2_15M_TH_<date>_01.HDF
L2_F_sol	L2_15M_SOL_<date>_01.HDF
L2_geo	L2_GEO_<date>_01.HDF
L2_50_th	L2_15M_50_TH_<date>_01.HDF
L2_50_sol	L2_15M_50_SOL_<date>_01.HDF
L2_50_geo	L2_GEO_50_<date>_01.HDF
L2_h_th	L2_15M_H_TH_<date>_EUROPE_01.HDF
L2_h_sol	L2_15M_H_SOL_<date>_EUROPE_01.HDF
L2_h_geo	L2_GEO_H_<date>_EUROPE_01.HDF
L2_archive	L2_15M_ARCHIVE_<date>_01.HDF

7 Product Description

7.1 L2_F_th

7.2 L2_F_sol

7.3 L2_geo

Id	Description
I13	latitude
I14	longitude

Id	Description
A1	File name
A5	RMIB s/w identifier
A6	Data and time of file creation
A7	GERB instrument identifier
A9a	UTC time of first GERB packet
A15	Geolocation parameters

7.4 L2_50_th

Id	Description
I1	Thermal flux
I3	Thermal radiance
I9	Viewing zenith angle
I11	Relative azimuth angle
I15	LW Correction
I19	<i>PSF parameters</i>

Id	Description
A1	File name
A2	<i>GGSPS s/w version number</i>
A3	GGSPS product version
A4a	<i>GGSPS table names (x 40)</i>
A4b	<i>GGSPS table version numbers (x 40)</i>
A5	RMIB s/w identifier
A6	Data and time of file creation
A7	GERB instrument identifier
A8a	Imager type
A8b	Imager identifier
A9b	Start of integration
A11b	End of integration
A14	File name for geolocation data
A15	Geolocation parameters
A26	Product confidence flags
A28	LOS N-S speed
A30	A values per GERB detector cell
A31	C values per GERB detector cell
A32	Spectral regression parameters per SEVIRI detector cell
A33	Resolution enhancement parameters
A34	Thermal ADM set version

7.5 L2_50_sol

Id	Description
I2	Solar flux
I4	Solar radiance
I5	Cloud cover
I6	Cloud phase
I7	Cloud amount
I8	Surface type
I9	Viewing zenith angle
I10	Solar zenith angle
I11	Relative azimuth angle
I12	Viewing azimuth angle
I16	SW Correction
I19	<i>PSF parameters</i>

Id	Description
A1	File name
A2	<i>GGSPS s/w version number</i>
A3	GGSPS product version
A4a	<i>GGSPS table names (x 40)</i>
A4b	<i>GGSPS table version numbers (x 40)</i>
A5	RMIB s/w identifier
A6	Data and time of file creation
A7	GERB instrument identifier
A8a	Imager type
A8b	Imager identifier
A9b	Start of integration
A11b	End of integration
A14	File name for geolocation data
A15	Geolocation parameters
A26	Product confidence flags
A28	LOS N-S speed
A30	A values per GERB detector cell
A31	C values per GERB detector cell
A32	Spectral regression parameters per SEVIRI detector cell
A33	Resolution enhancement parameters
A35	Solar ADM set version

7.6 L2_50_geo

(see 7.3)

7.7 L2_h_th

Id	Description
I1	Thermal flux
I3	Thermal radiance
I9	Viewing zenith angle
I11	Relative azimuth angle
I15	LW Correction
I17	Thermal ADM
I19	<i>PSF parameters</i>

Id	Description
A1	File name
A2	<i>GGSPS s/w version number</i>
A3	GGSPS product version
A4a	<i>GGSPS table names (x 40)</i>
A4b	<i>GGSPS table version numbers (x 40)</i>
A5	RMIB s/w identifier
A6	Data and time of file creation*
A7	GERB instrument identifier
A8a	Imager type
A8b	Imager identifier
A13	UTC time, per row **
A14	File name for geolocation data
A15	Geolocation parameters
A26	Product confidence flags
A28	LOS N-S speed
A30	A values per GERB detector cell
A31	C values per GERB detector cell
A32	Spectral regression parameters per SEVIRI detector cell
A33	Resolution enhancement parameters
A34	Thermal ADM set version

7.8 L2_h_sol

Id	Description
I2	Solar flux
I4	Solar radiance
I5	Cloud cover
I6	Cloud phase
I7	Cloud amount
I8	Surface type
I9	Viewing zenith angle
I10	Solar zenith angle
I11	Relative azimuth angle
I12	Viewing azimuth angle
I16	SW Correction
I18	Solar ADM
I19	<i>PSF parameters</i>

Id	Description
A1	File name
A2	<i>GGSPS s/w version number</i>
A3	GGSPS product version
A4a	<i>GGSPS table names (x 40)</i>
A4b	<i>GGSPS table version numbers (x 40)</i>
A5	RMIB s/w identifier
A6	Data and time of file creation
A7	GERB instrument identifier
A8a	Imager type
A8b	Imager identifier
A13	UTC time, per row
A14	File name for geolocation data
A15	Geolocation parameters
A26	Product confidence flags
A28	LOS N-S speed
A30	A values per GERB detector cell
A31	C values per GERB detector cell
A32	Spectral regression parameters per SEVIRI detector cell
A33	Resolution enhancement parameters
A35	Solar ADM set version

7.9 L2_h_geo

(see 7.3)

7.10 L2_archive

Id	Description
I1	Thermal flux
I2	Solar flux
I3	Thermal radiance
I4	Solar radiance
I5	Cloud cover
I6	Cloud phase
I7	Cloud amount
I8	Surface type
I9	Viewing zenith angle
I10	Solar zenith angle
I11	Relative azimuth angle
I12	Viewing azimuth angle
I13	latitude
I14	longitude
I15	LW Correction
I16	SW Correction
I17	Thermal ADM
I18	Solar ADM
I19	<i>PSF parameters</i>

Id	Description
A1	File name
A2	<i>GGSPS s/w version number</i>
A3	GGSPS product version
A4a	<i>GGSPS table names (x 40)</i>
A4b	<i>GGSPS table version numbers (x 40)</i>
A5	RMIB s/w identifier
A6	Data and time of file creation
A7	GERB instrument identifier
A8a	Imager type
A8b	Imager identifier
A13	UTC time, per row
A14	File name for geolocation data
A15	Geolocation parameters
A26	Product confidence flags
A28	LOS N-S speed
A30	A values per GERB detector cell
A31	C values per GERB detector cell
A32	Spectral regression parameters per SEVIRI detector cell
A33	Resolution enhancement parameters
A34	Thermal ADM set version
A35	Solar ADM set version

7.11 L2_archive_geo

(see 7.3)

References

- [1] RMIB-GGSPS ICD, MSG-RAL-GE-IF-0011
- [2] ROLSS ICD, MSG-RMIB-GE-IF-0001