



**Introduction to the ECLGRM-VHF IS role**

# **The ECLGRM-VHF IS timeline (steps & tools)**

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# Goal of this presentation

- **Give an overview of all the steps to be done by the IS ECLGRM-VHF, to reach the two goals: (1) to validate the ECL/GRM quicklook analysis ; (2) to make the related scientific products public.**
- **List the associated tools.**
- **For each step, understand the intended purpose.**

Then, for each step, the detailed procedure will be presented in a dedicated presentation during this training.

# Documentation



[https://docs.google.com/document/d/1LDnu9xK6w\\_BZosyQZJIBpwGjPFMhTIG2LWOEml9ft\\_k/edit?tab=t.0#heading=h.5ju20whizuxn](https://docs.google.com/document/d/1LDnu9xK6w_BZosyQZJIBpwGjPFMhTIG2LWOEml9ft_k/edit?tab=t.0#heading=h.5ju20whizuxn)

# Receiving the alerts

[SVOM Mattermost: #voevent-notices](#)

**When on shift, notifications must be activated for this channel, triggered with at least the following keywords:**

**@grm-trigger, @grm-preliminary**

**@eclairs-wakeup, @eclairs-preliminary**

**@slewing, @not-slewing**

**Phase 1: collecting useful information  
for the validation of the quicklook analysis**

**= steps to be followed by the IS ECLGRM-VHF while waiting  
for the VHF packets for the on-board lightcurves**

**The steps listed in this phase can be done in parallel.**

# IS ECLGRM-VHF procedure: phase 1



<b>Step</b>	<b>#1 Understand the trigger scenario</b> (ECL first / GRM first / GRM-only)
<b>Tools</b>	SVOM Mattermost: <a href="#">#voevent-notices</a> <a href="mailto:iFSC-Tools@FSC">iFSC-Tools@FSC</a> , tab ECL/GRM
<b>Expected results</b>	Understand what to expect in terms of VHF data, of targets for eclgrm-vhf (ECL, GRM, ECLGRM), of definition of reference time, etc.

# IS ECLGRM-VHF procedure: phase 1



<b>Step</b>	<b>#2 For ECL first or GRM first triggers: let the BA-T know that you are the IS ECLGRM-VHF on shift</b>
<b>Tools</b>	SVOM Mattermost: <a href="#">#followup-operation</a>
<b>Expected results</b>	<ul style="list-style-type: none"><li>▪ The BA-T and the IS ECLGRM-VHF can start to share information.</li><li>▪ The BA-T will invite the IS ECLGRM-VHF to a zoom meeting when it is time to write the HE GCN circular.</li></ul>

# IS ECLGRM-VHF procedure: phase 1



<b>Step</b>	<b>#3 Check if the event is detected by an other mission</b>
<b>Tools</b>	<a href="#">NASA GCN website</a> <a href="#">Fermi/GBM GRB notices</a> ; <a href="#">Swift trigger notices</a>
<b>Expected results</b>	<ul style="list-style-type: none"><li>▪ In all trigger scenarios: know if another detection must be mentioned, compare results of the quicklook analysis with public information from the other mission.</li><li>▪ GRM-only triggers: (i) allows a fast trigger validation without waiting for X-band data ; (ii) in some cases, the external mission can provide the position.</li></ul>

# IS ECLGRM-VHF procedure: phase 1



<b>Step</b>	<b>#4 Check the SVOM context:</b> <ul style="list-style-type: none"><li>▪ position relative to SAA/SAA-Ext &amp; environment</li><li>▪ is there an automatic slew?</li></ul>
<b>Tools</b>	SVOM Mattermost: <a href="#">#voevent-notices</a> <a href="#">iFSC-Tools@FSC</a> , tab Mission <a href="#">Grafana@FSC</a>
<b>Expected results</b>	<ul style="list-style-type: none"><li>▪ If there is a slew, strong variation of the background can be expected.</li><li>▪ For GRM-only triggers, understanding the environment is important for the trigger validation (for ECL-first/GRM-first triggers, this is less important as this validation is made by the BA-T).</li></ul>

# IS ECLGRM-VHF procedure: phase 1



<b>Step</b>	<b>#5 Check the solar activity</b>
<b>Tools</b>	External website: <a href="#">GOES X-ray flux</a>
<b>Expected results</b>	If the X-ray flux is rising above a certain threshold, the possibility of having detected a solar flare should be seriously considered.

# IS ECLGRM-VHF procedure: phase 1



<b>Step</b>	<b>#6 Check when the first complete process of the eclgrm-vhf pipeline is available</b>
<b>Tools</b>	<a href="mailto:eclgrm-ui@FSC">eclgrm-ui@FSC</a>
<b>Expected results</b>	<p>Once a first complete process is available, the IS ECLGRM-VHF can start the priority task: validation of the generated scientific products.</p> <p><b>Phase 2 of the IS ECLGRM-VHF timeline can start.</b></p>

# IS ECLGRM-VHF procedure: phase 1



<b>Step</b>	<b>#7 If needed: check which VHF packets have already been received, understand the status of the VHF network</b> (useful to understand the situation when the delay seems too long)
<b>Tools</b>	<a href="mailto:iFSC-Tools@FSC">iFSC-Tools@FSC</a> , tab Packets or better: <a href="mailto:vhf-ui@FSC">vhf-ui@FSC</a> <a href="#">Grafana@FSC</a>
<b>Expected results</b>	<ul style="list-style-type: none"><li>▪ Number of VHF packets received for the HP/LPLcurve: helps to understand the situation when there is still no complete process from the eclgrm-vhf pipeline.</li><li>▪ VHF stations available below SVOM: helps to understand a possible delay in the reception.</li></ul>

**Phase 2: validation of the ECL/GRM quicklook analysis**

**= steps to be followed by the IS ECLGRM-VHF  
to validate the scientific products generated by the eclgrm-vhf pipeline**

# Trigger scenarios

	Trigger scenario:	ECL-first (Tscale < 10 min)	ECL-first (Tscale > 10 min)	GRM-first	GRM-only
Available products	OBALERT_ECL	✓	✓	✓	✗
	OBLC_ECL	✓	✗	✓	✗
	OBALERT_GRM	✗	✗	✓	✓
	OBLC_GRM	✓	✓	✓	✓
eclgrm-vhf targets	ECLGRM-VHF-ECL	✓	✗	✓	✗
	ECLGRM-VHF-GRM	✓	✓	✓	✓
	ECLGRM-VHF-ECLGRM	✓	✗	✓	✗
Validation to be done by the IS ECLGRM-VHF	<b>Validation of ECL quicklook analysis</b>	<b>Yes</b>		<b>Yes</b>	
	<b>Validation of GRM quicklook analysis</b>	<b>Yes</b>	Usually useless	<b>Yes</b>	<b>Yes</b>

# IS ECLGRM-VHF procedure: phase 2



<b>Step</b>	<b>#8 Check the navigation plots</b>
<b>Tools</b>	<a href="mailto:eclgrm-ui@FSC">eclgrm-ui@FSC</a> (GRB information & Navigation)
<b>Expected results</b>	<ul style="list-style-type: none"><li>▪ Where is the Earth?</li><li>▪ Are there bright catalog X-ray sources in the fov?</li><li>▪ Evolution in the case of an automatic slew?</li><li>▪ ECL position available: check position in ECL/GRD<sub>i</sub> fov. → <b>this is important to understand the background</b></li><li>▪ External localization available: check consistency.</li></ul>

# IS ECLGRM-VHF procedure: phase 2



<b>Step</b>	<b>#9 Check the on-board lightcurves</b>
<b>Tools</b>	<a href="mailto:eclgrm-ui@FSC">eclgrm-ui@FSC</a> (Lightcurves)
<b>Expected results</b>	<b>First inspection of the count lightcurves (CLC):</b> <ul style="list-style-type: none"><li>▪ Is the GRB well visible ?</li><li>▪ Auto. slew: understand where does it start on the CLC.</li><li>▪ First idea of the duration: long/short/etc.</li><li>▪ First idea of the variation of the background. Consistency with the navigation plots.</li></ul>

# IS ECLGRM-VHF procedure: phase 2



<b>Step</b>	<b>#10 Assess the quality of the automatic background model</b>
<b>Tools</b>	<p><a href="mailto:eclgrm-ui@FSC">eclgrm-ui@FSC</a></p> <p>(Lightcurves: dynamical CLC and BSCLC ; Background Subtraction)</p>
<b>Expected results</b>	<ul style="list-style-type: none"><li>▪ <b>Check the quality of the automatic background model for each available detector (ECL, GRD1, GRD2, GRD3) and each energy band.</b></li><li>▪ <b>When the automatic background model is not satisfactory, understand why to prepare the reprocessing (task #11).</b></li></ul>

# IS ECLGRM-VHF procedure: phase 2



<b>Step</b>	<b>#11 If needed: reprocessing to improve the background model</b>
<b>Tools</b>	<a href="mailto:eclgrm-ui@FSC">eclgrm-ui@FSC</a> (main page: interface to modify the default configuration)
<b>Expected results</b>	<ul style="list-style-type: none"><li>▪ The diagnostics made before (task #12) allow to select the few parameters to change in the default configuration of the pipeline.</li><li>▪ <b>The expected result is a satisfactory background model, possibility on a reduced time window.</b></li></ul>

# IS ECLGRM-VHF procedure: phase 2



<b>Step</b>	<b>#12 Assess the quality of the duration analysis</b> (to be done only when a satisfactory background model has been obtained)
<b>Tools</b>	<a href="mailto:ecigrm-ui@FSC">ecigrm-ui@FSC</a> (Duration ; GRB Information)
<b>Expected results</b>	<ul style="list-style-type: none"><li>▪ <b>Understand if an estimation of T90 is possible (quality).</b></li><li>▪ If yes, the first result is <b>T90 with its error.</b></li><li>▪ An additional result is the <b>on-ground significance of the GRB detection computed on T90.</b> It's especially important to know if the GRM lightcurve must be commented in the ECL-first scenario.</li></ul>

# IS ECLGRM-VHF procedure: phase 2



<b>Step</b>	<b>#13 If needed: reprocessing to improve the duration analysis</b>
<b>Tools</b>	<a href="mailto:eclgrm-ui@FSC">eclgrm-ui@FSC</a> (main page: interface to modify the default configuration)
<b>Expected results</b>	<ul style="list-style-type: none"><li>▪ Even if the background model is satisfactory, the measurement of T90 can sometimes be improved by adapting the background region and/or the energy band.</li><li>▪ Expected result: an improved measurement with T90 (reduced errors).</li></ul>

## Important points for phase 2:

- **Speed is important but understanding the quality of the products is also important to not make bad quality results public.**
  - **During this phase, the BA-T must be informed about the progress of the analysis.**
- **When a reprocessing was needed and has improved the quality of the products, these new products must be injected in SDB by the IS ECLGRM-VHF.**

**Phase 3: make the results public**

**= steps to be followed by the IS ECLGRM-VHF  
once the scientific products generated  
by the eclgrm-vhf pipeline are validated**

# IS ECLGRM-VHF procedure: phase 3



<b>Step</b>	<b>#14 ECL-first/GRM-first: write the section of the HE GCN circular dedicated to the ECL+GRM quicklook analysis</b>
<b>Tools</b>	Web page <a href="mailto:SVOM%20Notices%20&amp;%20Circulars@FSC">SVOM Notices &amp; Circulars@FSC</a> (dedicated section in the template for the HE GCN circular)
<b>Expected results</b>	<ul style="list-style-type: none"><li>▪ <b>Both ECLAIRs and GRM are mentioned.</b></li><li>▪ <b>If possible, the time structure is commented</b> (multi-peak, high variability, extended emission, etc.)</li><li>▪ <b>If possible, the duration is commented:</b> this must be adapted to the quality of the measurement (e.g. <math>T_{90} = 13.2 \pm 0.8</math> s or <math>T_{90} \sim 15</math> s).</li></ul>

# IS ECLGRM-VHF procedure: phase 3

<b>Step</b>	<b>#15 Validate the public products if the quality is satisfactory.</b>
<b>Tools</b>	<a href="mailto:iFSC-Tools@FSC">iFSC-Tools@FSC</a> , tab ECL/GRM
<b>Expected results</b>	<ul style="list-style-type: none"><li>Validated public products automatically appear on the SVOM GRB Table if the status of the trigger on iFSC-Tools is « possible GRB » or « confirmed GRB ».</li></ul>

# IS ECLGRM-VHF procedure: phase 3



<b>Step</b>	<b>#16 Report to the ECL and GRM teams</b>
<b>Tools</b>	All triggers: <a href="#">SVOM Mattermost/#eclgrm-is</a> GRM-only: <a href="#">SVOM Mattermost/#etog-grm-validation</a>
<b>Expected results</b>	<ul style="list-style-type: none"><li>▪ All triggers: a short report for each burst id.</li><li>▪ GRM-only: a report for the IS GRM explaining why you consider the trigger to be a possible GRB. This initiates a thread with the IS GRM, where the GCN circular will be discussed later if the GRB validation is confirmed.</li></ul>

# Summary: procedure

## **Phase 1: collecting useful information for the validation of the quicklook analysis (while waiting for the VHF packets for the lightcurves)**

- #1 Understand the trigger scenario (ECL first/GRM first/GRM-only)
- #2 ECL-first/GRM-first: let the BA-T know that you are on shift
- #3 Check if the event is also detected by an other mission
- #4 Check the SVOM context (position relative to SAA/SAA-Ext, environment, automatic slew, etc.)
- #5 Check the solar activity
- #6 Check when the first complete process of the eclgrm-vhf pipeline is available  
*(if needed #7 check the reception of VHF packets)*

## **Phase 2: validation of the ECL/GRM quicklook analysis**

- #8 Check the navigation plots
- #9 Check the on-board lightcurves
- #10 Assess the quality of the automatic background model
- #11 If needed: reprocessing to improve the background model
- #12 Assess the quality of the duration analysis
- #13 If needed: reprocessing to improve the duration analysis

## **Phase 3: make the results public**

- #14 ECL-first/GRM-first: write the ECL+GRM quicklook analysis section of the HE GCN circular
- #15 Validate the public products if the quality is satisfactory
- #16 Report to the ECL and GRM teams

# Summary: tools

**IS ECLGRM-VHF must have access to the following channels on the SVOM Mattermost:**

- [#voevent-notices](#)
- [#followup-operation](#)
- [#eclgrm-is](#)
- [#etog-grm-validation](#)

**IS ECLGRM-VHF must use the following pages at FSC:**

- [iFSC-Tools](#)
- [Grafana](#)
- [\(vhf-ui@FSC\)](#)
- [eclgrm-ui](#)
- [Notices & Circulars](#)

**IS ECLGRM-VHF must use the following external pages:**

- [NASA GCN website](#)
- [GOES X-ray flux](#)

# Next presentations

## 11:00 → 12:00 Presentation of the eclgrm-vhf pipeline and user interface

11:00 **The eclgrm-vhf pipeline: analysis tasks and methods** ⌚ 30m

Orateur: Frédéric Piron (CNRS/IN2P3/LUPM)

11:30 **The eclgrm-ui user interface** ⌚ 30m

Orateur: Frédéric Piron (CNRS/IN2P3/LUPM)

## 12:00 → 14:00

**Lunch**

⌚ 2h

📍 Restaurants outside IAP

## 14:00 → 15:30 The ECLGRM VHF IS tasks

14:00 **Understand the alert context** ⌚ 15m

Orateur: Frédéric Piron (CNRS/IN2P3/LUPM)

14:15 **Make the ECL/GRM VHF scientific products** ⌚ 30m

Orateur: Frédéric Piron (CNRS/IN2P3/LUPM)

14:45 **Write the GCN high-energy circulars** ⌚ 30m

Orateur: Prof. Frédéric DAIGNE (Institut d'Astrophysique de Paris - Sorbonne Université)

15:15 **Validate the ECL/GRM VHF scientific products** ⌚ 15m

Orateur: Prof. Frédéric DAIGNE (Institut d'Astrophysique de Paris - Sorbonne Université)

# Next presentations

**11:00** → 12:00 **Presentation of the eclgrm-vhf pipeline and user interface**

**11:00** **The eclgrm-vhf pipeline: analysis tasks and methods**

Orateur: Frédéric Piron (CNRS/IN2P3/LUPM)

🕒 30m

**11:30** **The eclgrm-ui user interface**

Orateur: Frédéric Piron (CNRS/IN2P3/LUPM)

🕒 30m

Phase 2

**12:00** → 14:00

**Lunch**

🕒 2h

📍 Restaurants outside IAP

**14:00** → 15:30 **The ECLGRM VHF IS tasks**

**14:00** **Understand the alert context**

Orateur: Frédéric Piron (CNRS/IN2P3/LUPM)

🕒 15m

**14:15** **Make the ECL/GRM VHF scientific products**

Orateur: Frédéric Piron (CNRS/IN2P3/LUPM)

🕒 30m

**14:45** **Write the GCN high-energy circulars**

Orateur: Prof. Frédéric DAIGNE (Institut d'Astrophysique de Paris - Sorbonne Université)

🕒 30m

**15:15** **Validate the ECL/GRM VHF scientific products**

Orateur: Prof. Frédéric DAIGNE (Institut d'Astrophysique de Paris - Sorbonne Université)

🕒 15m

Phase 1

Phase 2

Phase 3