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**Title** : **GOCE L1b Data Quality Control Report  
October 2012**

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## DOCUMENT CHANGE RECORD

Issue	Date	Reason for Change	Changed Pages/Paragraphs
1.0	21/12/2012	First issue	
2.0	15/01/2013	Gaps in EGG data	Added 3.2



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## 1. INTRODUCTION

### 1.1 Purpose and Scope

This document contains the Quality report for GOCE L1b data for October 2012.

The latest version of this document is available on the GOCE Data Quality portal at:

<http://earth.esa.int/GOCE/> → “Level 1b QC” → “Monthly”

The GOCE Data Quality portal is the principal source for any quality-related information on GOCE products.

<http://earth.esa.int/GOCE/> → “Level 1b QC”.

### 1.2 Glossary

The following acronyms and abbreviations have been used in this report.

ABBREVIATION	MEANING
EGG	Electrostatic Gravity Gradiometer
DFACS	Drag Free and Attitude control system
SST-I	Satellite-to-satellite tracking instrument
CTR	Control Voltages
STR	Star Tracker
Trace SD	Trace Spectral Density
ICM	Inverse Calibration Matrix
GAR	Gradiometer Angular Rates
FPM	Fine Pointing Mode
MBW	Measurement Bandwidth

## 2. OCTOBER 2012 OVERVIEW

- 01-Oct-12** High solar activity, worsening of performance in the LMBW. Thrust peak of 12.3 mN.
- 01-Oct-12** Incomplete GGT/IAQ datasets into products:  
GO\_CONS\_EGG\_NOM\_1b\_20121001T012251\_20121001T025225\_0001  
GO\_CONS\_EGG\_NOM\_1b\_20121001T025225\_20121001T042158\_0001  
due to bad STR\_VC2/3 measures caused by Bbo flag.
- 08-Oct-12** High solar activity, worsening of performance in the LMBW. CM\_14\_X peak at UTC 22:24:40.
- 09-Oct-12** High solar activity, worsening of performance in the LMBW. CM\_14\_X peak at UTCs 03:40:48 and 23:08:27.

## 3. OCTOBER 2012 DATA QUALITY ANALYSIS

### 3.1 High drag and geomagnetic storm

A peak of geomagnetic activity occurred on 1<sup>st</sup> of October and on 8-9<sup>th</sup> October, as reported below with a Kp index values above 6:

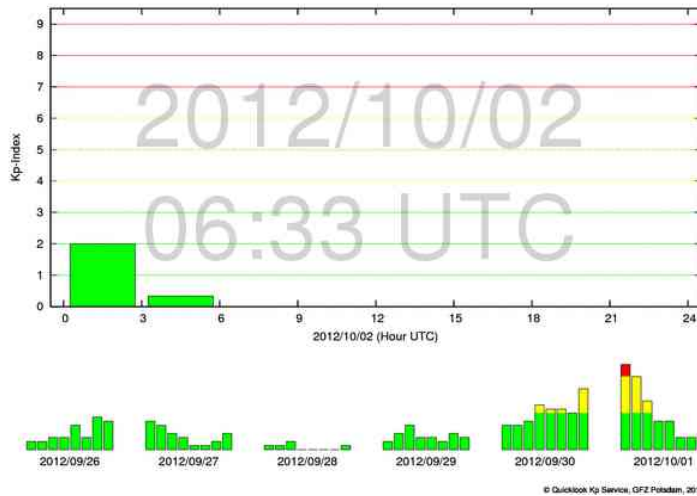
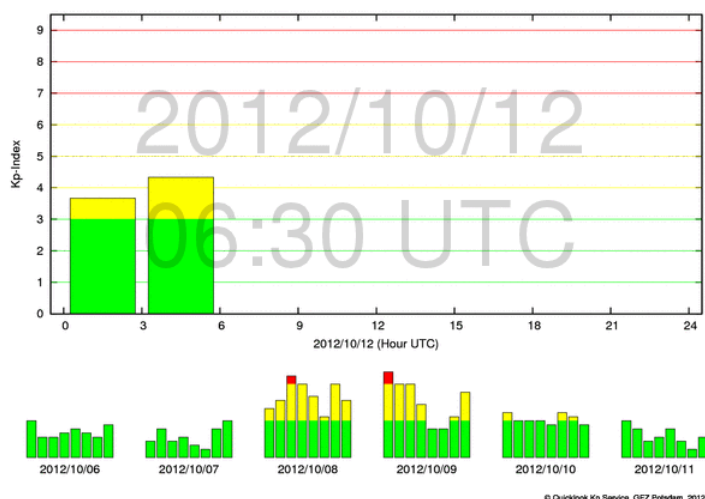
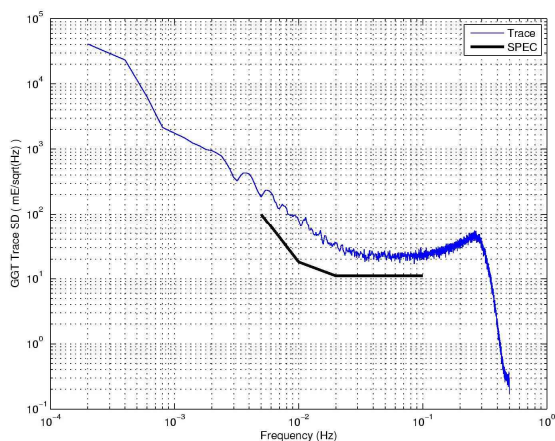


Figure 1 Kp Index from GFZ (peak on 1<sup>st</sup> October)



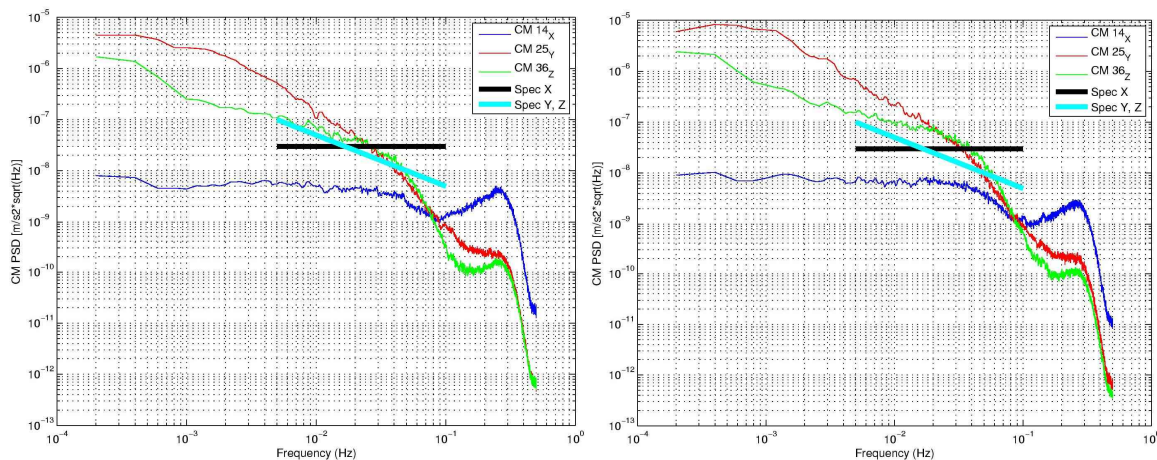
**Figure 2 Kp index (peaks on 8<sup>th</sup> October)**

This high geomagnetic activity had impacts on data quality producing high trace values in the lower part of the measurement bandwidth, as reported below:



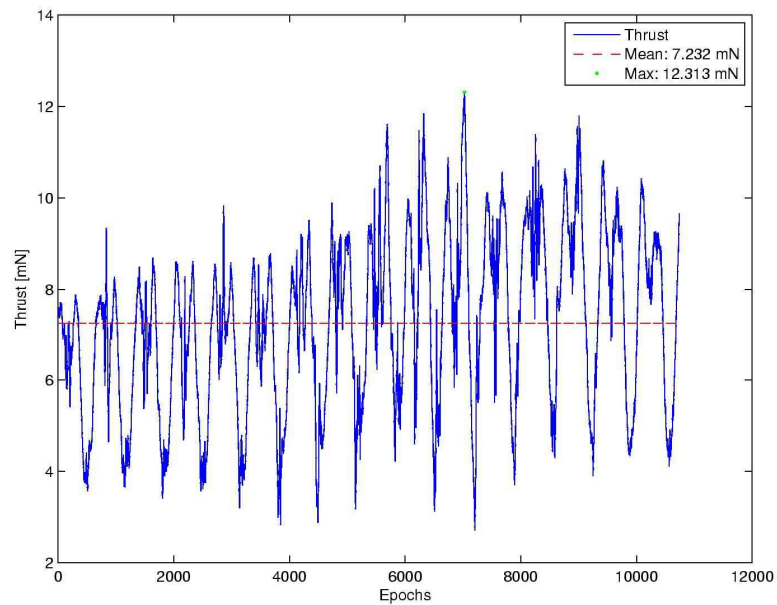
**Figure 3 Trace PSD during the geomagnetic storm**

The impact of the high solar activity is evident in the CM signals PSDs which show higher values:



**Figure 4 CM signals PSD before (left) and during (right) the peak of the solar activity**

A peak (12.3 mN) of delivered thrust also occurred on during the geomagnetic storm of 1<sup>st</sup> October, as reported below:



**Figure 5 Thrust peak on 1st October**

### 3.2 Gaps in EGG data

Due to bad STR\_VC2/3 measurements the following EGG\_NOM\_1b product has incomplete gradients, angular rates and IAQ datasets:

GO\_CONS\_EGG\_NOM\_1b\_20121001T012251\_20121001T025225\_0001  
 GO\_CONS\_EGG\_NOM\_1b\_20121001T025225\_20121001T042158\_0001

This is a nominal behavior of the EGG L1 processor.