Imperial College London — MAG Data Release Report 2010

07 January 2020 (report covers data release for 1-27 Oct)

Report Version	1	L2 ground processing software version:	1.7 1.8 (only 5 and 17)
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Data Summary

The operational philosophy of the MAG instrument was to be on throughout the period.

There is a lot of quality level 2 data in this release. There was a remote sensing checkout window from 19 – 22 Oct, which may be responsible for interference in the data. For other times, spacecraft generated offset disturbances which are significant in the inboard sensor, and for which we have not been able to fully quantify the impact of on the outboard sensor, are present. For full details of disturbance periods, refer to the quality flag.

Some data were lost on 1-2 Oct and 20 Oct due to bad weather at the ground station.

The spacecraft underwent a de-icing slew on the 5 November. Prior to this slew, starting on 28 October, the MAG sensors were gradually heated up from -90C to 0C. This warming has impacted the sensor offsets and algorithms to remove contamination from the MAG senor heaters, and therefore data from 28-31 October will not be released. If some parts of this period are of interest, please contact the MAG team to discuss release possibilities.

The spacecraft started October at 0.98AU and ended October at 0.97AU.

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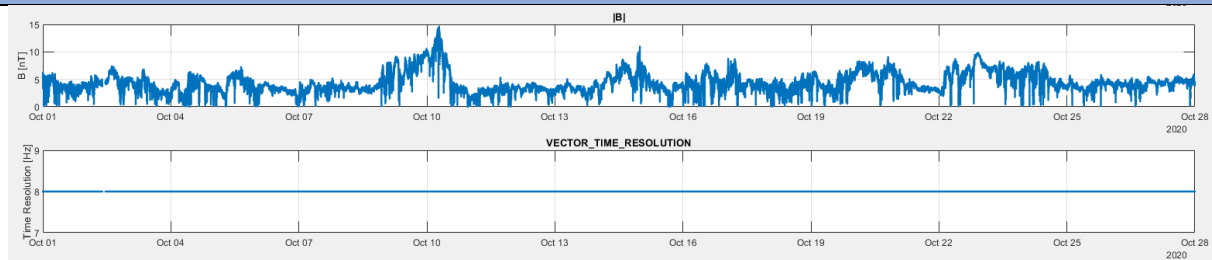
For whole month, MAG was on with 8Hz cadence normal mode data returned, for exceptions see below.

| Operations	1-27 Sep	Cruise phase throughout month
Operational Events of Note	11 Oct	Solar arrays relubrication
	19 Oct 19:00- 22 Oct 20:00	RSCW
Data Gaps	1 Oct 18:50:15 – 18:53:03	Non-continuous gaps due to bad weather data loss
	2 Oct 09:28:22 – 12:26:06	Non-continuous gaps due to bad weather data loss
	20 Oct 05:26:11 – 10:50:26	Non-continuous gaps due to bad weather data loss

Burst Mode
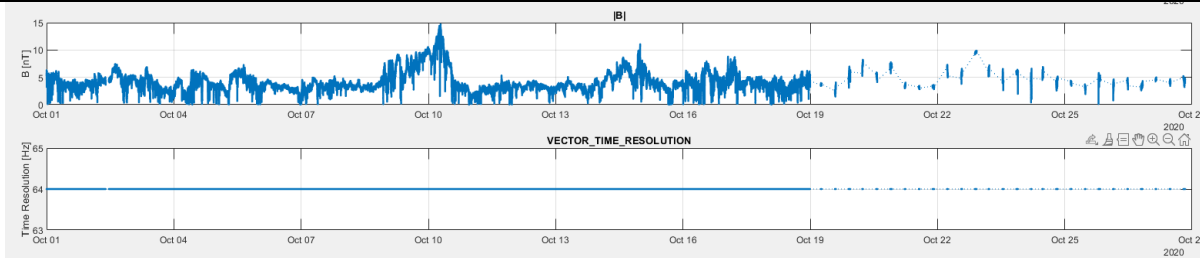
Coverage is not continuous. Data, where available, at 64 Hz cadence.

	From	To	
Coverage	1/10	18/10	24 hours per day 64 Hz
	19/10	27/10	3 hours per day 64 Hz, split into chunks of 1 hour

Quality bitmask
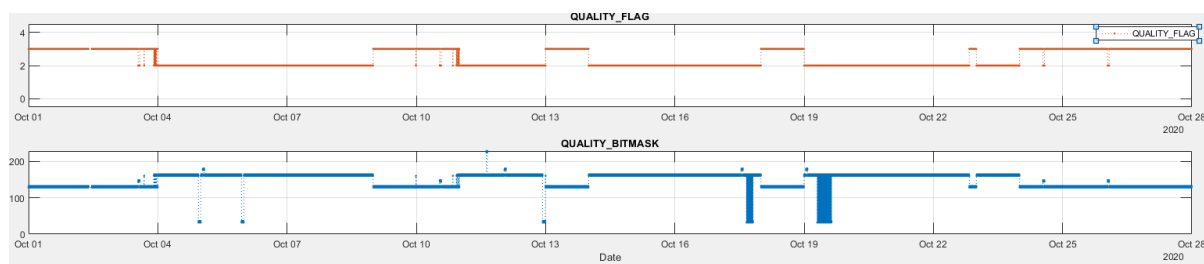
Quality bit mask events

1. SC events which disturb the field	• Thruster firings		
2. SC related issues	**StartTime**	**EndTime**	**Comment**
	04/10/2020 00:00	09/10/2020 00:00	SC signals of variable frequency in IBS. Impact on OBS unknown.
	11/10/2020 00:00	13/10/2020 00:00	SC signals of variable frequency in IBS. Impact on OBS unknown.
	06/10/2020 00:00	07/10/2020 00:00	Offset disturbance in x,y,z
	14/10/2020 00:00	18/10/2020 00:00	Offset disturbance in x,y,z
	19/10/2020 00:00	22/10/2020 20:00	RSCW, offset disturbance in z
	23/10/2020 00:00	24/10/2020 00:00	Offset disturbance in x,z

Offset								
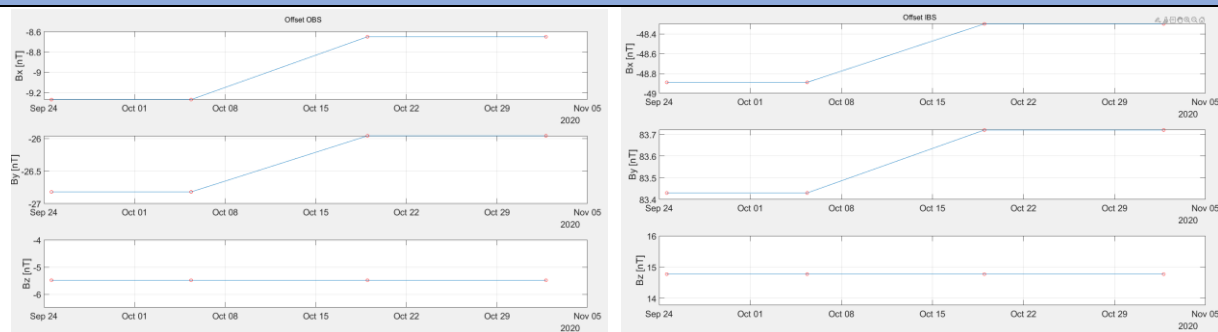
1-27 Oct:
OBS and IBS offsets are constants 1/10 to 5/10, there is then a linear trend in x an y until 19/10. From 19/10 to 28/10 offsets are again constant. These offsets have been quantified and removed from the L2 data.

Offset	Date	OBSX	OBSY	OBSZ	IBSX	IBSY	IBSZ	
61	24/09/2020 14:00	-9.27	-26.82	-5.48	-48.89	83.43	14.77	Switch on following shutdown for central software upgrade
61	05/10/2020 09:00	-9.27	-26.82	-5.48	-48.89	83.43	14.77	Start of Linear trend x and y in OBS and IBS
63	19/10/2020 00:00	-8.65	-25.96	-5.48	-48.3	83.72	14.77	End of linear trend, start of RSCW
63	30/11/2020 18:56	-8.65	-25.96	-5.48	-48.3	83.72	14.77	End of month.