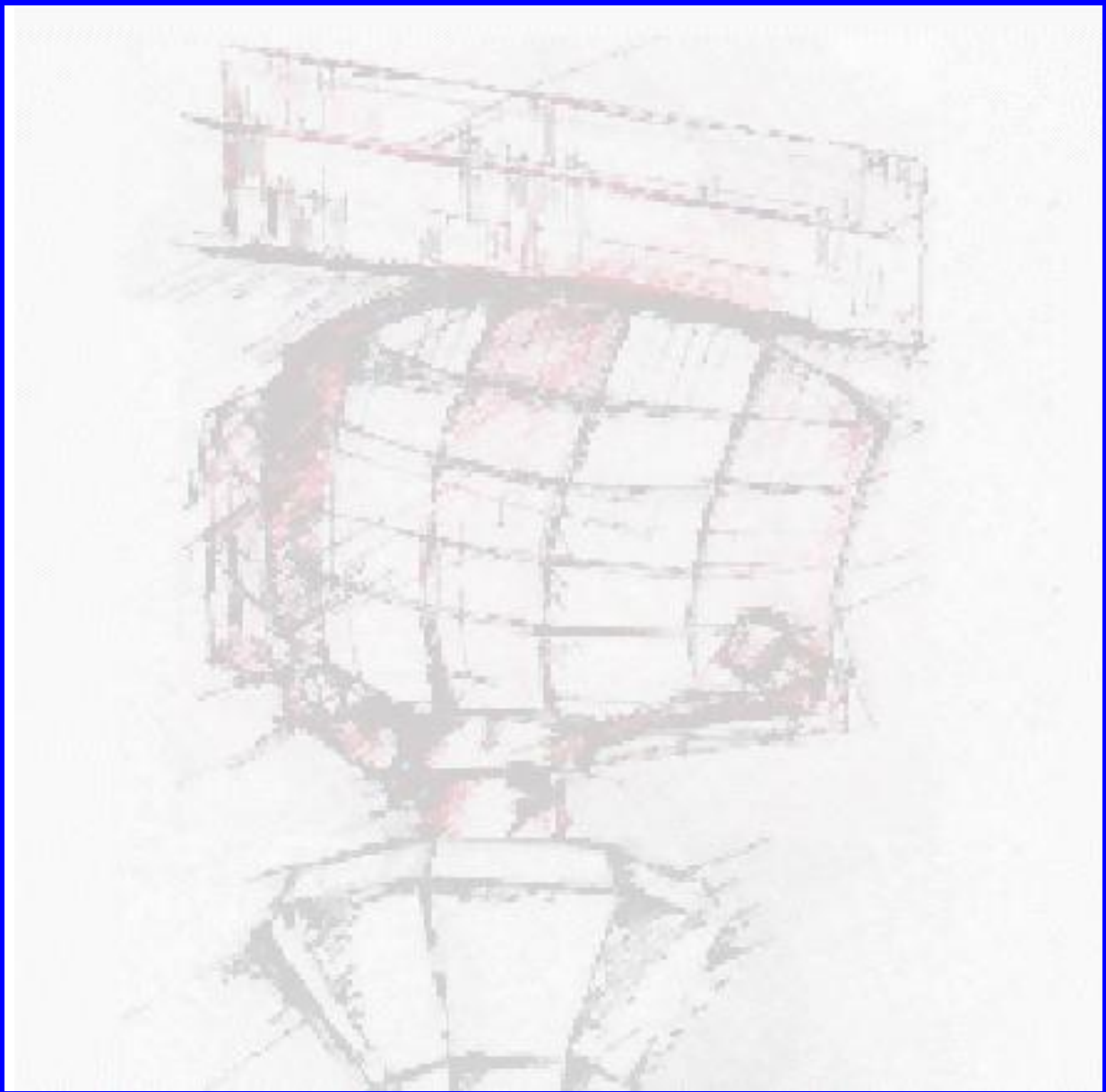


Coverage Map Calculator



User Manual

Edition	:	7
Edition Date	:	31-MAY-13
Status	:	Released Issue

DOCUMENT IDENTIFICATION SHEET

DOCUMENT DESCRIPTION

Document Title
Coverage Map Calculator – User Manual

Document Reference Number

EDITION : 7

EDITION DATE : 31-MAY-13

Abstract

Short resume of document contents

In order to make a correct evaluation of a radar site, the real coverage volume has to be taken into account. This tool produces coverage files and relief files of a radar with predefined coordinates, height and range.

Keywords

CMC

Coverage Map

Screening File

Relief map

CONTACT PERSON : BERT SAUVILLER

TEL : +32 14 231811

DOCUMENT STATUS AND TYPE

STATUS

CATEGORY

Working Draft	<input type="checkbox"/>	Executive Task	<input type="checkbox"/>
Draft	<input type="checkbox"/>	Specialist Task	<input checked="" type="checkbox"/>
Proposed Issue	<input type="checkbox"/>	Lower Layer Task	<input type="checkbox"/>
Released Issue	<input checked="" type="checkbox"/>		

ELECTRONIC BACKUP

INTERNAL REFERENCE NAME : IE-UM-00019-007 CMC.doc

HOST SYSTEM

MEDIA

SOFTWARE(S)

Windows XP Pro

Type : Hard disk

Word 2003

Media Identification :

DOCUMENT APPROVAL

The following table identifies all authorities who have successively approved the present issue of this document.

AUTHORITY	NAME AND SIGNATURE	DATE
Author	Joachim Freiwald	15/11/07
Editor	Bert Sauviller	31/05/13
Editor	Glenn Bosmans	17/05/13
Director ATC	Ing. M. Vanuytven	
Director Software Department	Ir. E. Moons	

DOCUMENT CHANGE RECORD

The following table records the complete history of the successive editions of the present document.

EDITION	DATE	REASON FOR CHANGE	SECTIONS PAGES AFFECTED
0.1		New document	All
2.0	14/05/07	Edited	All
2.1	26/06/07	Edited – spelling and layout	All
2.2	15/11/07	Changed to released (software version v1.0.1)	All
2.3	01/09/08	Manual updated to CMC version 1.0.2 Map name is the same as the destination path folder name (Section 3.3) Tip strips added	All
6	21/10/09	Filename changed; Manual up to date with CMC version 1.0.3	None
7	17/05/13	Manual updated to CMC version 1.0.4; New toolbox and CMC images added; Resolution is fixed now as explained in paragraph 3.3	9,11,12,13,14

TABLE OF CONTENTS

1. COVERAGE MAP CALCULATOR	8
2. RASS-R TOOLBOX	9
3. SOFTWARE USAGE	11
3.1 MENU-BAR	11
3.2 DATA SOURCE AND DESTINATION	11
3.3 PARAMETER INPUT	12
3.4 CALCULATION	14
3.5 RESULTS	14
3.6 USE OF THE FILES	15

TABLE OF FIGURES

<i>Figure 1-1: Screening file (Geneva 46:14:17.53N, 006:06:00.90E)</i>	8
<i>Figure 1-2: Relief file (Geneva 46:14:17.53N, 006:06:00.90E)</i>	8
<i>Figure 2-1: RASS-R toolbox</i>	9
<i>Figure 2-2: Campaign directory structure</i>	10
<i>Figure 3-1: CMC GUI</i>	11
<i>Figure 3-2: CMC Source path – Destination path</i>	12
<i>Figure 3-3: CMC GUI</i>	12
<i>Figure 3-4: Building Relief Map and Coverage Map</i>	14
<i>Figure 3-5: Different files</i>	15

TABLE OF TABLES

<i>Table 2-1: RASS-R menu bar</i>	9
<i>Table 3-1: Menu bar items</i>	11
<i>Table 3-2: File usage</i>	15

CONVENTIONS USED IN THIS MANUAL

The following conventions are used in this manual:



Note: *This icon to the left of bold italicized text denotes a note, which alerts you to important information.*



Caution: *This icon to the left of bold italicized text denotes a caution, which alerts you to the possibility of data loss or a system crash.*



Warning: *This icon to the left of bold italicized text denotes a warning, which alerts you to the possibility of damage to you or your equipment*

1. Coverage Map Calculator

In order to make a correct evaluation of a radar site, the real coverage volume has to be taken into account.

The RASS-R radar evaluation tools need therefore **screening angle files** (.hrscr-file) as displayed in Figure 1-1. These files are generated by using the radar Coverage Map Calculator module and contain the ranges and elevation angles for terrain obstacles inside each azimuth resolution angle. It can be used in different RASS-R modules (see further). The CMC also generates if desired, a **relief map file** for display purposes (e.g. Radar Comparator) as in Figure 1-2.

The CMC just needs the position on earth (longitude, latitude and antenna height) and the desired maximum range as input parameters and then generates a screening angle and/or a relief map file using high resolution digital terrain map data files or DEM's. (Digital Elevation Models are digital files consisting of points of elevations, sampled systematically at equally spaced intervals, during satellite observations of the earth.)

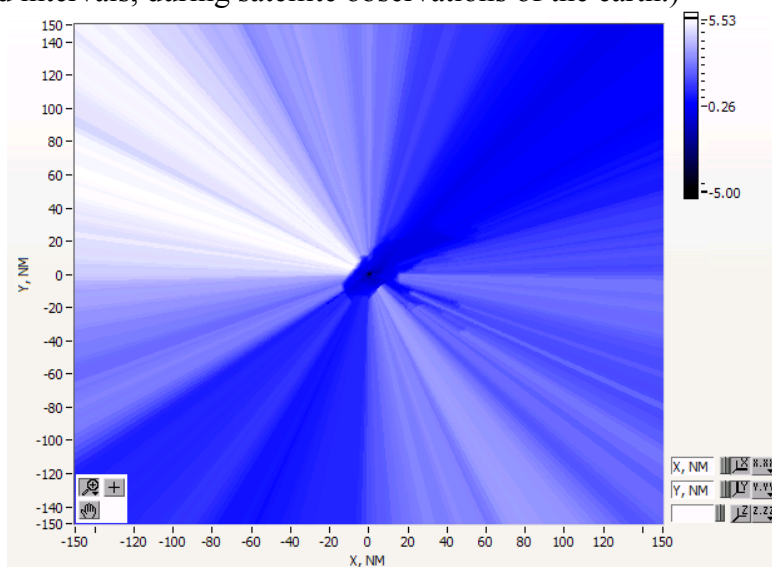


Figure 1-1: Screening file (Geneva 46:14:17.53N, 006:06:00.90E)

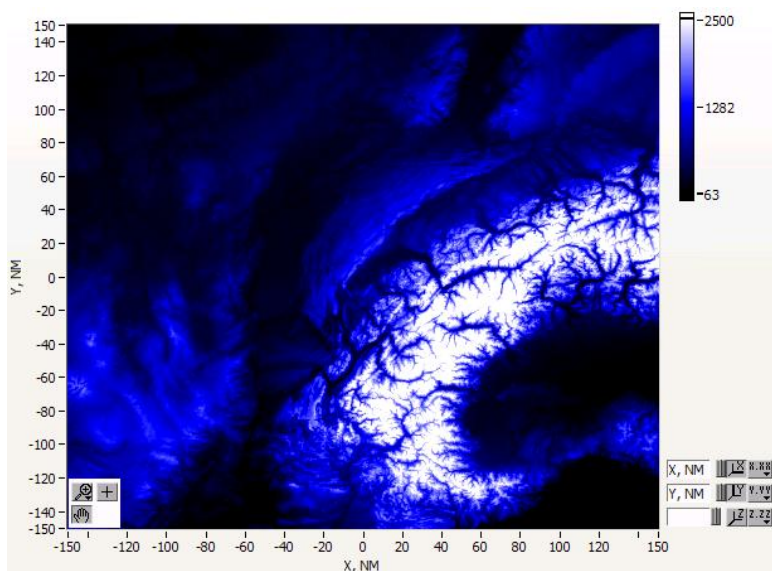



Figure 1-2: Relief file (Geneva 46:14:17.53N, 006:06:00.90E)

2. RASS-R toolbox

The RASS-R toolbox is installed on your pc and has a shortcut on the desktop. It can also be accessed using the Windows Start-menu. The toolbox is displayed in Figure 2-1: RASS-R toolbox. The current version of the RASS-R toolbox is displayed in the right upper corner. The Coverage Map Calculator is part of this RASS-R toolbox and can be opened using the appropriate icon .

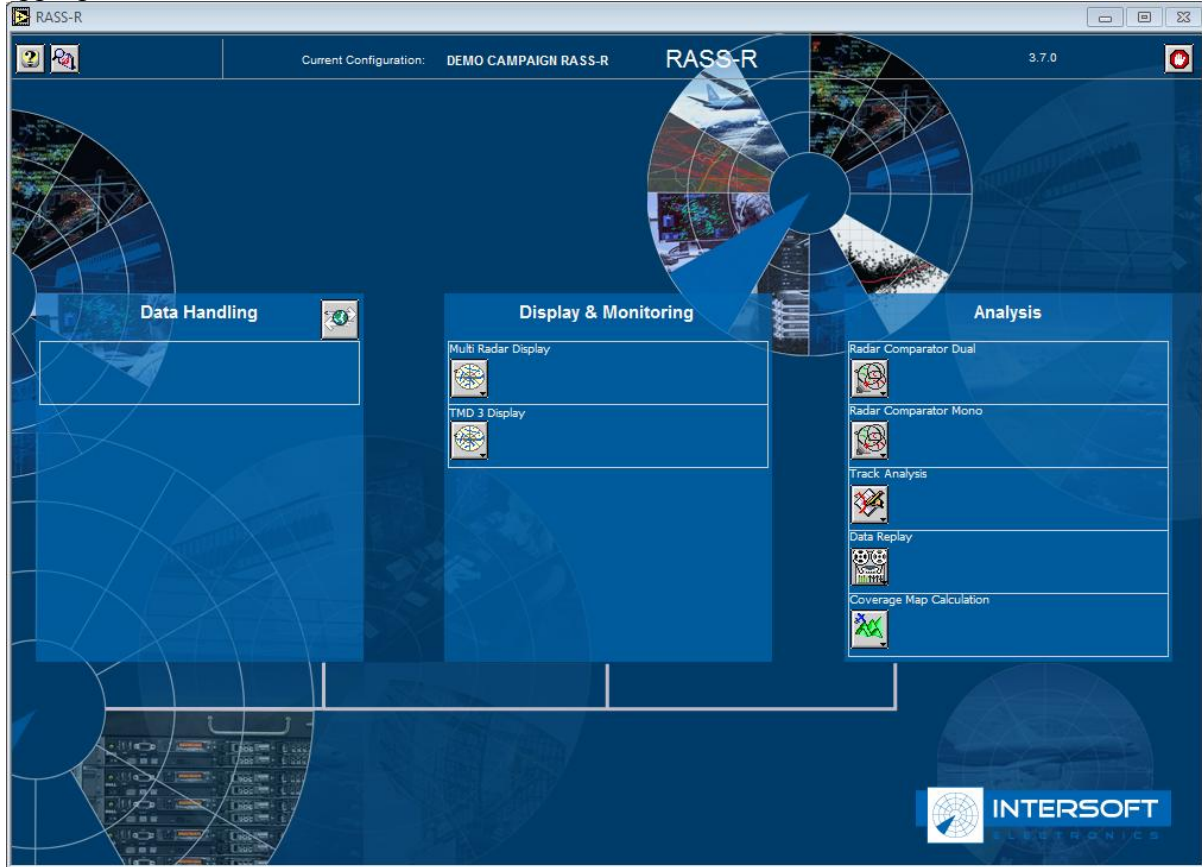






Figure 2-1: RASS-R toolbox

The menu bar contains the following items:

Table 2-1: RASS-R menu bar

Button	Usage
 Help window	When this button is clicked, the Help window will appear and show help information whenever you point over a button.
 Campaign change	Click this to make an appropriate campaign structure (see further)
 Exit	Quit the application

When you click the  button, the tool will ask you where you want to create your RASS-R campaign folder. Select the correct path. Upon completion, you should have the following directory structure created as in Figure 2-2: Campaign directory structure.

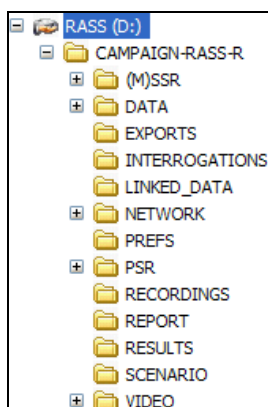


Figure 2-2: Campaign directory structure








When you make a campaign folder with the RASS-R toolbox, it is preferred to make it on a separate drive than the drive where your operation system is on. For example, as in the figure above, a structure named “CAMPAIGN-RASS-R” is created on the D-drive.

3. Software usage

3.1 Menu-bar

Table 3-1: Menu bar items

Button	Usage
 Online Reference	When this button is clicked, the Coverage Map Calculator user manual will appear.
 Help window	When this button is clicked, the Help window will appear and show help information whenever you point over a button.
 Start	This starts the calculation
 Stop	This button stops the calculation
 Exit	Quit the application

3.2 Data source and destination

To start creating the Coverage or Relief Map, select the correct CMC Data Path and Destination Path.

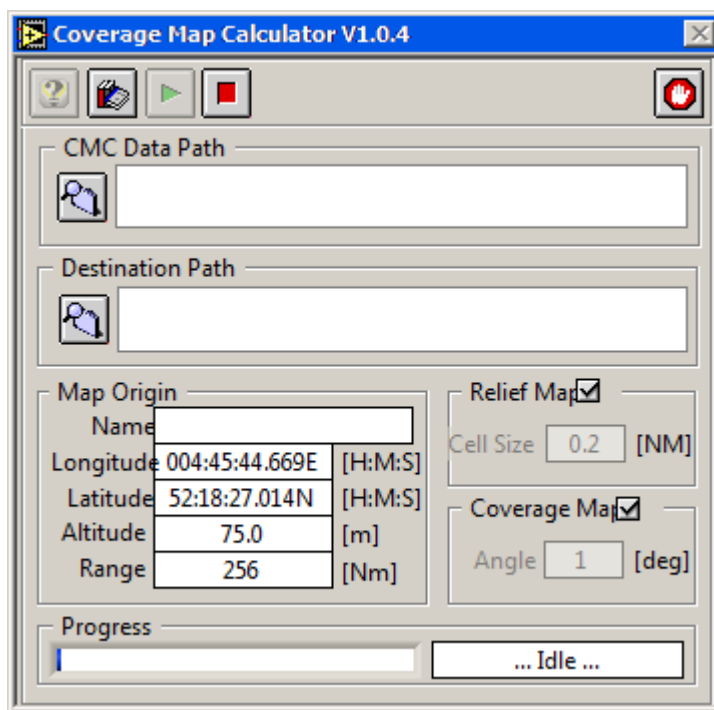


Figure 3-1: CMC GUI

The source data comprises two folders. Click **Select Cur Dir** as in the figure below left. For the destination folder, browse to the MAPs-folder in the RASS-R campaign folder (See 2) and click **Select Cur Dir** as in the figure below right.

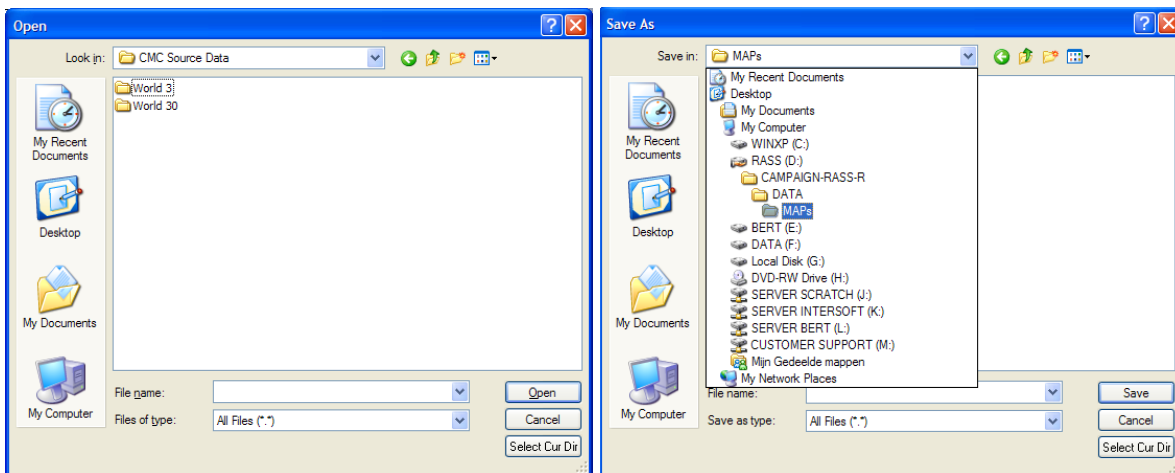


Figure 3-2: CMC Source path – Destination path

3.3 Parameter Input

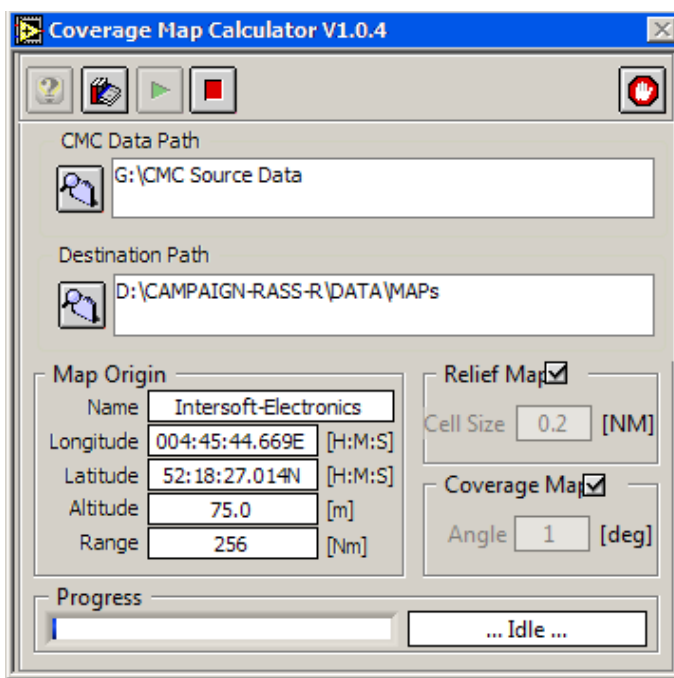


Figure 3-3: CMC GUI

The following selections can be made:

Radar parameters:

- Name: the name will automatically be the same as the folder name from the destination path. This is because when you want to load the screening file in the MRD3, the MRD3 needs the folder name to be similar to the name of the screening file!
- Longitude: position of the radar
- Latitude: position of the radar
- Altitude: this is the total altitude of the antenna above mean sea level. (so the tower height must be taken into account)
- Range: this is the maximum range of the radar



Take care when filling in the radar parameters. The position should be precise, as well as the height. Make sure you type in E,W, S or N and use a point as digital separator.



Relief map:

- Enable: tick the radio button if you want to generate a relief map.
- Cell size: The range cell size for the relief map generation is fixed at 0.2NM.

Coverage map:

- Enable: tick the radio button if you want to generate a coverage map
- Angle: The azimuth resolution is fixed at 1deg.

3.4 Calculation

Click  to start the calculation. If you want to stop the calculation for any reason, press . First, the relief map will be computed, then the coverage map. The status of the processing will be displayed in the progress bar. In case of the relief map, the window might show: fixing gaps. This algorithm corrects the gaps that might be in the source data.

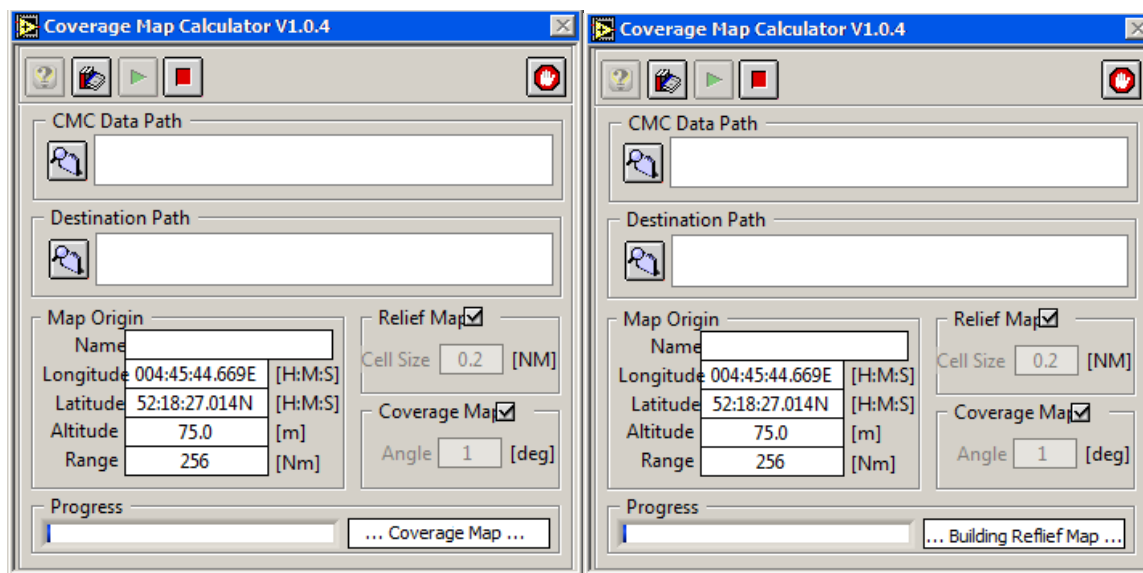


Figure 3-4: Building Relief Map and Coverage Map

3.5 Results

After completion, the following files should be visible.

- Intersoft-Electronics.hrscr: Coverage map file
- Intersoft-Electronics.rlf: Relief map file
- Intersoft-Electronics.par: parameters used for the calculation

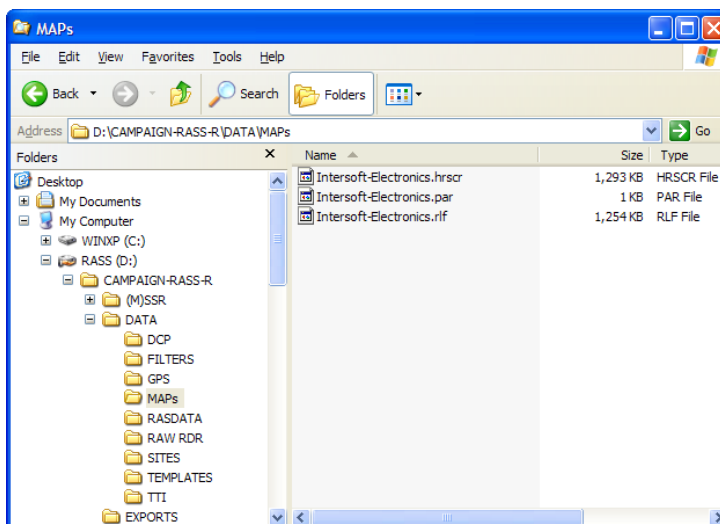


Figure 3-5: Different files

3.6 Use of the files

The usage of the screening or coverage file is twofold: to be taken into account when performing analysis or just used to be displayed in the software.

The next table shows for which tasks the screening file is used, per RASS-R module:

Table 3-2: File usage

Button	Analysis purposes	Display purposes
Radar Comparator (Mono/Dual)	✓	✓
TRACKAN	✓	✗
Multi Radar Display 3	✗	✓
Technical Maintenance Display 3	✗	✓

The relief map is only used in the advanced display functionalities of the Radar Comparator and the Radar Comparator Mono.