AN EXAMPLE USING THE VIRTUAL WAVE OBSERVATORY TO BROWSE CLUSTER WIDEBAND DATA

November 1, 2012

Selected the VWO Event "Halloween Storm Event 2003/10/24 to 2003/11/02" and requested the *Cluster WBD Survey Dynamic Spectrograms Plots* - 1 Data Product

+ Home

VWO Query Builder

Data Source Selection

Magnetospheric State

Location

Keywords

TIME: Reset

2003-10-24T00:00:00.000Z

2003-11-02T00:00:00.000Z

SOURCES: Reset

# of Observatories: 1

# of Instruments: 1

# of Products: 1

View Sources

View Intersection Times

Run Query

VWO Query Builder

Prev

Instrument: Cluster Merged WBD   **Collapse**

Product: Cluster WBD Survey Dynamic Spectrogram Plot
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Time Span: 2003-10-24 17:14:00 - 2003-10-24 18:51:00
Data File:
CM_CG_WBD_SPECPLOT_OVERVIEW_PNG__20031024_1714_20031024_1851_V00.png

Time Span: 2003-10-25 08:05:00 - 2003-10-25 10:03:00
Data File:
CM_CG_WBD_SPECPLOT_OVERVIEW_PNG__20031025_0805_20031025_1003_V00.png

Time Span: 2003-10-25 08:05:00 - 2003-10-25 10:04:00
Data File:
CM_CG_WBD_SPECPLOT_OVERVIEW_PNG__20031025_0805_20031025_1004_V00.png

Time Span: 2003-10-28 03:00:00 - 2003-10-28 05:01:00
Data File:
CM_CG_WBD_SPECPLOT_OVERVIEW_PNG__20031028_0300_20031028_0501_V00.png

Time Span: 2003-10-28 03:05:00 - 2003-10-28 05:02:00
Data File:
CM_CG_WBD_SPECPLOT_OVERVIEW_PNG__20031028_0305_20031028_0502_V00.png

Time Span: 2003-10-30 03:30:00 - 2003-10-30 05:48:00
Data File:
CM_CG_WBD_SPECPLOT_OVERVIEW_PNG__20031030_0330_20031030_0548_V00.png

Time Span: 2003-10-31 20:24:00 - 2003-10-31 20:26:00
Data File:
CM_CG_WBD_SPECPLOT_OVERVIEW_PNG__20031031_2024_20031031_2026_V00.png

Time Span: 2003-10-31 20:24:00 - 2003-10-31 23:31:00
Data File:
CM_CG_WBD_SPECPLOT_OVERVIEW_PNG__20031031_2024_20031031_2331_V00.png

Time Span: 2003-10-31 20:26:00 - 2003-10-31 23:31:00
Data File:
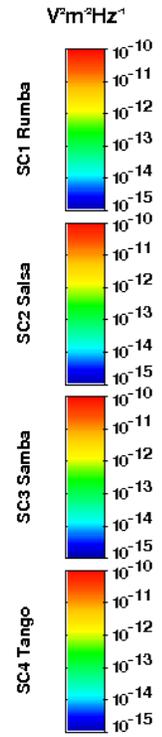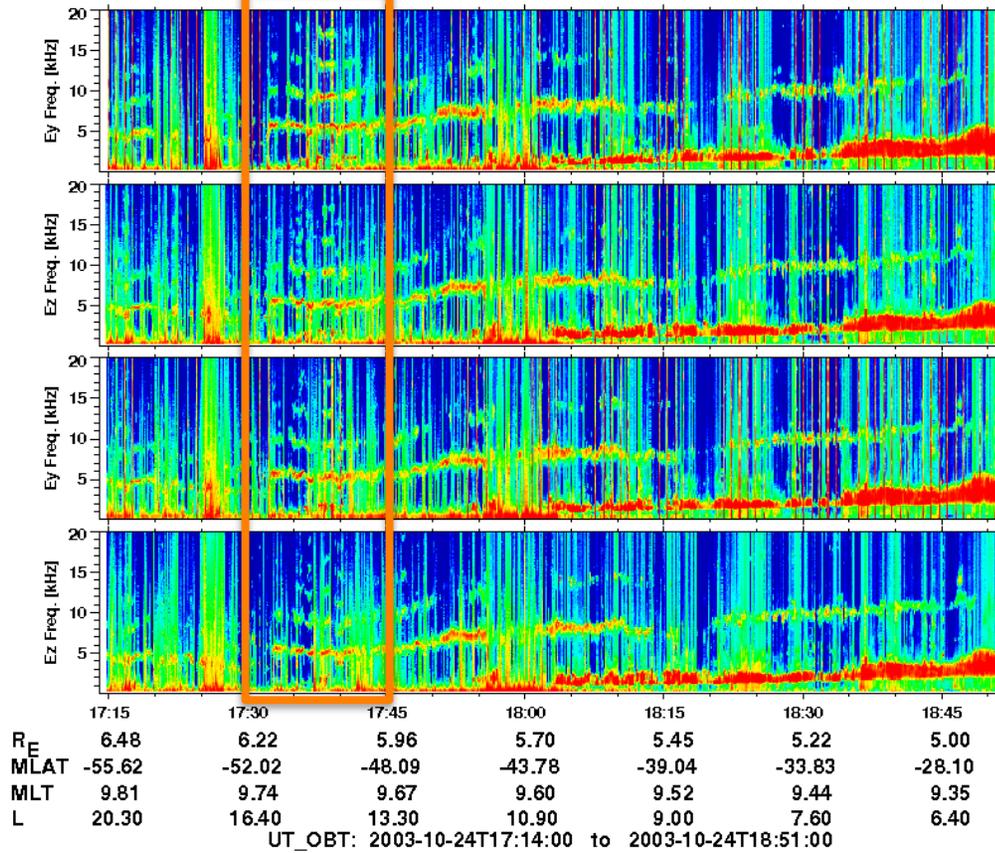CM_CG_WBD_SPECPLOT_OVERVIEW_PNG__20031031_2026_20031031_2331_V00.png

Time Span: 2003-11-01 13:54:00 - 2003-11-01 15:11:00
Data File:
CM_CG_WBD_SPECPLOT_OVERVIEW_PNG__20031101_1354_20031101_1511_V00.png

Prev

- The VWO contacted the CAA and returned a list of available data files.

- Downloaded the first zip file from time period 17:14 to 18:51 on 2003-10-24.

- I noticed an interesting feature at 17:30 - 17:45 on all 4 S/C.

Data Set Selection

VWO	VHO	VMO	VSO	VIRBO	VITMO	VMR

Observatory

- Cluster Merged
- Cluster Rumba – SC1
- Cluster Salsa – SC2
- Cluster Samba – SC3
- Cluster Tango – SC4
- Combined Release and Radiation
- Dynamics Explorer 1
- FAST
- Geotail
- Hawkeye

Instrument

- Cluster Merged
- Cluster Rumba – SC1
  - Rumba WBD
  - Rumba WHISPER
- Cluster Salsa – SC2
  - Salsa WHISPER
  - Salsa Wide Band Data
- Cluster Samba – SC3
  - Samba WHISPER
  - Samba Wide Band Data

Data Product

- **Cluster–Rumba WBD**
  - Cluster Rumba WBD High Time Resolution Dynamic Spectrogram Plot
  - Cluster Rumba Wideband Data Plasma Wave Receiver/High Time Resolution Waveform Data
- **Cluster–Rumba WHISPER**
  - Cluster WHISPER Combined Daily Dynamic Spectrograms
- **Cluster–Salsa WHISPER**
  - Cluster WHISPER Combined Daily Dynamic Spectrograms
- **Cluster–Salsa Wide Band Data**
  - Cluster Salsa WBD High Time Resolution Dynamic Spectrogram Plot
  - Cluster Salsa Wideband Data Plasma Wave Receiver/High Time Resolution Waveform Data

[Apply The Above Conditions]   [Reset]

- Selected the *Cluster WBD High Time Resolution Dynamic Spectrogram Plot* data product for each Cluster spacecraft for this 15 minute time range.

- The return resulted in 32 thirty-second plots for each spacecraft which was too much to look through.

- From the Survey plot, the time period from 17:35 to 17:40 looked most interesting.

Product: Cluster Rumba WBD High Time Resolution Dynamic Spectrogram Plot
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Time Span: 2003-10-24 17:34:30 - 2003-10-24 17:35:00
Data File: C1_CG_WBD_GIFPLOT__20031024_1734_20031024_1735_V00.gif

Time Span: 2003-10-24 17:35:00 - 2003-10-24 17:35:30
Data File: C1_CG_WBD_GIFPLOT__20031024_1735_20031024_1735_V00.gif

Time Span: 2003-10-24 17:35:30 - 2003-10-24 17:36:00
Data File: C1_CG_WBD_GIFPLOT__20031024_1735_20031024_1736_V00.gif

Time Span: 2003-10-24 17:36:00 - 2003-10-24 17:36:30
Data File: C1_CG_WBD_GIFPLOT__20031024_1736_20031024_1736_V00.gif

Time Span: 2003-10-24 17:36:30 - 2003-10-24 17:37:00
Data File: C1_CG_WBD_GIFPLOT__20031024_1736_20031024_1737_V00.gif

Time Span: 2003-10-24 17:37:00 - 2003-10-24 17:37:30
Data File: C1_CG_WBD_GIFPLOT__20031024_1737_20031024_1737_V00.gif

Time Span: 2003-10-24 17:37:30 - 2003-10-24 17:38:00
Data File: C1_CG_WBD_GIFPLOT__20031024_1737_20031024_1738_V00.gif

Time Span: 2003-10-24 17:38:00 - 2003-10-24 17:38:30
Data File: C1_CG_WBD_GIFPLOT__20031024_1738_20031024_1738_V00.gif

Time Span: 2003-10-24 17:38:30 - 2003-10-24 17:39:00
Data File: C1_CG_WBD_GIFPLOT__20031024_1738_20031024_1739_V00.gif

Time Span: 2003-10-24 17:39:00 - 2003-10-24 17:39:30
Data File: C1_CG_WBD_GIFPLOT__20031024_1739_20031024_1739_V00.gif

Time Span: 2003-10-24 17:39:30 - 2003-10-24 17:40:00
Data File: C1_CG_WBD_GIFPLOT__20031024_1739_20031024_1740_V00.gif

Time Span: 2003-10-24 17:40:00 - 2003-10-24 17:40:30
Data File: C1_CG_WBD_GIFPLOT__20031024_1740_20031024_1740_V00.gif

Instrument: Cluster Salsa - Wide Band Data (WBD)   Expand
ⓘ

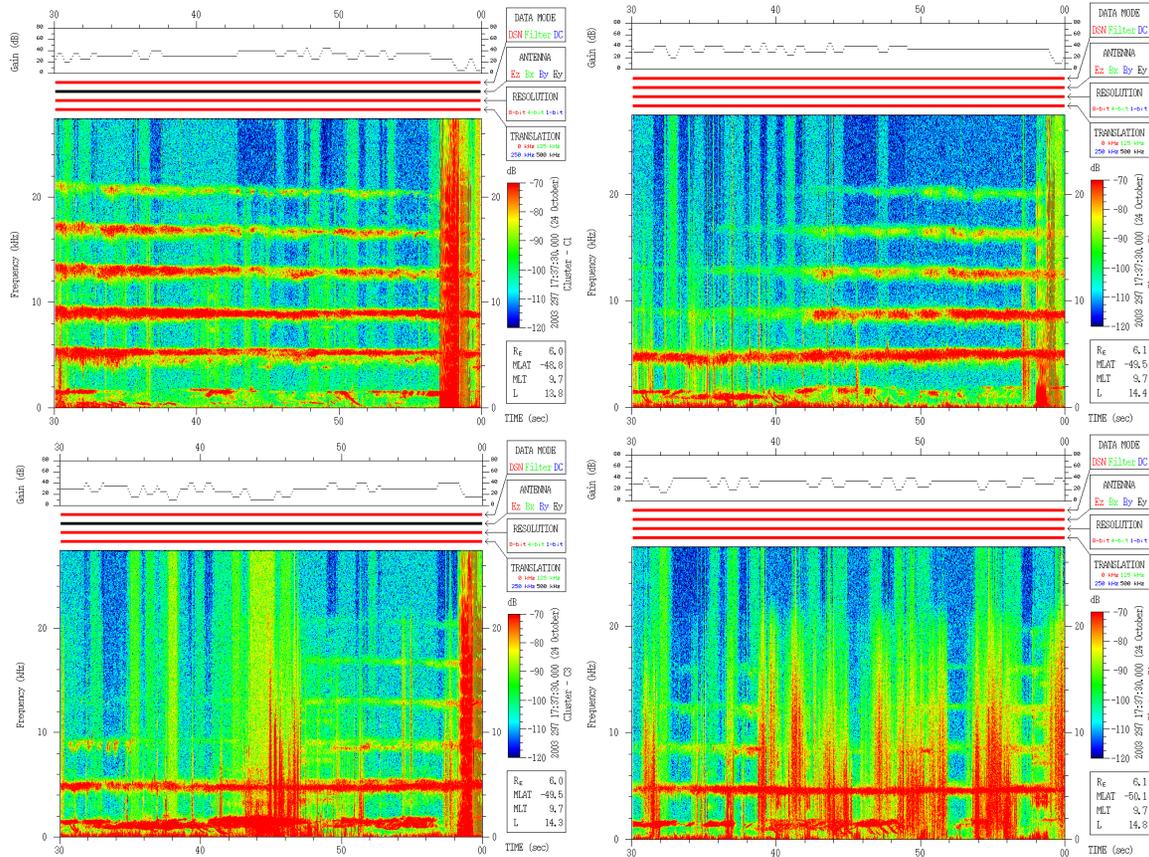**Instrument: Cluster Samba - Wide Band Data (WBD)**   Expand
ⓘ

Instrument: Cluster Tango - Wide Band Data (WBD)   Expand
ⓘ

- Reduced the time range and re-ran the query, the return list was more reasonable

Selected the high resolution plot from each spacecraft for the time period 17:37:30 to 17:38:00 and downloaded the zip files for each.

Time Range

Start:		Stop:	
2003-10-24T17:37:30.	=	2003-10-24T17:38:00.	[+ Events]
-1 day | -1 hr | +1 hr | +1 day		-1 day | -1 hr | +1 hr | +1 day	

Measurement Type

☑ Passive   ☑ AC Electric Antenna   ☑ Ground-based
☑ Active   ☑ AC Magnetic Antenna   ☑ Space-based

☐ Frequency Range - From: [0]   To: [0]   [kHz ⇕]

[Select Active Instrument Attributes]

Data Set Selection

[VWO] [VHO] [VMO] [VSO] [VIRBO] [VITMO] [VMR]

Observatory	Instrument
Cluster Merged	Cluster Merged
Cluster Rumba - SC1	Cluster Rumba - SC1
Cluster Salsa - SC2	Rumba WBD
Cluster Samba - SC3	Rumba WHISPER
Cluster Tango - SC4	Cluster Salsa - SC2
Combined Release and Radiation	Salsa WHISPER
Dynamics Explorer 1	Salsa Wide Band Data
FAST	Cluster Samba - SC3
Geotail	Samba WHISPER
Hawkeye	Samba Wide Band Data

Data Product

Cluster–Rumba WBD
   Cluster Rumba Wideband Data Plasma Wave Receiver/High Time Resolution Waveform Data
Cluster–Salsa Wide Band Data
   Cluster Salsa Wideband Data Plasma Wave Receiver/High Time Resolution Waveform Data
Cluster–Samba Wide Band Data
   Cluster Samba Wideband Data Plasma Wave Receiver/High Time Resolution Waveform Data
Cluster–Tango Wide Band Data
   Cluster Tango Wideband Data Plasma Wave Receiver/High Time Resolution Waveform Data

- Based on viewing these plots, I retrieved the WBD data corresponding to this 30 second time range for the 4 Cluster spacecraft. I selected from the VWO the *Cluster Wideband High Time Resolution Waveform Data* which are available as CDFs from the CDAWeb.

- Alternatively, a user can enter this date and time range into the Cluster Active Archive (http://caa.estec.esa.int) to obtain the data in CDF or CEF format.

The VWO returns with three options for the user.

1. Request a time range subset of the data to enable downloading of a smaller file.

2. A hyperlink to download the CDF file. The CDF may span a larger time range but includes the time span of interest.

3. Run Autoplot software (autoplot.org) to view the CDF file and select among parameter options to display.

NOTES ON CDF SUPPORT FOR CLUSTER WIDEBAND HIGH TIME RESOLUTION DATA

- To support the very high time resolution (~microsecond) of the Cluster Wideband data the CDF WBD data files contain a time parameter called CDF_EPOCH16 which is stored as a two 8-byte, double precision floating point value.

- The CDF_EPOCH16 values represent the number of picoseconds since the epoch of 01-Jan-0000 00:00:00.000.000.000.000 .

- Functions exist that parse, encode, compute, and decompose CDF_EPOCH16 values. These functions are described in the *CDF C Reference Manual* for C applications and in the *CDF Fortran Reference Manual* for Fortran applications.

- Visit http://cdf.gsfc.nasa.gov for more details.