



29 August 2024 (report covers data release for 1-31 August 2022)

Report Version	2	L2 ground processing software version:	V2.27
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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:

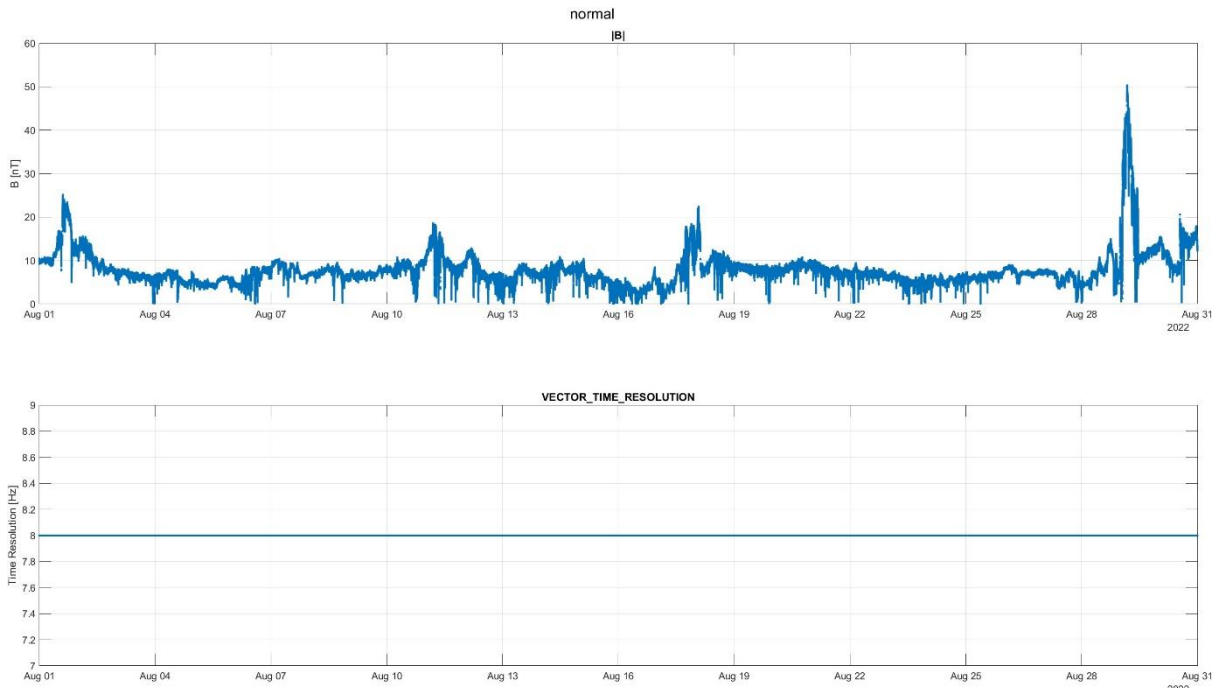
MAG was on for the period 1-31 August 2022. The BM data was available only from the 26th to the 27th of August.

Spacecraft noise was observed particularly in IBS data for several periods (there was significant noise for a total of 274 hours in the period 1-31 Aug 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 20th and 21st of Aug 2022 cannot be released: SC noise was high for the whole day.

The spacecraft started the month at 0.96AU and at the end it was at 0.76AU from the Sun.

Normal Mode

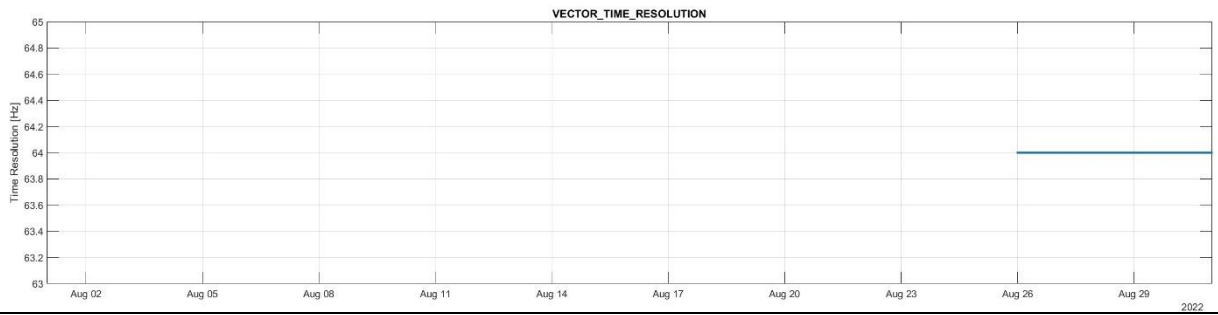
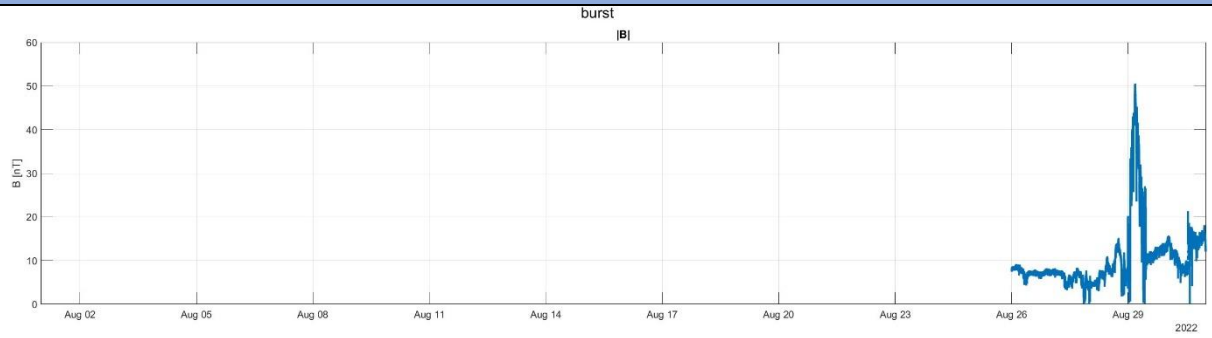


MAG was on with 8Hz cadence normal mode data returned, for exceptions see below.

Operations	1-31 August	Science phase throughout period, normal data returned
Operational Events of Note	None	

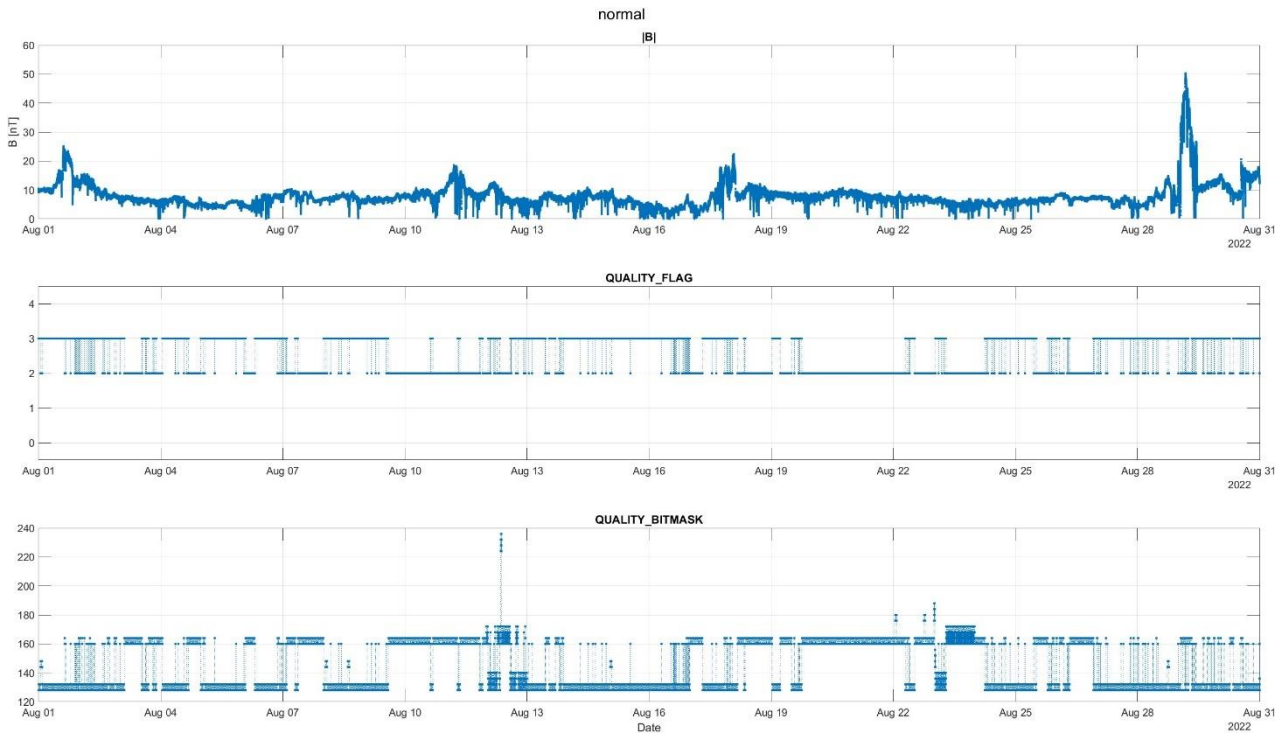
Data Gaps greater than one minute:
 NaNs have been introduced during the noisiest periods because the data was highly disturbed. See Appendix for details.

Burst Mode



Coverage	From	To	Coverage
	26/08	31/08	24h of 64Hz

Quality bitmask



Quality bit mask events

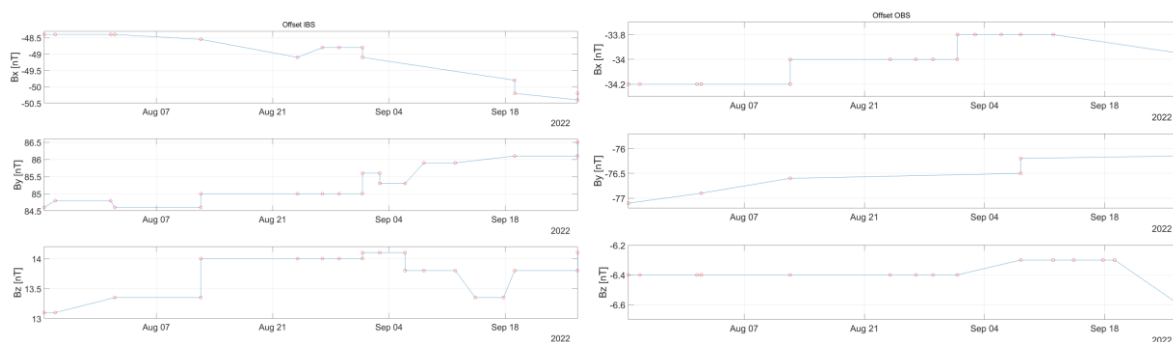
SC events which disturb the field

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
12/08/2022 8:30	SA movement from 0 to 30 deg
22/08/2022 21:34-23/08/2022 04:39	HGA movement
31/08/2022 19:44	SA movement from 30 to 56 deg

Offset



1-31 Aug:

OBS and IBS offsets changed after the SA movement on the 12th and 31st of Aug. Between these events, the offset linearly changed and the trend has been chosen accordingly.

Offset Number	Date	OBSX	OBSY	OBSZ	IBSX	IBSY	IBSZ	Comment
220801	24/07/2022 12:00	-34.20	-77.1	-6.4	-48.4	84.6	13.1	Start linear trend OBS and IBS
220802	25/07/2022 20:00	-34.20		-6.4	-48.4	84.8	13.1	End linear trend IBS
220803	01/08/2022 12:00	-34.20		-6.4	-48.4	84.8		Start linear trend IBS
220804	02/08/2022 00:00	-34.20	-76.9	-6.4	-48.4	84.6	13.35	End linear trend OBS and IBS
220805	12/08/2022 08:30	-34.20		-6.4	-48.55	84.6	13.35	Pre SA movement from 0 to 30 deg
220806	12/08/2022 08:36	-34.00	-76.6	-6.4	-48.55	85	14	Post SA movement from 30 to 56 deg
220807	24/08/2022 00:00	-34.00		-6.4	-49.1	85	14	Change in IBS offset
220901	31/08/2022 19:44	-34.00		-6.4	-48.8	85	14	Pre SA movement from 30 to 56 deg
220902	31/08/2022 19:49	-33.80			-49.1	85.6	14.1	Post SA movement from 30 to 56 deg
220903	02/09/2022 21:35	-33.80				85.6	14.1	Pre HGA movement
220904	02/09/2022 21:39	-33.80				85.3	14.1	Post HGA movement
220905	05/09/2022 22:45	-33.80				85.3	14.1	Pre SA movement from 56 to 60 deg
220906	05/09/2022 22:45	-33.80				85.3	13.8	Post SA movement from 56 to 60 deg
220907	08/09/2022 04:59	-33.80	-76.5				13.8	Pre HGA movement
220908	08/09/2022 05:02	-33.80	-76.2	-6.3		85.9	13.8	Post HGA movement

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
02/08/2022 21:10	02/08/2022 21:11	SC interference
03/08/2022 02:57	03/08/2022 12:22	SC interference
03/08/2022 16:50	03/08/2022 19:20	SC interference
03/08/2022 20:00	03/08/2022 20:26	SC interference
03/08/2022 21:30	04/08/2022 00:00	SC interference
04/08/2022 00:28	04/08/2022 00:44	SC interference
04/08/2022 16:30	04/08/2022 20:30	SC interference
04/08/2022 20:30	04/08/2022 22:00	SC interference
05/08/2022 01:26	05/08/2022 01:34	SC interference
06/08/2022 02:00	06/08/2022 07:30	SC interference
06/08/2022 20:55	06/08/2022 21:30	SC interference
07/08/2022 02:50	07/08/2022 06:35	SC interference
07/08/2022 09:00	08/08/2022 00:00	SC interference
09/08/2022 14:39	10/08/2022 14:41	SC interference
09/08/2022 18:00	10/08/2022 00:00	SC interference
10/08/2022 00:45	10/08/2022 01:45	SC interference
10/08/2022 02:50	10/08/2022 03:30	SC interference
10/08/2022 07:00	10/08/2022 11:00	SC interference
10/08/2022 13:45	10/08/2022 15:00	SC interference
10/08/2022 16:30	11/08/2022 00:00	SC interference
11/08/2022 00:00	11/08/2022 07:00	SC interference
11/08/2022 08:40	11/08/2022 20:00	SC interference
11/08/2022 21:50	12/08/2022 01:00	SC interference
12/08/2022 08:30	12/08/2022 08:36	SA movement from 0 to 30 deg
12/08/2022 09:00	12/08/2022 14:00	SC interference
12/08/2022 17:46	12/08/2022 18:04	SC interference
13/08/2022 11:00	13/08/2022 13:00	SC interference
13/08/2022 17:00	13/08/2022 19:00	SC interference
13/08/2022 20:50	13/08/2022 21:20	SC interference
17/08/2022 00:00	17/08/2022 07:30	SC interference
18/08/2022 04:30	18/08/2022 07:30	SC interference
18/08/2022 08:40	19/08/2022 00:02	SC interference
19/08/2022 05:30	19/08/2022 11:40	SC interference
19/08/2022 18:00	22/08/2022 07:00	SC interference
22/08/2022 08:34	22/08/2022 08:36	SC interference
22/08/2022 13:30	23/08/2022 00:00	SC interference
23/08/2022 07:30	24/08/2022 06:00	SC interference
24/08/2022 09:58	24/08/2022 10:18	SC interference

24/08/2022 17:15	24/08/2022 18:15	SC interference
25/08/2022 12:45	25/08/2022 19:00	SC interference
25/08/2022 22:00	25/08/2022 22:30	SC interference
26/08/2022 02:00	26/08/2022 04:15	SC interference
26/08/2022 08:00	26/08/2022 22:00	SC interference
30/08/2022 06:30	30/08/2022 08:30	SC interference
30/08/2022 13:27	30/08/2022 13:31	SC interference
31/08/2022 19:44	31/08/2022 19:48	SA movement from 30 to 56 deg

Appendix B: Files within this release

Filename
solo_L2_mag-rtn-burst_20220826_V01.cdf
solo_L2_mag-rtn-burst_20220827_V01.cdf
solo_L2_mag-rtn-burst_20220828_V01.cdf
solo_L2_mag-rtn-burst_20220829_V01.cdf
solo_L2_mag-rtn-burst_20220830_V01.cdf
solo_L2_mag-rtn-burst_20220831_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220801_V01.cdf
solo_L2_mag-rtn-normal-1-minute_20220802_V01.cdf
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