SOLAR CORONAL MASS EJECTIONS (CMEs) FROM SOHO/LASCO

http/cdaw/gsfc.nasa.gov

Center for Solar Physics and Space Weather (CSPSW) – The Catholic University of America
In cooperation with the Naval Research Laboratory (NRL)
and the National Aeronautical and Space Administration (NASA)

DECEMBER 2001

First C2 Appearance		Central			———2nd order speed———				Measurement
Date	Time UT	Position Angle degree	Angular Width degree	Linear Fit Speed km/s	Initial km/s	Final km/s	20R km/s	Accel m/s^2	Position Angle degree
2001/12/01	15:30:05	111	043	215	260	170	0	-24.6	110
2001/12/01	16:54:05	201	084	531	605	449	468	-6.3	190
2001/12/01	18:06:05	76	086	707	816	593	665	-9.3	66
2001/12/02	02:30:05	167	020	289	316	261	197	-2.7	177
2001/12/02	15:06:05	268	057	178	221	138	0	-11.8	268
2001/12/02	16:25:26	266	088	318	264	370	452	5.5	269
2001/12/02	22:06:05	264	165	533	460	605	564	4.4	254
2001/12/03	04:06:05	166	023	161	129	192	376	5.1	170
2001/12/03	12:06:05	148	085	410	446	371	279	-5.0	155
2001/12/03	14:06:05	329	033	235	293	177	0	-17.7	326
2001/12/03	18:30:05	285	042	185	195	175	0	-2.1	291
2001/12/03	20:18:05	289	060	358	327	391	375	1.5	300
2001/12/04	00:42:05	318	066	265	193	341	314	3.3	325
2001/12/04	02:30:06	55	033	131	131	131	131	0.0	53
2001/12/04	03:30:05	63	031	365	316	418	518	6.9	56
2001/12/04	05:54:28	59	037	304	261	351	455	5.8	55
2001/12/04	11:54:05	63	023	323	353	293	0	-6.9	57
2001/12/04	13:32:26	198	020	321	355	287	0	-14.6	198
2001/12/04	17:30:05	67	021	250	310	193	0	-24.2	59
2001/12/04	20:29:18	239	027	722	791	651	364	-21.7	244
2001/12/04	23:30:06	0	010	246	231	261	345	2.9	2
2001/12/05	05:06:05	294	035	253	265	241	189	-1.5	301
2001/12/05	06:55:04	192	029	568	654	483	296	-15.2	197
2001/12/05	07:31:56	65	012	253	269	237	0	-9.5	60
2001/12/05	14:30:05	310	022	210	215	205	205	-0.2	307
2001/12/05	20:30:07	97	013	449	420	481	760	16.8	94
2001/12/06	04:54:05	87	008	373	327	419	846	25.6	80
2001/12/06	13:31:54	235	020	370	335	406	779	20.6	236
2001/12/06	13:31:54	70	035	329	378	281	0	-20.1	66
2001/12/06	19:54:13	199	023	182	304	72	0	-107.7	198
2001/12/06	22:30:05	74	041	168	149	186	342	4.3	65
2001/12/06	23:30:05	123	023	355	354	356	369	0.5	118
2001/12/07	01:54:11	72	041	285	249	322	453	5.9	77
2001/12/07	02:30:05	219	069	429	330	537	591	9.9	218
2001/12/07	03:30:05	Halo	360	620	748	487	312	-22.2	330
2001/12/07	09:30:05	70	032	147	163	131	0	-2.4	73
2001/12/07	10:06:05	228	049	573	514	639	602	4.4	227
2001/12/07	10:30:31	121	038	299	364	231	30	-5.5	117
2001/12/07	14:06:05	322	133	451	461	440	443	-0.7	310
2001/12/08	00:54:05	294	010	373	340	404	457	3.9	296
2001/12/08	05:54:05	123	030	168	206	132	0	-20.6	119
2001/12/08	06:54:05	78	109	453	446	461	461	0.6	74
2001/12/09	05:30:06	120	024	572	688	465	0	-22.5	121
2001/12/09	17:54:05	233	025	426	297	551	1309	69.7	233

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DECEMBER 2001

First C2 Appearance		Central							Measurement
		Position	Angular	Linear Fit	------2nd order speed------			Accel	Position
Date	Time UT	Angle degree	Width degree	Speed km/s	Initial km/s	Final km/s	20R km/s	m/s^2	Angle degree
2001/12/09	20:06:05	284	012	267	211	322	635	15.4	290
2001/12/09	20:06:05	66	092	245	125	371	399	6.0	57
2001/12/09	20:30:05	91	065	495	440	546	561	5.0	99
2001/12/09	22:06:05	257	053	199	161	234	343	4.0	262
2001/12/09	22:30:05	285	018	683	750	619	544	-11.3	285
2001/12/10	02:30:05	336	028	216	204	228	252	0.9	328
2001/12/10	05:06:05	285	021	502	479	524	575	4.4	284
2001/12/10	05:54:07	77	029	212	202	221	246	0.8	84
2001/12/10	07:54:15	257	054	213	115	300	756	23.5	255
2001/12/10	10:30:33	261	085	253	217	289	367	3.6	285
2001/12/10	10:54:06	1	044	241	234	248	385	3.9	349
2001/12/10	12:06:06	78	028	189	86	285	835	28.4	79
2001/12/10	12:30:05	353	049	133	93	171	378	5.8	354
2001/12/10	15:30:05	235	033	305	351	255	0	-44.8	228
2001/12/11	01:54:12	282	006	685	697	674	491	-10.7	283
2001/12/11	04:30:05	270	061	299	348	249	0	-5.6	270
2001/12/11	08:30:05	27	144	401	384	418	423	1.3	39
2001/12/11	09:54:07	271	123	907	454	1389	1145	46.2	238
2001/12/11	15:30:05	233	024	444	509	378	273	-7.7	238
2001/12/12	03:06:05	292	036	312	215	411	1148	52.9	288
2001/12/12	11:30:06	240	113	203	280	125	0	-42.5	226
2001/12/12	13:31:53	292	022	518	475	565	747	14.1	293
2001/12/12	16:54:06	323	021	355	231	489	756	21.2	329
2001/12/12	17:54:29	128	059	465	273	670	742	19.7	123
2001/12/12	22:30:05	287	040	545	547	542	540	-0.3	290
2001/12/12	23:54:05	216	022	931	899	964	981	7.5	210
2001/12/13	02:54:05	139	018	344	345	342	340	-0.2	143
2001/12/13	07:54:05	271	071	267	227	307	562	10.9	275
2001/12/13	11:30:07	100	021	124	131	117	0	-1.2	96
2001/12/13	14:54:06	Halo	360	569	577	561	565	-0.6	8
2001/12/13	14:54:06	Halo	360	961	993	928	928	-5.4	17
2001/12/13	16:54:05	277	008	504	561	445	0	-17.3	283
2001/12/14	05:30:05	152	017	232	289	177	0	-15.1	156
2001/12/14	06:06:07	324	030	211	340	86	0	-49.3	319
2001/12/14	09:06:06	Halo	360	1317	1435	1199	1277	-18.1	86
2001/12/14	11:54:05	75	029	273	281	264	233	-1.0	75
2001/12/14	15:30:05	277	017	180	176	183	219	0.7	271
2001/12/14	21:54:05	166	035	426	465	381	414	-1.9	165
2001/12/14	23:30:05	268	013	428	483	375	0	-21.9	271
2001/12/15	03:54:08	263	017	187	----	----	----	------	257
2001/12/15	05:30:05	48	060	289	292	286	278	-0.3	55
2001/12/15	10:34:05	144	038	461	517	404	365	-5.6	144
2001/12/15	12:06:06	164	030	380	313	446	516	7.3	166
2001/12/15	12:30:05	132	031	476	408	544	856	23.8	134
2001/12/15	13:31:47	265	016	495	447	542	728	14.9	269
2001/12/15	16:54:05	264	037	342	404	276	0	-10.1	278

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DECEMBER 2001

First C2 Appearance		Central							Measurement
		Position	Angular	Linear Fit	-------2nd order speed-------			Accel	Position
Date	Time UT	Angle degree	Width degree	Speed km/s	Initial km/s	Final km/s	20R km/s	m/s^2	Angle degree
2001/12/16	02:06:05	254	056	302	330	270	0	-5.3	278
2001/12/16	05:30:05	272	036	225	232	218	108	-1.7	279
2001/12/16	15:06:05	239	025	266	289	242	0	-5.5	248
2001/12/16	15:42:05	229	039	329	242	417	661	18.8	240
2001/12/17	02:30:05	14	084	319	348	290	0	-5.6	36
2001/12/17	03:30:05	264	009	865	966	765	466	-30.5	266
2001/12/17	10:06:07	131	012	430	124	737	2201	213.0	135
2001/12/18	00:06:05	173	064	448	90	808	679	18.6	170
2001/12/18	03:06:05	295	024	607	671	543	438	-11.0	298
2001/12/18	11:30:05	30	054	226	270	183	0	-3.7	32
2001/12/18	12:06:05	246	032	363	357	369	381	0.7	257
2001/12/18	16:30:06	177	012	391	339	444	497	5.7	176
2001/12/18	17:06:06	250	033	588	538	633	679	7.5	248
2001/12/18	17:30:05	252	107	1042	755	1321	1149	32.7	246
2001/12/18	23:30:05	41	067	351	456	220	218	-7.8	42
2001/12/19	02:06:05	184	019	424	354	498	505	5.7	177
2001/12/19	11:07:55	249	006	495	543	450	256	-9.7	257
2001/12/19	11:07:55	291	079	243	283	202	0	-5.9	271
2001/12/19	15:54:06	307	008	607	705	505	150	-19.8	305
2001/12/19	18:30:05	60	043	456	440	473	483	1.8	50
2001/12/20	00:30:06	Halo	360	771	561	997	900	20.4	122
2001/12/20	04:54:05	207	038	610	515	706	726	11.1	196
2001/12/20	21:12:44	280	067	402	302	519	467	5.5	277
2001/12/21	11:07:34	278	019	385	300	481	475	5.7	278
2001/12/21	11:54:05	55	029	339	136	549	582	13.4	49
2001/12/21	16:54:05	88	040	297	380	214	0	-9.0	76
2001/12/22	05:54:05	43	044	516	605	425	378	-9.5	52
2001/12/22	06:54:05	91	085	166	93	239	365	5.1	91
2001/12/22	10:37:46	88	050	168	221	115	0	-22.8	91
2001/12/22	12:30:06	272	058	317	228	414	466	7.0	276
2001/12/22	13:31:50	270	011	494	435	552	772	18.1	271
2001/12/22	14:54:06	72	057	185	281	55	0	-82.7	57
2001/12/22	18:30:05	72	063	159	128	191	533	11.2	62
2001/12/22	23:18:13	290	068	280	134	406	403	7.6	292
2001/12/23	02:06:05	80	056	165	174	155	0	-2.7	83
2001/12/23	06:30:05	77	033	242	269	212	0	-3.9	72
2001/12/23	07:32:21	41	022	445	422	469	532	4.6	47
2001/12/23	09:54:05	314	028	457	355	561	860	25.6	316
2001/12/23	11:54:05	93	045	269	286	251	162	-2.3	74
2001/12/23	16:54:06	178	034	420	483	349	185	-8.6	176
2001/12/23	18:30:05	33	020	300	259	339	492	7.4	39
2001/12/23	23:30:05	172	012	381	479	281	0	-20.2	169
2001/12/23	23:30:05	83	060	246	207	285	294	1.9	66
2001/12/24	00:54:05	133	021	1028	1399	639	0	-150.7	133
2001/12/24	01:54:15	29	012	259	225	292	417	5.1	30

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		Position	Angular	Linear Fit	———2nd order speed———			Accel	Position
Date	Time UT	Angle degree	Width degree	Speed km/s	Initial km/s	Final km/s	20R km/s	m/s^2	Angle degree
2001/12/24	04:30:05	285	059	330	326	333	337	0.3	278
2001/12/24	11:54:05	85	026	169	175	163	0	-2.1	79
2001/12/24	14:30:05	90	044	954	1130	766	704	-36.2	91
2001/12/24	14:30:05	87	045	593	464	729	662	9.3	87
2001/12/24	20:30:05	80	042	240	280	195	0	-23.6	82
2001/12/25	06:06:05	270	019	211	201	221	291	1.9	275
2001/12/25	10:34:57	Halo	360	1705	1458	1980	1859	55.1	168
2001/12/25	15:30:05	60	012	509	423	592	622	9.0	45
2001/12/25	16:54:05	11	071	318	179	470	579	12.7	14
2001/12/25	17:54:05	72	042	338	347	329	55	-4.8	70
2001/12/25	21:54:05	270	038	269	242	296	420	5.1	274
2001/12/26	01:31:53	276	028	743	721	765	769	3.0	276
2001/12/26	03:54:05	62	032	188	217	160	0	-9.7	63
2001/12/26	05:30:05	276	196	1406	1487	1326	1362	-15.8	269
2001/12/26	11:50:53	220	074	325	291	358	343	1.8	217
2001/12/27	02:30:05	291	095	368	347	388	428	2.7	292
2001/12/27	04:06:05	258	037	260	243	276	428	5.1	255
2001/12/27	06:06:06	261	105	410	446	368	360	-2.9	271
2001/12/27	14:30:06	290	035	612	643	584	487	-7.4	291
2001/12/27	17:30:05	252	111	835	612	1073	945	21.2	236
2001/12/27	18:06:05	79	042	332	315	352	372	1.6	64
2001/12/28	03:30:05	79	056	234	131	333	985	38.9	83
2001/12/28	04:30:05	278	020	296	336	254	123	-4.1	282
2001/12/28	08:42:05	39	026	492	425	558	670	14.2	41
2001/12/28	10:34:53	276	025	413	367	458	879	27.4	279
2001/12/28	11:30:05	44	066	865	853	877	877	1.8	36
2001/12/28	16:30:05	284	026	312	347	278	0	-8.7	286
2001/12/28	20:06:05	284	049	383	413	352	0	-10.6	280
2001/12/28	20:06:05	Halo	360	2045	1963	2128	2091	21.3	155
2001/12/29	09:54:05	270	137	668	769	562	632	-7.9	274
2001/12/29	18:54:05	281	014	572	616	530	455	-7.2	287
2001/12/29	19:54:49	Halo	360	824	565	1122	999	28.4	264
2001/12/30	02:06:05	205	021	401	470	327	0	-12.6	209
2001/12/30	04:06:05	203	015	469	409	535	625	9.9	208
2001/12/30	08:54:06	53	020	312	177	459	440	7.0	50
2001/12/30	11:54:05	85	020	277	279	274	264	-0.4	79
2001/12/30	14:18:05	281	060	733	465	976	852	33.4	290
2001/12/30	15:06:05	255	026	459	411	507	989	33.3	261
2001/12/30	15:54:06	276	012	584	317	850	1380	85.3	281
2001/12/30	22:30:05	235	029	549	552	546	545	-0.3	234
2001/12/30	23:30:05	186	041	737	755	718	715	-2.6	205
2001/12/30	23:30:05	Halo	360	477	524	431	0	-12.8	231
2001/12/30	23:54:05	51	017	491	484	498	520	1.6	39

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		Position	Angular	Linear Fit	———2nd order speed———			Accel	Position
Date	Time	Angle	Width	Speed	Initial	Final	20R		Angle
	UT	degree	degree	km/s	km/s	km/s	km/s	m/s^2	degree
2001/12/31	01:54:14	64	025	317	287	351	391	3.0	60
2001/12/31	02:54:05	115	018	502	377	638	716	15.7	111
2001/12/31	02:54:05	231	028	475	448	503	512	2.8	218
2001/12/31	08:54:05	271	019	195	200	191	173	-0.4	274
2001/12/31	09:30:06	289	014	359	294	422	514	7.8	291
2001/12/31	10:35:00	254	024	256	307	205	0	-29.7	254
2001/12/31	12:30:06	257	049	533	547	520	348	-7.4	261
2001/12/31	16:54:05	288	020	529	373	696	757	20.4	284

If you use data from this catalog, we would appreciate an acknowledgment as follows:

"This CME catalog is generated and maintained by the Center for Solar Physics and Space Weather, The Catholic University of America in cooperation with the Naval Research Laboratory and NASA. SOHO is a project of international cooperation between ESA and NASA."

CME heights are measured at the fastest segment of the leading edge
PA= Postion Angle measured from Solar North in degrees (Counter clockwise)
ONLINE -- Click on date to view java script movies
ONLINE -- Click on time to see height-time digital files
ONLINE -- Click on speed to view height-time plot
Numbers in 2nd order fit columns correspond to the speed at the last height of measurement and at a distance of 20 solar radii.