XRISM pre-pipeline/operations/ToO response, etc
Managed by ISAS/JAXA in Japan

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On behalf of Science Operation Team (SOT)
(=SOC in JP +SDC in US)
Today’s Contents

Science Operation Team
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Goal of the Science Operations: **Enhance science outputs from the XRISM mission**

Tasks/responsibility of the Science Operations Team (SOT)

- **SO1:** Performing guest observer (GO) program and the data distribution
  - Proposal handling
  - Science Observation scheduling, Planning, ToO handling etc
  - Pre-pipeline process / Pipeline process
  - Data archive
  - Quick-look viewing

- **SO2: Release of the analysis software and calibration database**
  - Development and release of analyses tools & CALDB

- **SO3: GO support**
  - User guide documents
  - Researcher webpages
  - Helpdesk, handling questions from GO

- **SO4: Performance Verification and Optimization (PVO) activities**
  - Activities to enhance performance of observatory
  - Health/performance checking.

See more details in Terada et. al. JATIS 037001-2 (2021)
 Tasks are covered by SOC (JAXA), SDC (NASA), and ESAC (ESA)

In Japan, MOPT prepared the science operations and mission operations

MOPT became SOC and MOT (JAXA), respectively after launch.
JAXA facilities

Tanegashima: launch
JAXA facilities

Uchinoura (=USC): Main 34/20m antenna

Katsuura (KTU): Backup 20m antenna

Tanegashima: launch
JAXA facilities

Uchinoura (USC): Main 34/20m antenna

Tanegashima: launch

ISAS:
Sagamihara Space Operation Center (SSOC)

Katsuura (KTU): Backup 20m antenna

Operation Timeline

Uchinoura (USC) / Katsuura (KTU): 4-5 passes/day

- Command uplink/Data downlink are performed everyday
- Commands are generated only on Mon-Sat (except for Sun)
  - On Sat, 2 command sets are generated for Sun and Mon operations
  - It takes ~3.5 hours to generate 1 command set

Other NASA/JAXA ground stations (every < 3 hours)

- Status monitor in nominal case
- Operations only in emergency cases
Observation Schedule

Long/Short-term schedule

- Long-term schedule: every 3 months
- Short-term schedule: every 1 week (inc. next 3 weeks)
- Before 3 weeks, PIs are informed to check observation modes

https://xrism.isas.jaxa.jp/research/observers/index.html
ToO Request

- ToO request from JAXA web page
- ToO request form is not available now

https://xrism.isas.jaxa.jp/research/proposer/index.html
ToO Timeline

- Start of ToO observation may take up to 2 days (weekday) or 3 days (weekend)
  - Judgement, cmd generation, command uplink only Uchinoura, no cmd generation on Sunday
- Maneuver takes up to ~1 hour for 180 deg
Command generation

- **ToO Timeline**

<table>
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<tr>
<th>Time after request</th>
<th>N-8 / N-day</th>
<th>N-12 / N-1 day</th>
<th>N-218 / N-2 day</th>
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<td>0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15</td>
<td>23 24 25 26 27</td>
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<tr>
<td>-CMD creation</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>-Nominal(N-2)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Notes**

- **Commands are generated during the daytime on Mon-Sat in Japan time**
- **If you request ToO during the daytime and the request are approved before next USC passes, the observation will start next USC passes**
- Commands are not generated on Sunday in Japan time
- If you request ToO on weekend, command will be generated next Monday and the observation will start after 3 days
Data Process/Distribution

Ground Network (JAXA/NASA)

USC

Storage

SIRIUS

Operation Control

Quick Look

Pre-pipeline

JAXA SOC

RPT

FFF HK

FFF event

ATT

Orb

Tim

Command log

Pipeline

NASA SDC

Level 1, 2,3 Pipeline

Metadata archive PI notification

XDTS

GO

Proposal database RPS

JAXA/NASA/ESA

Observation Database (ODB, xrismmastr)

JAXA/NASA

Archives

GO
Data Type/Format

- RPT (raw packet telemetry)
- FFF (first fits file) are not public
- SFF (second fits file) is the same format as FFF with calibrated information.
- Users can reprocess from SFF
Data will be delivered 1-2 weeks after observation.

- Pre-pipeline + attitude process is performed after Orbit determined 2 times/week (by Tsukuba)
- Data is stored in ~3 days + Pre-pipeline: ~1 day + Pipeline: ~2 days
User Support

JAXA web page
- Maintenance
- Announcements

Help Desk
- Opening Help Desk for Japan
- Handling questions from guest observers

https://xrism.isas.jaxa.jp/research/index.html

Agreement to Xtend Transient Search

- For contributing Multi-messenger astronomy, if GO proposers agree at proposal submission, XRISM team will search transient sources using Xtend data outside FoV(Resolve).

- Please check “YES” for Xtend transient search.
Agreement to Xtend Transient Search

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Science Operation Team = SOC (JAXA) + SDC (GSFC)

✦ Goal of the Science Operations: Enhance science outputs from the XRISM mission

JAXA facilities

✦ Command uplink/Data downlink are performed everyday from USC/KTU

Operation timeline

✦ ToO observation takes 2-3 days

Data process/distribution

✦ takes 1-2 weeks

User Support

✦ Help Desk is opened

Xtend transient search

✦ Please check “YES” for Xtend transient search in your proposal