

CDAW Experience

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(CDAW: Coordinated Data Analysis Workshop)



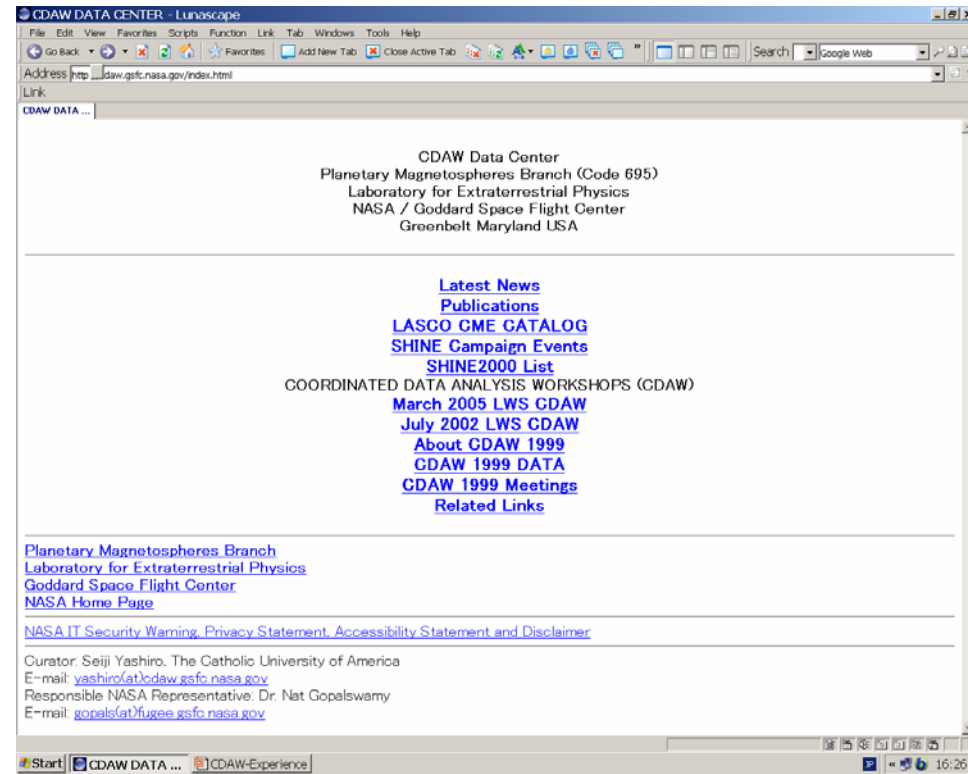
CDAW Concept & History

- CDAW is a community effort to further the development and use of tools and techniques to analyze large simultaneous data sets of selected solar-terrestrial events and answer primary scientific questions.
- First generation CDAWs (1-9): 1977-1986
 - Evolved into ISTP workshops after radical change in underlying technology
 - CDAW5-9: data available electronically;
 - CDAW1-4 data only as hard copy
 - CDAWeb
- Second generation CDAWs:
 - started with SOHO –Yohkoh CDAW in 1997
 - Now includes [a large number of data sets from space and ground](#)

CDAW Data Center

<http://cdaw.gsfc.nasa.gov/>

- CDAW Data Center has been built and developed to support CDAWs.
 - 1999: Global Picture of Solar Eruptive Events
 - 2002: Solar Energetic Particles: Solar and Geospace Connections
 - 2005: CME, ICME, and Geomagnetic Storm
- Web Based Quick Look Event Tables
 - Everyone can access the data without IDL
- CDAW Data Center is an LWS-supported activity:
 - Supports SHINE campaigns
 - Contains SOHO/LASCO CME catalog



CDAW Overview

1. CDAW

Glue together disparate data sets to answer questions related to a chosen topic

Preprocess data for efficient use during workshop

Web Based Event Table

(It takes 2-3 months for preparation.)

2. 1 year after the CDAW workshop:
Follow-up science meeting with broader community participation

3. 1 year after the science meeting:
Publish the results grouped in scientific journals



1999 CDAAW: Global Picture of Solar Eruptive Events

- Starting Point: Interplanetary Type II Radio Bursts from Wind/WAVES
 - 28 events were selected.
- Science Targets:
 1. Near-surface manifestations
 2. Coronal Dimming and Arcade Formation
 3. Magnetic Field Changes
 4. Sources of Energetic Particles
 5. CMEs and Magnetic Clouds

ISTP/IACG Workshop Event List - Lunascope

Address: http://cdaw.gsfc.nasa.gov/ISTP/typell_eva.html

Link: [ISTP/IACG W...](#)

INSTRUCTIONS: Click on the Date column and the other hyperlinks to retrieve/view data.

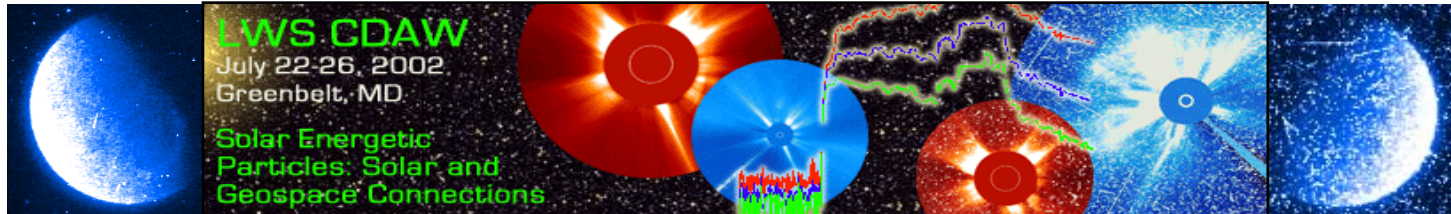
Date	Time Range	GOES	BATSE	NOAA	Freq Range (MHz)	Kilometric	CME Speed	EIT Signature?	Location	RSTN	SEP?	Metric II
970401	1400 1415	Plot	None	List	8-4	N	296	Y	S25E16	Plot	Y	Y(1349) 125
970407	1430 1730	Plot	None	List	11-1	N	830	Y	S30E19	Plot	Y	Y(1358) 125
970512	0456 0515	Plot	None	List	14-9	Y	273	Y	N21W08	Plot	Y	Y(04:54) 60
971103	0515 0608	Plot	None	List	14-5	Y	369	Y	S20W13	Plot	Bkg	Y(04:37)
971103	1030 1100	Plot	Plot	List	14-8	N	420	Y	S20W15	Plot	Y	Y(10:26) 90
971104	0600 0740	Plot	Plot	List	14-2	Y	830	Y	S14W33	Plot	Y	Y(05:58)
971106	1210 1255	Plot	Plot	List	14-2	Y	1561	Y	S18W63	Plot	Y	Y (11:53)
971127	1330 1400	Plot	Plot	List	14-7	N	434	Y	N16E63	Plot	N	Y (1316) 240
971212	2245 2320	Plot	None	List	14-1	N	166	Y	N25W52	Plot	N	N
980121	1040 1230	Plot	None	None	6-3	Y	296	Y	S57E19	Plot	N	N
980125	1503 1518	Plot	None	List	14-10	Y	481	Y	N21E25	Plot	Y	N
980329	0305 0355	Plot	None	List	3-1.5	N	1361	Y	backside	Plot	Y	Y (0245)
980420	1025 1045	Plot	None	List	11-5	Y	1631	Y	S43W90	Plot	Y	Y (0956)
980423	0550 0630	Plot	Plot	List	14-2	Y	1222	Y	E90	Plot	Bkg	Y (05:40)
980427	0920 1000	Plot	Plot	List	10-1	Y	1221	Y	S16E50 AR8210	Plot	Y	Y (0908; 0910)
980427	1140 1200	Plot	None	None	7.5-6	N	-	-	-	Plot	-	N
980502	1410 1540	Plot	None	List	14-8	N	1039	Y	S15W15 AR8210	Plot	Y	N (IV)
980502	1425 1450	Plot	None	None	5-3	N	-	-	-	Plot	-	N
980502	1650 1820	Plot	None	List	3-1	N	-	-	-	Plot	-	N
980503	2210 2300	Plot	None	List	14-8	N	705	Y	S13W34 AR8210	Plot	Bkg	N (IV)
980506	0815 0840	Plot	Plot	List	14-1	N	1053	Y	S11W65 AR8210	Plot	Y	Y(08:05-08:16) 140
980509	0335 0435	Plot	Plot	List	9-1	Y	1783	Y	S11W90 AR8210	Plot	Y	Y(03:31-03:42)



1999 CDAW: Global Picture of Solar Eruptive Events

- The follow-up science meeting was held at Catholic University 10 months after the CDAW.
- 6 GRL and 19 JGR papers were published.

2002 CDAW: Solar Energetic Particles: Solar and Geospace Connections



- Starting Point: Solar Energetic Particle (SEP) Events
 - 48 events were selected.
- 15 scientific questions related to SEPs were addressed
 - e.g. What are the primary characteristics that make a CME or flare produce SEPs?

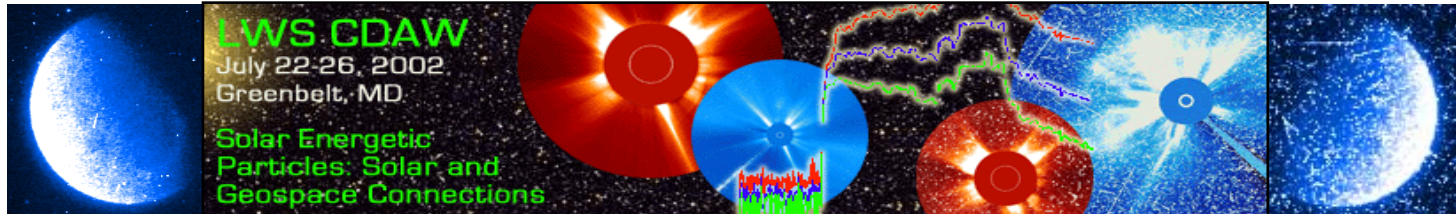
LWS CDAW 2002 Data List - Lunascape

Address: http://cdaw.gsfc.nasa.gov/LWS/data/event_list.html

Link: LWS CDAW 2...

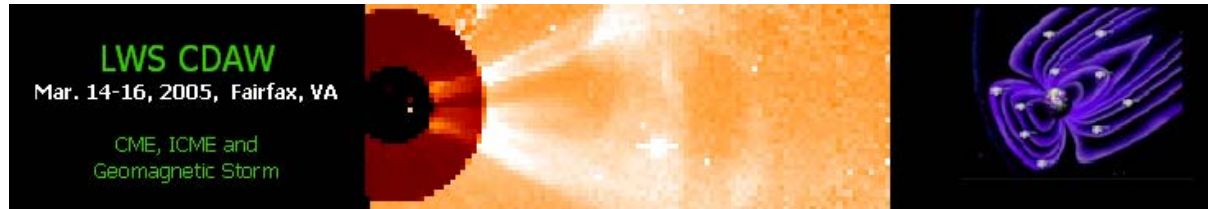
<1> No	<2> SEP Date	<3> SEP Time	<4> CME Time	<5> Speed km/s	<6> Width Deg	<7> Region Location	<8> Class Onset Time	<9> GOES X-rays	<10> SEC SWS	<11> Images MDI/LASCO	<12> Daily Movies LASCOP BT SYT Nobeyama	<13> Event Movies LASCOP SSW	<14> Radio WAVES Culgoora HIRAS	<15> Protons/Ions EPAM ERNE GOES/R/Chic	<16> Electrons EPAM	<17> Solar Wind	<18> Notes
1	19971104	07:00	06:10	785	Halo	AR 8100 S14W83	X2.1/28 05:52	View	Events SPS	MDI LASCOP	C2 C3 195 SXT --	C2 C2-2D C3 C3-2D 195 195 RD SSW	High/Low Culgoora HIRAS	EPAM ERNE GOES R/Chic	DE1 DE2 DE3 DE4 LE1 LE2 LE3 LE4 I8/Chic	SWE MAG	View
2	19971106	13:00	12:10	1556	Halo	AR 8100 S18W63	X9.4/28 11:49	View	Events SPS	MDI LASCOP	C2 C3 195 SXT --	C2 C2-2D C3 C3-2D 195 195 RD SSW	High/Low HIRAS	EPAM ERNE GOES R/Chic	DE1 DE2 DE3 DE4 LE1 LE2 LE3 LE4 I8/Chic	SWE MAG	View
3	19980420	11:00	10:07	1863	165	AR 7 S43W90	M1.4/7 09:38	View	Events SPS	MDI LASCOP	C2 C3 195 SXT --	C2 C2-2D C3 C3-2D 195 195 RD SSW	High/Low --	EPAM ERNE GOES R/Chic	DE1 DE2 DE3 DE4 LE1 LE2 LE3 LE4 I8/Chic	--	View
4	19980502	14:00	14:06	938	Halo	AR 8210 S15W15	X1.1/38 13:31	View	Events SPS	MDI LASCOP	C2 C3 195 SXT --	C2 C2-2D C3 C3-2D 195 195 RD SSW	High/Low --	EPAM ERNE GOES R/Chic	DE1 DE2 DE3 DE4 LE1 LE2 LE3 LE4 I8/Chic	SWE MAG	View
5	19980506	08:00	08:29	1099	190	AR 8210 S11W65	X2.7/1N 07:58	View	Events SPS	MDI LASCOP	C2 C3 195 SXT --	C2 C2-2D C3 C3-2D 195 195 RD SSW	High/Low --	EPAM ERNE GOES R/Chic	DE1 DE2 DE3 DE4 LE1 LE2 LE3 LE4 I8/Chic	SWE MAG	View

2002 CDAW: Solar Energetic Particles: Solar and Geospace Connections



- Six GRL papers were published, 6 months after the CDAW.
- The follow-up science meeting was held 1-year after the CDAW.
 - Chapman Conference on Solar Energetic Plasmas and Particles (Turku, Finland)
- AGU Monograph Book (32 Articles, edited by N. Gopalswamy, R. Mewaldt, & J. Torsti) and 7 JGR papers (special section) will be published.

2005 CDAW: CME, ICME, and Geomagnetic Storm



- The follow-up science meeting: Next Spring at Dartmouth, NH (place is tentative)
- A special section in JGR-Space Physics is planned.

CDAW Statistics

	Main Topic	Number of Participants	Number of Events (Study Period)	Number of Table Columns (~proxy of data sets)	Number of Publications
1999	CMEs (Type II)	60~80	28 (3 Year)	14	25 Papers
2002	SEPs	~60	48 (6 Year)	18	13 Papers + AGU Book (32 Articles)
2005	Geomagnetic Storms	~80	79 (9 Year)	20	??

Summary

- CDAW has been a useful tool with measurable scientific achievements; CDAW is one of the best ways to maximize cross-disciplinary science output.
 - For the success of a CDAW workshop, preprocessed data and quick look event table are important.
 - For the scientific output, follow-up science meeting and solid publication plan are important.
- We anticipate many CDAWs based on STEREO data.