



10 Sept 2021 (report covers data release for 1-31 July)

Report Version	1	L2 ground processing software version:	V2.3
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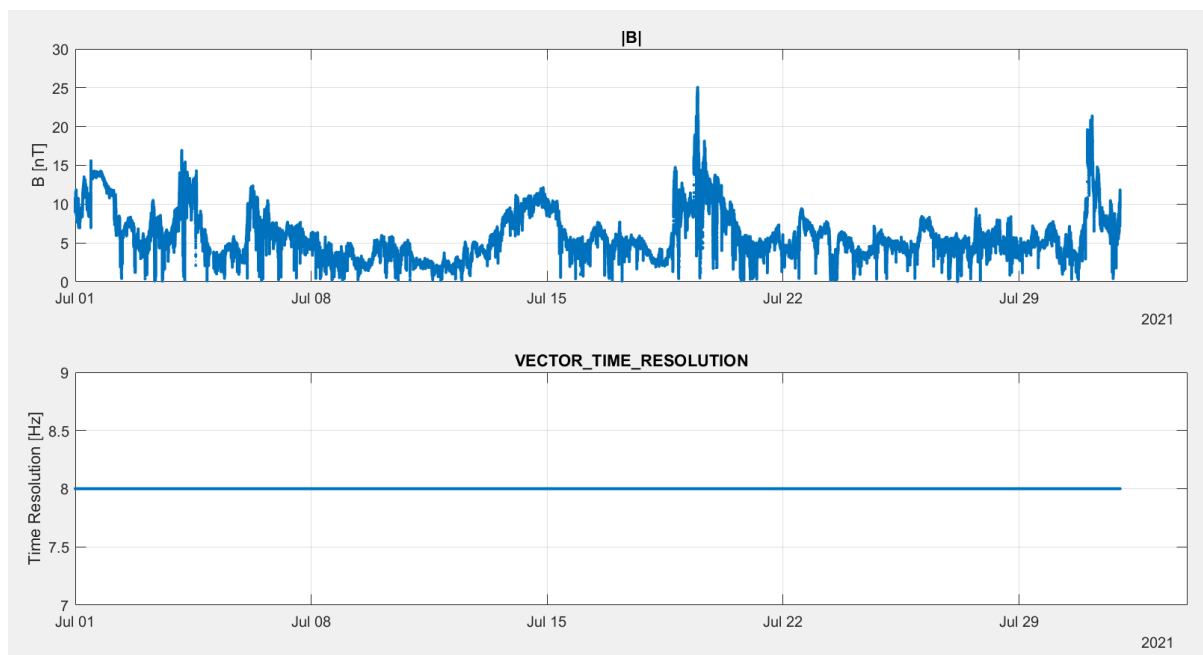
Data Summary

MAG was on for the period 1-31 July 2021.

Spacecraft noise was observed particularly in IBS data for several periods (there was significant noise for a total of 4 hours during July). 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 0.91AU and ended it at 0.78AU.

Normal Mode



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

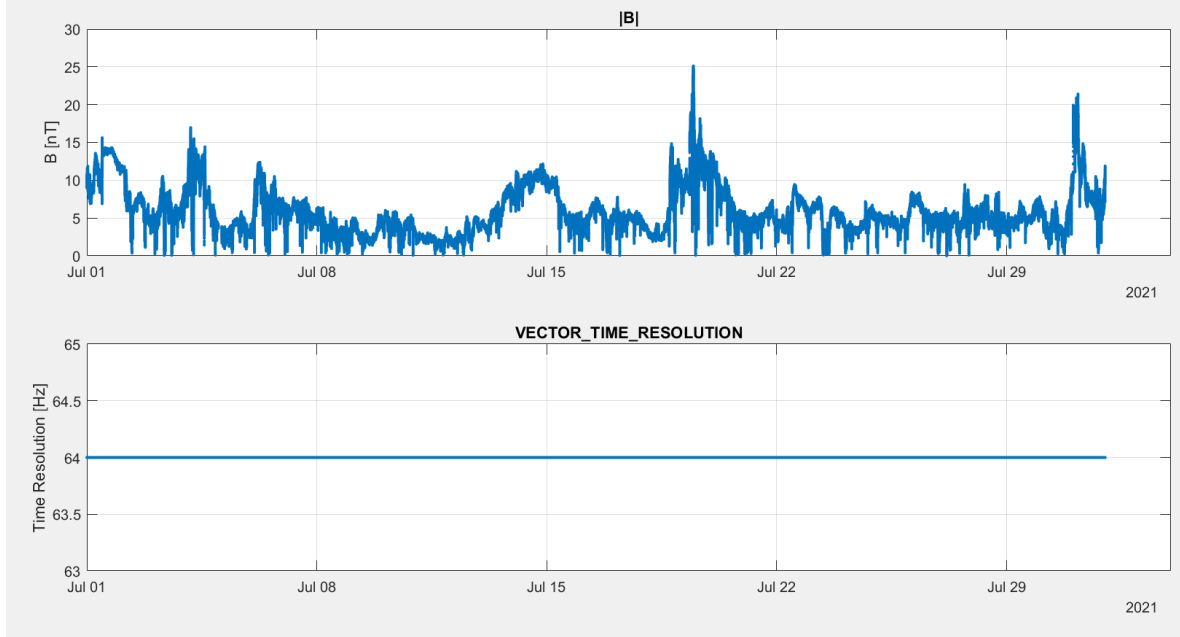
Operations	1-31 July	Cruise phase throughout period
Operational Events of Note	None	

Data Gaps greater than one minute:

Gaps due to bad weather at NNO on:

GapStart	GapEnd	GapDuration
20210706T10:37:42.023	20210706T10:37:46.149	00:00:04
20210706T10:37:50.024	20210706T10:40:42.146	00:02:52
20210706T10:40:54.022	20210706T10:40:58.145	00:00:04
20210706T10:41:14.020	20210706T10:42:22.144	00:01:08
20210706T10:42:26.020	20210706T10:42:30.144	00:00:04
20210706T11:03:46.003	20210706T11:03:50.129	00:00:04
20210706T11:03:54.004	20210706T11:04:06.129	00:00:12
20210708T17:02:55.563	20210708T17:10:23.683	00:07:28
20210708T23:30:43.270	20210708T23:32:03.395	00:01:20
20210712T04:04:55.800	20210712T04:08:27.923	00:03:32
20210712T04:12:19.794	20210712T04:12:59.919	00:00:40
20210712T10:04:39.530	20210712T10:04:47.653	00:00:08

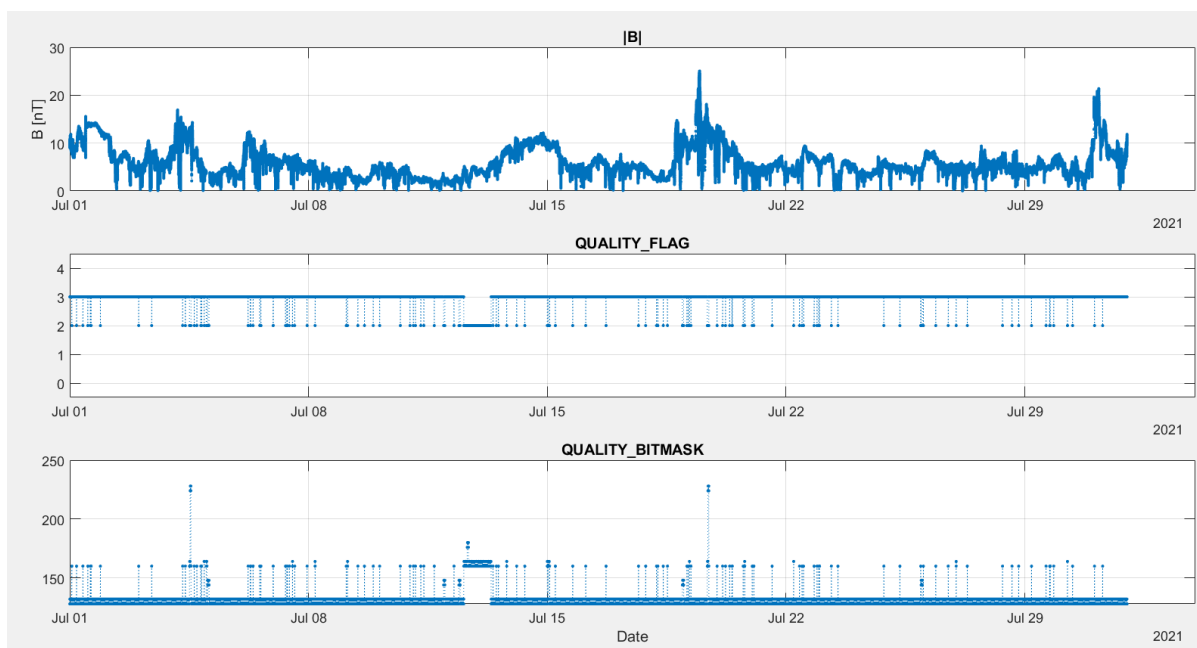
Burst Mode



Coverage continuous. Data at 64 Hz cadence.

Coverage	From	To	Coverage
	1/7	31/07	24 hours 64 Hz per day

Quality bitmask



Quality bit mask events

SC events which disturb the field

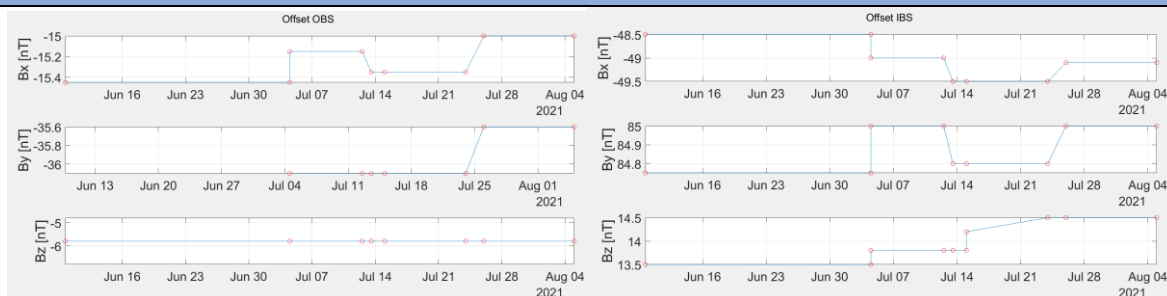
1. Thruster firings
2. Solar array lubrications (solar array is moved 15 degrees, then returned to original position)
3. Solar array movements (solar array angle is changed, and then remains at new angle due to sun-SC distance thermal constraints)
4. High gain antenna movements

SC related issues

Time	Reason
04/07/2021 12:45	SA movement from 0 to 30 deg
05/07/2021 00:05 until 2:30	SA current event
12/07/2021 13:18 - 13/07 8:28	HGA movement from 136 to 0 deg and from 0 to 136 deg
12/07/2021 15:39	Thruster firing on 12/07 not well cleaned: trajectory correction
15/07/2021 1:00	LGA swap performed @ 01:00, due to better visibility for the non-primary antenna until 16/08
19/07/2021 17:05	SA lubrication

The MAG heater profiles for the 4th 10th 31st could not be accurately determined, thus signals having the same periodicity as the MAG heater switching can be noticed in the data: please, check the quality bitmask, bit 3, for the MAG heater ON times.

Offset



1-31 July:

Both IBS and OBS offsets have been modified by the solar array and HGA movements and LGA swap. A linear trend affecting both sensors has been identified on the 24th-26th but it seems to be not related to any SC event.

These offsets have been quantified and removed from the L2 data.

Offset	Date	OBSX	OBSY	OBSZ	IBSX	IBSY	IBSZ	
150	02/06/2021 00:00	-15.45	-37	-5.8	-48.5	84.75	14.1	Offset valid at beginning of 2nd Jun 2021
151	09/06/2021 17:14	-15.45		-5.8	-48.5	84.75	14.1	Pre SA lubrication
152	09/06/2021 17:21	-15.45		-5.8	-48.5	84.75	13.5	Post SA lubrication
153	04/07/2021 12:44	-15.45	-36.1	-5.8	-48.5	84.75	13.5	Pre SA movement from 0 to 30 deg
154	04/07/2021 12:50	-15.15	-36.1	-5.8	-49	85	13.8	Post SA movement from 0 to 30 deg
154	12/07/2021 13:18	-15.15	-36.1	-5.8	-49	85	13.8	Pre HGA antenna movement from 136 to 0 deg
155	13/07/2021 13:21	-15.35	-36.1	-5.8	-49.5	84.8	13.8	Post HGA antenna movement from 0 to 136 deg
155	15/07/2021 01:00	-15.35	-36.1	-5.8	-49.5	84.8	13.8	Pre LGA swap
156	15/07/2021 01:01	-15.35	-36.1	-5.8	-49.5	84.8	14.2	Post LGA swap
157	24/07/2021 00:00	-15.35	-36.1	-5.8	-49.5	84.8	14.5	Start linear trend affecting IBS and OBS (unknown event)
158	26/07/2021 00:00	-15	-35.6	-5.8	-49.1	85	14.5	End linear trend affecting IBS and OBS (unknown event)
158	04/08/2021 23:40	-15	-35.6	-5.8	-49.1	85	14.5	Final Offset

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 of unknown source. 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
04/07/2021 12:44	04/07/2021 12:50	SA movement from 0 to 30 deg
05/07/2021 00:05	05/07/2021 02:30	SA current event
12/07/2021 13:15	12/07/2021 13:22	HGA movement
12/07/2021 15:38	12/07/2021 16:35	Bad thruster firing removal: trajectory correction. Offset disturbance
13/07/2021 08:12	13/07/2021 08:15	HGA movement
15/07/2021 01:00	15/07/2021 01:15	Interference due to LGA swap
19/07/2021 17:00	19/07/2021 17:15	SA lubrication
23/07/2021 05:40	23/07/2021 05:42	Interference in Bx and Bz