Current Burst Advocates tools and activities related to the Swift GRB training

Damien Turpin (CEA)

on behalf of
Henri Louvin (CEA), Chrystel Moreau (LAM), Kamshat Tazhenova (CEA), Nicolas Dagoneau (CEA), Stéphane Schanne (CEA), Tatyana Sadibekova (CEA), Stéphane Basa (LAM), Arnaud Claret (CEA), Bertrand Cordier (CEA), Li-Ping Xin (NAOC), Mo Zhang (NAOC), Xuhui Han (NAOC) + FSC team

SVOM workshop @OHP
April, 7th 2022

Check the BA-training wiki page

https://forge.in2p3.fr/projects/ba-training2

Modifier Surveiller •••

BA training

Core program training with Swift and Fermi-GBM alerts

Goals

The goals of this new BA training session is to test and validate the interfaces and tools we will need to perform the BA tasks in 2022 in the framework of the Core Program. Below are listed the tools and interfaces that we will test:

- Shift organization and tools
- FSC and CSC communication protocols
- SVOM follow-up system @ Xinglong and CSC communication
- CSC - BA tools interfaces
- BA tools monitoring pages for the validation of the optical counterparts

Presentations in meetings

- General system architecture (author: D. Turpin & Liping Xin)
- Kick-off meeting presentations (author: SVOM BA group)

General presentations about the BA training system

Documentation

Burst Advocate Working Organization / PDF version (**not necessarily up-to-date**) check here
Burst Advocate Working Procedure / PDF version (**not necessarily up-to-date**) check here
GCN Circular templates

Draft about the BA working organization and working procedures

Useful links

iFSC-tools
Invitation to SVOM-BA Slack

Link towards the iFSC-tools + SVOM-BA Slack

Access to BA reports for training campaigns

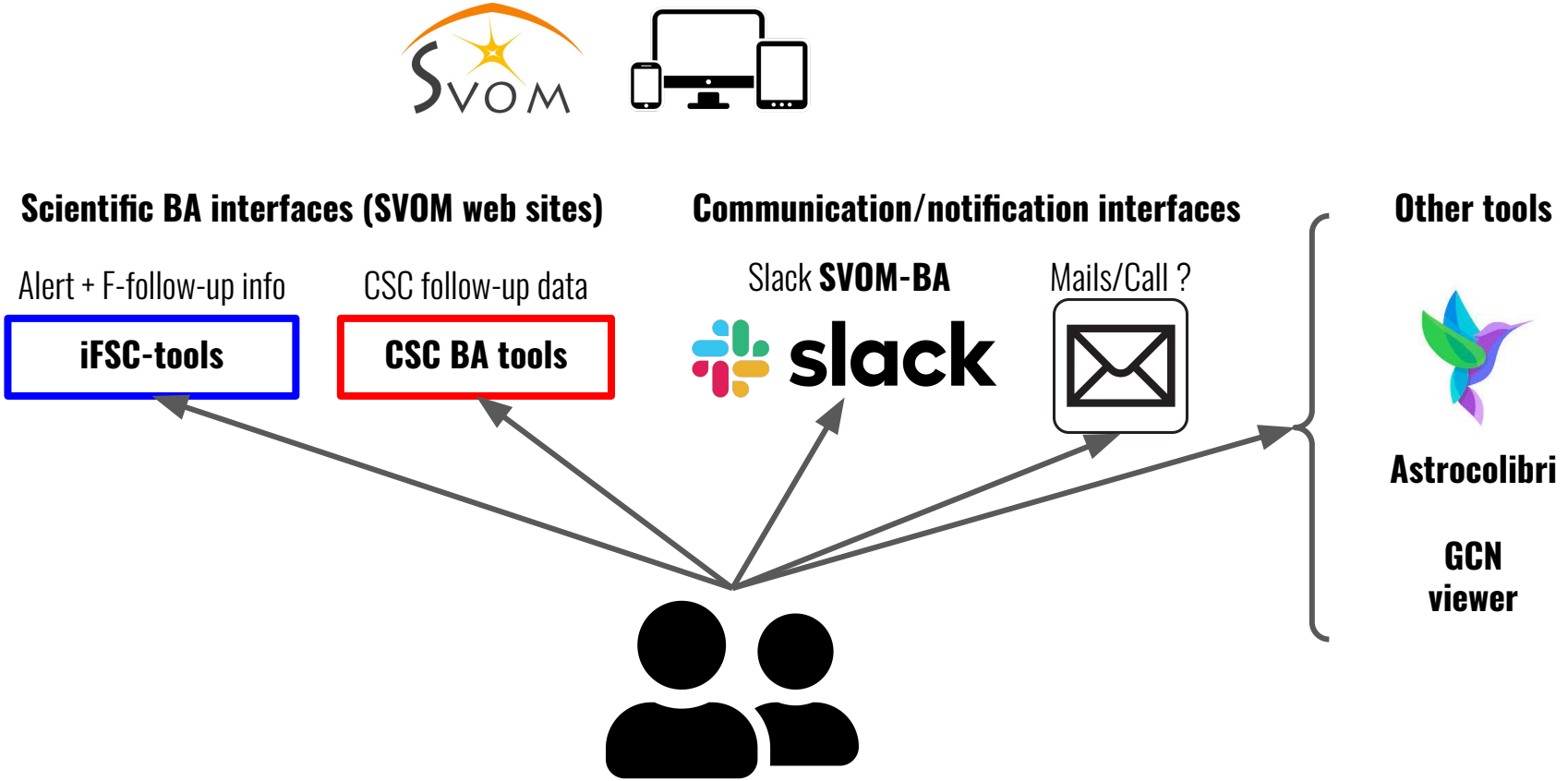
Tutorials

1. **What are the informations I can get form the BA training wiki pages?** check tutorial
2. **How to make my Burst Advocate final report?** check tutorial

Tutorial about the BA training activities + BA report pages for the 2022 training

Training on Swift GRB alerts

The BA tools for the SVOM sci. operations



The current BA environment in SVOM

The BA training WIKI (redmine) D. Turpin

- Store the main documentations and presentations
- **BA working procedure**
- **Template for BA report in the Wiki**
- **Template for GCN Circulars** (TBD)
- General statistics about the follow-up campaign

The iFSC-tools (FSC) C. Moreau

- **Display VHF/X-band data products (alert & follow-up)**
- **Manage the French shifts**
- Display the FR/CN BA shift calendar
- Display the COLIBRI data and provide tools to identify the GRB afterglow ?
- **Display follow-up data from external partners?**

The CSC BA-tools (CSC) L. Xin

- Manage the Chinese shifts
- Display the SVOM/CN follow-up data
- Provide tools to identify the GRB afterglows
- Make a link with ToO revisit tools

zoom slack

- **Regular BA meetings**
- Live discussions for any kind of concern related to the BA activities

2022 : BA training with the Swift GRB alerts

SVOM

cea

SVOM workshop @OHP
April, 7th 2022

Some statistics about the first months of activities

Month/year	#Swift alerts	#SVOM simulated bursts @FSC	%sim success @FSC	reason of failures	#follow-up
May/2021	1	1	–	–	0
June/2021	11	4	36%	code debugs	0
July/2021	15	4	27%	code debugs	0
Oct/2021	8	2	25%	code debugs	0
Nov/2021	4	2	50%	code debugs + failure FSC infra. (power outage)	0
Dec/2021	8	5	63%	failure FSC infra. (power outage)	0
Jan/2022	5	5	**100%**	–	**0**
Feb/2022	1	1	**100%**	–	**0**
March/2022	5	4	**80%**	Infrastructure upgrade at FSC	**0**

Some statistics about the bursts of 2022

https://forge.in2p3.fr/projects/ba-training2/wiki/Training_on_Swift_GRB_alerts

Summary of the follow-up 2022

Instrument	TrigID	SVOM burst ID	Trigger alias	GRB type	Redshift	Trigger Time [UTC]	BA	Description	SVOM Follow-up	First observation after T0	follow-up duration	BA report
Swift/BAT	1091527	sb22010121	GRB 220101A	Long	4.618	2022-01-01 05:10:11	D. Turpin	The BAT lightcurve shows a complex lightcurve extending to at least T+170. z = 4.618. **It is a high-z burst**.	No	--	--	check
Swift/BAT	1093592	sb22011767	GRB 220117A	Long	4.961	2022-01-17 16:18:51	D. Turpin	The BAT light curve showed a multi-peaked structure with a duration of about 65 sec. z = 4.961. **It is a high-z burst**.	No (low elevation)	--	--	check
Swift/BAT	1093611	sb22011783	GRB 220117B	Long	--	2022-01-17 20:05:28	D. Turpin	The BAT light curve showed a complex structure with a duration of about 20 sec.	No (low elevation)	--	--	check
Swift/BAT	1093742	sb22011876	GRB 220118A	Long	--	2022-01-18 18:20:38	D. Turpin	The BAT light curve showed a single-peaked structure with a duration of about 20 sec.	No (bad weather)	--	--	check
Swift/BAT	1095288	sb22030676	GRB 220306B	Long	-	2022-03-06 18:15:37	N. Dagoneau	The BAT light curve showed a complex structure with a duration of about 15 sec. The peak count rate was ~2600 counts/sec (15-350 keV), at ~0 sec after the trigger.	No	--	--	check
Swift/BAT	1098132	sb22031973	GRB 220319A	Long	--	2022-03-19 17:40:33.33	D. Turpin	The BAT light curve showed a single-peaked structure with a duration of about 10 sec. T90 (15-350 keV) is 6.44 +- 1.54 sec	no	--	--	check
Swift/BAT	1098630	sb22032167	--	--	--	2022-03-22T16:06:35.17	P. Maggi	NOT A GRB, BAT trigger occured without StarTracker lock, likely to be Sco_X-1	No (not a GRB)	--	--	check
Swift/BAT	1098633	sb22032168	--	--	--	2022-03-22 16:22:43.17	P. Maggi	NOT A GRB, BAT trigger occured without StarTracker lock, likely to be Cyg X-1	No (not a GRB)	--	--	check
Swift/BAT	1099310	sb22032571	GRB 220325A	Long	--	2022-03-25T17:16:23.08	P. Maggi	The BAT light curve showed a complex structure with a duration of about ~8 sec.	No (weather and low elevation)	--	--	check
Swift/BAT	1100848	sb22040216	--	--	--	2022-04-02 03:54:42.47	D. Turpin	It is a non astrophysical event	no	--	--	check
Swift/BAT	1101053	sb22040386	GRB220403B	Long	--	2022-04-03 20:42:42.65	D. Turpin	The BAT light curve showed a single-peaked structure with a duration of about 30 sec and a possible precursor just before.	no (no answer from Xinglong)	--	--	check
Swift/BAT	1101133	sb22040449	GRB220404A	Long	--	2022-04-04 11:54:30	D. Turpin	The BAT light curve showed a complex structure with a duration of about 10 sec. Due to a Sun observing constraint, Swift cannot slew to the BAT position until 20:40 UT on 2022 June 28. There will thus be no XRT or UVOT data for this trigger before this time.	no (too close to the Sun)	--	--	check

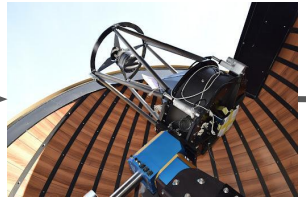
To move forward and start optical afterglow validation training

Example of a SVOM GRB/ToO follow-up request with IRiS

French Science Center
contact: H. Louvin

FSC broker

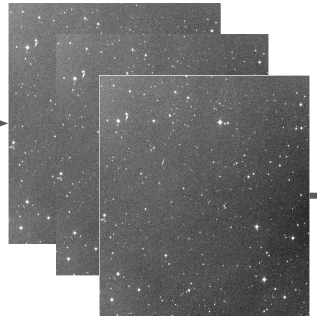
sends alert (VOE)



The IRiS telescope system
contact: S. Basa

follow_up obs

of svom sb21XXXX burst alert



The SVOM/IRiS image repo
contact: S. Basa & IRiS team

Image analysis pipeline
contact : D. Turpin

Communication tools

zoom

slack

To debrief

live discussion when an alert sequence is started

H. Louvin, S. Basa & D. Turpin

Some take-away messages

1. The Swift alert simulator @FSC is stable, we can enter into sci. production mode ("MISTRAL mode" or "SVOM-like" mode)

2. We are close to have tools to analyze any kind of images for photometric analysis

3. Many debugs of FSC VHF services (pre-proc, notices, monitor, etc.) done thanks to these tests in addition to the different system tests (DC, GAL, etc.)

4. A small team of BA beta testers is debuging the "BA tools" for what concerns the VHF alert products. They also make reports on the BA-training wiki page + suggestions for having a understandable BA working procedure

5. Still no follow-up so far ! WE MUST START THIS ASAP IF WE WANT TO HAVE A REAL TRAINING. Critical issue here !
(trigger validation can be trained with the recurrent alert test made at FSC but the follow-up is missing)