Community Support and Mission Planning ctivities

XMM-Newton Users' Group Meeting #24

Rosario González-Riestra

XMM-Newton Science Operations Centre

ON BEHALF OF THE XMM-SOC MISSION PLANNING AND COMMUNITY SUPPORT TEAMS

Community Support

Community Support Group Activities Overview

- **WEB, CONFERENCES AND OUTREACH**
  - Newsletter, Web Pages
  - Social Media presence (Twitter)
  - Organisation of Science Conferences **>> The X-Ray Universe 2023**
  - Outreach

- **HELPDESK, VALIDATION AND DOCUMENTATION**
  - HelpDesk support (working days, 09:00-17:00)
  - Science Analysis Software (SAS) **>> SASv21.0**
    - Scientific validation Development, maintenance and testing of data analysis Threads
    - Edition of Manual
  - Validation of Pipeline Processing System (PPS) products
  - Validation of the XMM Science Archive (XSA)
  - Edition of Users Handbook
  - Edition of the Proposal Submission Manuals (XIPS & XRPS)

- **SUPPORT DURING AO AND PEER REVIEW**
  - Support to Project Scientist and OTAC (including Proposal Submission Systems and OTAC evaluation tools

- **PROPOSAL ENHANCEMENT, LONG-TERM PLAN, COORDINATIONS AND SUPPORT FOR JOINT PROGRAMMES**
  - Enhancement of XMM and joint proposals approved by other facilities
  - Technical evaluation of proposals requesting XMM time submitted to other observatories
  - Preparation of Calibration observations
  - Coordinations with other facilities
  - Long term Plan: compilation of time constraints and specific requests

- **DEVELOPMENT AND SUPPORT OF TOOLS**
  - XIPS
  - Visibility Checker and Target Search Tool
  - Target of Opportunity Request Tool

Community Support: Technical Evaluation and Enhancement

	Enhancement	Technical Evaluation
NuSTAR Cycle 9	17	46
HST Cycle 30	1	13
MAGIC Cycle 8	7	11
Chandra Cycle 24	3	8
INTEGRAL AO20	1	5
JWST Cycle 2	-	3
Total	**29**	**86**
XMM AO22	174	

203

Community Support: HelpDesk

- Web interface discontinued in October 2022 to comply with ESA Policy on Personal Data Protection

- At present questions can be submitted only by e-mail

- Working in a new tickets system based on Jira Service Management

Questions received May 2022 – April 2023:   329

                                               27 per month

95% of the questions get a first reply in less than 36 h

Community Support:
XIPS [XMM-Newton Interface for Proposal Submission]
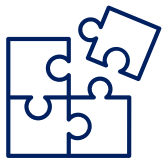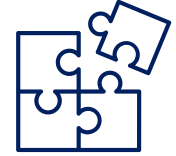

Phase I Proposal Submission System (replaced HRPS in AO21)

- **New for AO23:**

    ✓ Multi Year Heritage Programme

    ✓ JWST Joint Programme

    ✓ Fix of minor bugs, technical issues…
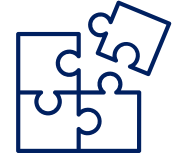
Mission Planning

Mission Planning Group Activities Overview

- **GENERATION AND DELIVERY TO MOC OF MISSION PLANNING PRODUCTS**
  - Short term Plan
  - Operational Schedule

- **DOWNLINK INFORMATION CONSOLIDATION**
  - Evaluation of observations success/failure (according to the guidelines in the P&P Document)
  - Re-ingestion of failed observation in the scheduling queue

- **ToOs EVALUATION AND IMPLEMENTATION**
  - ToO on-call 24/7 for urgent requests
  - Planning and scheduling of anticipated and un-anticipated ToOs
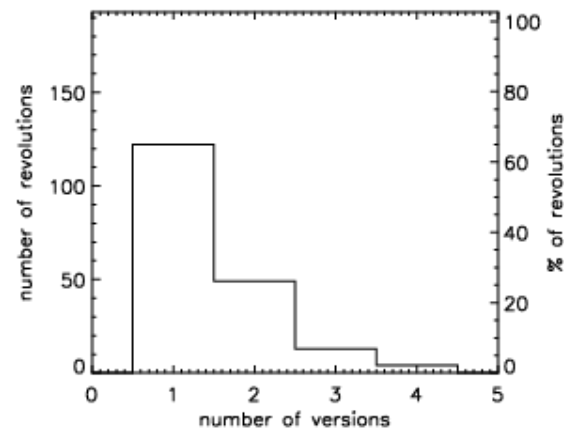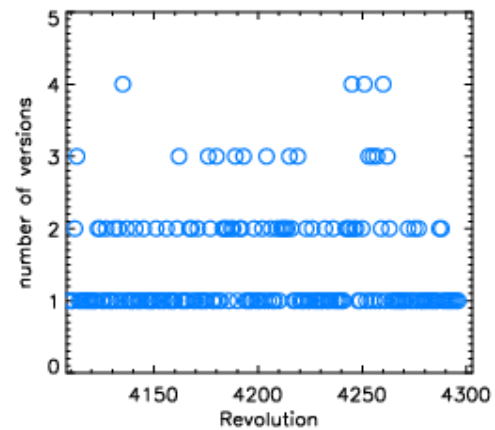 - Interface with Project Scientist for ToO handling
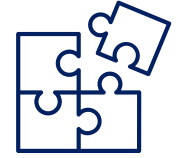
Planning and Scheduling

- **INCREASING SCHEDULING COMPLEXITY**
  - Growing number of constrained and/or multi-mission coordinated observations
  - Short time changes in coordinations
  - Large number of ToOs

  - Scheduling of a single ToO often triggers the re-planning of several revolutions
    - → Larger number of re-schedules (~ 40% of revolutions are re-scheduled)

Planning and Scheduling: Targets of Opportunity

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Grand Total
2022	Qtr2	May				1							1		2		1	2	2			1			2		2		1					15
		Jun			1	1	2		2					1									1								1	1		1	11
	Qtr3	Jul				1			1							1								1		1		1		1			1		7
		Aug			1						1			1				1				1			1							1		7
		Sep									1					1		2										1						5
	Qtr4	Oct										1	1		1	2						1				1	1			1				9
		Nov									1												1				1				1	1		5
		Dec														1								1			1							3
2023	Qtr1	Jan				1											1				2											1		5
		Feb	1	1	3			1	1								1											1		1				10
		Mar	1		1				1		2					1	1	1										1						9
	Qtr2	Apr					1												1				2											4

90

May 2022 – April 2023

One trigger every 4 days

≈ 2 triggers per week

7 - 8 triggers per month

May 2021 – April 2022
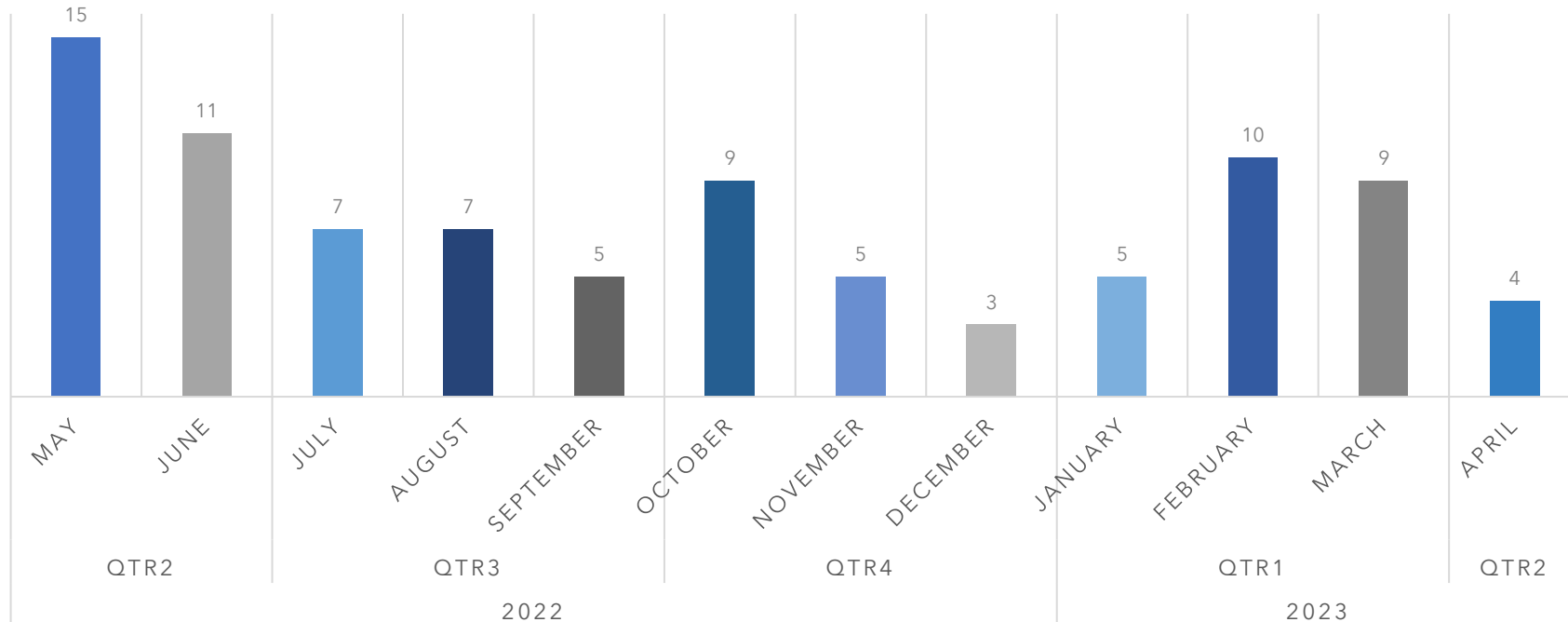
One trigger every 3 days

2 triggers per week

9 triggers per month

Planning and Scheduling: Targets of Opportunity

May 2022 July 2022	August 2022 October 2022	November 2022 January 2023	February 2023 April 2023
▪ One trigger every 3 days ▪ 11 triggers per month	▪ One trigger every 4 days ▪ 7 triggers per month	▪ One trigger every 7 days ▪ 4 triggers per month	▪ One trigger every 4 days ▪ 7 triggers per month

Bar chart values:
- MAY: 15
- JUNE: 11
- JULY: 7
- AUGUST: 7
- SEPTEMBER: 5
- OCTOBER: 9
- NOVEMBER: 5
- DECEMBER: 3
- JANUARY: 5
- FEBRUARY: 10
- MARCH: 9
- APRIL: 4

QTR2   QTR3   QTR4   QTR1   QTR2

2022   2023

Planning and Scheduling: Special Events

TANKS REPLENISHMENT ACTIVITIES (22-26 MAY 2023, BACKUP 19-23 JUNE)

o   Selection of optimal target fulfilling strict specifications about S/C attitude

o   Two-revolutions long observation of ESO 198-G24. Data will become public inmediately

Planning and Scheduling: Special Events

O4 LIGO-Virgo-KAGRA starting 24 May 2023

(engineering period since April 24)
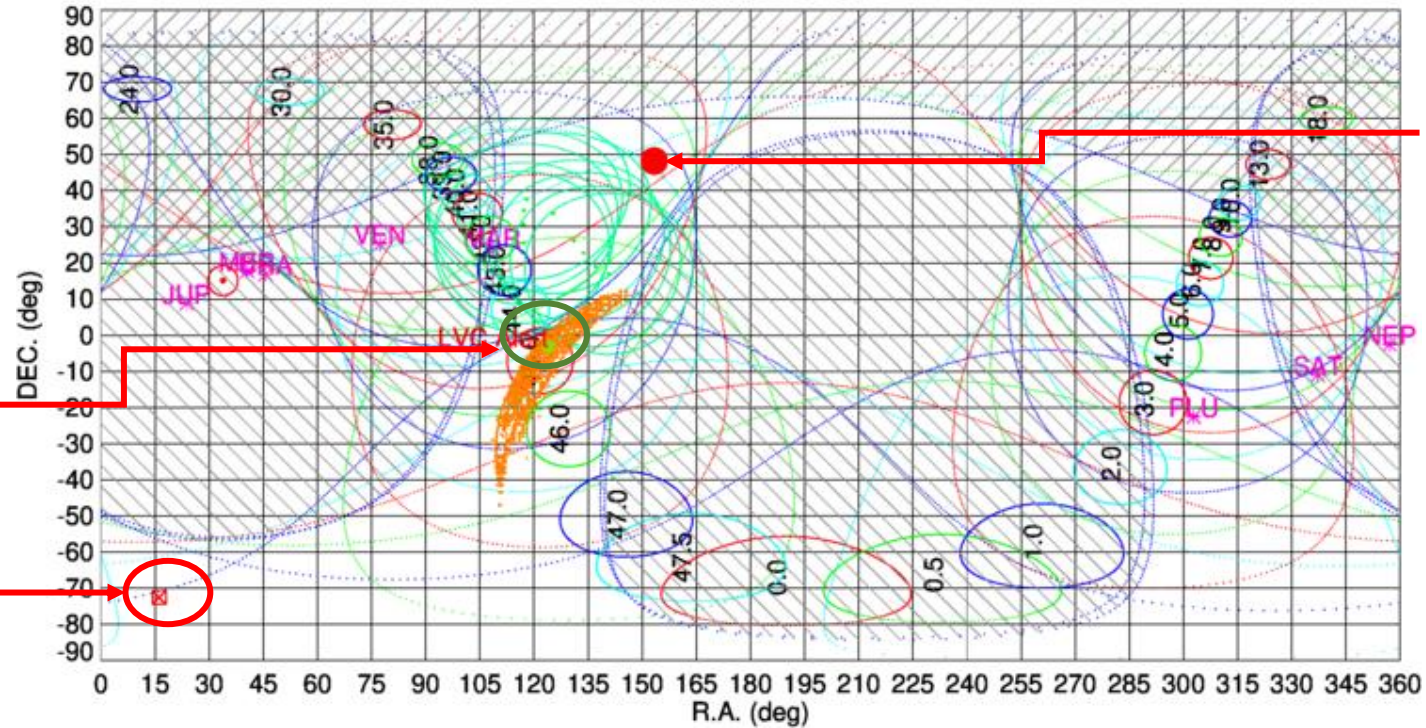
Preparations for faster response to GW alerts:

- Monitor GCN/LVC Notices

- Process **Initial** notices issued after human vetting (minutes)

- Generate SkyMap with information

Planning and Scheduling: Special Events

MS230427w 2023-04-27T22:56:51Z(4282.7)0.001 prob in XMM FoV@ 08 16 03.28 -03 08 05.7

0900650101 SXP164   2023-04-27T22:22:00Z 2023-04-28T09:43:40Z Prob in FoV: 3.48E-06
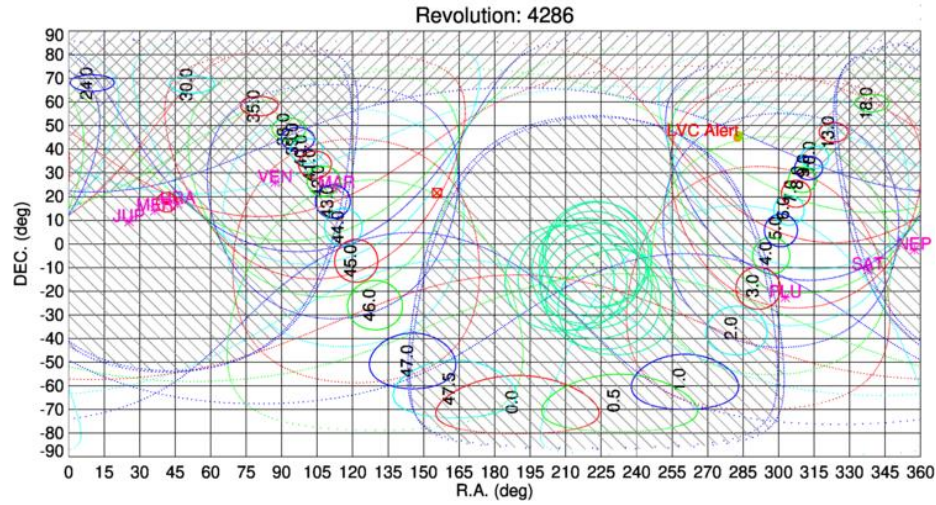
GRBs reported in INTEGRAL/SWIFT GCN in the last 3 days

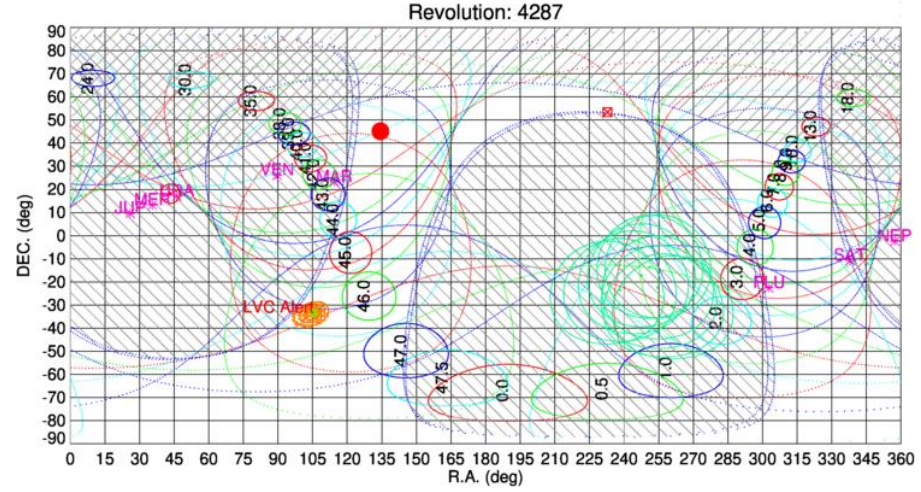LVC Alert Position (maximum probability)

Current XMM pointing

MS230505f 2023-05-05T06:02:28Z(4286.3)0.047 prob in XMM FoV@ 18 53 07.54 +45 38 09.6
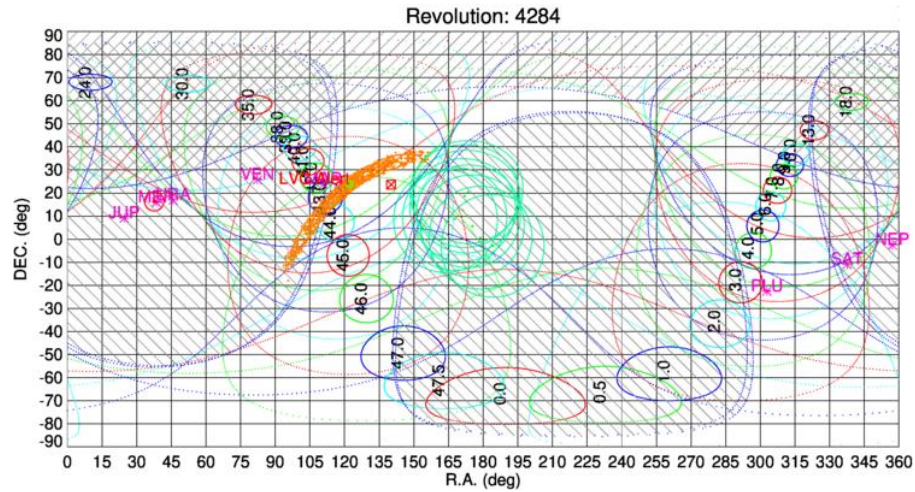0922170201 NGC 3221   2023-05-04T22:49:28Z 2023-05-06T06:52:48Z Prob in FoV: 8.61E-06

MS230507r 2023-05-07T18:02:35Z(4287.6)0.003 prob in XMM FoV@ 07 02 03.05 -33 19 52.6
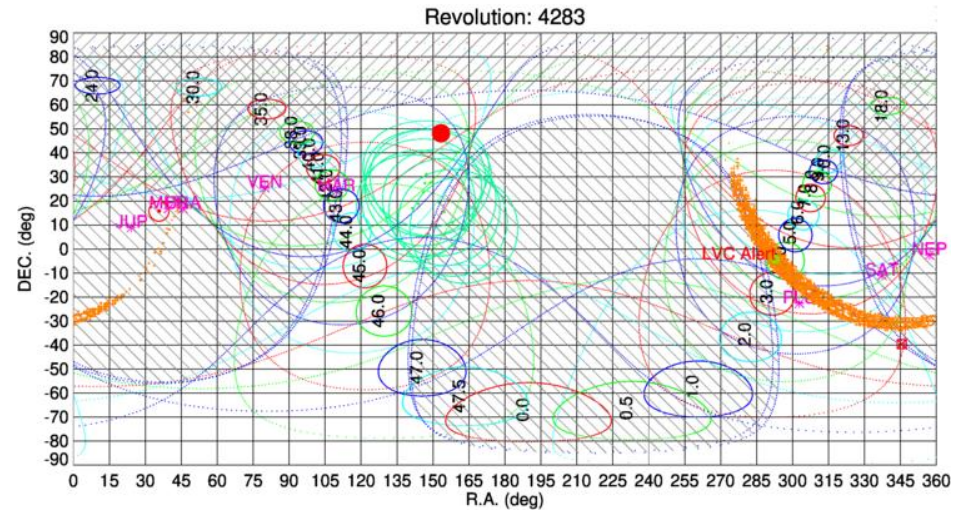0894200501 AT2022fpx   2023-05-07T18:23:42Z 2023-05-07T22:00:22Z Prob in FoV: 3.69E-06

MS230430w 2023-04-30T23:02:21Z(4284.2)0.001 prob in XMM FoV@ 08 09 01.40 +23 48 22.7
0930590401 B2 0917+23   2023-04-30T19:38:04Z 2023-04-30T23:03:14Z Prob in FoV: 3.34E-06

MS230428w 2023-04-28T23:02:15Z(4283.2)0.000 prob in XMM FoV@ 19 31 24.37 -04 19 52.1
0901330201 NGC 7456 ULX-1   2023-04-28T19:46:12Z 2023-04-28T23:09:32Z Prob in FoV: 2.88E-06

Planning and Scheduling: Special Events

O4 LIGO-Virgo-KAGRA alerts

Criteria for XMM-Newton ToO alert:

- Probability of GW event within EPIC FoV centered on maximum probability location > 0.3
- XMM-Newton visibility in on-going revolution > 5ks

=> Automatic generation of tentative re-planning