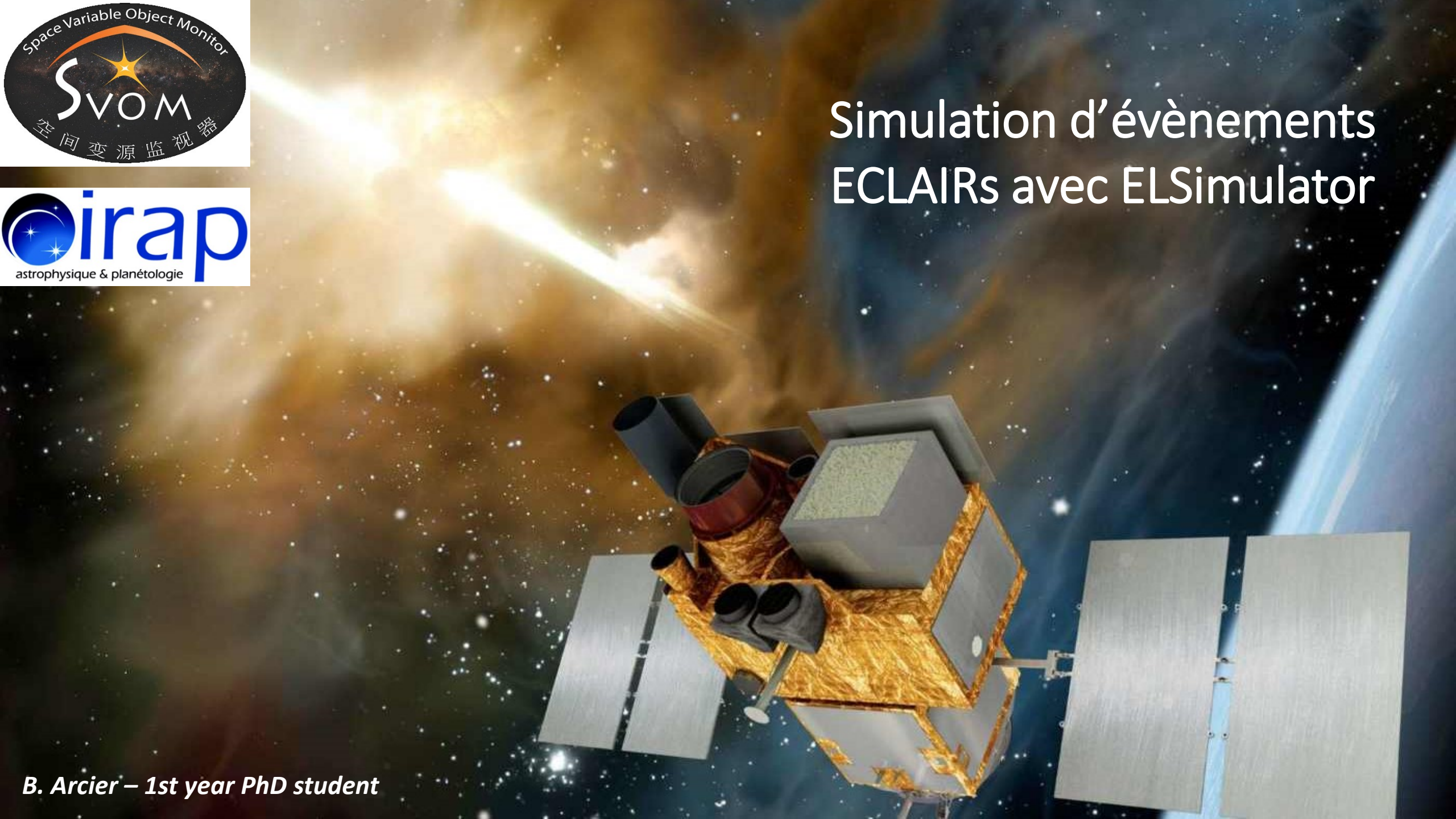
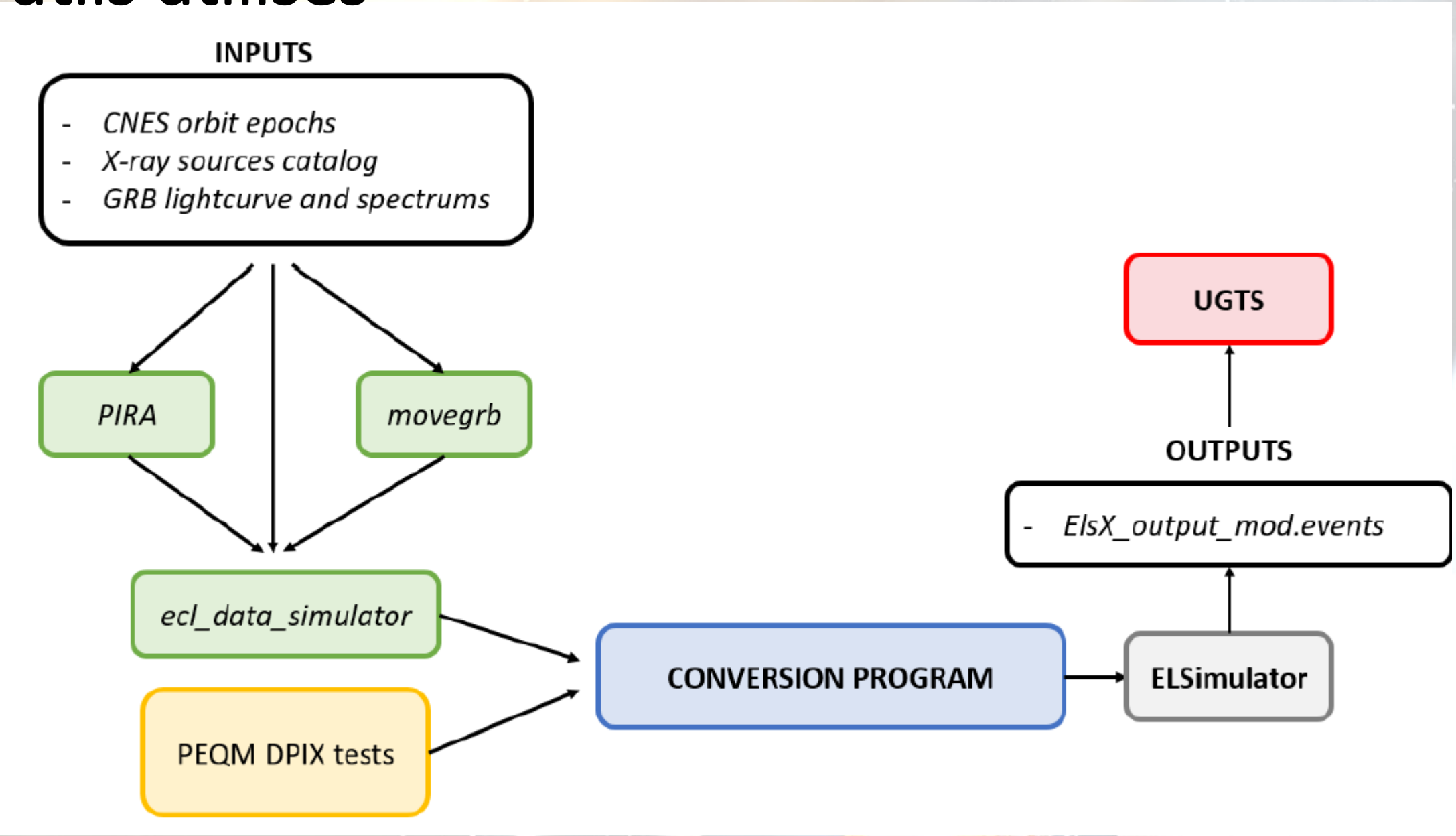
Simulation d'évènements ECLAIRs avec ELSimulator



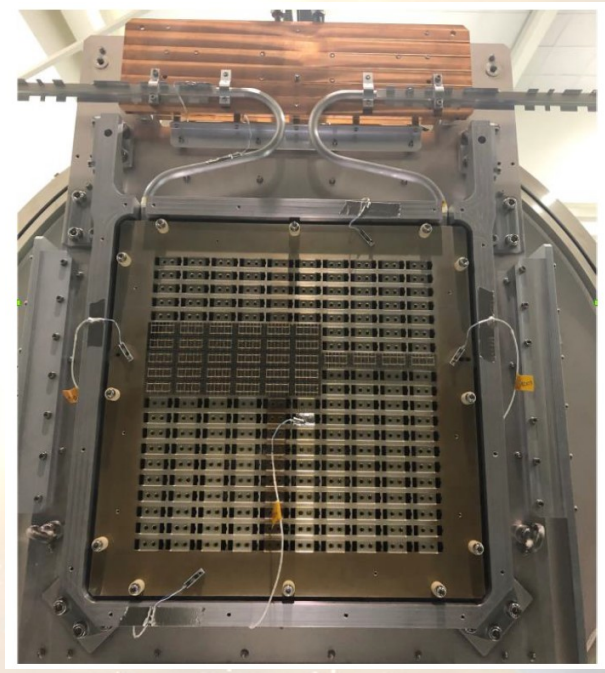
B. Arcier – 1st year PhD student

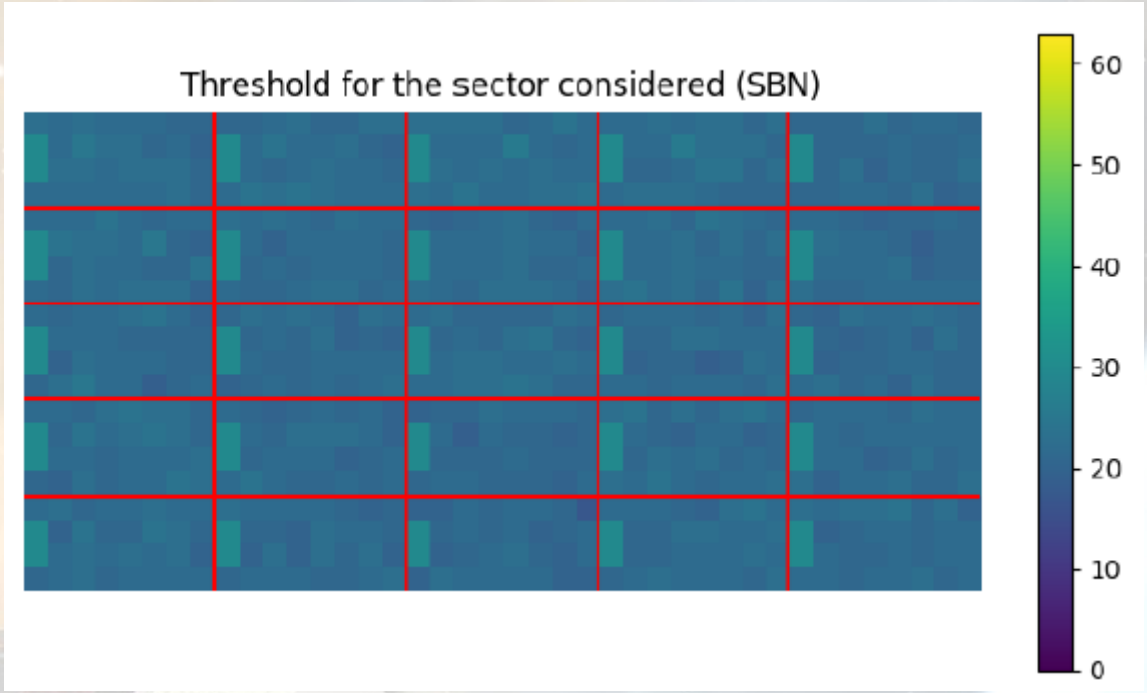
1. Outils utilisés

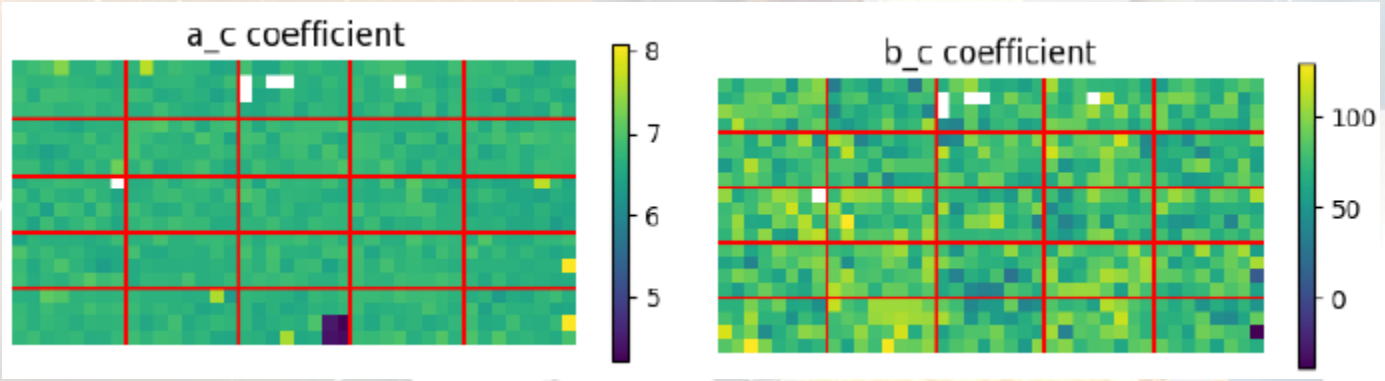


1. Outils utilisés: GROUND

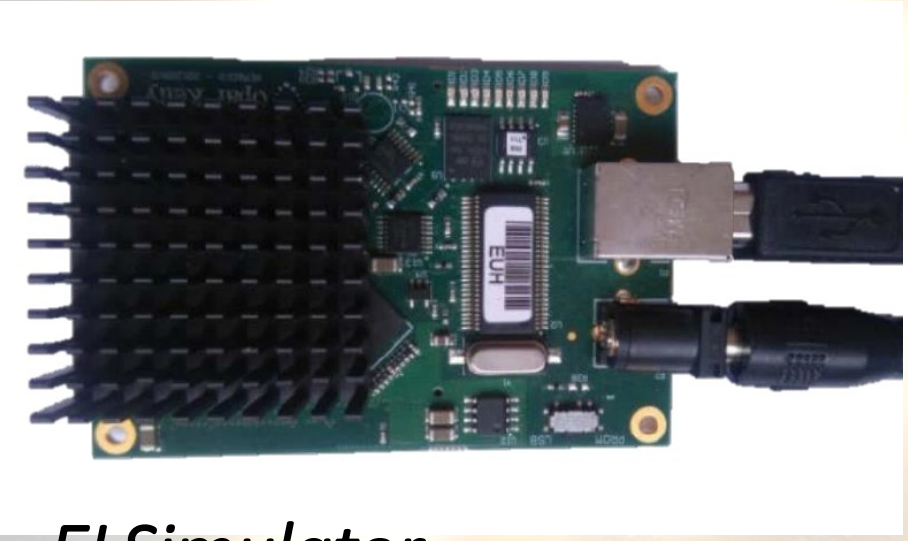
DPIX configuration PEQM: SBN, CHAN-E, SBN-E







1. Outils utilisés: GROUND



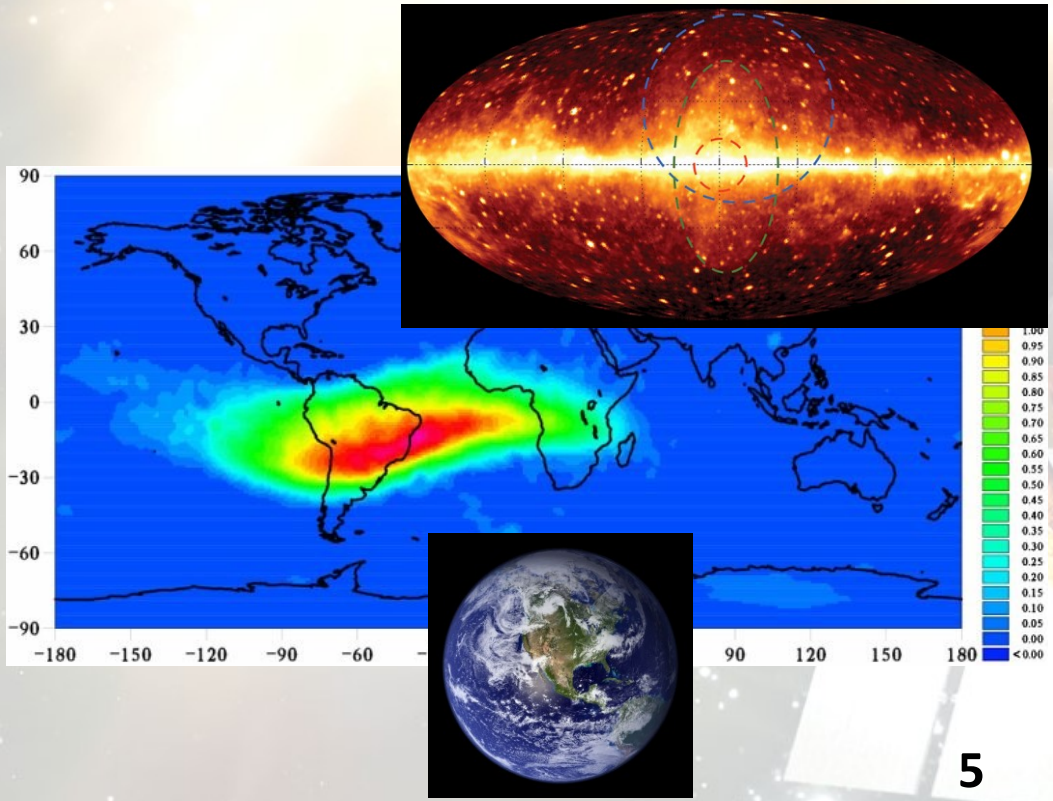
ELSimulator
Maestre S., Bouchet L.

										x32	x32				
0	1	3	50	3	1	96	2	0	1	16	150	300	450	600	750
1	1	3	50	3	1	96	2	0	1	16	150	300	450	600	750
2	1	3	50	3	1	96	2	0	1	16	150	300	450	600	750
3	1	3	50	3	1	96	2	0	1	16	150	300	450	600	750
4	1	3	50	3	1	96	2	0	1	16	150	300	450	600	750
5	1	3	50	3	1	96	2	0	1	16	150	300	450	600	750
6	1	3	50	3	1	96	2	0	1	16	150	300	450	600	750
7	1	3	50	3	1	96	2	0	1	16 ...	150	300	450	600	750 ...
8	1	3	50	3	1	96	2	0	1	16	150	300	450	600	750
9	1	3	50	3	1	96	2	0	1	16	150	300	450	600	750
10	1	3	50	3	1	96	2	0	1	16	150	300	450	600	750
11	1	3	50	3	1	96	2	0	1	16	150	300	450	600	750
12	1	3	50	3	1	96	2	0	1	16	150	300	450	600	750
13	1	3	50	3	1	96	2	0	1	16	150	300	450	600	750
14	1	3	50	3	1	96	2	0	1	16	150	300	450	600	750
1	2	3	4	5	6	7	8	9	10	11	12				

0	10000	10	b11110000000000000000000000000000	3525	3654	2308	2485	0	0
0	10000	22	b01000000000000000000000000000000	0	606	0	0	0	0
0	15	9	b11000000000000000000000000000000	513	825	1175	3362	1337	394
0	7	18	b00000000000000000000000000000001	3596	3655	1378	1906	272	2501
0	0	8	b00000000010000000000000000000000	2987	1164	2426	31	2337	2076
0	50000	24	b00000000000001000000000000000000	2618	843	1866	3279	2893	2534
0	10000	3	b10000000000000000000000000000000	27	3906	1232	2037	1751	2719
1	2	3	4	5					

1. Outils utilisés: SPACE

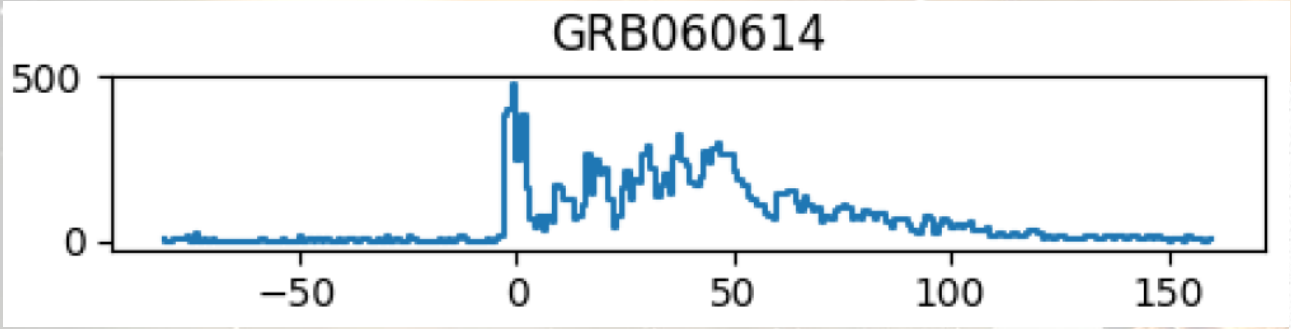
PIRA
Particle Interaction Recycling Approach
Mate et al. 2019

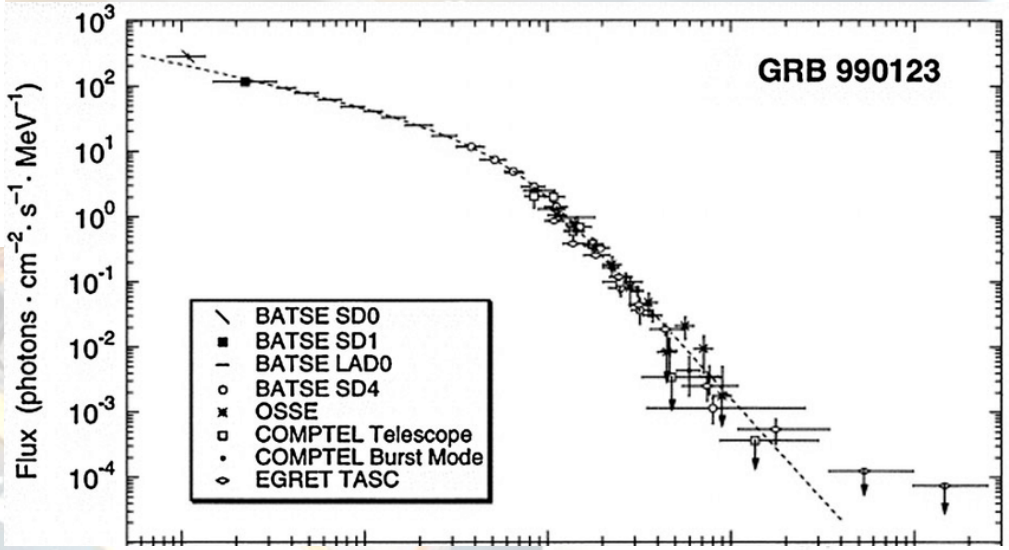



```
[VARIABLES]

###  Simulation Variables (To be set by user for each run as required)  ###

# Select Time range (in ISOT format)
TSTART = 2020-01-01T00:20:00.000
TSTOP = 2020-01-01T00:30:00.000

#If using CNES input files, update this time and set USE_CNES flag to 1
TSTART_CNES = 25567.0
TSTOP_CNES  = 25567.065972222223
USE_CNES = 0

#Particle computation flag
PARTICLES = 0

#Select components to calculate (only for array proceesing)
CXB = 1
REFLECTION = 1
ALBEDO = 1
ELECTRONS = 0
PROTONS = 0

# Pixel convention for output events, choose bwtween
# G4: Default Geant 4;
# DPIX: DPIX like (compatible with CEA and ELS);
# ECLGP: ECL General program pipeline like (compatible with data simulator)
PIXEL_CONV = G4

## Albedo C factor params
# Magnetic South pole coord (in degrees) forattitude file year (2020, chang
(in GV)
MPOLE_LAT = 80.37
MPOLE_LON = 287.59
PHI_SOL = 0.25

# Particle rate limit to restrict computation beyond detector saturation an
ELECMAXRATE = 100000
PROTMAXRATE = 50000
```

1. Outils utilisés: SPACE

movegrb
Antier S., Daigne F., Bocquier M.



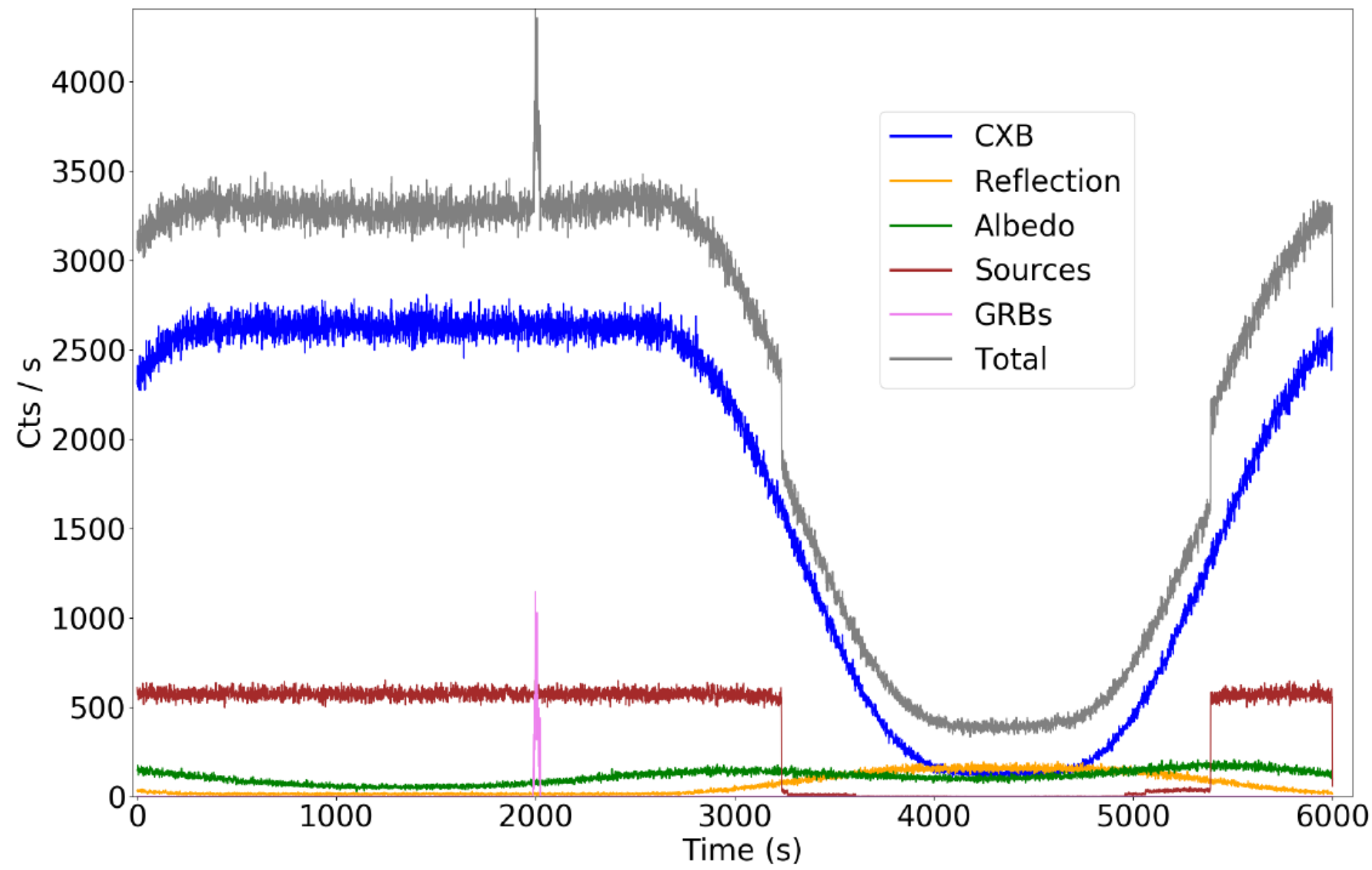


1. Outils utilisés: SPACE

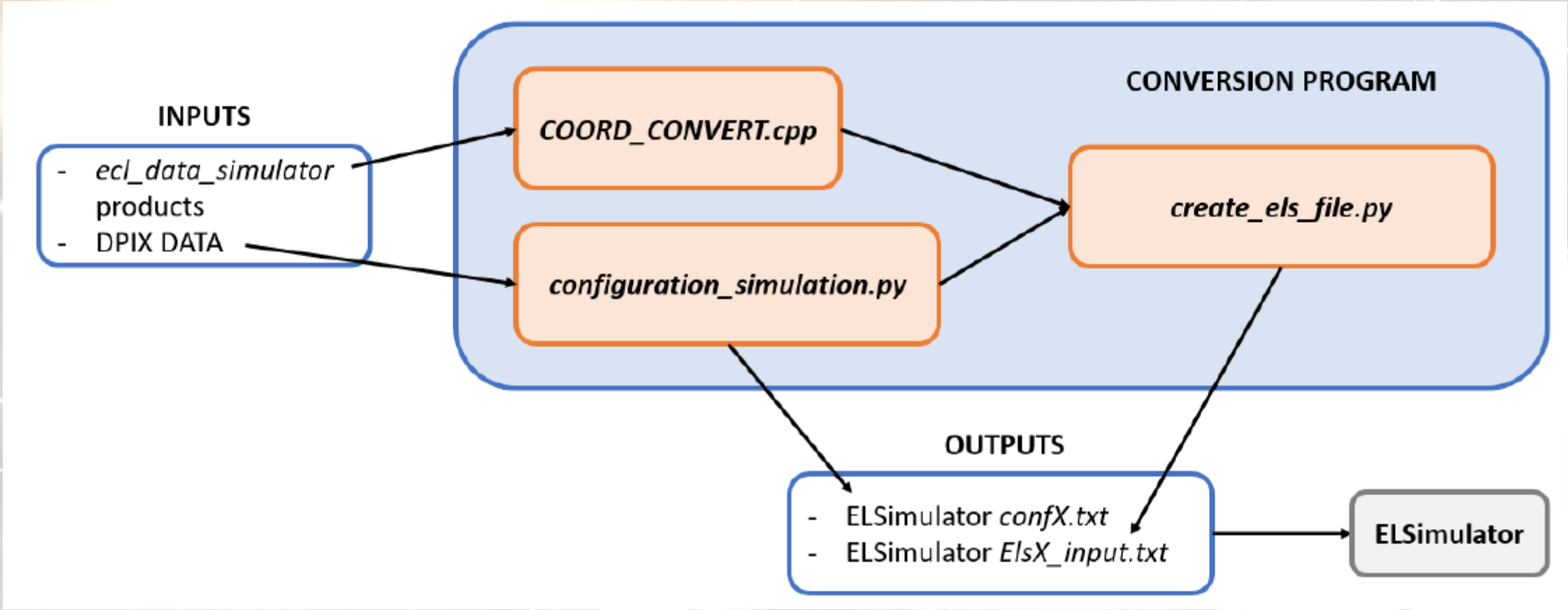
ecl_data_simulator
Mate S. , APC tools for Ray-tracing

```
[PATHS]
#Data Dirs
BKGDIR = /home/barcier/Python/bkg_eclairs/OUTPUT/
GRBPHOT = /home/barcier/Python/ecl_data_simulator/SOURCE/local_GRBs/
OUTDIR = /home/barcier/Python/ecl_data_simulator/OUTPUT/

[FILES]
# Catalogue and ARF
CATSRC = /home/barcier/Python/ecl_data_simulator/sources_catalog/pytho
ARFFILE = /home/barcier/data/eclairs/ecl_rsp_0008_arf.fits

[VARIABLES]
# To filter catalogue sources
SRCFILTER = True
COLNAME = snr20min
VALUE = 6
OPERATOR = >

# Pixel convention for output events, choose bwtween
# G4: Geant 4;
# DPIX: DPIX like (compatible with CEA and ELS);
# ECLGP: ECL General program pipeline like
PIXEL_CONV = DPIX

# To compute the earth occultation
R_EARTH = 6370
H_ATM = 100
```

1. Outils utilisés: SPACE



2. Le programme interface



3. Remarques

- Pas d'implémentation de lien ELS-ELS → mauvaise prise en compte du temps mort induit
- Problème de synchronisation des TFE entre chaque ELS → Les éléments multiple entre ELS ne sont plus des multiples.

ELSimulator Grande est requis si l'on veut faire des simulations en utilisant plusieurs ELS proprement.


Space Variable Object Monitor
SVOM
空 间 变 源 监 视 器
irap
astrophysique & planétologie
THANK YOU ! QUESTIONS ?