SVOM GCN circular templates

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Postdoc at EIC with Olivier Godet & Laurent Bouchet

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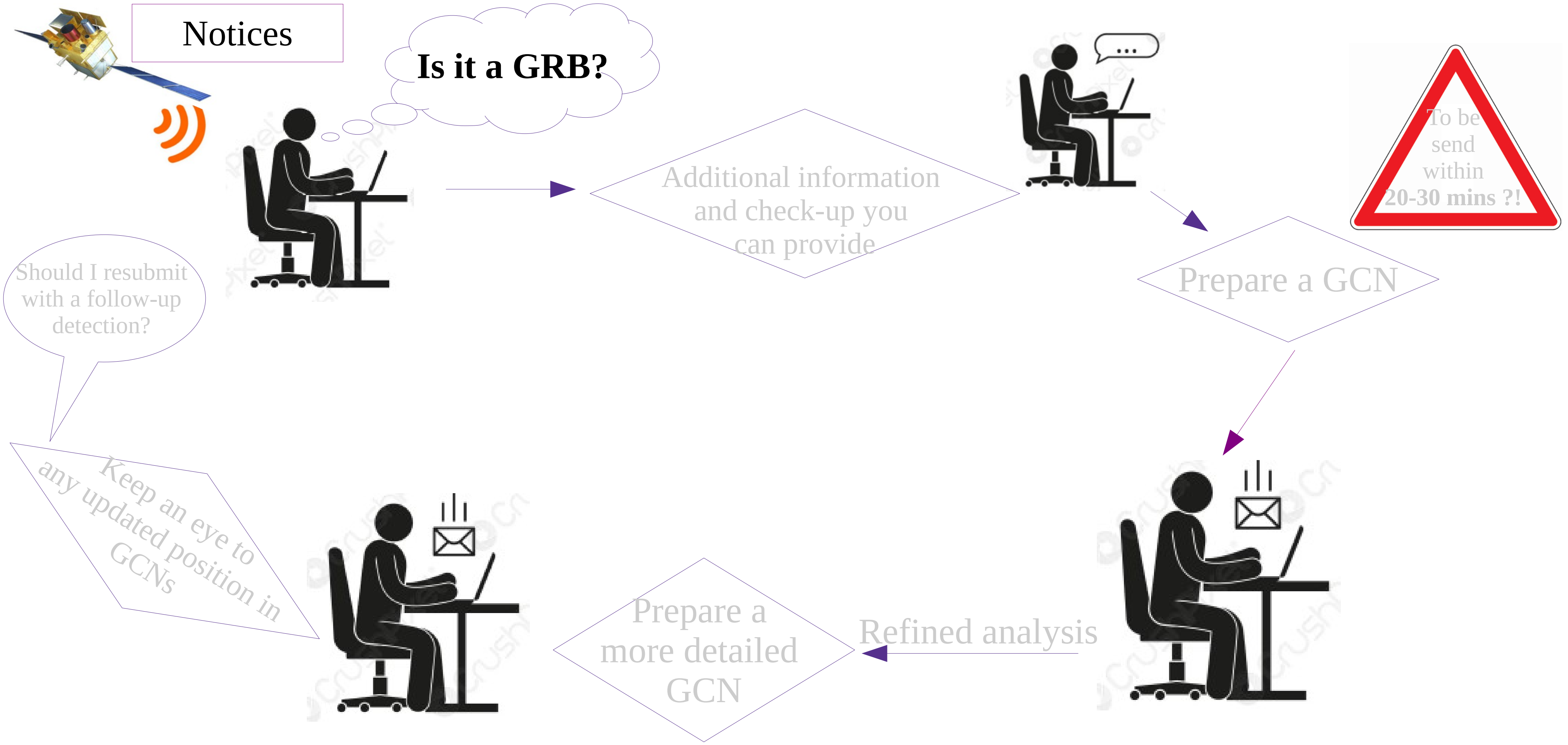
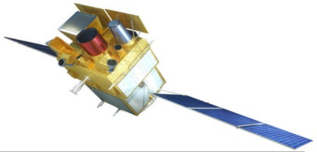
How many GCN templates will need to be prepared?



Judge the type of the coming event



SGR?

Short Gamma repeater
Very soft spectra, short pulses, multiple triggers

GRB?

High SNR? Count-threshold detection ?

Cosmic-ray shower?

has multiple simultaneous overflow channel pulses

SAA?

Trigger before entering, after exiting SAA, signals in all pixels

TGF?

Terrestrial gamma-ray flash:
very short duration, signal in most pixels, ….

Others?

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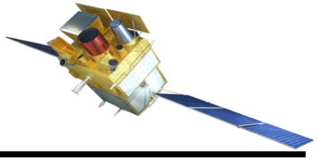

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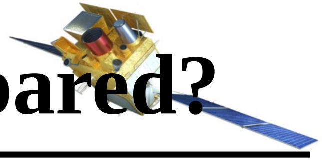
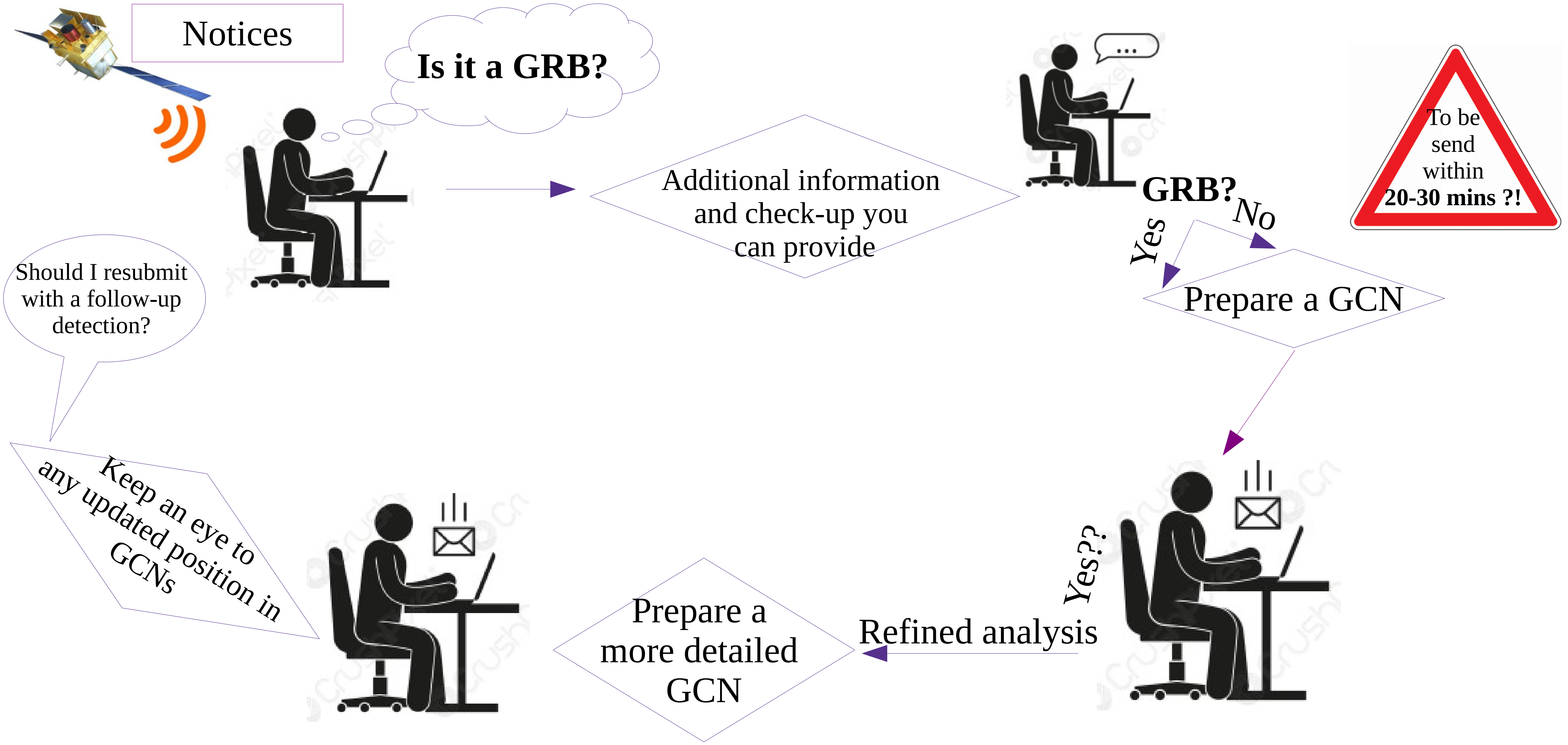
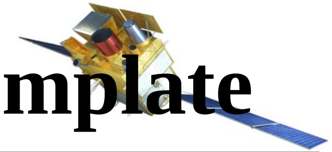




What are the relevant informations in a GCN template



- **2 GCNs for claiming a detection on** redmine
  - **Initial GCN Circular,** ***over which timescale should it be sent? (within 20 min?)***
  - **On-ground Localization, refined anlaysis (asap after analyzing the received data)**

Initial GCN circular

- **GCN TITLE:** GRB XXXXXXA: SVOM detection of a **[SHORT/LONG, BRIGHT/FAINT, UNUSUAL]** burst [of great interest / with an optical counterpart, ..]
- **Authors:** A. Author (Afil), A. Author (Afil), and A. Author (Afil). Clear identification of the BA and Instrument specialists! Ranks !
- **Short description about the detection:** SVOM-ECLAIRs has detected and located the [SHORT/LONG, BRIGHT/FAINT, UNUSUAL] GRB YYMMDDA (Trigger=XXXXX) at YYYY-MM-DDTXX:XX:XX.X UT (thereafter T0).
- **Detected with other instrument?**: This burst was also observed by MISSION/instrument [ADD GCNs OF OTHER INSTRUMENTS AS NEEDED]
- **Slewed/not:** SVOM slewed promptly to the burst / SVOM will slew with an XX h delay/ SVOM cannot slew to the burst because of orbital constraints.
- **Information about the rough location:** The ECLAIRs on-board location is RA, Dec xxx.x, xxx.x (J2000) [RA = XXh XXm Xxs, Dec(J2000) = + / - XXd XX' XX"], with an error radius of XX arcmin (90% containment [, including **systematic errors**]).

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Initial GCN circular

1- Automate the GCNs??

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Initial GCN circular

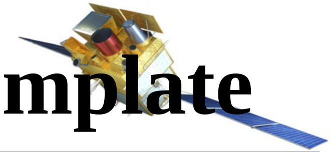
- **Provide more information on the trigger :** The XX-XX keV ECLAIRs lightcurve showed **[multi-peaked, single-peaked]** structure **[with an extended emission / ...]** with a duration of about XX sec. The XX-XX keV peak count rate was around xxx counts/sec at ~XX sec after the trigger.

- **Detected with the GRM instrument?** The SVOM/GRM also detected the burst with a localization consistent with ECLAIRs. *shall we mention at this stage a URL link where people could see some of the VHF products for a given trigger?*

- **Information about the BA:** The Burst Advocate for this burst is XXXXX XXXXX (xxxxatxxx.xxx). Please contact the BA to require further information on the SVOM follow-up for this burst. In case of extreme urgency, after emailing the BA, **you can contact the SVOM PIs by [phone?] (see xxxxx web site: [URL]).**

- **Information about the SVOM telescope:** SVOM is a Chinese-French collaboration … , please see XXX et al. (YYYY) – [URL].

What are the relevant informations in a GCN template



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2- Do we will wait for other SVOM-instrument detection: MXT, VT, GRM??

What are the relevant informations in a GCN template

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<u>GCN with refined analysis</u>

- **After the whole data are dowlinked:**
  Using downlinked data from T0-XXX sec to T0+yyy sec (T0 being the trigger time), we report further analysis of ECLAIRs GRB XXXXX[A,B, C] (Trigger = XXXXXX) [BA et al., GCN XXXX].

- **Information about the on-ground location:** more precision on the position than the initial GCN circular

- **Information about the light-curve:** The XX-XX keV ECLAIRs lightcurve showed **[multi-peaked, single-peaked]** structure **[with an extended emission / ...]** with a T90 duration of about XX sec.

- **Information about the GRB spectrum:**
  - **Fit model:** The Time average spectrum from T0+/-XX sec to T0+XX sec is best fitted by a [simple power-law / other models with the best-fit parameter values & errors].
  - **Fluence:** The XX-XXX keV fluence is XX + / - xx 10^{XX} erg/cm^2.
  - **The photon flux:** The 1-sec peak photon flux measured from T0+xxx sec to T0+yyy sec in the XX-XX keV band is XXX+/-XX ph/cm^2/s. The errors are quoted at the [1 sigma / 90% confidence level]. *The estimated photon index above 100 keV is XX.*

What are the relevant informations in a GCN template

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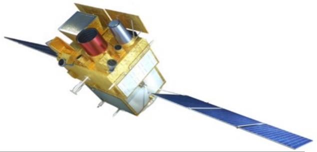
GCN with refined analysis

- A Swift ToO has been requested for this burst?
- Indicate if the burst/event could be associated with a multi-messenger event (i.e. GW ou neutrino)
- A sentence to say where the basic ECLAIRs products could be seen
- Information already provided in the first GCN about the BA and SVOM instruments

Additional informations

- Is it interesting to provide the T50 as well??
- Could make sense to talk here about the joint fit with GRM??
- Add information about if there was an overlap in the observation of ECLAIRs and MXT over which period of time and corresponding to the prompt or early afterglow phase.

Questions to be discussed ...



- ***When the initial GCN should be provided?***

- ***Shall we automate the GCN circular from the beginning of the mission?***

- ***Do will wait for information from the other instruments: MXT, VT, GRM?***

- ***What about the author list that will be included?***

Thank you