Imperial College London

MAG Data Release Report 2206

21 Mar 2023 (report covers data release for 1-30 June 2022)

Report Version	2	L2 ground processing software version:	V2.21
MAG PI	Tim Horbury t.horbury@imperial.ac.uk		
MAG IM	Helen O'Brien h.obrien@imperial.ac.uk		

Data Summary

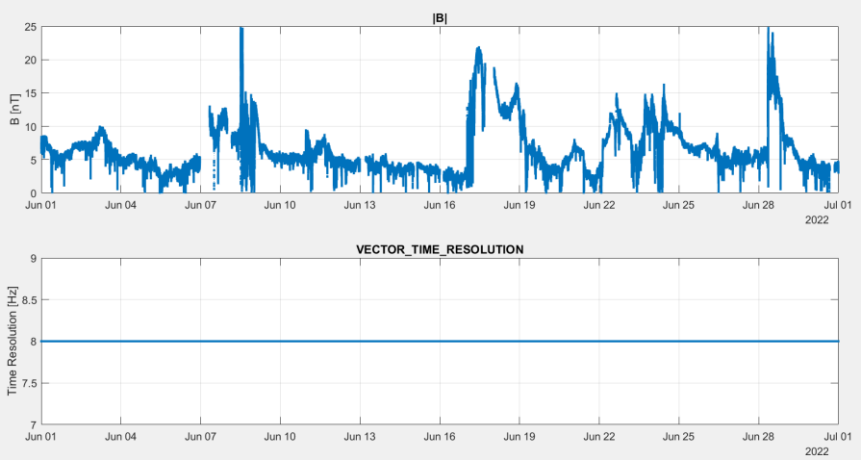
MAG was on for the period 1-30 June 2022. No burst mode data is available for the whole month.

On 06/06 the temperature set point for both IBS and OBS changed from -60 to -90 °C, influencing the offsets of both sensors. The data covering the transition between the temperatures has not been released as it is highly disturbed due to heater cycles instability.

Spacecraft noise was observed particularly in IBS data for several periods (there was significant noise for a total of 41 hours in the period 1-30 June 2022). This noise is very clear in IBS, the source has not been identified. We can see evidence for it being there in OBS as well, and have not got algorithms to clean this from the data. The magnetic field data have been converted to NaNs when the noise in the data was particularly high. The full period of missing data is listed in the appendix of this report. If you have particular need for any data during these periods, please contact the MAG team and we see if the data maybe suitable for release for certain applications.

The spacecraft started the month at 0.93AU and at the end it was at 1.01AU from the Sun.

Normal Mode



MAG was on with 8Hz cadence normal mode data returned, for exceptions see below.

Operations	1-30 June	Science phase throughout period, normal data returned
Operational Events of Note	None	

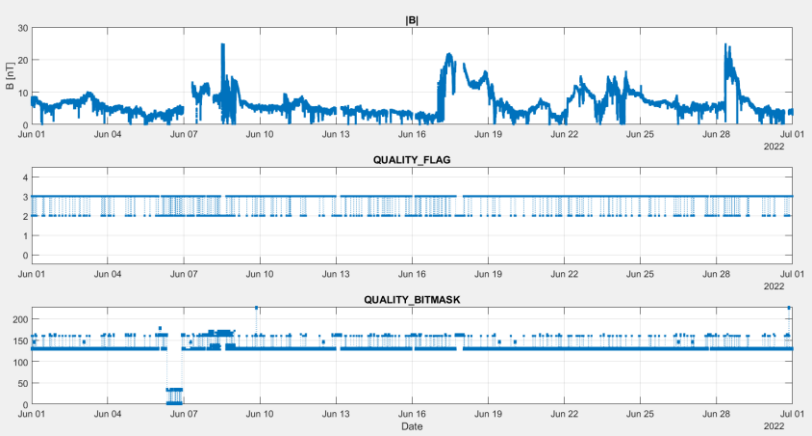
Data Gaps greater than one minute:
NaNs have been introduced during the noisiest periods because the data was highly disturbed. See Appendix for details.

Burst Mode

No BM available in June

Coverage	From	To	Coverage
	01/06	30/06	No BM

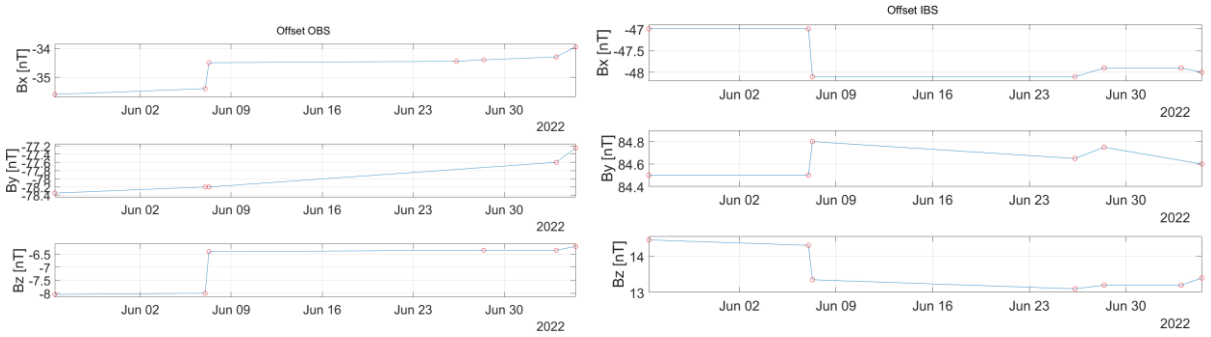
Quality bitmask



Quality bit mask events	
SC events which disturb the field	1. Thruster firings 2. Solar array lubrications (solar array is moved 15 degrees, then returned to original position) 3. Solar array movements (solar array angle is changed, and then remains at new angle due to sun-SC distance thermal constraints) 4. High gain antenna movements
SC related issues	

Time	Reason
01/06/2022 04:40- 03/06 08:10	HGA movement
06/06 00:00	Battery top up event
06/06 23:25	IBS and OBS temperature set point change
09/06	Solar array relubrication
30/06	Solar array relubrication

Offset



1-30 Jun:
Both sensor offsets changed when the temperature set points changed. After that, OBS offsets linearly increased.

Offset	Date	OBSX	OBSY	OBSZ	IBSX	IBSY	IBSZ	Comment
220504	26/05/2022 10:29	-35.60	-78.35	-8.05	-47	84.5	14.45	Post SA movement from 30 to 0 deg
220504	07/06/2022 00:00	-35.40	-78.2	-8	-47	84.5	14.3	Pre change sensor temperature
220601	07/06/2022 07:00	-34.50	-78.2	-6.4	-48.1	84.8	13.35	Post change sensor temperature
220602	26/06/2022 07:30	-34.45			-48.1	84.65	13.1	Change linear trend both
220603	28/06/2022 10:15	-34.40		-6.35	-47.9	84.75	13.2	Change linear trend both
220604	04/07/2022 00:00	-34.30	-77.6	-6.35	-47.9		13.2	Pre TCM
220605	05/07/2022 12:00	-33.95	-77.25	-6.2	-48	84.6	13.4	Post TCM

Appendix

Appendix A: NANs periods of the month

This table shows the NaN periods which have been introduced in the data due to SC interference. The disturbance observed in the IBS-OBS data set is large that we cannot quantify the impact on OBS, therefore we have set this data to NaN. If you have a need to see this data, please get in contact with the MAG team and we can discuss this with you.

StartTime	EndTime	Comment
06/06/2022 23:25	07/06/2022 08:00	Offset disturbance caused change in temp set point
08/06/2022 00:00	08/06/2022 04:00	SC interference
08/06/2022 14:00	08/06/2022 15:30	SC interference
09/06/2022 20:23	09/06/2022 20:30	SA lubrication
12/06/2022 23:45	13/06/2022 05:00	SC interference
14/06/2022 22:00	14/06/2022 22:30	SC interference
15/06/2022 00:30	15/06/2022 03:30	SC interference
16/06/2022 00:00	16/06/2022 03:30	SC interference
17/06/2022 17:00	18/06/2022 01:00	SC interference
27/06/2022 16:15	27/06/2022 18:10	SC interference
30/06/2022 16:15	30/06/2022 20:28	SA lubrication

Appendix B: Files within this release

Filename
solo_L2_mag-rtn-normal-1-minute_20220601_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220602_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220603_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220604_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220605_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220606_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220607_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220608_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220609_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220610_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220611_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220612_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220613_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220614_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220615_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220616_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220617_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220618_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220619_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220620_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220621_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220622_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220623_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220624_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220625_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220626_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220627_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220628_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220629_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220630_V01.cdf
solo_L2_mag-rtn-normal_20220601_V01.cdf
solo_L2_mag-rtn-normal_20220602_V01.cdf
solo_L2_mag-rtn-normal_20220603_V01.cdf
solo_L2_mag-rtn-normal_20220604_V01.cdf
solo_L2_mag-rtn-normal_20220605_V01.cdf
solo_L2_mag-rtn-normal_20220606_V01.cdf
solo_L2_mag-rtn-normal_20220607_V01.cdf
solo_L2_mag-rtn-normal_20220608_V01.cdf
solo_L2_mag-rtn-normal_20220609_V01.cdf
solo_L2_mag-rtn-normal_20220610_V01.cdf
solo_L2_mag-rtn-normal_20220611_V01.cdf
solo_L2_mag-rtn-normal_20220612_V01.cdf

solo_L2_mag-rtn-normal_20220613_V01.cdf
solo_L2_mag-rtn-normal_20220614_V01.cdf
solo_L2_mag-rtn-normal_20220615_V01.cdf
solo_L2_mag-rtn-normal_20220616_V01.cdf
solo_L2_mag-rtn-normal_20220617_V01.cdf
solo_L2_mag-rtn-normal_20220618_V01.cdf
solo_L2_mag-rtn-normal_20220619_V01.cdf
solo_L2_mag-rtn-normal_20220620_V01.cdf
solo_L2_mag-rtn-normal_20220621_V01.cdf
solo_L2_mag-rtn-normal_20220622_V01.cdf
solo_L2_mag-rtn-normal_20220623_V01.cdf
solo_L2_mag-rtn-normal_20220624_V01.cdf
solo_L2_mag-rtn-normal_20220625_V01.cdf
solo_L2_mag-rtn-normal_20220626_V01.cdf
solo_L2_mag-rtn-normal_20220627_V01.cdf
solo_L2_mag-rtn-normal_20220628_V01.cdf
solo_L2_mag-rtn-normal_20220629_V01.cdf
solo_L2_mag-rtn-normal_20220630_V01.cdf
solo_L2_mag-srf-normal_20220601_V01.cdf
solo_L2_mag-srf-normal_20220602_V01.cdf
solo_L2_mag-srf-normal_20220603_V01.cdf
solo_L2_mag-srf-normal_20220604_V01.cdf
solo_L2_mag-srf-normal_20220605_V01.cdf
solo_L2_mag-srf-normal_20220606_V01.cdf
solo_L2_mag-srf-normal_20220607_V01.cdf
solo_L2_mag-srf-normal_20220608_V01.cdf
solo_L2_mag-srf-normal_20220609_V01.cdf
solo_L2_mag-srf-normal_20220610_V01.cdf
solo_L2_mag-srf-normal_20220611_V01.cdf
solo_L2_mag-srf-normal_20220612_V01.cdf
solo_L2_mag-srf-normal_20220613_V01.cdf
solo_L2_mag-srf-normal_20220614_V01.cdf
solo_L2_mag-srf-normal_20220615_V01.cdf
solo_L2_mag-srf-normal_20220616_V01.cdf
solo_L2_mag-srf-normal_20220617_V01.cdf
solo_L2_mag-srf-normal_20220618_V01.cdf
solo_L2_mag-srf-normal_20220619_V01.cdf
solo_L2_mag-srf-normal_20220620_V01.cdf
solo_L2_mag-srf-normal_20220621_V01.cdf
solo_L2_mag-srf-normal_20220622_V01.cdf
solo_L2_mag-srf-normal_20220623_V01.cdf
solo_L2_mag-srf-normal_20220624_V01.cdf
solo_L2_mag-srf-normal_20220625_V01.cdf
solo_L2_mag-srf-normal_20220626_V01.cdf

solo_L2_mag-srf-normal_20220627_V01.cdf
solo_L2_mag-srf-normal_20220628_V01.cdf
solo_L2_mag-srf-normal_20220629_V01.cdf
solo_L2_mag-srf-normal_20220630_V01.cdf