

CSDS

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RAPID contribution

Managing Cluster Data

Patrick W. Daly



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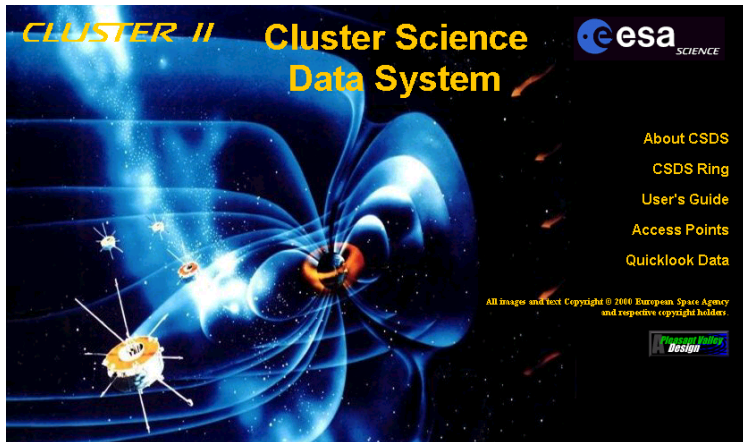
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Cluster Science Data System

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P. W. Daly

A banner for the Cluster Science Data System. The background is a dark space with blue and white light trails and a cluster of four satellites. The text 'CLUSTER II' is in yellow, and 'Cluster Science Data System' is in white. The ESA Science logo is in the top right. A list of links is on the right, and a copyright notice and 'Pegasus Policy Design' logo are at the bottom right.

CLUSTER II Cluster Science
Data System

esa
SCIENCE

About CSDS
CSDS Ring
User's Guide
Access Points
Quicklook Data

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Pegasus Policy
Design

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Purpose

- To provide relatively quickly a subset of vital Cluster data to the entire Cluster community ([The Prime Parameters](#))
- To provide coarser overview data (1 min) to the entire world ([Summary Parameters](#))
- To provide 6 hour summary plots.

Method

- A set of national Cluster Data Centres, each generating the data sets for the PIs in that country.
- Validation by those PIs.
- Distribution among the Centres to produce a full set at each one.

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Interaction between PI and Data Centres

- Data centre receives raw data on CDs, same as PI
- DC generates raw data files with software from PI
- . . . and then CSDS products, also with PI software and calibrations.
- PI checks resulting prime parameter files, and validates them, with possible caveats and corrections, for public release.
- PI updates software and calibrations regularly.

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Cluster II Quick Look Homepage - Netscape
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Bookmarks Netsite: <http://sci2.estec.esa.nl/cluster/csd5/ring.html>

CLUSTER II Structure of Cluster Science Data System

Select the Cluster Science Data Centre closest to where you are located

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Cluster Data Management System

- Chinese Data Centre
Beijing
- Operations Control Centre
ESOC, Darmstadt
- US Data Centre
GSFC, Maryland
- Austrian Data Centre
IMF, Graz
- UK Data Centre
RAL, Didcot, QMM London
- French Data Centre
CNES, Toulouse
- Scandinavian Data Centre
KTH, Stockholm
- German Data Centre
MPE, Garching
- Hungarian Data Centre
KFKI, Budapest
- ESTEC Data Centre
Noordwijk, Netherlands
- Joint Science Operations Centre
RAL, Didcot
- Ground Observation Centre

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Welcome to German Cluster Data Centre - Mozilla

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Home Bookmarks

CLUSTER II

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Cluster Home
ESA Science
Home

Science Data
System

esa SCIENCE

Welcome to the German Cluster Data Centre

NEWS:
2003-07-17 : All old (obsolete) versions of the CDF data files (PP/SP/JP) have been removed from the CSDS database at the German Data Centre.

This page provides access to data from the Cluster mission. See the [Database Contents page](#) to see what data is currently available. Some of this data is proprietary and subject to access controls. Click [here](#) for rules of use, or see the [CSDS Users Guide](#). See the [New Features page](#) for an overview of some of the changes to the CSDS.

[Proprietary data](#)

Access to these data are controlled by a user name and password. They are usually referred to as **Prime Parameters**. These data have a one-minute resolution and come from a single spacecraft. They are usually referred to as **Summary parameters**.

[Public data](#)

These files have public access and contain spacecraft positions, orbital and scientific events. Data are provided by the [Joint Science Operations Centre](#).

[JSOC Events Catalogues](#)

These plots are publicly accessible and available for download in **zip** format.

[Summary plots](#)

These are unvalidated quicklook plots of data from one spacecraft. They are available within several days of the data being acquired on the spacecraft.

[Quicklook Plots](#)

Expert users may prefer to use this link [here](#).

In case of problems contact gtl@mpe.mpg.de

Start | Windows Explorer | Command Prompt | data_dist.pdf | Welcome to G... | Microsoft Photo Viewer | 100% | 21:38

P. W. Daly

Prime Parameter Selection - Mozilla

File Edit View Go bookmarks Tools Window Help

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Prime Parameter Selection

Select spacecraft or instruments by clicking the checkboxes. You may select more than one spacecraft and more than one instrument. Selecting no spacecraft or instrument counts as all of them. You can also restrict the search by date using the 'Start Date' and 'End Date' boxes (use a YYYY-MM-DD format). Press the 'Reset' button to clear the selections and 'Submit' when ready to continue. 'Submit' will cause user authentication to be checked. See [Database Contents](#) for data availability.

Spacecraft	Instrument
<input type="checkbox"/> Cluster 1 (Rumba)	<input type="checkbox"/> ASPOC - Active Spacecraft Potential Control
<input type="checkbox"/> Cluster 2 (Salsa)	<input type="checkbox"/> CIS - Cluster Ion Spectrometry Experiment
<input type="checkbox"/> Cluster 3 (Samba)	<input type="checkbox"/> DWP - Digital Wave Processing Experiment
<input type="checkbox"/> Cluster 4 (Tango)	<input type="checkbox"/> EDI - Electron Drift Instrument
	<input type="checkbox"/> EFW - Electric Fields and Waves
	<input type="checkbox"/> FGM - Flux Gate Magnetometer
Start Date <input type="text" value="2004-08-16"/>	<input type="checkbox"/> PEACE - Plasma Electron and Current Experiment
End Date <input type="text"/>	<input type="checkbox"/> RAPID - Imaging Particle Spectrometer
	<input type="checkbox"/> STAFF - Spatial/Temporal of Field Fluctuations
<input type="button" value="Submit"/> <input type="button" value="Reset"/>	<input type="checkbox"/> WHISPER - Sounder and HF Wave Analyser Experiment

Click [here](#) to change your password.

[HOME](#) Please send comments to gtl@mpe.mpg.de

Start | WinEdit 5 - [C... | Command Prompt | data_dkt.pdf | Prime Paramet... | Microsoft Photo... | 100% | 21:40

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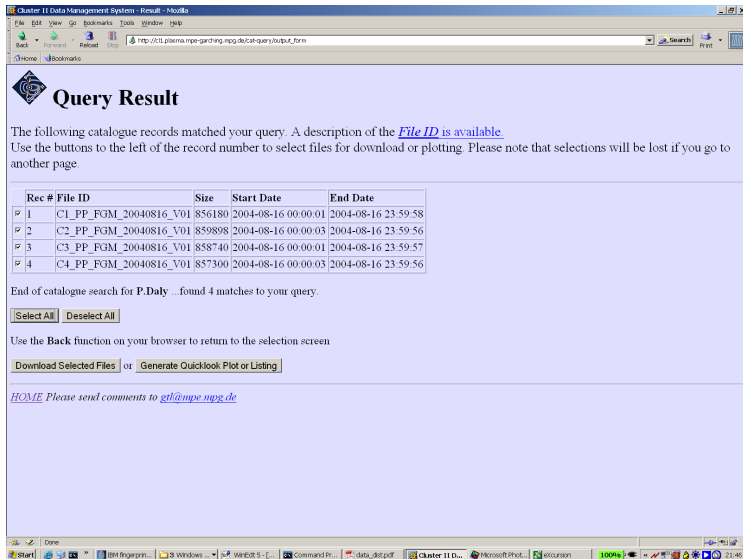
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Cluster 11 Data Management System - Result - Mozilla

File Edit View Go bookmarks Tools Window Help

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Query Result

The following catalogue records matched your query. A description of the [File ID is available](#).
Use the buttons to the left of the record number to select files for download or plotting. Please note that selections will be lost if you go to another page.

Rec #	File ID	Size	Start Date	End Date
1	C1_PP_FGM_20040816_V01	856180	2004-08-16 00:00:01	2004-08-16 23:59:58
2	C2_PP_FGM_20040816_V01	859898	2004-08-16 00:00:03	2004-08-16 23:59:56
3	C3_PP_FGM_20040816_V01	858740	2004-08-16 00:00:01	2004-08-16 23:59:57
4	C4_PP_FGM_20040816_V01	857300	2004-08-16 00:00:03	2004-08-16 23:59:56

End of catalogue search for **P.Daly** ...found 4 matches to your query.

Use the **Back** function on your browser to return to the selection screen

or

[HOME](#) Please send comments to gtl@mpe.mpg.de

Done

Start | Internet Explorer | IBM fingerprin... | 8 Windows | WinEdt 5 - [... | Command Pr... | data_dist.pdf | Cluster 11 D... | Microsoft Phot... | excursion | 100% | 21:46

Cluster II Data Management System Quicklook - Mozilla

http://c11.plasma.mpg.de/cat-query/request_01

Cluster II Data

Select Quicklook Parameters

The following tables list all the available data parameters in your selected files. Use the mouse to select the parameters that you want to be plotted.

Data Type	Available data parameters
C1_PP_FGM	FGM status
	FGM DC magnetic field, interval centred data from primary sensor
	Normalised magnetic variance: summed component variances Normalised magnetic variance: magnitude
C2_PP_FGM	FGM status
	FGM DC magnetic field, interval centred data from primary sensor
	Normalised magnetic variance: summed component variances Normalised magnetic variance: magnitude
C3_PP_FGM	FGM status
	FGM DC magnetic field, interval centred data from primary sensor
	Normalised magnetic variance: summed component variances Normalised magnetic variance: magnitude
C4_PP_FGM	FGM status
	FGM DC magnetic field, interval centred data from primary sensor
	Normalised magnetic variance: summed component variances Normalised magnetic variance: magnitude

Select start and stop time for plot. (Only data from selected files will be plotted)

Start	Stop	<input type="checkbox"/> Show caveats	<input type="checkbox"/> Overplot PP
2004-08-16 00:00:00	2004-08-16 23:59:59	<input type="checkbox"/> Autoscale to data	

Please be patient, some plots take a while to be generated.

Start | Done

Start | BM fingerprin... | 3 Windows... | WinEdt 5... | Command Pr... | data_dist.pdf | Cluster II D... | Microsoft Phot... | excursion | 100% | 21:49

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Cluster II Data Management System Quicklook - Mozilla

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http://c1i.plasma.mpe-garching.mpg.de/Cat-quick/quicklook

Click time series plot to recenter and zoom [Zoom 400%] Re-generate as a [Plot] [Listing] [Save config]

Includes caveats \mathcal{P} Overplot PP \mathcal{P} Auto file select Γ

Link to 6 hr plot from [CSDSweb](#). Link to [SSC Orbit Plot](#).

PP FGM

C1_PP_FGM_20040816_V01.cdf Caveats:
See CSDS User's Guide, DS-RPA-TM-0015, for post processing caveats
*** CAUTION Preliminary calibrations used; not for publication ***

C2_PP_FGM_20040816_V01.cdf Caveats:
See CSDS User's Guide, DS-RPA-TM-0015, for post processing caveats
*** CAUTION Preliminary calibrations used; not for publication ***
*** Data spike removed 06:29:24-06:29:28 ***
Status set to 0: No reason given
For time range 2004-08-16T06:29:242 to 2004-08-16T06:29:282
Fill value inserted for ALL: No reason given
for time range 2004-08-16T06:29:242 to 2004-08-16T06:29:282

C3_PP_FGM_20040816_V01.cdf Caveats:
See CSDS User's Guide, DS-RPA-TM-0015, for post processing caveats
*** CAUTION Preliminary calibrations used; not for publication ***

C4_PP_FGM_20040816_V01.cdf Caveats:
See CSDS User's Guide, DS-RPA-TM-0015, for post processing caveats
*** CAUTION Preliminary calibrations used; not for publication ***

Quater FGM-Fungate Magnetometer PP=C1+Block, C2=Plot, C3=Open, C4=Blue

B_x [nT]

B_y [nT]

B_z [nT]

TIME (NAME=C3H4/14 (Z3)) to 2004/8/16 (Z3)

Data not for publication, please contact the PI, A. Balogh at EOSTM.
Generated by GDS2 using SPDF/NSDD/CD4#6 on Tue Sep. 13 21:54:27 2005

HOME Please send comments to gsl@mpe.mpg.de

Start | Done

Start | IBM fingerprint so... | Windows Ec... | WinEdt 5 - [C:\d... | Command Prompt | data_dkt.pdf | Microsoft Photo ... | Cluster II Data ... | 100% | 21:55

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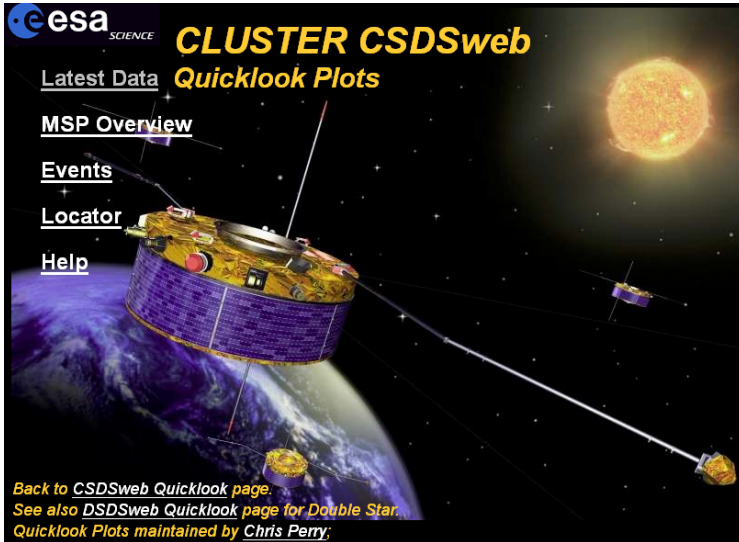
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CLUSTER CSDSweb

Latest Data **Quicklook Plots**

MSP Overview

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*Back to [CSDSweb Quicklook page](#).
See also [DSDSweb Quicklook page for Double Star](#).
Quicklook Plots maintained by [Chris Perry](#);*

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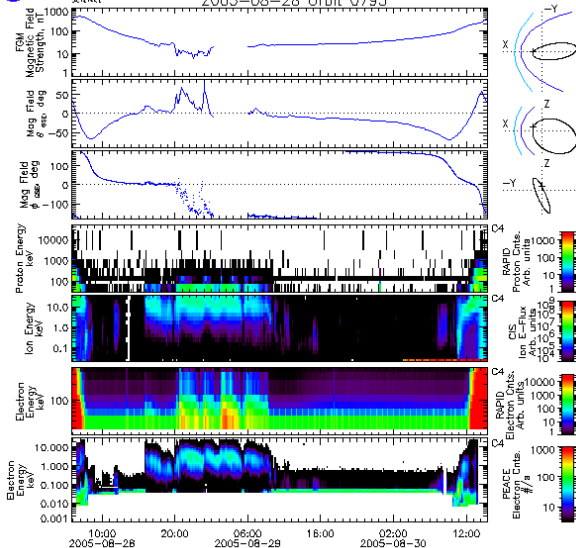
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Cluster Quicklook Perigee to Perigee: Particles #2 2005-08-28 Orbit Q795



CSDS Formats

- Simple line plots
- Ascii listings
- Common Data Format (CDF) delivered as zip file
- Summary plots as zipped PostScript files

There is a CSDS Users Guide explaining all the Cluster instruments (sufficiently for CSDS use) and the variables available.

JSOC

(Cluster) Joint Science Operations Centre

- Coordinates scientific planning between PIs and ESOC
- Provides predicted event catalogues, orbit data, etc

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History

- CSDS was envisaged in mid-1980's as revolutionary new idea to deliver scientific data quickly and efficiently.
- This was before the WWW and Internet browsers existed. The Internet provided FTP, Telnet, emails (without attachments).
- Originally to be run by **ESIS**, European Space Information System, for which Cluster was the first demo customer.
- But ESIS was a pilot project, and soon it became clear that Cluster would be its **only** customer. **And so should pay for it!!**
- ESIS died, and JSOC took over its software.
- With Cluster II, a new Web-based interface was created from scratch by JSOC, now called CDMS (Cluster Data Management System).

As useful and vital CSDS is, it does remain in many ways a **compromise** (e.g. distributed data centre) and **old fashioned**.

A new ESA project, the *Cluster Active Archive* is a more modern, centrally run solution.

CAA Goals

- To begin archiving *complete* data sets while the mission is still operational;
- such that they can be obtained, inspected, manipulated, interactively online (the active part);
- and to provide a long-term (decades) home for Cluster data after all the instrument teams and expertise have dispersed.

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CAA Data Rights

- Data in CAA will be available to the world.
- Two years' data to be ingested per year. Data will not be the latest, but is to be the best.
- Complete sets of processed data (physical parameters) plus raw data for future generations to reproduce processing, if desired.

Data Formats

- Data are delivered to CAA in a specially developed *Cluster Exchange Format*, CEF, an ascii format;
- Users will download selected data in variety of formats, including CEF, CDF, ascii listing.
- Survey, overview plots in various formats.

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Main Data Products

- **Omnidirectional** fluxes for electrons and ions
- **3-D** particle fluxes for electrons and ions
- **Standard deviations** of all the above (for subsequent error analyses)
- **Raw count rates** for the above, plus their standard deviations

Derived Products

- **GSE flow directions** for all electron and ion detectors/sectors, once per hour
- **Pitch angles** for all electron and ion detectors/sectors, for each spin, based on on-board magnetic data

CSDS

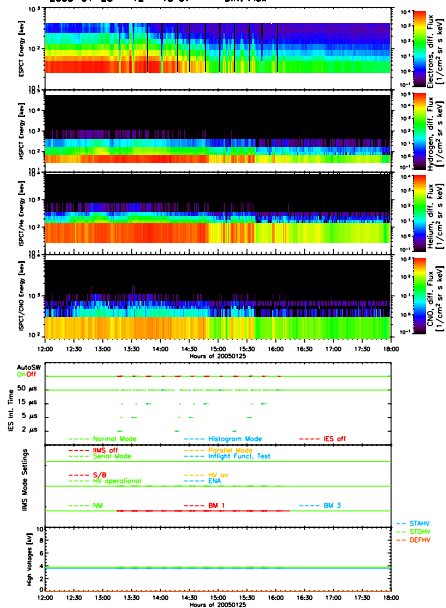
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RAPID Summary Plots

Cluster/RAPID - spacecraft C1 summary plot
2005-01-25 12 - 18 UT -- Diff. Flux



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Delivery Method

- Raw RAPID data files (MSF) transferred to CAA.
- Software to convert MSF to RAPID science (SCI) files, with calibration, delivered to CAA.
- Software and template files to convert SCI to CEF files also delivered to CAA.
- CAA generates CEF files following OK from Lindau.
- Lindau checks selected CEF files with its own to verify proper processing.

