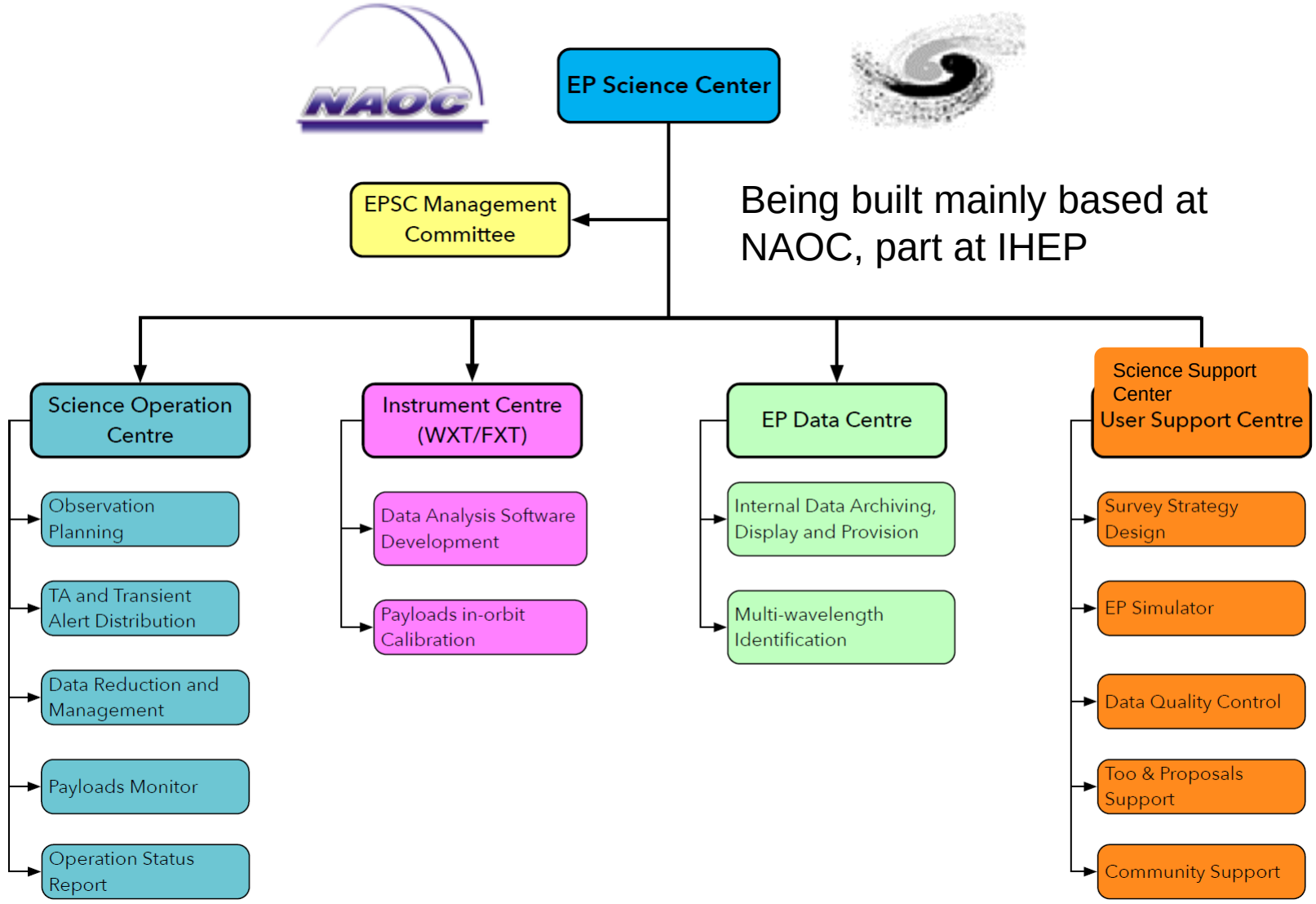
The Status of Einstein Probe Science Center

Yuan Liu

National Astro. Observatories
Chinese Academy of Sciences

On behalf of EPSC

EP Science Center

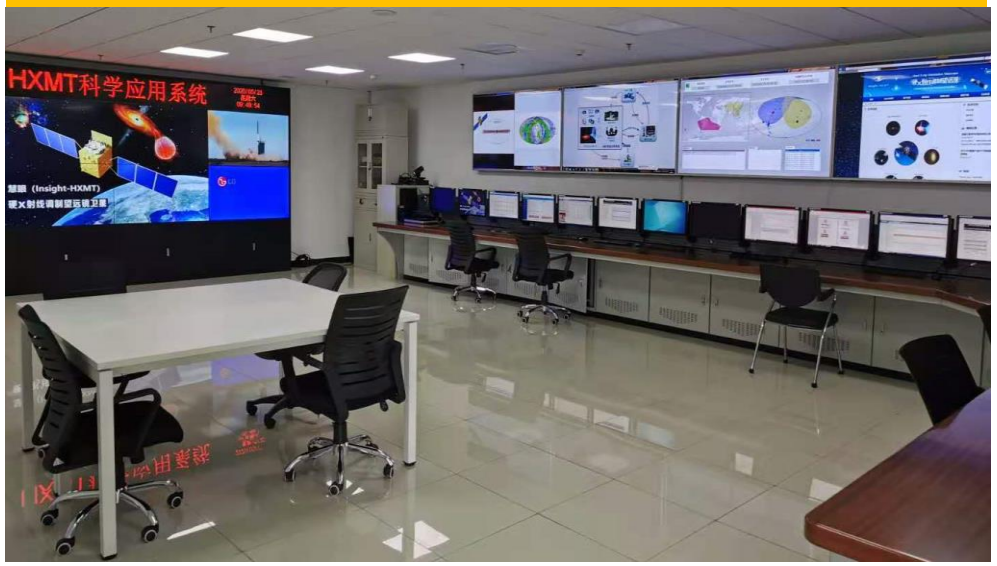


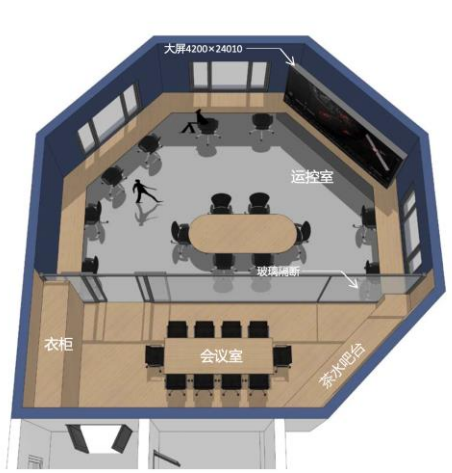
Science Operations and Control Room

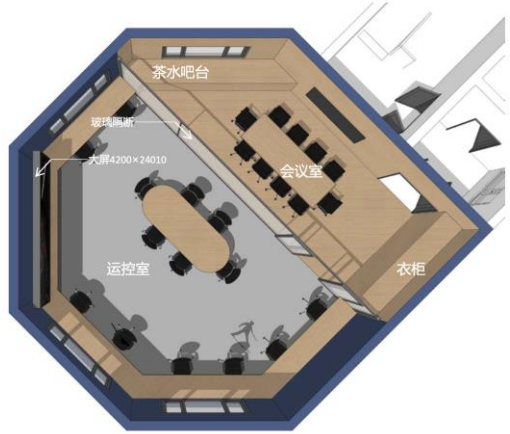
Science Operation and Control Room (NAOC, EP/SVOM)

The Science Operation and Control Room (NAOC) is currently under renovation and is expected to be fully equipped in about two months. It will provide various software and hardware services for scientists, including payload monitoring, data analysis, and observation plan applications.

EP-FXT Science Data Center (FXTSDC) in

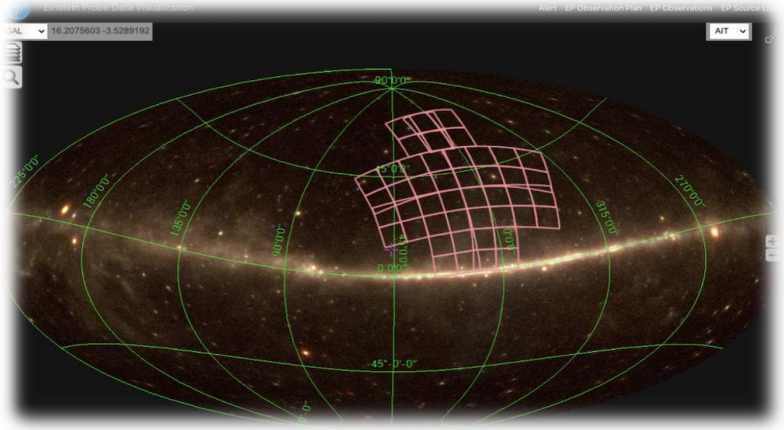






Visualizing Tools for monitoring

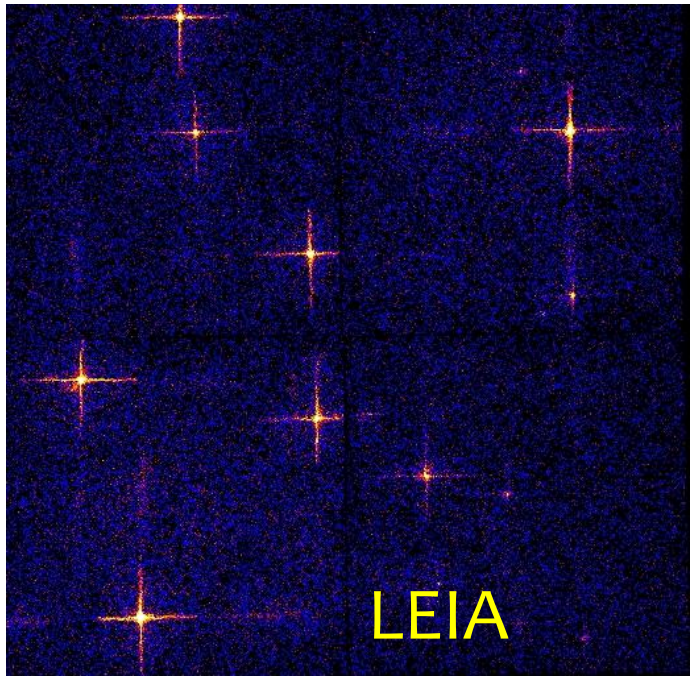
ID	观测请求编号	观测类型	状态
284	176166e4-3e00-41bf-a400-fb60fd9594d1	ToO-NOM-AT	已提交
283	5955c33c-ba64-4366-8f6b-531ace23c022	ToO-NOM-AT	已提交
282	a94ccbe6-5e76-4217-a853-e6dc4d57bf57	ToO-NOM-AT	已提交
281	1200bb3b-c579-454b-8449-397f61e2430e	ToO-NOM-AT	已提交
280	81c3aa89-d811-4b21-94f4-f4b662290000	ToO-NOM-AT	已提交
279	b431eb17-d960-4aa1-a539-e2a66f4b2002	ToO-NOM-AT	已提交

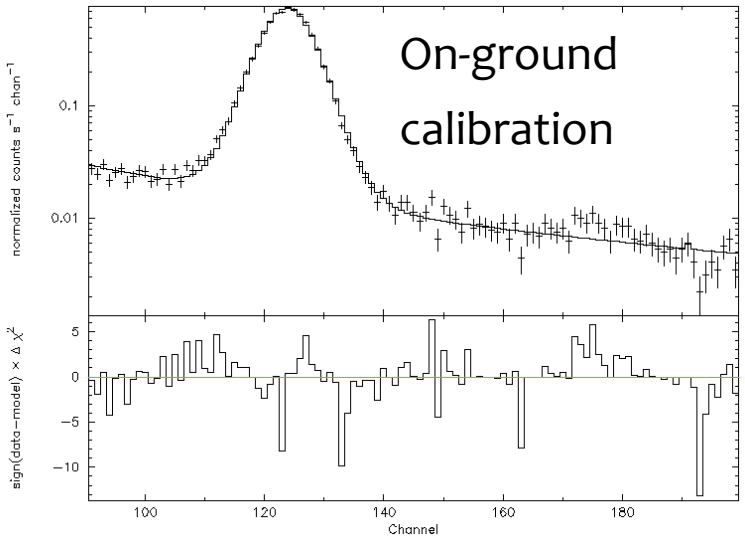


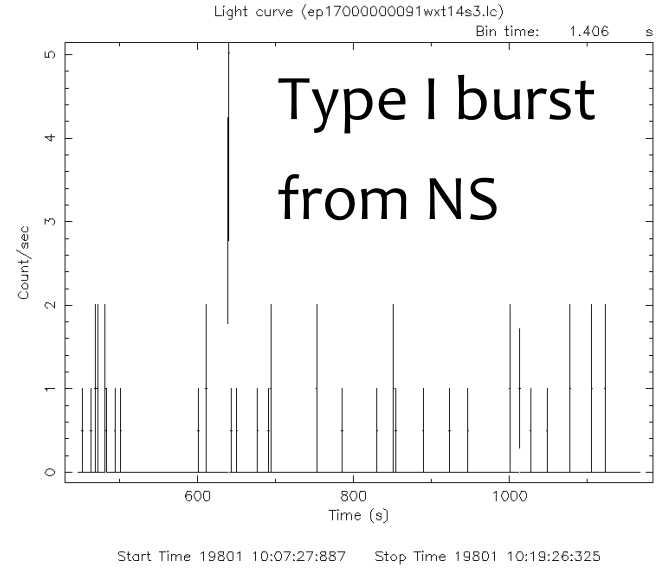
The operation and control room provides a variety of monitoring tools.
Near real-time information via VHF

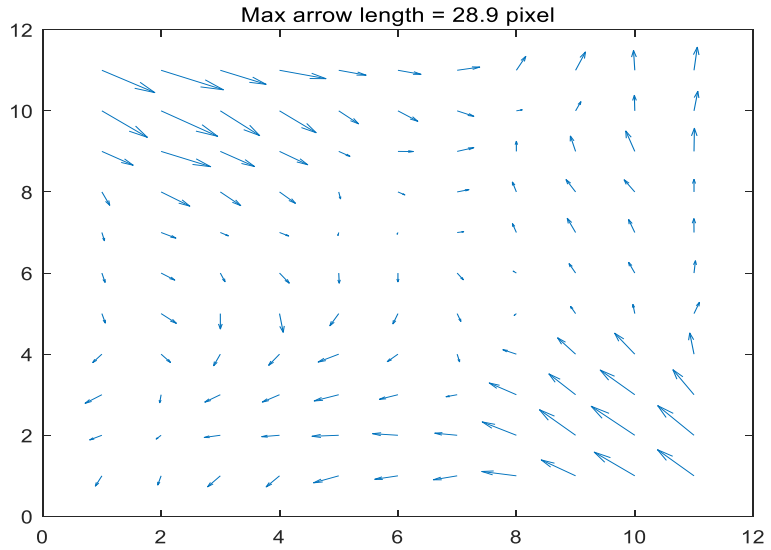
WXT Data Analysis software

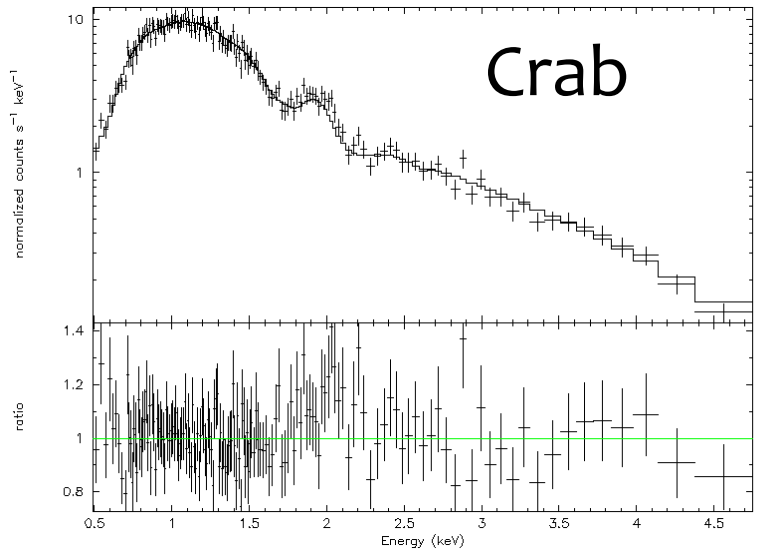
- Define data products
- Build CALDB
- Develop and test software
- HEASARC framework





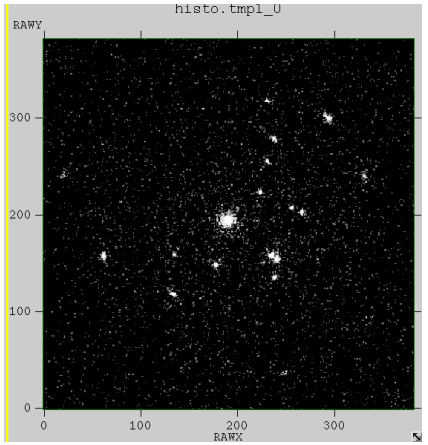




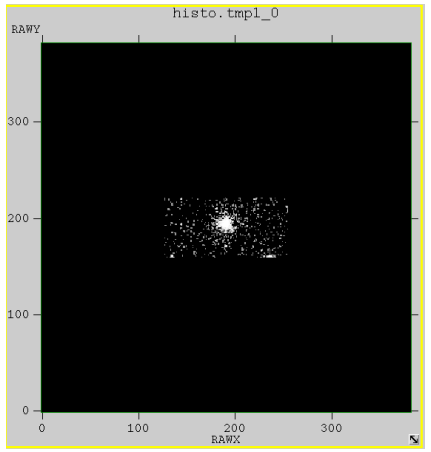


FXT Data Analysis Software

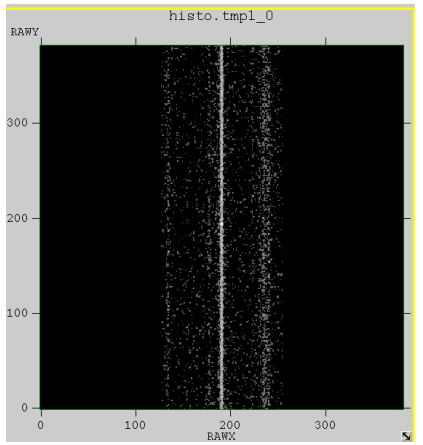
- FXT-DAS
- FXT-CALDB
- HEASARC framework



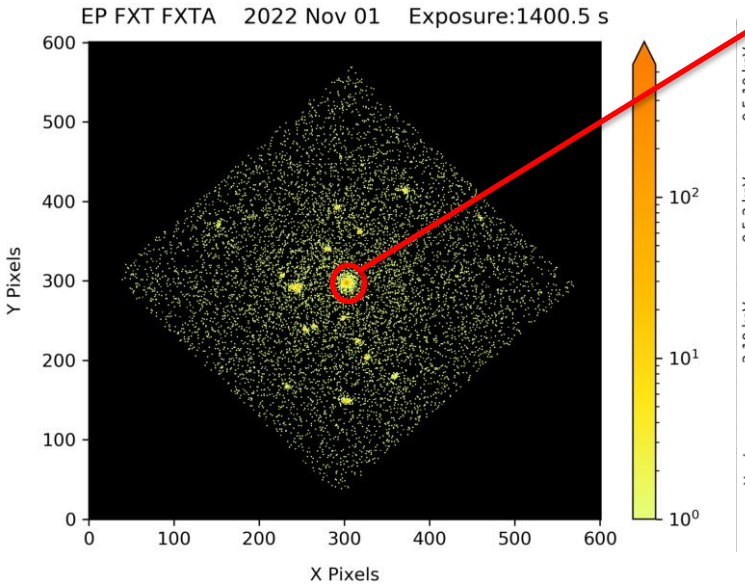
Full frame



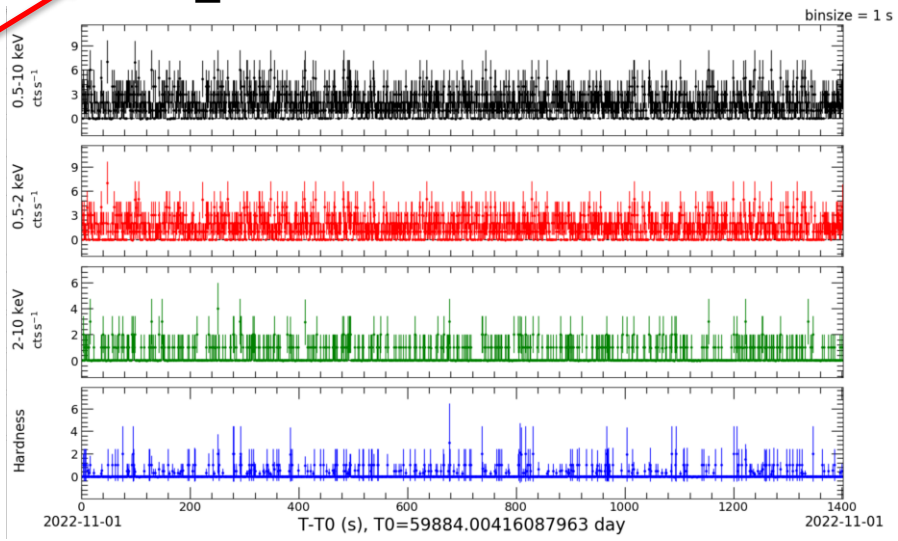
Partial window

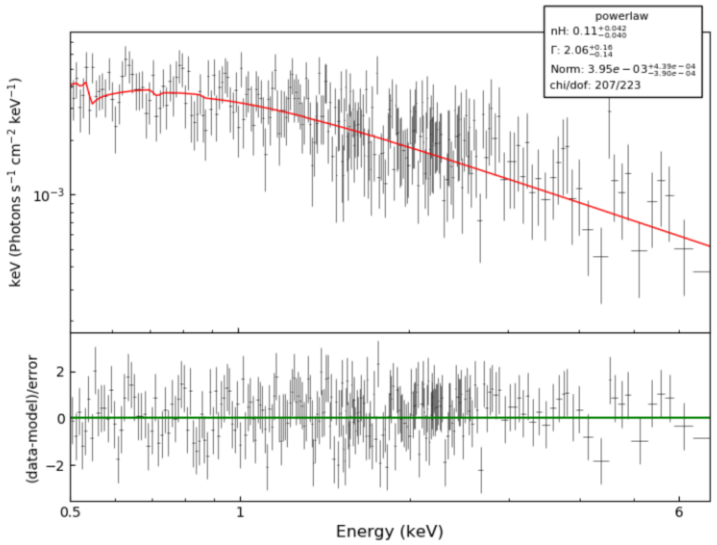


Timing mode



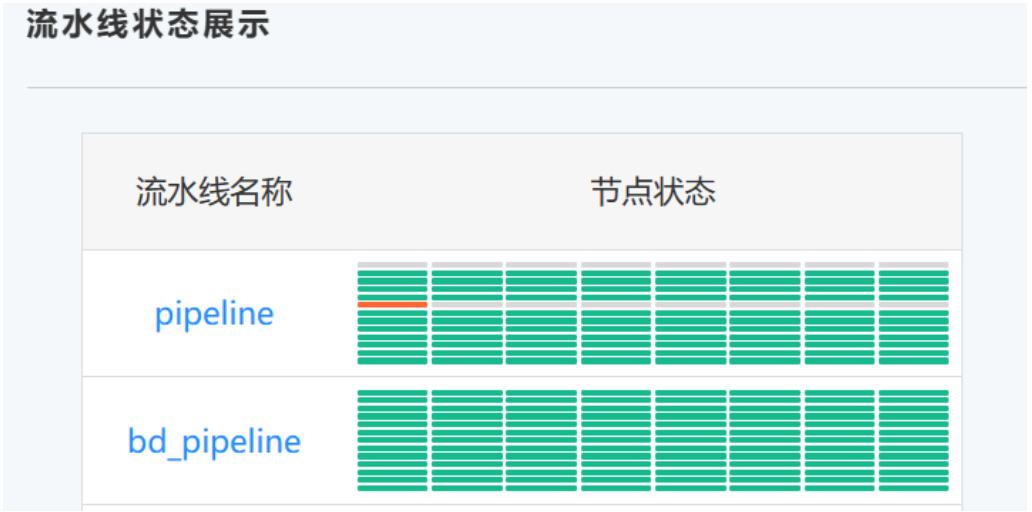
2RXS_J004241.9+411546



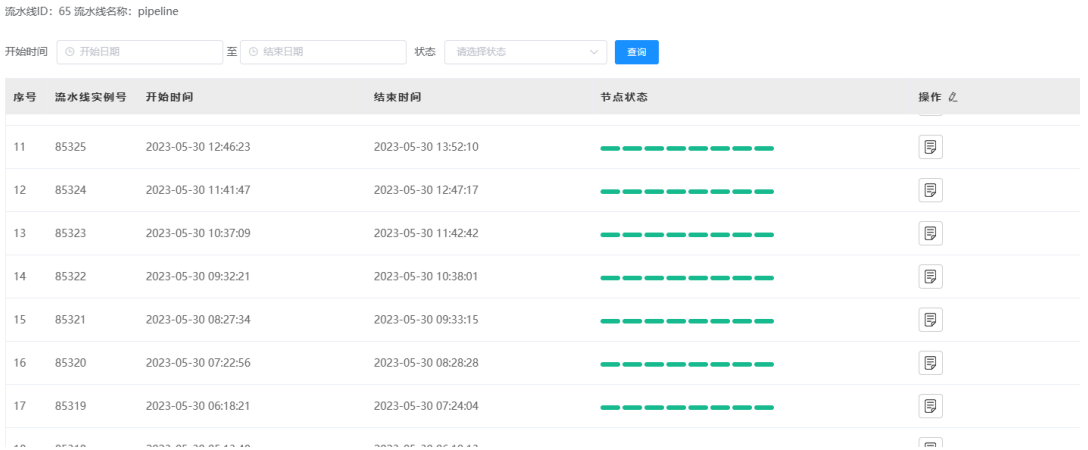


Pipelines

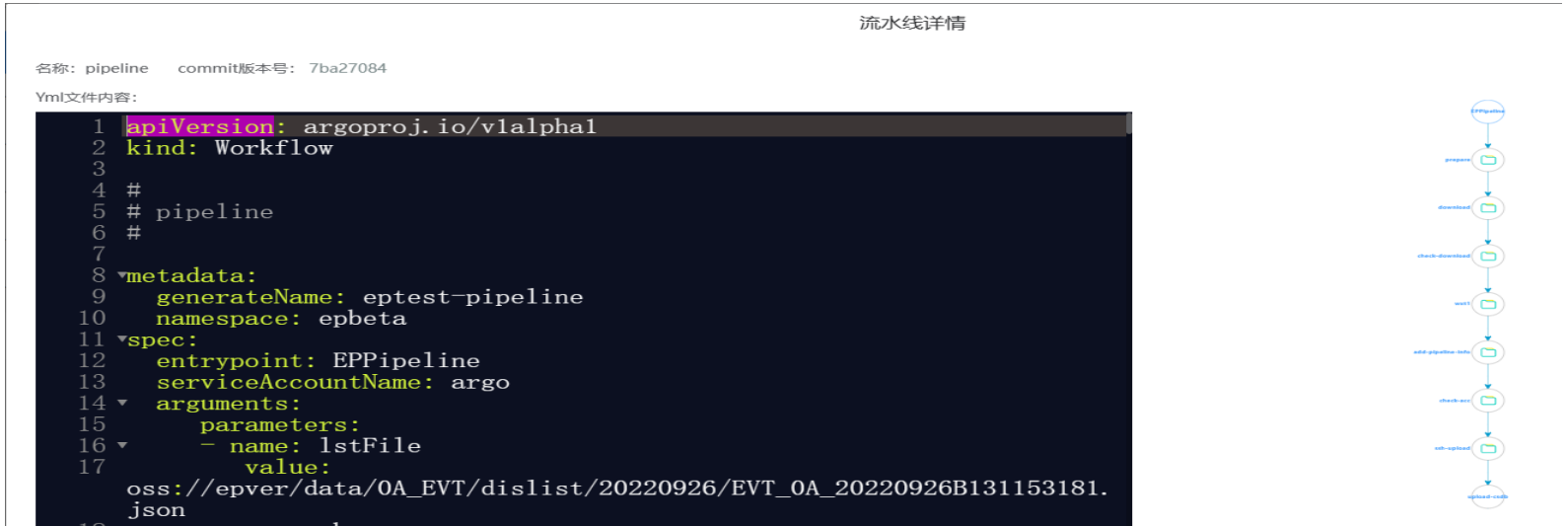
- Pipelines



Pipelines status



Pipelines History



Pipelines Details

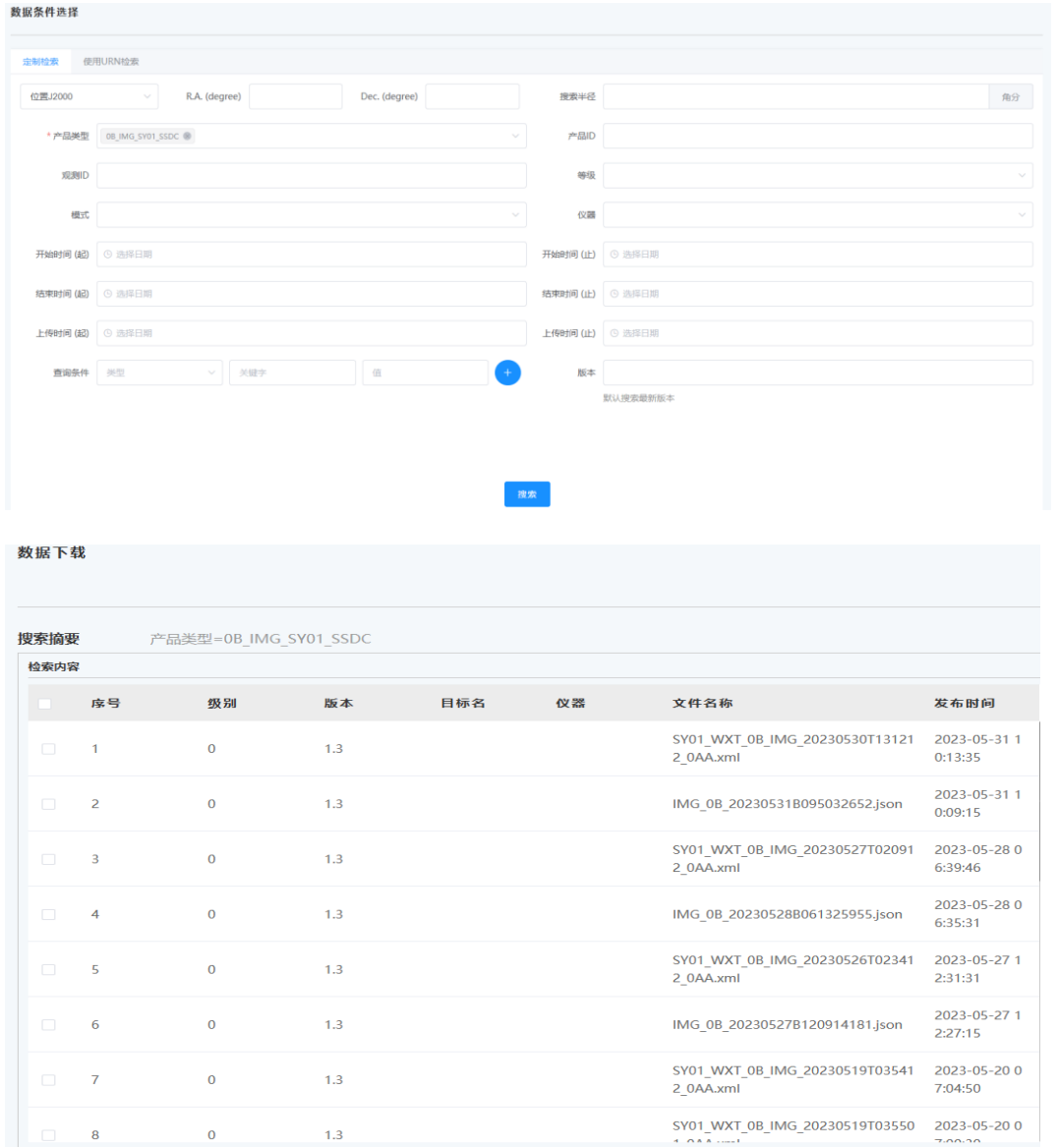
Products Management

- Products

存储接口 Storage Controller

GET	/v1/storage/** 下载
POST	/v1/storage/** 上传
DELETE	/v1/storage/** 删除
GET	/v1/storage/addTags 根据urn增加tags
POST	/v1/storage/adsearch 高级搜索
DELETE	/v1/storage/delDatatype 根据path删除type,会删除type，属于批量删除
DELETE	/v1/storage/delDatatypeData 根据path只删除数据不删除type，属于批量删除
POST	/v1/storage/delete 会删除type(参数传递)
POST	/v1/storage/deleteData 只删除数据，不删除type(参数传递)
DELETE	/v1/storage/delTag 根据tag删除tag
DELETE	/v1/storage/delTemplate 删除模板
POST	/v1/storage/filter 筛选检索后数据

Products API



WEB UI

Interfaces Management

- Interfaces

数据接口状态信息

接口名称 请输入接口名称 调用状态 请选择调用状态 最后调用时间 开始日期 至 结束日期 查询

序号	接口名称	传输协议	接口方向	调用状态	历史调用次数	最后调用时间	操作
1	EpObservePlan	ftp	进入	正常	289	2023-05-26 13:22:20	
2	ObserveRequestGp	ftp	输出	正常	2	2023-02-10 16:06:30	
3	ObserveRequestToo	ftp	输出	正常	253	2023-05-26 12:57:35	
4	0B_EVT	nftp	进入	正常	8626	2023-05-31 10:34:00	
5	ALERT	ftp	进入	正常	64982	2023-05-29 12:18:48	
6	LoadParameterUpdate	ftp	输出	正常	0		
7	0B_IMG	nftp	进入	正常	879	2023-05-31 10:13:36	
8	0A_IMG	nftp	进入	正常	307	2023-05-31 10:09:17	
9	ATT	nftp	进入	正常	1250	2023-05-30 16:06:01	
10	ORB	nftp	进入	正常	1258	2023-05-30 16:08:58	
11	MKF	nftp	进入	正常	1231	2023-05-30 16:00:05	

Interfaces status

数据接口消息日志

接口编号 请输入接口编号 数据来源 请输入数据来源 传输协议 请选择传输协议 接口方向 请选择

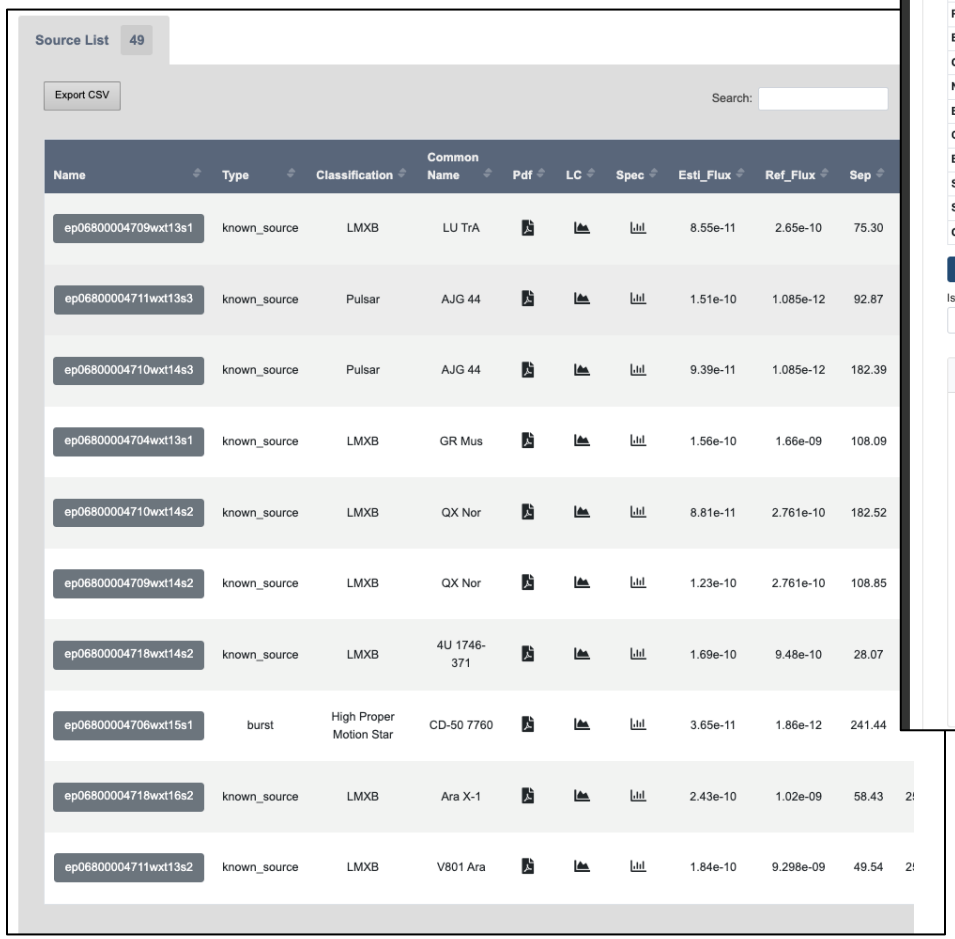
详情 请输入详情 开始时间 开始日期 至 结束日期 查询

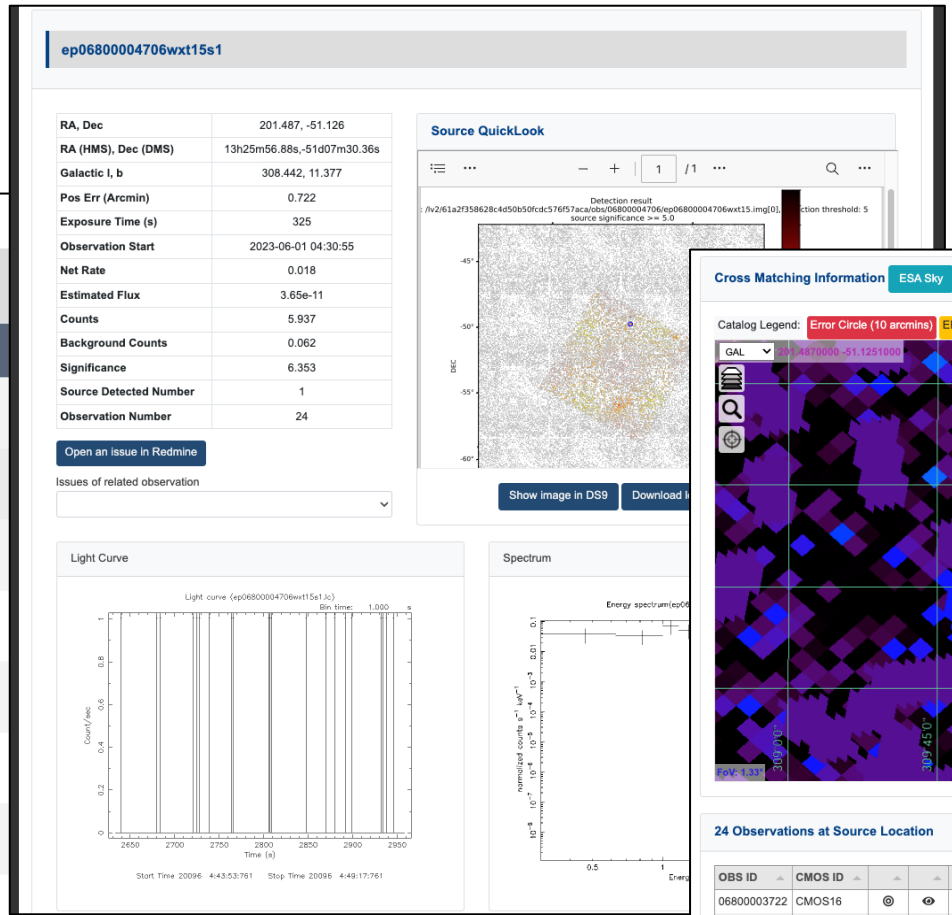
序号	接口编号	数据来源	传输协议	状态	接口方向	开始时间	结束时间	数据大小
1	0B_EVT-9654	ssdc	nftp	成功	进入	2023-05-31...	2023-05-31...	20.81 MB
2	0B_EVT-9653	ssdc	nftp	成功	进入	2023-05-31...	2023-05-31...	1.19 KB
3	0B_EVT-9654	ssdc	nftp	传输中	进入	2023-05-31...		
4	0B_EVT-9653	ssdc	nftp	传输中	进入	2023-05-31...		
5	0B_EVT-9652	ssdc	nftp	成功	进入	2023-05-31...	2023-05-31...	2.96 MB

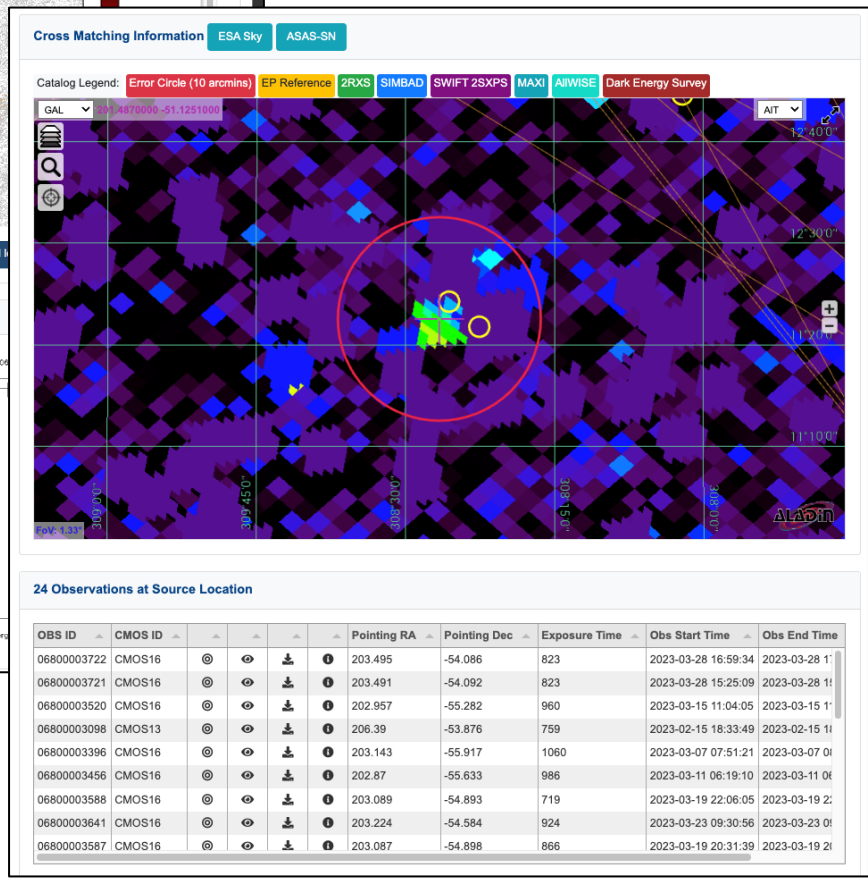
Interfaces messages

Transient Identification

- Comparison of archived X-ray catalogues
- Multi-wavelength data as reference
- AI based classification (coming soon)

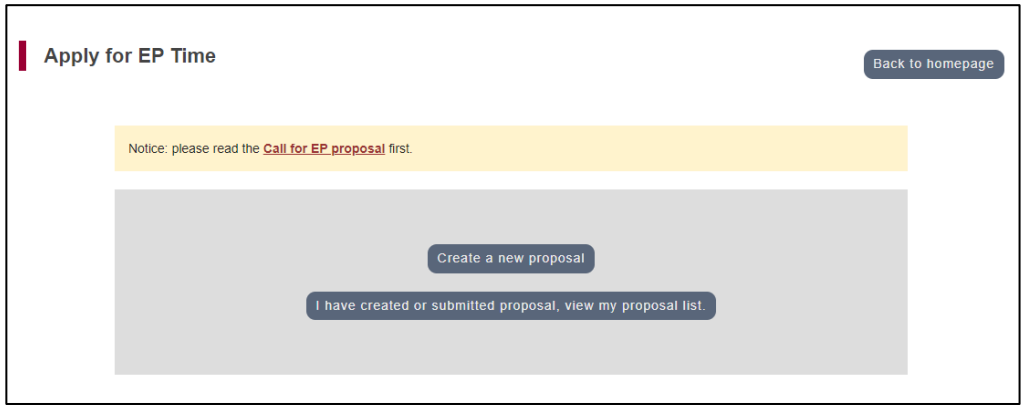




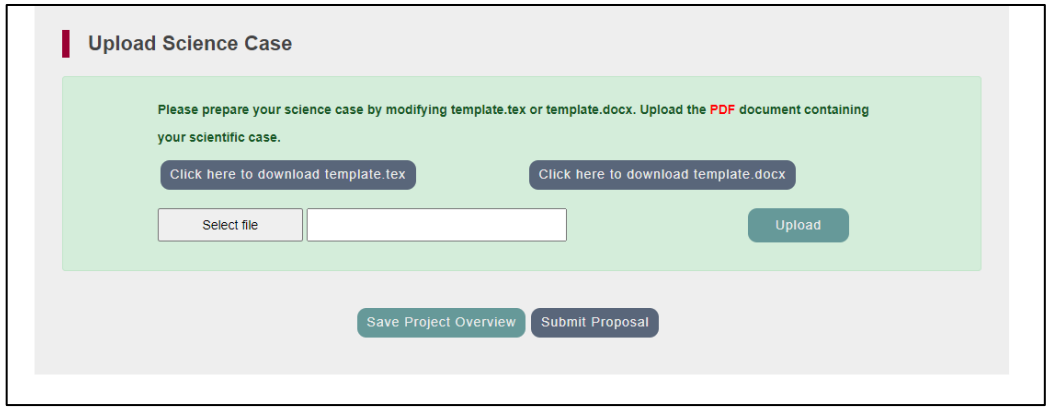


Proposal Tools

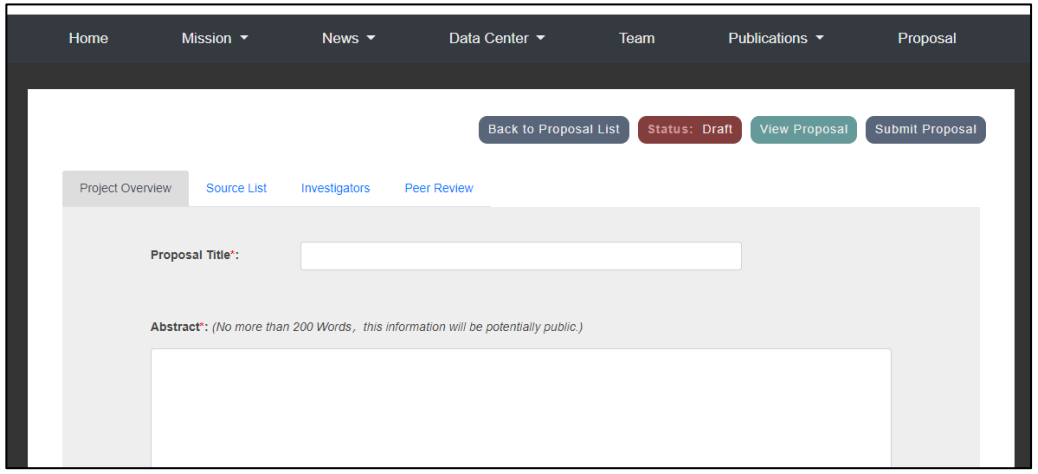
- Proposal submission and review



Proposal Management



Science Use Case Submission

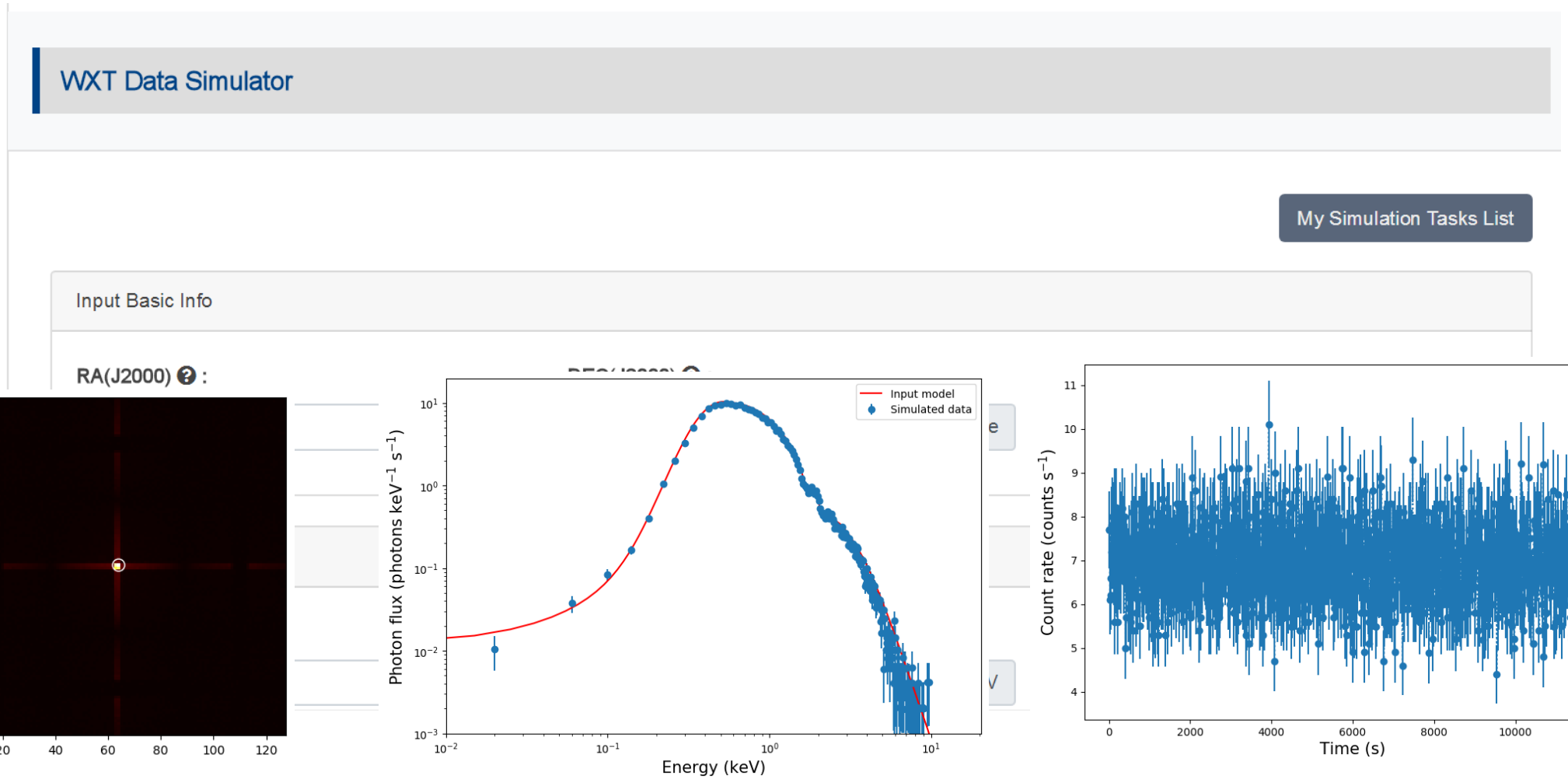


Proposal Content Filling

Proposal Review Management

WXT/FXT online simulator

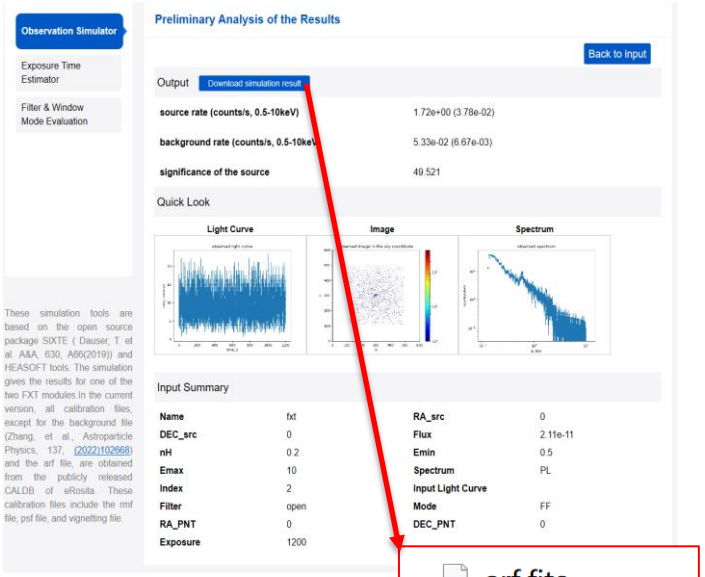
- Simple and quick (https://ep.bao.ac.cn/ep/simulator/)



FXT Online Tools

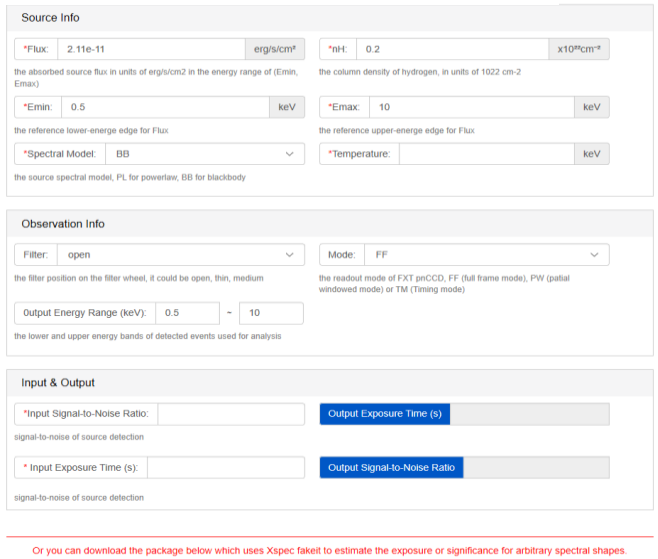
http://epfxt.ihep.ac.cn/simulation —— 提供：快视结果 & 数据文件下载

Observation Simulator



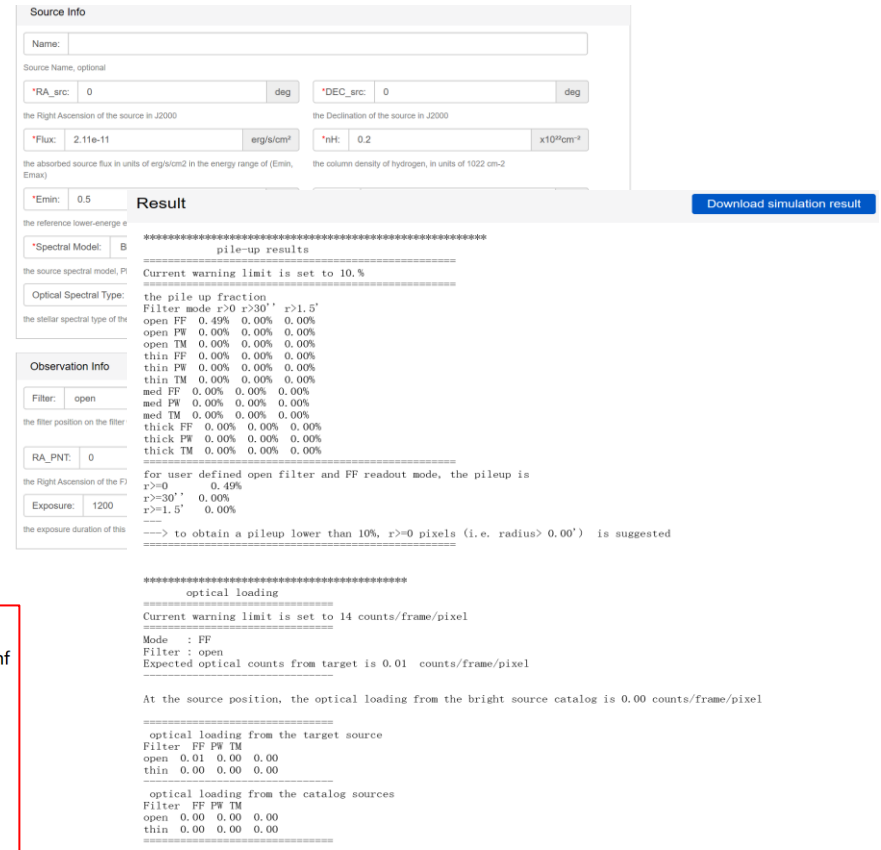
- arf.fits
- bkg.pha
- FXT_evt.fits
- obs.img
- obs.lc
- obs.pha
- obsimg.jpg
- obslc.jpg
- obsspc.jpg
- rmf.fits

Exposure Time Estimator



- estimate_fakeit.py
- fxt_normalized_singles_20190416_v0p2.rmf
- FXT_notf_med.arf
- FXT_notf_open.arf
- FXT_notf_thick.arf
- FXT_notf_thin.arf
- wfi_spc_FF_med.pha
- wfi_spc_FF_open.pha
- wfi_spc_FF_thick.pha
- wfi_spc_FF_thin.pha
- wfi_spc_PW_med.pha
- wfi_spc_PW_open.pha
- wfi_spc_PW_thick.pha
- wfi_spc_PW_thin.pha

Filter & Window Mode Evaluation



根据pile-up和optical loading

推荐observation mode和filter

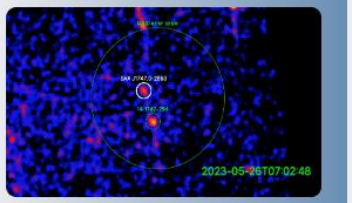
News and Announcement (https://ep.bao.ac.cn)

Upcoming Events

- 爱因斯坦探针（EP）科学讨论会 . 2023北京香山
- Kick-off meeting of the Einstein Probe Science Topical Panels (April 19 2023)

News

MORE



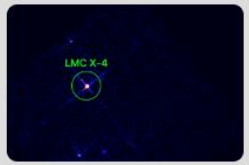
- LEIA detected possible brightening of SAX J1747.0-2853 and v… [2023-05-30]
- The FXT FM payload completed delivery from IHEP to IAM [2023-05-28]
- LEIA detected a bright X-ray flare from 1RXS J054317.4-760222 [2023-05-06]
- Kick-off meeting of the EP Science Topical Panels held online [2023-04-24]

Highlights

MORE

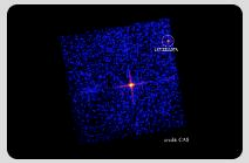
Xinhua: China to launch Einstein Probe to observe changing universe

LEIA detected a bright outburst from LMC X-4



Happy New Year 2023

EP-WXT Pathfinder LEIA discovered an X-ray transient LXT 221107A



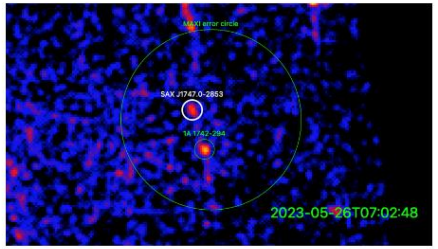
Home / News / Latest News / LEIA detected possible brightening of SAX J1747.0-2853 and variability of 1A 1742-294 in the Galactic Center region

LEIA detected possible brightening of SAX J1747.0-2853 and variability of 1A 1742-294 in the Galactic Center region

LEIA detected possible brightening of SAX J1747.0-2853 and X-ray variability of 1A 1742-294 in the Galactic Center region, where MAXI reported the detection of a new X-ray outburst since May 24 2023(ATel #16059). The Galactic Center region has been regularly monitored by LEIA in the last few months. In the latest observations taken on May 26 2023, within the field of view (1.5 degrees, FWHM) of MAXI/GSC detection ((l, b) = (359.944, -0.046)), LEIA detected two sources at (RA=266.782, Dec=-28.85, uncertainty=2.6 arcmin) and (RA=266.535, Dec=-29.499, uncertainty=2.2 arcmin), that are spatially consistent with SAX J1747.0-2853 and 1A 1742-294, respectively.

SAX J1747.0-2853 remained undetected in all previous observations of LEIA with a typical cadence of ~10 days and a typical exposure time of ~700s, indicating an upper limit of ~4e-11 erg/s/cm2; whereas an X-ray source was detected around this position in the last two observations at 2023-05-26T05:28:30 and 2023-05-26T07:02:48. Assuming the source is indeed SAX J1747.0-2853 and a spectral shape of absorbed powerlaw with a photon index of 2.0 and NH of 7e+22 cm^-2 (Wijnands et al. 2002, ApJ, 579, 422), its unabsorbed 0.5-4 keV flux was (3.5+/-1.2)e-9 erg/s/cm2 and (9.3+/-7.0)e-10 erg/s/cm2, respectively, implying that SAX J1747.0-2853 has entered a new outburst.

The other source was firstly detected by LEIA on May 12 2023. Assuming it is 1A 1742-294 and a spectral shape of absorbed powerlaw with a photon index of 2.0 and NH of 6e+22 cm^-2 (Lutovinov et al. 2000, arXiv:astro-ph/0009349), its unabsorbed 0.5-4 keV flux was (1.8+/-1.0)e-9 erg/s/cm2. During the following observations till May 26 2023, 1A 1742-294 shows moderate variability with its 0.5-4 keV unabsorbed flux varies in the range of ~6e-10 to 3e-9 erg/s/cm2.



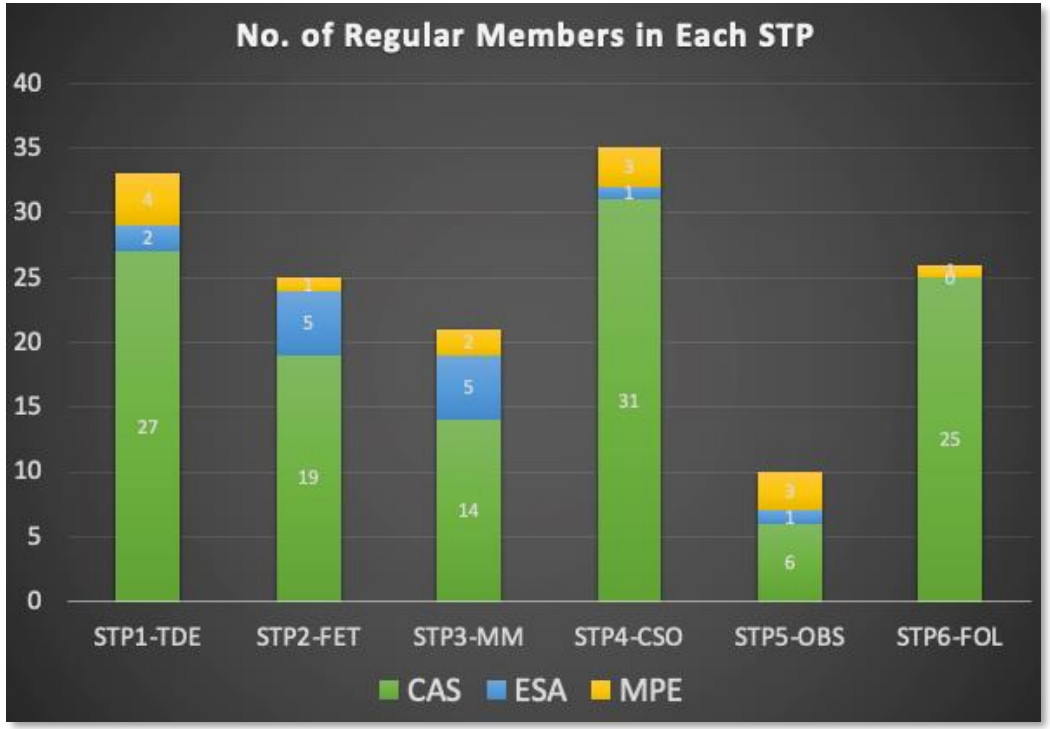
The preliminary results have been posted at Astronomer's Telegram as ATel 16061. Click here for more EP/LEIA Astronomer's Telegrams.

Edit Editor: Hui Sun

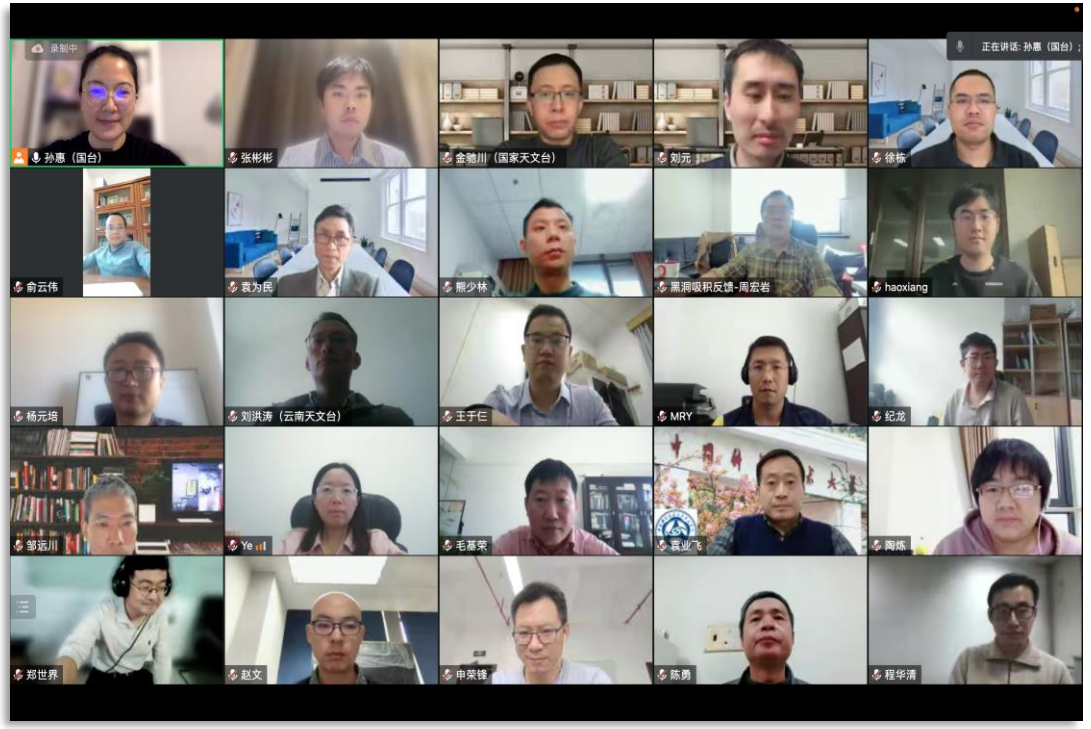
Access to the most current updates on EP-related news, events, transient alerts, and proposal call

Science Team and the STP Kick-off meeting

- **Built the EP science team:** STP members and associate members
- **Current team:** STP members (~90), associate members (~120)



- **Scientific Activities:**
  - ✓ International STP Kick-off meeting, 19th April 2023
  - ✓ Online user meeting, 11th Nov. 2022



Summary

- Significant progress since 2017
- Develop and test software
- Verify some functions by LEIA (obs planning, instrument monitoring, WXT data reduction, Beidou alert, TA management, transient identification, alert distribution)
- Update FM CALDB of WXT/FXT
- Interface testing with VHF and ground supporting system
- Whole system test (August)
- Distribute software and train TA

Thanks!