

Updates on the Real-time simulation of SVOM Core Program alert sequences for the training of the Burst Advocates



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with the collaboration of
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**SVOM workshop @OHP
April, 7th 2022**



Motivations and Goals

Our motivation for this training (Core Program only)

We have one year to train the future Burst Advocates in **real conditions**.

- **At the system level**

1. **Simulate (ECLAIRs/MXT) alert sequences generated onboard in real-time**
2. **Send the alert informations in all the SVOM sub-systems (FSC & CSC DB, SDB, follow-up system) in real-time**
3. Generate simulated voevent alerts to be followed-up by our SVOM follow-system (SVOM facilities, external partners, MoU partners, etc.)
4. **Build the first pieces of the future SVOM BA working environment**

- **At the scientific level**

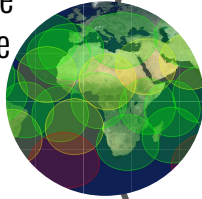
1. Interpret the data displayed on the iFSC and CSC-BA tools : validation of the optical GRB afterglow candidates
2. Take appropriate decision to perform further follow-up observations
3. Post our first GRB follow-up GCN Circular as the SVOM Collaboration !

The Burst Advocate role in SVOM (CP)

1. Check & validate the ECLAIRs/GRM trigger quality



2. Check the VHF data downlink and be prepare for more data coming from the onboard instruments



3. Check that the alerts has been well propagated into the SVOM follow-up system (FSC/CSC)



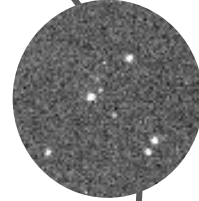
A working procedure is in progress to guide the future BAs in their tasks



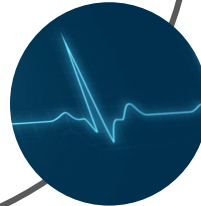
4. Check that obs. plan are being executed by the follow-up tel. on ground



6. Validate/Identify the EM afterglow counterparts from MXT + opt/IR facilities



7. Send GCN circulars to the world and trigger more spectro/photo follow-up if needed

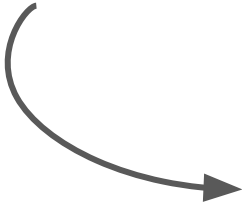


5. Check the sci. products coming from x-ray and optical follow-up observations

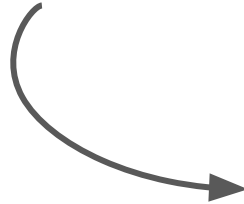


Outlines

1. The SVOM alert simulator



2. Who are our possible partners for following-up the SVOM sim. GRB alerts ?



3. Last modifications on the SVOM alert simulator



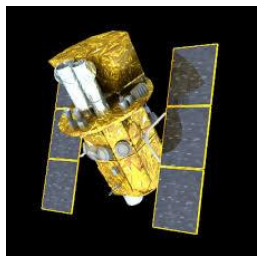
1. The SVOM alert simulator



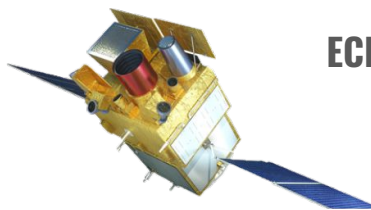
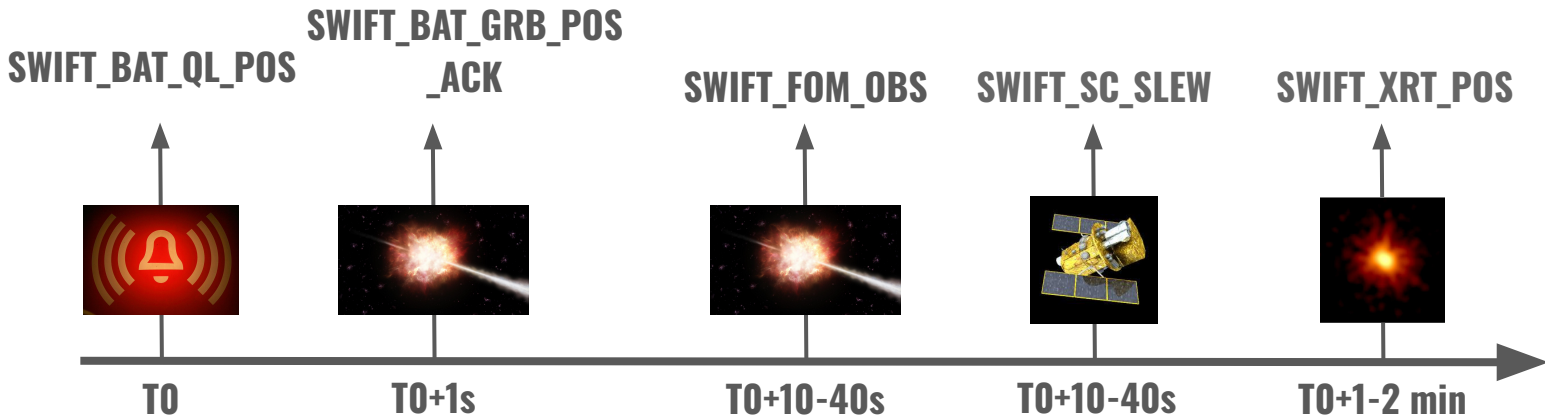
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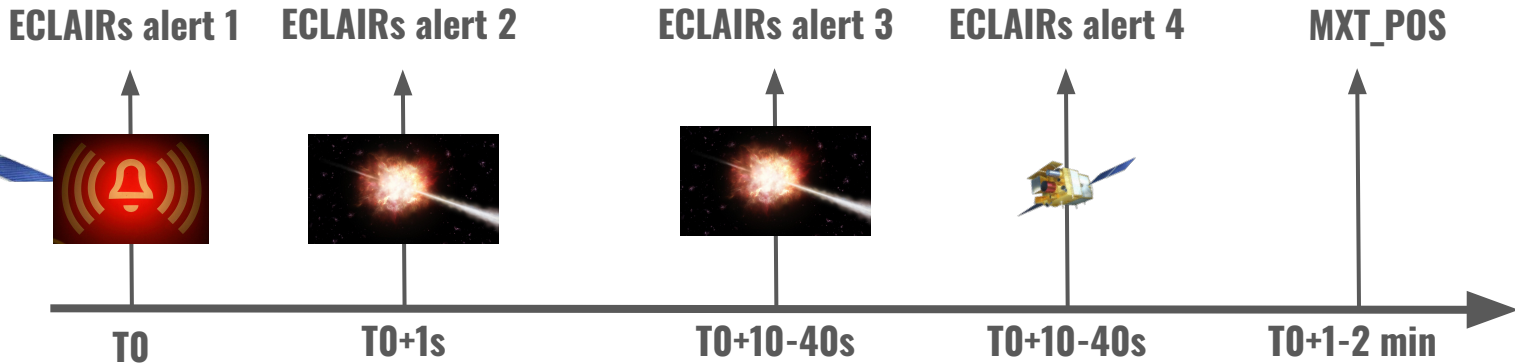
Which Swift Notices / Which SVOM Notices?



Swift
(real world)



SVOM
(simu world)





Practically speaking, how do we proceed ?

Swift GCN notices (pygcn service)

VOEvent (XML)

SWIFT_BAT_QPO, SWIFT_BAT_GRB_POS_ACK, SWIFT_FOM_OBS &
SWIFT_SC_SLEW

Running
24h/7d

SVOM decoder & ECLAIRs packet simulator
(gcn-interceptor)

ECLAIRs Alert packet (JSON)

JSON packet

FSC encoder code
(packets-decoder)

Encoded packet

FSC VHF upload in SDB

voevent-notices service

NATS com

SVOM / iFSC-tools
(C. Moreau talk)



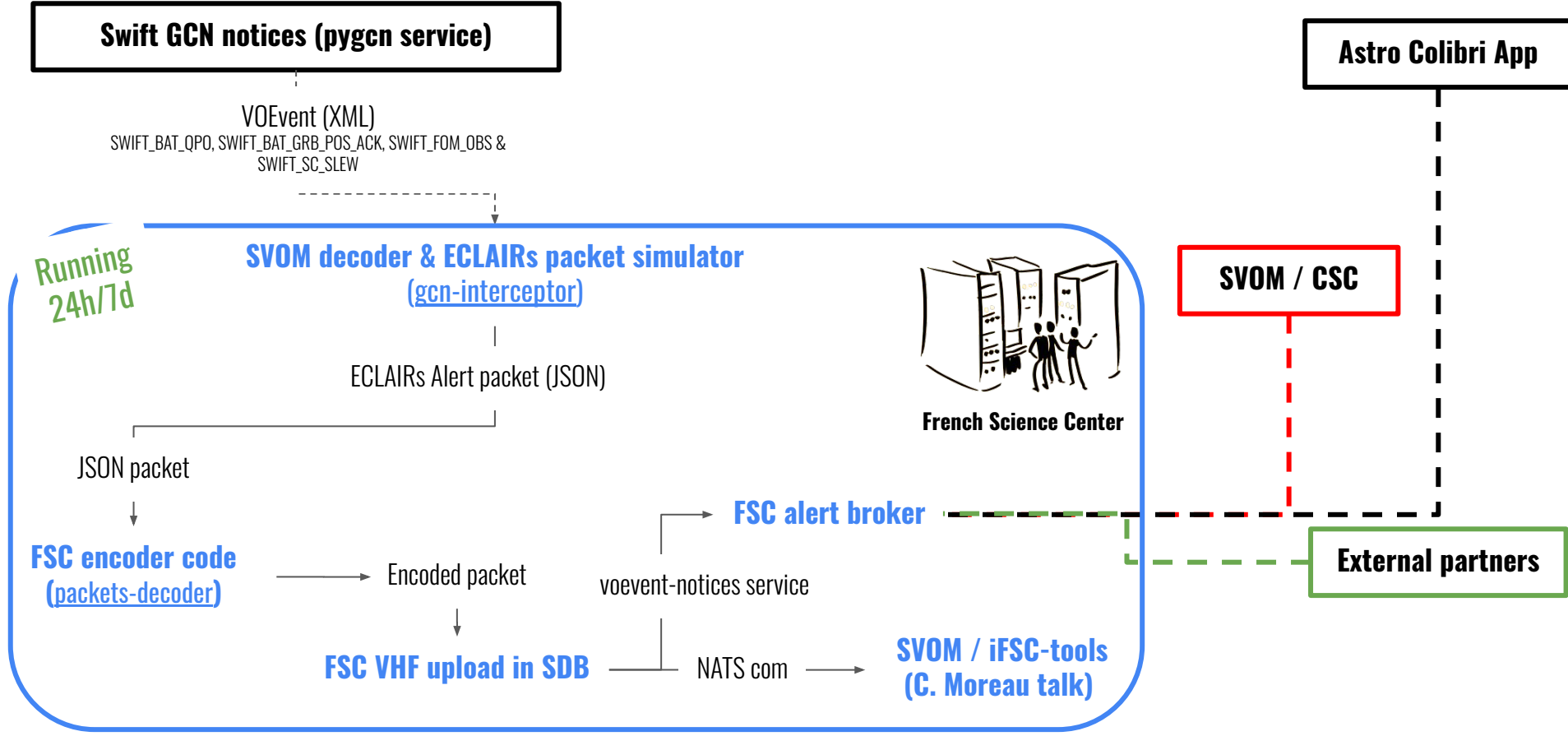
French Science Center

FSC alert broker

SVOM / CSC

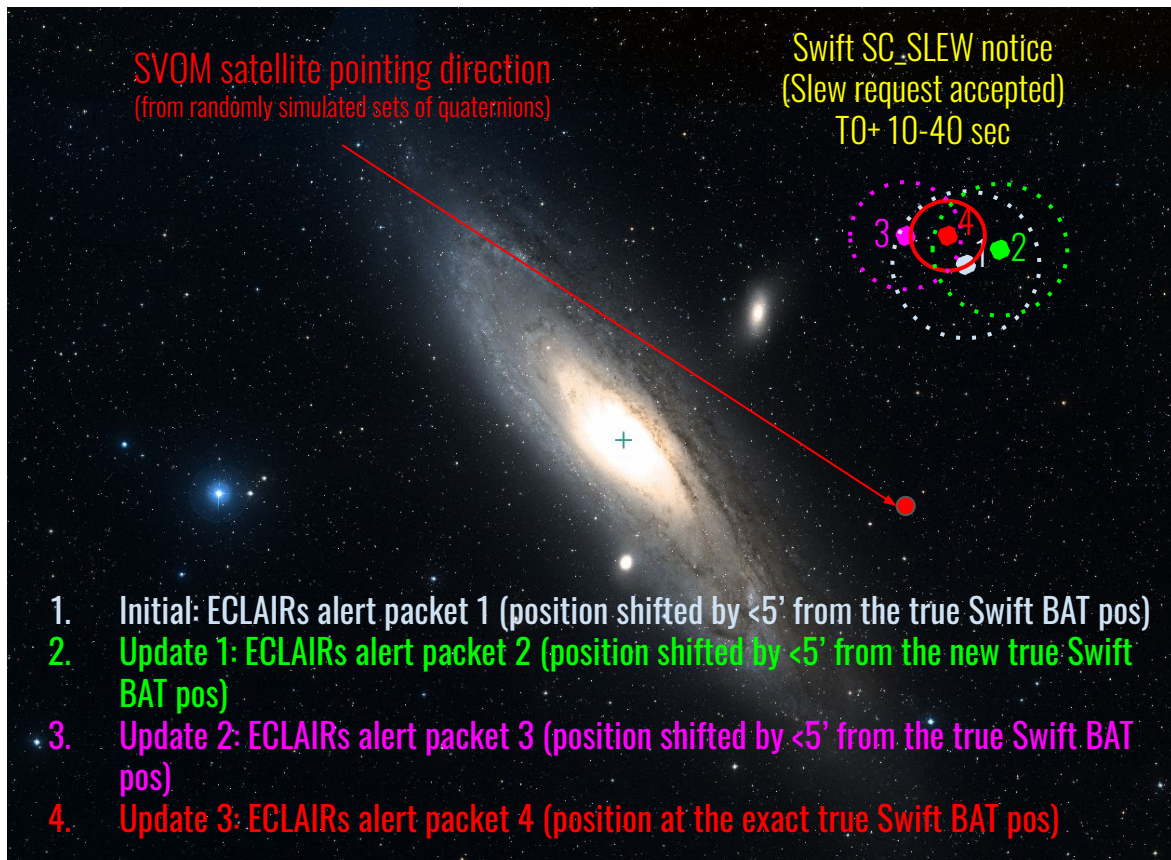
Astro Colibri App

External partners





The typical scenario for the follow-up facilities





2.

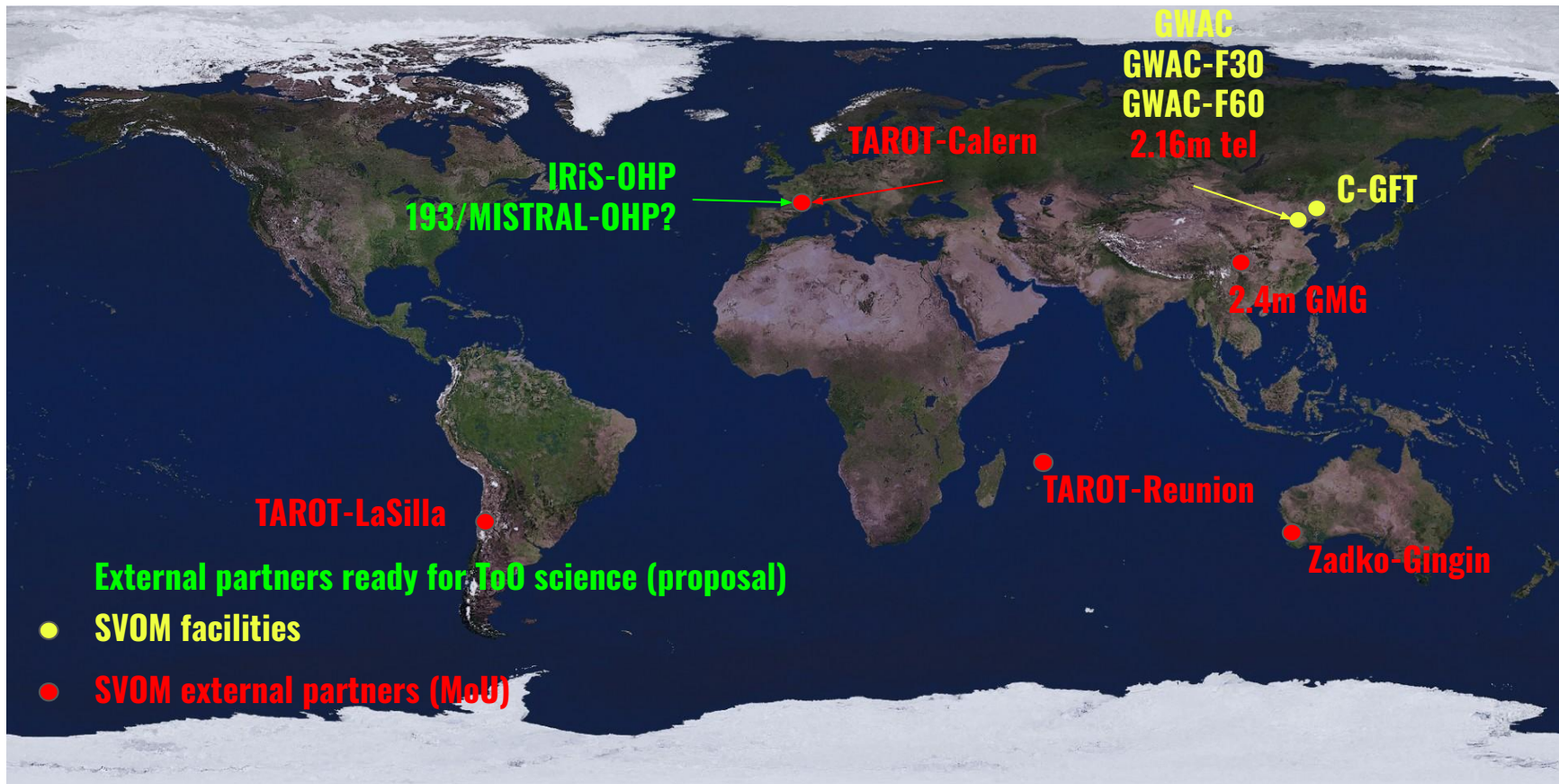
Our potential partners for the follow-up of the SVOM sim.
GRBs



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The potential follow-up partners for the training





How do we collect sci. products from external partners ? Which format for these products ?

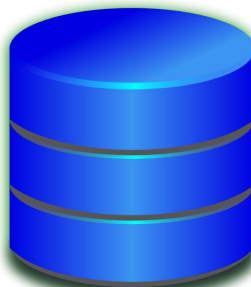
photometry or spectro data

Transient detection pipeline
/ spectro analyzer

produces sci. products

Which interface ?

Who develop that ?



FSC/CSC
SDB



iFSC-tools ?
CSC BA tools ?

other ?

**To me
there is no clear answer right now**



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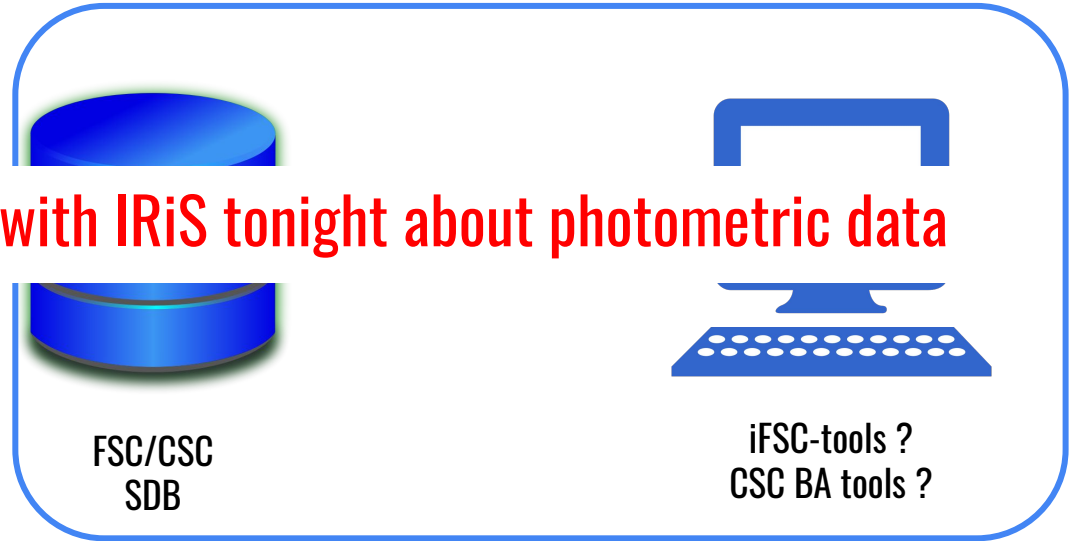
photometry or spectro data

Transient detection pipeline

/: **We will show what is doable with IRiS tonight about photometric data**

produces sci. products

who develop that :



FSC/CSC
SDB

iFSC-tools ?
CSC BA tools ?

other ?

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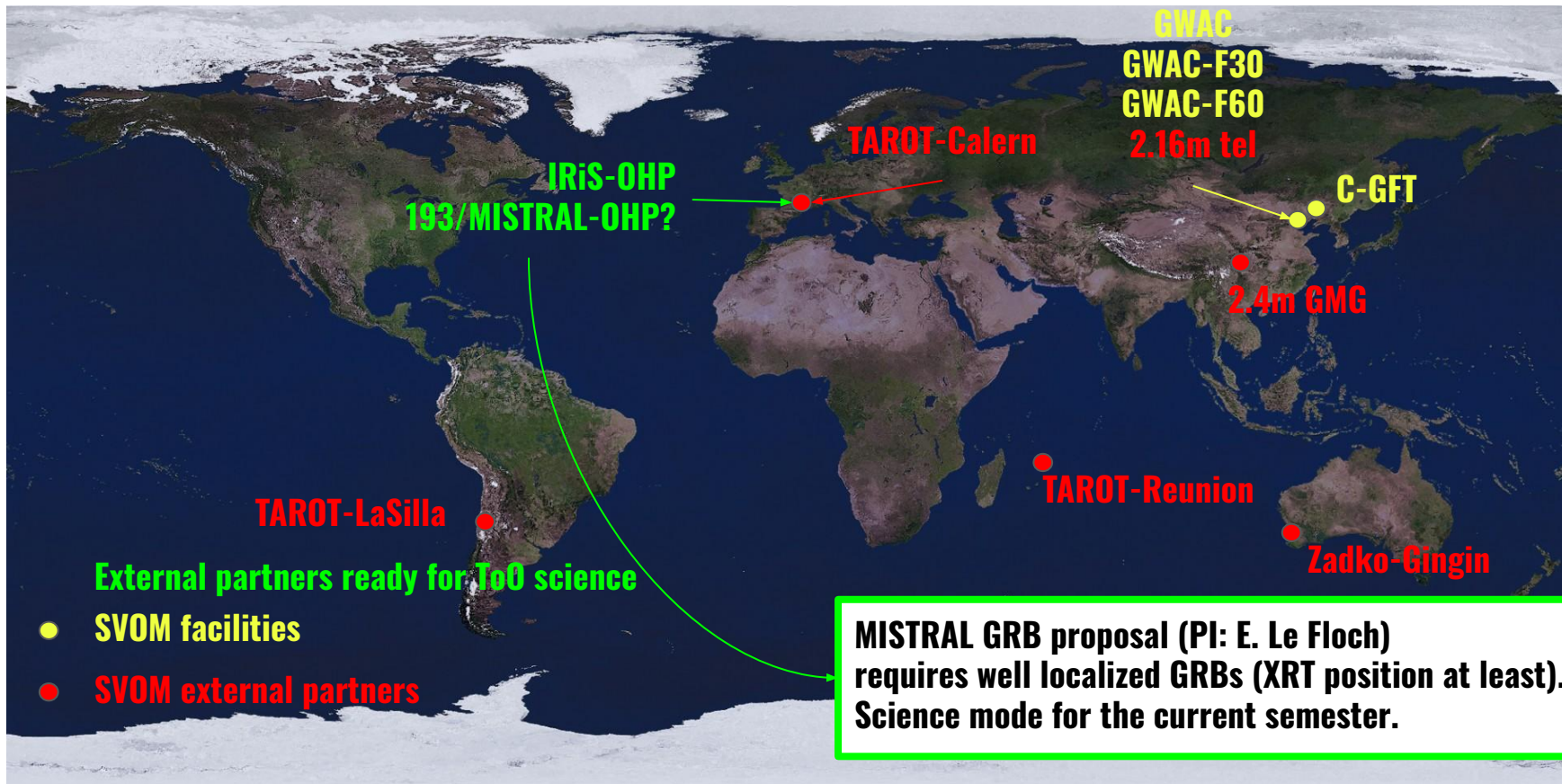


3.
Last modifications on the SVOM alert simulator

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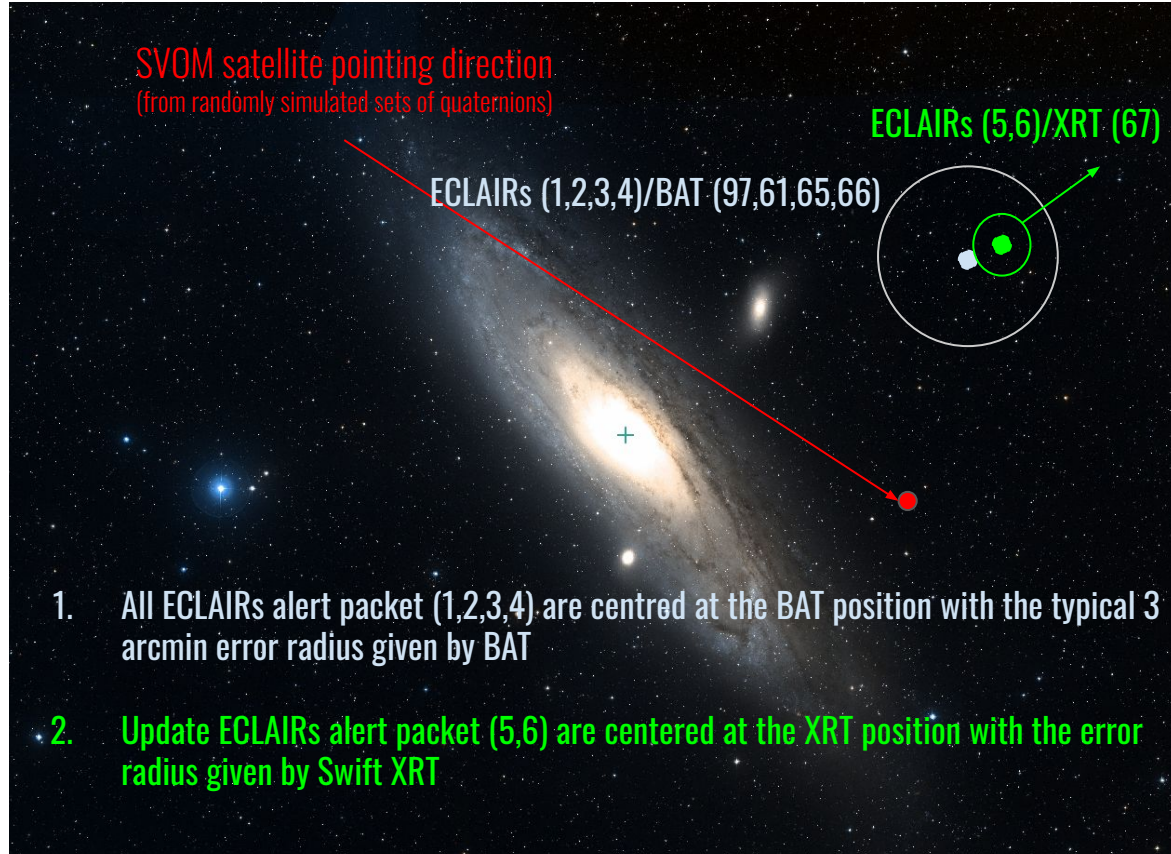


The potential follow-up partners for the training





For 2 weeks, the new GRB scenario is the following





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SVOM satellite pointing direction
(from randomly simulated sets of quaternions)

Some issues related to these (needed for science) modifications

- We are no longer testing SVOM like alert sequence with Swift alerts but rather we forward the Swift BAT/XRT notices into SVOM ECLAIRs voevent notices
- ECLAIRs is not supposed to send XRT notices but MXT notices are not ready
- We are sending these alerts to our chinese colleagues too, they might be confused but also other external facilities that would like to train on SVOM-like alert sequence
- It prevents us to make test at FSC (production site -> we should keep a dev version of the gcn-interceptor)

Radius given by Swift XRT