

RMIB GERB Processing: GERB Workpackages

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CHANGE RECORD

Issue	Date	Approved by	Reason for change
Version 1	17/09/1999		document added to the RGP documents after CDR requirement
Version 2	20/12/1999		Update
Version 3	27/01/2000		Update
Version 4	08/03/2000		Update
Version 5	12/06/2000		W OI 1 is now obsolete

1 Introduction

1.1 Purpose of this document

This document gives a description of the RMIB GERB processing (RGP) as workpackages and the last version gives the latest update on the work progress of the project.

1.2 Scope of this document

This document is a working document to give an overall overview of what has been done, what has to be done and who is working on what.

2 Workpackage Description

Workpackage Data Simulation 1

Satellite simulation

Start

February 98

End

TBD

Duration

12 months (10 months)

WP development

Gilles Sadowski

WP management

Steven Dewitte, Luis Gonzalez

Inputs

1. GERB Documentation
2. EUMETSAT MSG Documentation

Tasks

1. Satellite functioning simulation (65 % / 65 %)
2. Generation of SW and LW radiances in GGSPS L1.5 format (10 % / 15 %)
3. Software Documentation (10 % / 10 %)
4. Technical Documentation (5 % / 10 %)

Outputs

Program generating SW and LW radiances seen from MSG
(90 % / 100 %)

Workpackage DS 2

RAL L1.0 data

Start

(TBD)

End

(TBD)

Duration

3 months

WP development

Gilles Sadowski

WP management

Steven Dewitte, Luis Gonzalez

Inputs

1. WP 1 programs

Tasks

1. Support and maintenance of DS 1 program (0 % / 100 %)

Outputs

-
(0 % / 100 %)

Workpackage Gerb Processing 1

Raw GERB L15 to L20 data processing

Start

October 1998

End

(TBD)

Duration

9 months (8 months)

WP development:

Aline Hermans

WP management:

Steven Dewitte, Luis Gonzalez

Inputs

1. GERB documentation
2. SEVIRI processing output description

Tasks

1. Artificial GERB data generation (15 % / 15 %)
2. Artificial SEVIRI data generation (15 % / 15 %)
3. GERB processing (45 % / 50 %)
4. Technical documentation (10 % / 10 %)
5. Software documentation (5 % / 10 %)

Outputs

GERB L20 data
(90 % / 100 %)

Workpackage GP 2

High resolution

Start

June 99

End

(TBD)

Duration

6 months (5,5 month)

WP development:

Aline Hermans

WP management:

Steven Dewitte, Luis Gonzalez

Inputs

1. WP 4

Tasks

1. L20 GERB low to high resolution (75 % / 80 %)
2. Technical documentation (10 % / 10 %)
3. Software documentation (5 % / 10 %)

Outputs

GERB L20 high resolution data
(90 % / 100 %)

Workpackage Operationnal Implementation 1

RAL to RMIB automatic transfer of data - this workpackage is obsolete

Start

-

End

-

Duration

-

WP development:

-

WP management:

-

Inputs

-

Tasks

-

Outputs

-

Workpackage OI 2

Material Purchase

Start

January 2000

End

May 2000

Duration

1 months (1 months)

WP development

Luis Gonzalez

WP management

Steven Dewitte, Luis Gonzalez

Inputs

1. WP 1->WP 5

Tasks

1. Determine the material requirements for the complete GERB processing (40 % / 40 %)
2. Scan the available solutions (40 % / 40 %)
3. Compare the different solutions and choose the appropriate one (20 % / 20 %)

Outputs

GERB material
(100 % / 100 %)

Workpackage OI 3

ROLSS site and RAL ftp client

Start

May 99

End

(TBD)

Duration

6 months (4,5 months)

WP development

Gilles Sadowski

WP management

Steven Dewitte, Luis Gonzalez

Inputs

1. ROLSS requirements
2. RAL requirements

Tasks

1. Create the site (50 % / 60 %)
2. Elaborate the ftp transfer for RAL (0 % / 5 %)
3. Estimate the server load, Determine the material requirements for the ROLSS server, Scan the available solutions, Compare the different solutions and choose the appropriate one (20 % / 25 %)
4. Documentation (5 % / 10 %)

Outputs

ROLSS site
FTP RAL download
(75 % / 100 %)

Workpackage OI 4

RMIB tests and validation

Start

(TBD)

End

(TBD)

Duration

6 months (3,5 months)

WP development

Luis Gonzalez, Nicolas Clerbaux

WP management

Steven Dewitte, Luis Gonzalez

Inputs

1. All WP

Tasks

1. Data input generation (SEVIRI/GERB raw format) (20%/20%)
2. Reprocessing startegy (15%/20%)
3. Tests and validation of the complete RMIB implementation (20 % / 40 %)
4. Documentation (5% / 20%)

Outputs

Near real-time RMIB processing
(60 % / 100 %)

Workpackage Data Handling 1

GERB data archiving

Start

(TBD)

End

(TBD)

Duration

2 months (1,5 months)

WP development

TBD

WP management

Steven Dewitte, Luis Gonzalez

Inputs

1. WP1 -> WP 5

Tasks

1. Requirments
2. Determine the material requirements for the archiving (10 % / 10 %)
3. Scan the available solutions (10 % / 10 %)
4. Compare the different solutions and choose the appropriate one (10 % / 10 %)
5. Archive software/hardware fitting to the requirements (40 % / 50 %)
6. Documentation (0 % / 20 %)

Outputs

Archiving of generated data
(70 % / 100 %)

Workpackage DH 2

Data Compression

Start

(TBD)

End

(TBD)

Duration

3 months

WP development

TBD

WP management

Steven Dewitte, Luis Gonzalez

Inputs

1. WP1 -> WP 5

Tasks

1. Determine the compression to realize for archiving (TBD % / TBD %)
2. Determine the compression to realize for ROLLS server data (TBD % / TBD %)
3. Compression fitting to our needs (TBD % / TBD %)
4. Documentation (TBD % / TBD %)

Outputs

Compression tool

(TBD % / 100 %)

Workpackage DH 3

HDF from RMIB program outputs

Start

(TBD)

End

(TBD)

Duration

3 months (2,5 months)

WP development

Gilles Sadowski

WP management

Steven Dewitte

Inputs

1. WP RMIB GERB internal interface

Tasks

1. Collect data from different programs and add them in HDF format(80 % / 100 %)

Outputs

RMIB output in HDF format
(80 % / 100 %)

Workpackage Seviri Processing 1

Spectral Modeling

Start

April 1998

End

(TBD)

Duration

9 months (6,5 months)

WP development

Nicolas Clerbaux

WP management

Steven Dewitte

Inputs

1. EUMETSAT documentation
2. GERB/SEVIRI calibration data
3. General structure of GERB processing
4. AVIRIS images

Tasks

1. Method for GERB radiance estimation from SEVIRI radiances in SW (25 % / 30 %)
2. Method for GERB radiance estimation from SEVIRI radiances in LW (25 % / 30 %)
3. Program developpement (15 % / 20 %)
4. Documentation (15 % / 20 %)

Outputs

Gerb SW/LW estimation from SEVIRI at SEVIRI resolution
Broadband (“unfiltered”) estimation from SEVIRI at SEVIRI resolution
(80 % / 100 %)

Workpackage SP 2

Scene identification

Start

September 1998

End

(TBD)

Duration

12 months (8 months)

WP development

Nicolas Clerbaux

WP management

Steven Dewitte

Inputs

1. SEVIRI calibration data
2. Radiative model
3. ATSR, AVIRIS and Meteosat images
4. GERB documentation
5. Eumetsat MPEF
6. CERES scene identification methodology

Tasks

1. Method development for scene identification from SEVIRI images(40 % / 50 %)
2. Implementation (15 % / 20 %)
3. Documentation (5 % / 10 %)
4. Use of Eumetsat products (0 % / 20 %)

Outputs

Scene Identification software
Scene flag description documentation
(70 % / 100 %)

Workpackage SP 3

Radiance to flux conversion

Start

April 1998

End

(TBD)

Duration

6 months (3 months)

WP development

Nicolas Clerbaux

WP management

Steven Dewitte

Inputs

1. BRDF ADM for SW coming from: ERBE, CERES, POLDER,...
2. BRDF ADM fo LW
3. Radiative transfer models (SBDART)

Tasks

1. Available SW radiance to flux conversion review (15 % / 40 %)
2. LW radiance to flux conversion method (15 % / 20 %)
3. Software implementation (10 % / 20 %)
4. Documentation (10 % / 20 %)

Outputs

Radiance to flux software
(50 % / 100 %)

Workpackage SP 4

Generation of artificial SW and LW fluxes

Start

April 1998

End

(TBD)

Duration

24 months (23 months)

WP development

Nicolas Clerbaux, Steven Dewitte

WP management

Steven Dewitte

Inputs

1. Required space time resolution
2. Meteosat images, ERBE, CERES and SCARAB data

Tasks

1. Convert narrow band Meteosat data to broadband (15 % / 15 %)
2. Scenery identification (40 % / 40%)
3. Radiance to flux conversion with appropriate ADM (15 % / 15 %)
4. Ad hoc spatial integration (15 % / 15 %)
5. Documentation (10 % / 15 %)

Outputs

Test data for use by other partners, and specifically for comparison of fluxes with models run by Hadley Center
(95 % / 100 %)

Workpackage Interface Description 1

RMIB GERB internal interface

Start

(TBD)

End

(TBD)

Duration

3 months (1,5 month)

WP development

Luis Gonzalez

WP management

Steven Dewitte, Luis Gonzalez

Inputs

1. GERB documentation
2. RAL/RMIB interface documentation

Tasks

1. Internal data organisation between different programs (50 % / 100 %)

Outputs

Description of internal organisation
(50 % / 100 %)

3 Workpackage Summary

Workpackage	Total effort	Realised Effort
Data Simulation 1	12	10
Data Simulation 2	3	0
GERB Processing 1	9	8
GERB Processing 2	6	5,5
Operationnal Implementation 1	3	2
Operationnal Implementation 2	1	1
Operationnal Implementation 3	6	4,5
Operationnal Implementation 4	6	3,5
Data Handling 1	2	1
Data Handling 2	-	-
Data Handling 3	3	2,5
SEVIRI Processing 1	9	7
SEVIRI Processing 2	12	8
SEVIRI Processing 3	6	3
SEVIRI Processing 4	24	23
Interface Description	3	1,5
TOTAL	104	82

4 Budget

(in euro, estimations in italic)

	Initial budget	year 1	year 2	year 3
Personnel	371 658	79 200	<i>153 000</i>	
Travel	35 000	4 623	10 544	
Computing	50 000	10 193	9 935	
Total	456 658	94 016		
Overhead (16.3 %)	74 340	15 324		
Total	530 998	109 340		

5 Risk Assessment

The workpackage “GERB processing 2” (Resolution enhancement) could be not realised in the schedule or the solution be impracticable in near real time. Since this product is optionnal, this is not a real problem.

The computing power to fit all the process in near real time could be prohibitive and some of the process could be optimised with non-exact optimisation. This risk will be clearly estimated when the workpackage “GERB processing 2” will be terminated (or rejected).

For the moment, the resolution enhancement seems still computer time prohibitive in some cases. Since it is an iterative process, the number of iteration could be limited to fit the available computer time.

6 Staff Members

Alexandre Joukoff (Belgian State Agent)

Project responsible

Steven Dewitte (EC funding + Belgian State Agent)

Programmer¹ + Scientific support

Luis Gonzalez (PRODEX funding)

Scientific programming support, day-to-day project management, programmer

Gilles Sadowski (EC funding)

Programmer

Nicolas Clerbaux (EC funding)

Programmer

Aline Hermans (EC funding)

Programmer

¹Programmer does not mean only someone writing code but also the scientific work to find (possibly original) computer solutions to scientific problems.

Alessandro Ippe (EC funding)

Programmer