

# IMPERIAL MAG Data Release Report 2411



26 February 2025 (report covers data release for 1 November– 28 November 2024)

Report Version	1	L2 ground processing software version:	V2.27
MAG PI	Tim Horbury <a href="mailto:t.horbury@imperial.ac.uk">t.horbury@imperial.ac.uk</a>		
MAG IM	Helen O'Brien <a href="mailto:h.obrien@imperial.ac.uk">h.obrien@imperial.ac.uk</a>		
Report prepared by	Jean Morris <a href="mailto:j.morris23@imperial.ac.uk">j.morris23@imperial.ac.uk</a>		

## Data Summary

MAG was powered on for November. Burst Mode (BM) was available at 64 vectors/s for 24 hours per day for the entire month, and Normal Mode at 8 vectors/s was generated from this.

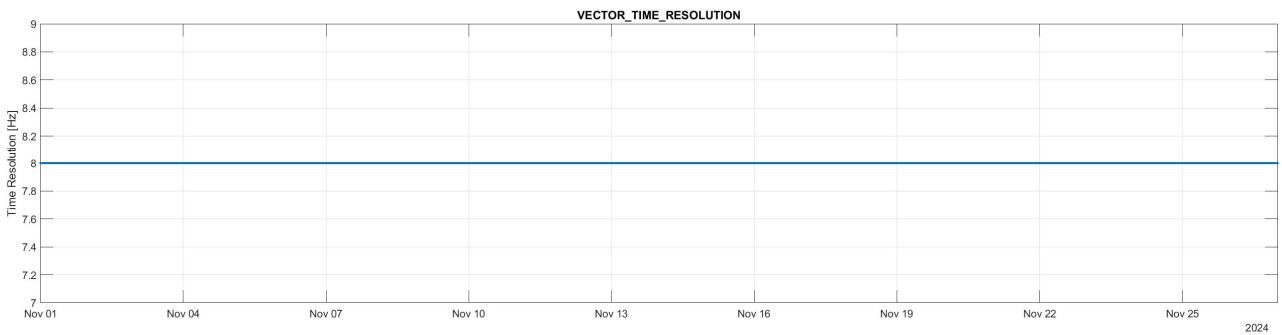
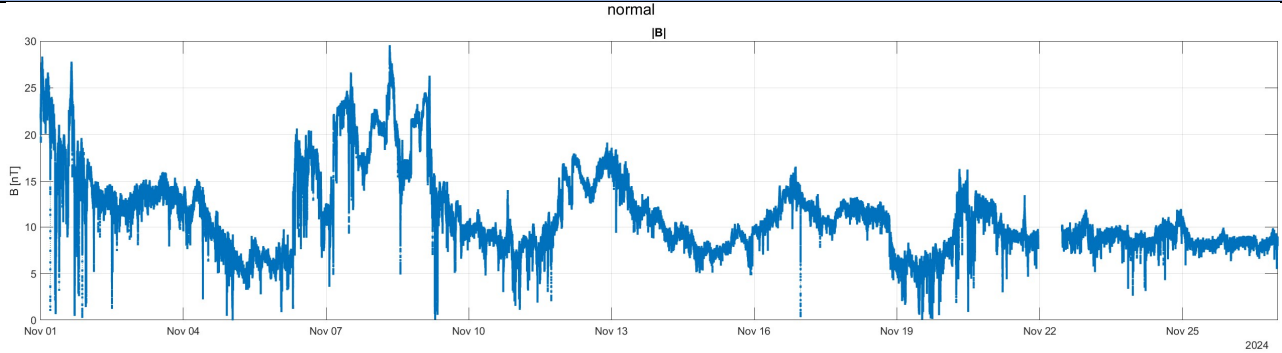
On the 28<sup>th</sup> of November the instrument was powered off and rebooted into a new version of the on-board instrument software enabling compression. This allows us to be in BM 24/7 for our entire orbit as we now are achieving a compression rate of 2-3x. To upload this new version of software, the instrument was power cycled. As a precaution against jumps in offsets the instrument was commanding to non-operational temperature of -60C. The offsets were disturbed by these temperature changes and the reboot. During the calibration process this disturbance was not able to be characterised with sufficient accuracy, therefore the data from 12 hours onwards for both temperature changes has not been released and the day of the reboot (the 28<sup>th</sup>). Please contact the team if you have a special need for this data. These are the periods not released:

Start Time NaN	End Time NaN	Comment
21/11/2024 23:16	22/11/2024 11:16	-90C to -60C temperature change
27/11/2024 23:59	29/11/2024 06:56	-60C to -90C temperature change and 28 <sup>th</sup> upload day.

The post-compression files of the 29<sup>th</sup> and 30<sup>th</sup> will be released with December, as a new data pipeline was required to generate these files.

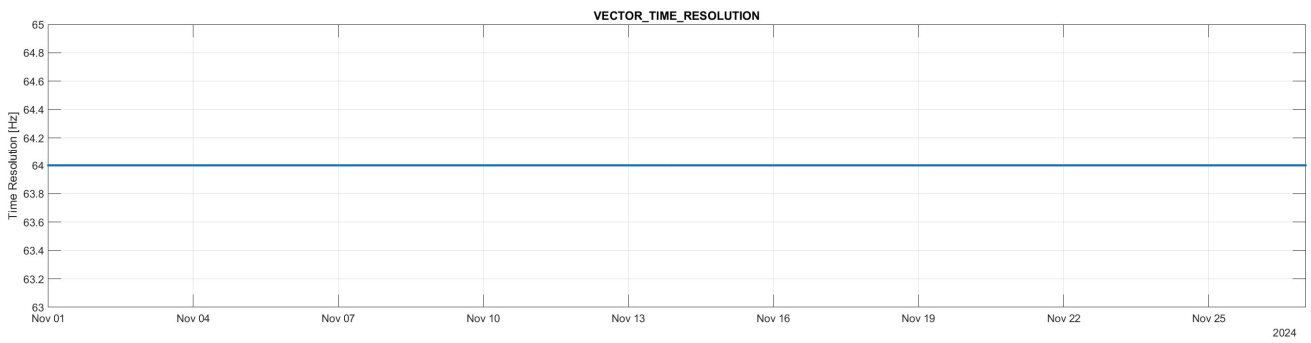
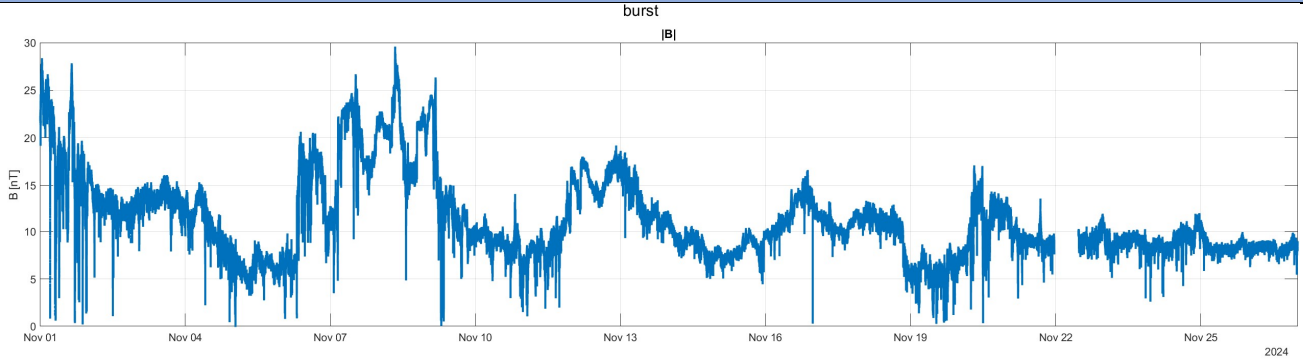
The spacecraft started the month at 0.64AU on the 1st of November and at the end of the month it was at 0.88AU.

### Normal Mode



Operations	1 November – 28 November	Science phase throughout period, normal data produced.
Operational Events of Note		

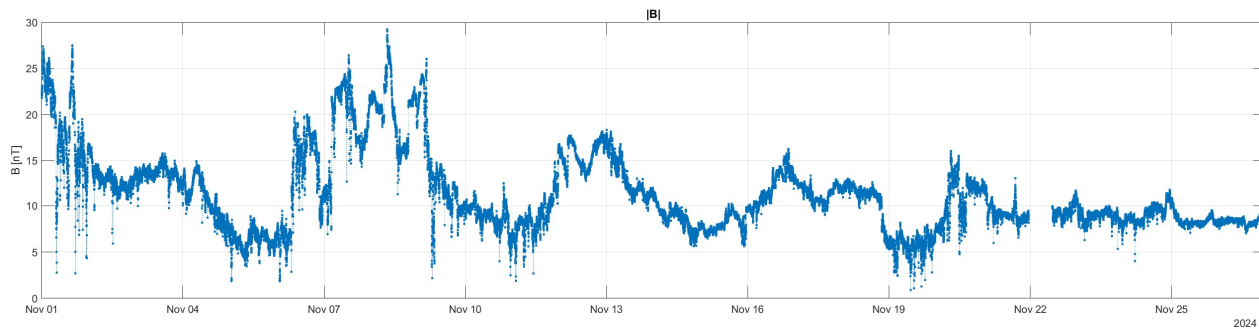
### Burst Mode



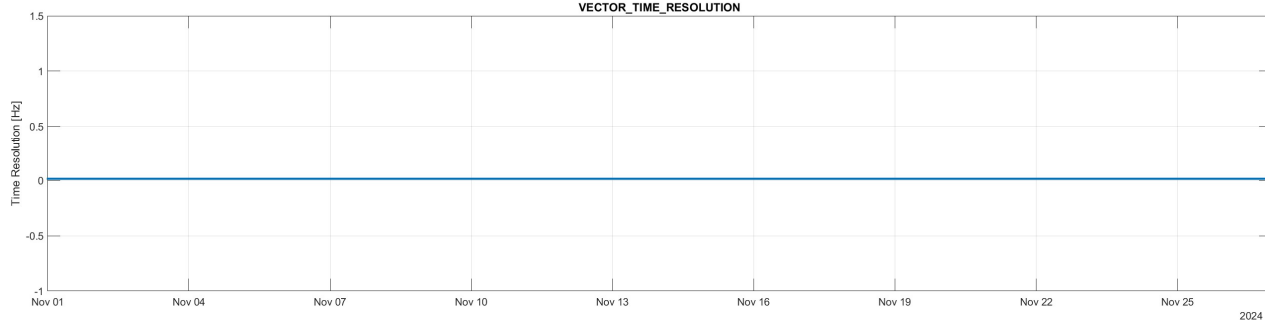
Coverage	From	To	Coverage
	01/11	28/11	24h per day of 64 vectors/s

### Normal – 1min

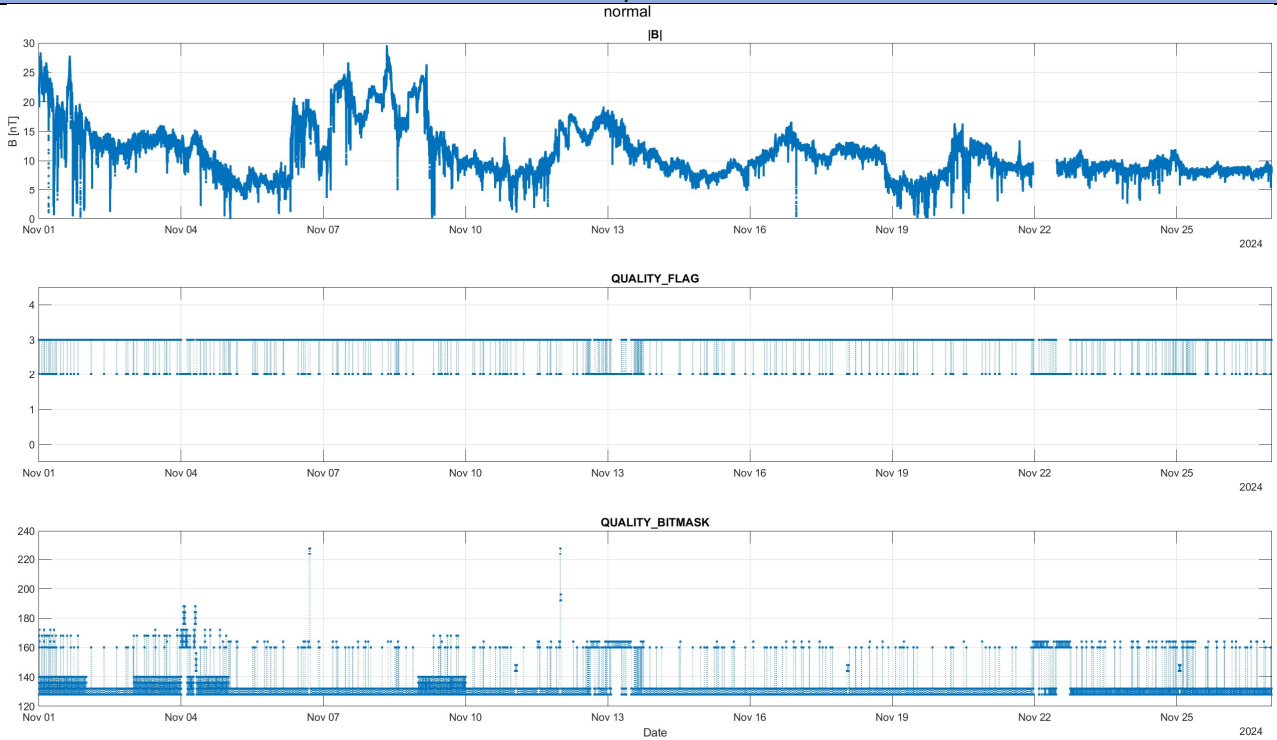
normal-1-minute



### VECTOR\_TIME\_RESOLUTION



## Quality bitmask



### Quality bit mask events

SC events which disturb the field

1. Solar array movements (solar array angle is changed, and then remains at the new angle due to sun-SC distance thermal constraints)
2. High gain antenna movements
3. Battery Top Up

## Offsets

### 1 November – 28 November

The MAG onboard offsets are generally stable, with an expected recovery in the Y offsets. Events that disturb the offsets include temperature changes across the spacecraft, and especially when the operational temperature of the instrument is changed. The operational temperature of the instrument changed on the 21<sup>st</sup> and 28<sup>th</sup> of the month and there are jumps on these dates in both IBS and OBS offsets shown below. The OBSX offset was ~4nT lower than before the temperature change, the OBS Y offset ~10nT lower and the OBS Z offset ~1.5nT lower. The IBS Y and IBS Z offsets had similar jumps, whilst the IBS X offset remained stable.

OffsetNumber	Date	OBSX	OBSY	OBSZ	IBSX	IBSY	IBSZ	Comment
221032	01/11/2024 00:00	-43.1	-105.31	-5.4	-50.5	85.51	15	
221033	08/11/2024 00:00				- 50.37	84.9	15.19	
221034	11/11/2024 23:50				- 50.37			
221035	11/11/2024 23:55				- 49.78			
221036	19/11/2024 00:00	- 43.08	-105.2	-5.42	- 49.38	84.49	16.45	
221037	21/11/2024 23:41	- 43.08	-105.2	-5.42	- 49.38		16.45	Start of non-operational temperature change (-60C)
221038	22/11/2024 00:56	- 43.45	-104.35	-7.11	-48		17	Non-operational temperature reached (-60C)
221039	28/11/2024 12:36	- 43.45	-103.61	-7.11	-48	84.49	17	Start of operational temperature change (-90C)
221040	28/11/2024 19:21	- 46.91	-114.72	-6.8	- 50.79	85.82	14.54	Operational temperature reached (-90C)

## Appendix

Appendix A: Files within this release

Filename
solo_L2_mag-rtn-burst_20241101_V01.cdf
solo_L2_mag-rtn-burst_20241102_V01.cdf
solo_L2_mag-rtn-burst_20241103_V01.cdf

solo_L2_mag-rtn-burst_20241104_V01.cdf
solo_L2_mag-rtn-burst_20241105_V01.cdf
solo_L2_mag-rtn-burst_20241106_V01.cdf
solo_L2_mag-rtn-burst_20241107_V01.cdf
solo_L2_mag-rtn-burst_20241108_V01.cdf
solo_L2_mag-rtn-burst_20241109_V01.cdf
solo_L2_mag-rtn-burst_20241110_V01.cdf
solo_L2_mag-rtn-burst_20241111_V01.cdf
solo_L2_mag-rtn-burst_20241112_V01.cdf
solo_L2_mag-rtn-burst_20241113_V01.cdf
solo_L2_mag-rtn-burst_20241114_V01.cdf
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solo_L2_mag-rtn-burst_20241117_V01.cdf
solo_L2_mag-rtn-burst_20241118_V01.cdf
solo_L2_mag-rtn-burst_20241119_V01.cdf
solo_L2_mag-rtn-burst_20241120_V01.cdf
solo_L2_mag-rtn-burst_20241121_V01.cdf
solo_L2_mag-rtn-burst_20241122_V01.cdf
solo_L2_mag-rtn-burst_20241123_V01.cdf
solo_L2_mag-rtn-burst_20241124_V01.cdf
solo_L2_mag-rtn-burst_20241125_V01.cdf
solo_L2_mag-rtn-burst_20241126_V01.cdf
solo_L2_mag-rtn-burst_20241127_V01.cdf
solo_L2_mag-rtn-burst_20241128_V01.cdf
solo_L2_mag-rtn-burst_20241129_V01.cdf
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solo_L2_mag-rtn-normal-1-minute_20241101_V01.cdf
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