



11 March 2024 (report covers data release for 1-31 Aug 2021)

Report Version	3	L2 ground processing software version:	V2.26.1
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Data Summary

V2 updates 2024:

After an investigation by ESA, Airbus and Imperial, the unexplained spacecraft interference has been confirmed not to impact the science quality of the OBS data. Cleaning of data around thruster firings requires use of the contaminated IBS data so users should beware of data during these periods, which can be identified by the thruster flag. These now re-released periods have also been quality flagged to level 2, due to the effect on the IBS data, as IBS-OBS is also an important tool in offset determination. This SC interference had historically resulted in the data not being released for these periods. The MAG team is now working to re-release these previously retracted periods, please see the Appendix for the periods now released.

V1:

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

On the 9th of August Solar Orbiter had the second flyby with Venus.

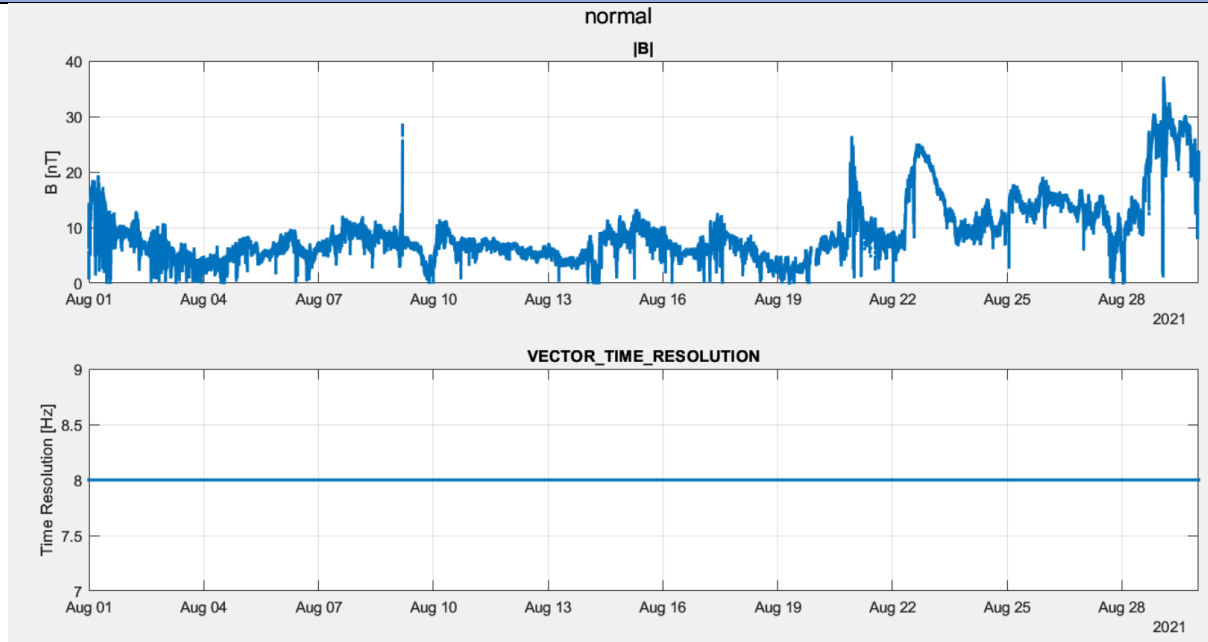
In August two SA current events have been observed: on the 17th and the 19th. They are not yet fully understood. MAG will continue to investigate and better quantify the impact of these events.

Spacecraft noise was observed particularly in IBS data for several periods (there was significant noise for a total of 132 hours in the period 1-31 Aug). 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 27th and 29th of August cannot be released because the data have been all converted to NaNs.

The spacecraft started the month at 0.78AU and ended it at 0.61AU.

Normal Mode



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

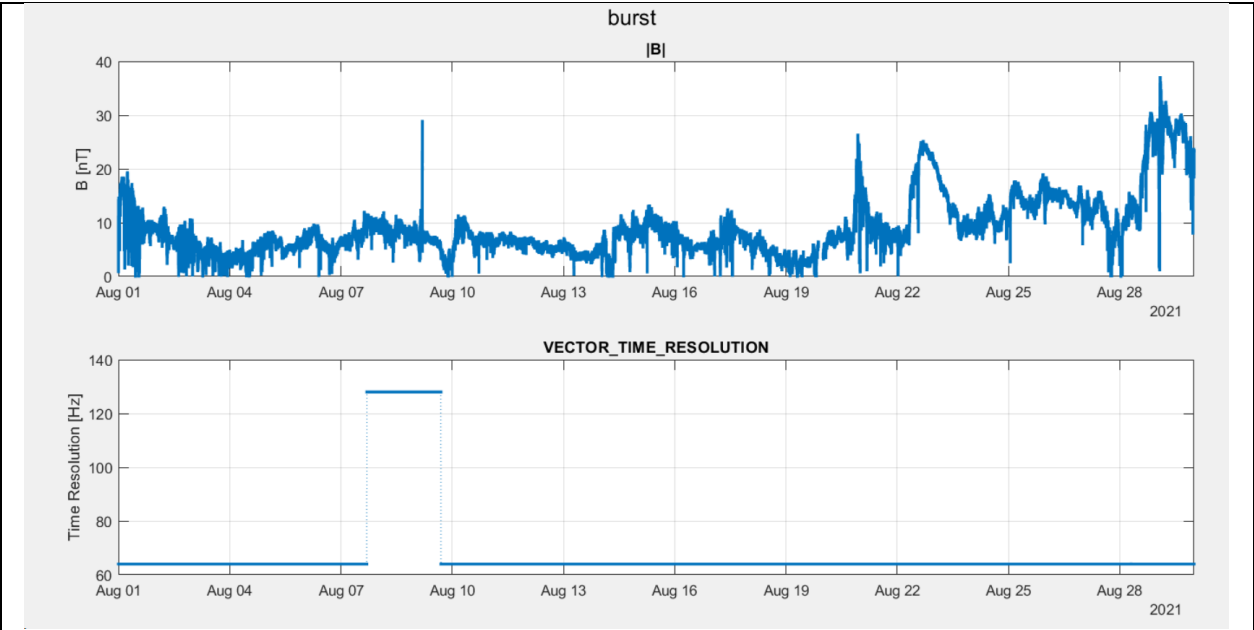
Operations	1-31 August	Cruise phase throughout period
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Operational Events of Note	9 th August: Venus flyby. Files in VSO coordinates are available for the 8 th -9 th -10 th August 2021.	
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Data Gaps:

GapStart	GapEnd	Gap duration	Reason
20210801T04:21:14.565	20210801T04:21:30.689	00:00:16	Data gap of unknown origin. possibly related to SOLMCA crash reported in MOR #46
20210808T03:13:27.477	20210808T03:13:35.602	00:00:08	MOR #47: Data gaps due to bad weather at NNO
20210808T03:13:39.476	20210808T03:14:47.600	00:01:08	
20210808T03:14:51.476	20210808T03:14:55.600	00:00:04	
20210808T03:15:07.475	20210808T03:17:19.598	00:02:12	
20210808T08:00:19.269	20210808T08:00:35.393	00:00:16	
20210829T23:59:56.117	20210830T00:00:01.076	00:00:04	Gap at end of day due to unknown origin. Nothing in MOR #48. possibly related to time correlation performed on 2021-08-30 reported in MOR #49 or maybe slew

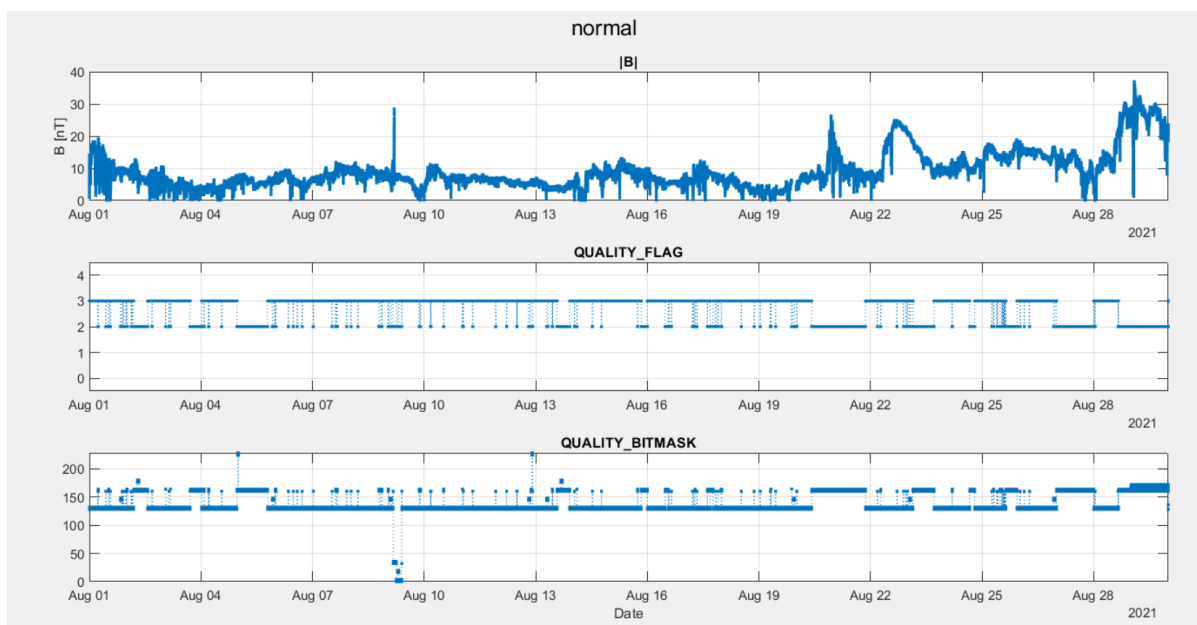
Burst Mode



Coverage continuous. Data at 64 Hz cadence.

Coverage	From	To	Coverage
	1/08	7/08 16:45	24 hours 64 Hz per day
	7/08 16:45	9/08 16:45	24 hours 128Hz
	9/08 16:45	31/08	24 hours 64 Hz per day

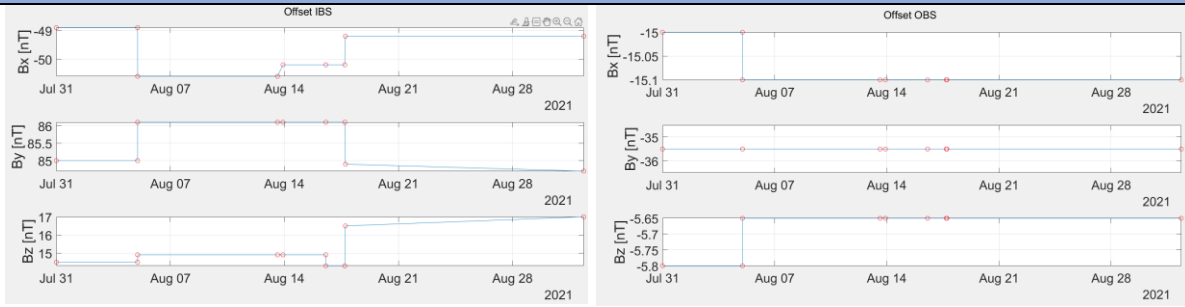
Quality bitmask



Quality bit mask events

SC events which disturb the field	<ol style="list-style-type: none"> 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
	02/08/2021 04:33-13:39	HGA from 0 to 130 deg and vice versa Elevation -94 to -90 and vice versa
	04/08/2021 23:40-23:45	SA movement from 30 to 56 deg
	12/08/2021 21:29	SA movement from 56 to 60 deg
	13/08/2021 13:48-21:44	HGA azimuth from 124 to 0 deg and vice versa Elevation -94 to -90 and vice versa
	16/08/2021 12:58-13:04	HGA elevation from -94 to -77 deg
	17/08/21 16:58-17:54	SA current event
	19/08/21 21:04	SA current event: battery top up operation

Offset



1-31 August:

IBS offsets have been modified by the solar array movement on the 4th of August and the HGA antenna movements on the 13th and the 17th. OBS offsets have been modified only by the SA movement on the 4th.

Offset	Date	OBSX	OBSY	OBSZ	IBSX	IBSY	IBSZ	
159	31/07/2021 00:00	-15	-35.5	-5.8	-48.9	85	14.5	Start of month
159	04/08/2021 23:40	-15	-35.5	-5.8	-48.9	85	14.5	Pre SA movement from 30 to 56 deg
160	04/08/2021 23:45	-15.1	-35.5	-5.65	-50.6	86.1	14.9	Post SA movement from 30 to 56 deg
161	13/08/2021 13:48	-15.1	-35.5	-5.65	-50.6	86.1	14.9	Pre HGA azimuth from 124 to 0 deg and vice versa, Elevation -94 to -90 and vice versa
161	13/08/2021 21:53	-15.1	-35.5	-5.65	-50.2	86.1	14.9	Post HGA azimuth from 124 to 0 deg and vice versa, Elevation -94 to -90 and vice versa
161	16/08/2021 12:58	-15.1	-35.5	-5.65	-50.2	86.1	14.9	Pre HGA elevation from -94 to -77 deg
163	16/08/2021 12:58	-15.1	-35.5	-5.65	-50.2	86.1	14.3	Post HGA elevation from -94 to -77 deg
163	17/08/2021 16:58	-15.1	-35.5	-5.65	-50.2	86.1	14.3	Pre SA current event
164	17/08/2021 17:54	-15.1	-35.5	-5.65	-49.2	84.9	16.5	Post SA current event
165	01/09/2021 09:00	-15.1	-35.5	-5.65	-49.2	84.7	17	Pre HGA azimuth from 105 to 102 deg
165	03/09/2021 09:00	-15.1	-35.5	-5.65	-49.2	84.7	17	Final offset

SC Interference Re-Release

After an investigation by ESA, Airbus and Imperial, the unexplained spacecraft interference (SC interference) has been confirmed not to impact the science quality of the OBS data, so this is no longer being removed from these periods. Cleaning of data around thruster firings requires use of the contaminated IBS data so users should beware of data during these periods, which can be identified by the thruster flag. These now re-released periods have also been quality flagged to level 2, due to the effect on the IBS data, as IBS-OBS is also an important tool in offset determination.

Appendix

Appendix – Periods now released.

StartTime	EndTime	Comment
03/08/2021 17:00	04/08/2021 00:00	SC interference
07/08/2021 15:30	07/08/2021 16:00	SC interference
07/08/2021 14:55	07/08/2021 15:00	SC interference
08/08/2021 19:19	08/08/2021 19:21	SC interference
15/08/2021 20:00	16/08/2021 00:00	SC interference
20/08/2021 10:00	21/08/2021 20:45	SC interference
23/08/2021 03:30	23/08/2021 17:00	SC interference
24/08/2021 16:00	24/08/2021 19:00	SC interference
25/08/2021 15:30	25/08/2021 22:30	SC interference
27/08/2021 00:00	28/08/2021 00:00	SC interference
28/08/2021 16:00	30/08/2021 00:00	SC interference

Appendix – Files released

Filename
solo_L2_mag-rtn-burst_20210801_V03.cdf
solo_L2_mag-rtn-burst_20210802_V03.cdf
solo_L2_mag-rtn-burst_20210803_V03.cdf
solo_L2_mag-rtn-burst_20210804_V03.cdf
solo_L2_mag-rtn-burst_20210805_V03.cdf
solo_L2_mag-rtn-burst_20210806_V03.cdf
solo_L2_mag-rtn-burst_20210807_V03.cdf
solo_L2_mag-rtn-burst_20210808_V03.cdf
solo_L2_mag-rtn-burst_20210809_V03.cdf
solo_L2_mag-rtn-burst_20210810_V03.cdf

solo_L2_mag-rtn-burst_20210811_V03.cdf
solo_L2_mag-rtn-burst_20210812_V03.cdf
solo_L2_mag-rtn-burst_20210813_V03.cdf
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