

Version 13: Draft Event list from the inspection of the PSP plasma and magnetic field data until 27 July 2023. Compiled by VB and IC, 13/04/2024. More references to relevant studies will be added. Abbreviation explanations are given below the Table.

Year	Month	Day	PSP r_d (au)	SW event	Compl. Obs.	Comments
2018	10	30, 31	SE1, 0.26	TS, SSW, ICME	WSA	RE
	11	2		ME		
		3	6P1	SWB	WE	
		8		SWB, P		
		10		HSS		
		11, 12	E1S, 0.23	SWB, ICME	ESA	Ref. Nieves-Chinchilla_2020_ApJS_246_63
		14-20		HSS		
		15		ME		
		19, 22		MQ		
		21	0.45	ICME		
		23		CS		
		24,25,26	0.52	ICME		
		26-28		HSS		
	12	3,4	0.64	ICME	EE	
		7		CS		
		15		SSW		
		19		BI		
2019	02	20		BI	WSA	
		27		BI		
	03	4		BI		
		5		BI		
		10		BI		
		12		P		
		13		BI		
		15	0.55	ICME		E. Kilpua et al.
		16-17		HSS?		
		17		MH, CS		
		18		CS		
		19	0.49	ICME?		
		20		MH		
		25	0.37	ICME?		
		27		CS		
		28	30SE2	CS	EE	RSA
	04	1		SSW		
		3	4P2	ST		
		6		BD		
		8		P	WSA	RE disk passage
		9		DE		
		10	SE2S, 0.24	ICME		

		11	0.26	ICME		
		16		CS		
		17		HSS		
		18		ME		
	05	13	0.77	ICME		
		19	0.82	ICME		
		23		CS, SSW	EE	
		27		CS?		
	06	1		RC		
		16		ME		
		21		CS		
2019	06	22		SSW		
	07	11		BI		
		16	0.85	ICME		
		17	0.84	ICME		
		25	0.78	ICME	WSA	
	08	9		BI		
		11		HSS		
		17	0.46	CS, ICME		
		19		CS		
		24		BI		
		25		CS, SWB	WE	
		26	27SE3,1P3	ST		
	09	7	E3S	SWB		
		8		SWB		
		10	0.31	ICME		
		11, 12	0.33	ICME		
		14		CS	EE	RSA
		19		CS		
		20-23		HSS		
		27		CS		
		29		CS		
	10	7		ME		
		12		HSS		
		12		CS		
		13, 14	0.80	ICME		
		16		CS		
		17		BI, SH?		
		22	0.87	ICME		
		23,24	0.88	ICME		
		26	0.89	ICME		
		27,28		CS		
		30		CS		
	11	4		BI	EE	PSP meets SA
		11		P		
		12		CS		
		13	0.94	ICME		

		15		CS		
		16	0.94	ICME		
		18		BI		
		20		CS		
		23	0.93	ICME		
		26	0.93	SWB, ICME		
		27	0.92	ICME,CS		
	12	1	0.91	ICME		
		3		CS		
		5		CS		
		6		CS		
		9	0.87	ICME		
		11		MQ		
2019	12	13		CS		
		16	0.83	ICME		
		18	0.81	ICME		
		19	0.80	ICME,SIR		
		26		BS		
		28	0.71	ICME	EE	
2020	01	16	0.43	ICMEs		
		19	0.36	CS,ICME		
		20	0.34	ICME		
		21	23SE4	BI	EE	RSA
		25		BS		
		26		SWB		
		27	29P4, 0.16	BI,ICME?	WSA	RE disk passage
		30		CS		
		31		CS		
	02	1	4E4S	CS	WE	
		7		TS		
		8		CS		
		9	0.37	ICME,CS		
		11		BI		
		12		TS		
		15		SWB		
		16	0.51	ICME		
		17,18		TS		
		20,21	0.58	ICMEs		
		23		CS		
		24		CS?		
		25		CS?,ICME		
		26		CS		
		27		CS		
		29	0.65	CS,ICME		
	03	9,10,11		SWB		
		13		ICME		

		16		CS		
		19		CS		
		23,24	0.81	ICME,CS		
		26,27	0.86	ICME		
		31		CS		
	04	1		CS		
		5		P		
		16	0.85	ICME		
		21	0.83	ICMEs		
		26		SWB		
	05	10		SWB,TS		
		11	0.66	ICMEs, CS		
		13		SWB		
		17		SWB		
2020	05	19		CS		
		21	0.51	SWB,CS,ICMEs		
		22	0.49	SWB,ICME		
		24	0.45	ICME,P		
		25		P		
		31		BI		
	06	1	SE5	SWB,P		
		2		SWB		
		3	0.21	ICME?		
		4		SWB	ESA	
		5		FS		
		7	P5	SWB		
		8		CS	EE	RSA
		9	0.15	SH,ICME		
		13	E5S, 0.25	ICME		
		15	0.30	ICMEs	WSA	RE
		16		CS		
		18		CS		
		19		CS		
		20	0.41	ICME,CS		
		23	0.47	ICME		
		24		CS		
		25	0.51	ICME		E. Kilpua
		26		CS		
	07	1		SWB		
		6-7		HSS		
		9,10		CS		
		22	0.79	ICME		
		26		CS		
		29,30		CS		
	08	2		CS		
		3		SWB		

		4		CS		
		12	0.80	ICME		
		13	0.80	ICME,CS,S T		
		18	0.77	ICMEs		
		20		SWB		
		25	0.72	ICME?,CS		
		26		CS,SWB		
		27		ST		
		28,29	0.69	ICME,CS		
		29		HSS		
		31		BS		
	09	1		ST,CS		
		1-2		HSS		
		2		BI		
		3,4		SWB,TS		
		5		SWB,BI,CS		
		6		CS,BD		
2020	09	7,8		SSW		
		9		BD,SSW		
		10		CS		
		12	0.48	ICME,SH		
		13		CS		
		14		SWB		
		15		CS,SWB	WSA	
		16	0.40	ICME,SH?		
		17		BI		
		18	0.35	ICME,BI,CS ?		
		19		CS,SWB		
		20	21SE6	CS		RSA
		22		CS		
		23		SSW,TS		
		24		BI		
		25,26	27P6, 0.15	CS,ICMEs?	WE	
		28		SSW,TS	ESA	
		30		CS?		
	10	1	0.78	SWB		
		2	E6S	BD		
		6		CS		
		7	0.36	CS,ICMEs, P		
		14-21		HSS		RE
		27	0.69	ICME		
		28	0.70	ICME	EE	
		31		HSS		
		31		CS		

	11	2,3		BI		
		5		BI		
		6		TS		
		15		BI		
		18	0.81	ICMEs?		
		20		SWB		
		21		SWB,CS		
		23	0.82	ICME		
		25	0.82	ICME		
		27	0.81	ICME		
		28	0.81	ICME		
		29,30	0.81	ICME		
	12	1	0.80	ICME		
		2		BI		
		7		CS		
		8	0.77	BI,ICME?		
		9	0.77	BI,ICME?		
		12	0.75	BI,ICME?		
		12-14		HSS		
		13		SWB		
		14		CS,SWB		
2021	01	2		SWB,CS		
		4		SWB		
		6,7		SWB	EE	
		10,11	12SE7	SWB		
		12		HSS		
		13	0.22	TS,ICME?		
		14		CS		RSA
		15		FS,SSW		disk passage
		17	P7	CS	ESA	RE
		18		BD		
		19		CS?		
		20		CS?	WE	
		21		SWB		
		23,24	23E7S, 0.24	ICME,CS		
		26	0.33	ICME		
		27		CS?		
		28,29	0.38	ICMEs?,S WB?,TS	ESA	
		30-2		HSS		
	02	4,5		SWB		
		6-7		HSS		
		7,8		RC,ST		
		9		CS		
		10		SWB, HSS		
		11	0.62	ICME		
		12	0.64	ICME		

		15-16		HSS		
		17		CS		
		20		BS,SWB		
		24		SWB,BI		
2021	03	2,3		SWB		
		8	0.78	ICME		
		15,16		SWB?,BI		
		20		SWB		
		21		CS		
		28		CS		
		29	0.70	ICME		
		30	0.69	ICMEs?		
		31		SWB		
	04	1		SWBs, CS		
		2		SWBs		
		7,8,9,10,11,12		CS		
		15,16		SWBs?, CS?		
		18		SSW, TS		
		19		CS, SWBs		
		22		SWB		
		23		CS		
		24-28	SE8	BI, ICME?, SSW	WSA	
		29	P8	CS		
		30	0.08	ICME?		RSA
	05	1	E8S4	SSW		RE disk passage
		9	0.37	ICME?, CS?		
		12,13		CS	WE	
		14	0.48	ICME?		
		15		SWBs		
		16		CS		
		27		SWB		
		28,29	0.68	ICME		
		30	0.70	ICME	WSA	
	06	1,2,3,4		CS		
		7,8	0.75	ICMEs		
		9	0.76	ICME, CS		
		10,11	0.76	BI, CS, ICME?		
		12	0.77	ICME?		
		14		CS?		
		15-17		CS		
		18		SIR, CS		
		19		HSS		

		20-22		CS		
		23		SWB		
		24		ST		
		25		CS?		
		29		TS		
		30/01	0.76	ICME		
	07	03	0.75	ICME?	WSA, WE	
	07	05/06	0.73	ICME?		
		11	0.69	ICME		
		14	0.66	CS		
		25/26	0.50	CS		
		28	0.44	SFR		
		30	0.40	ICME		
	08	01	0.35	SFR		
		02	0.32	BS, ICME		
		03/04	0.29, SE9	ICMEs		
		07,08,09	0.16, P9	SSW		
		10	0.08	CS		
		11	0.10	ICME?	EE, ESA	
		14	0.21, E9S15	ICME?		
		17	0.31	CS		
		19	0.36	SWB		
		20/21/22	0.38	CS		RSA
		25	0.49	SFR		
		27	0.53	ICME?		
		28/29/30/31	0.54	ICMEs		
2021	09	01	0.60	SFR		
		02	0.62	SFR		
		03	0.63	SFR		
		04	0.64	ICME?		
		06	0.66	CS		
		09/10	0.69	CS		
		12/13	0.72	ICME		
		14/15/16/17	0.73	ICMEs		
		18	0.75	ICME		
		19	0.76	ICME?		
		20	0.76	SFR		
		21/22	0.77	CS?, ICME		
		23	0.77	CS		
		24/25	0.78	ICME?, CS		RSA
		26/27	0.78	ICME		
		28/29/30	0.78	ICME, CS		
	10	3/4		SSW		
		5		CS		
		6		CS		
		7	0.77	ICME		
		8		SWB		

		10		SSW, ICME?	EE	
		11	0.76	ICME		
		12		ICME		
		14		CS?		
		16	0.73	ICME?		
		17		ICME?		
		19		ICME?		
		20		ICME, CS?		RE
		21	0.70	ICME	WE,SA	
		24		CS		
		28		CS		
		29		ICME		
	11	01		ICME?		
		02	0.56	ICME		
		03		ICME		
		04/05		ICME?		
		07		ICME		
		09/10	0.42	ICME		
		11		CS		
		14/15/16	0.26, SE10	SWB		
		17/18/19	0.22	SWB		RE disk passage
		22	0.07, P10, E10S26	CS		
2022	01	11		ICME	ESA	
		12		ICME		
		13/14	0.76	ICME		
		18		SH		
		20		ICME?		
		21	P10	ICME?		
		25	E10S26	CS		
		27		CS		
		28		CS		
		29/30		ICME?		
		31		SWB		
	02	02/03		SWB		
		05	0.58	ICME?		
		08/09/10		SWB		
		11		SWB		
		13		SSW		
		14		CS		
		15		ICME?		
		16/17	0.38	SH, ICME, CS		
		18/19/20	SE11	SWB		
		21/22/23	0.23	SSW	EE	
		25	P11	CS		RE disk passage

		28		SSW		
	03	01		SSW	WE	
		02	E11S	SWB		
		05		SWB, CS		
		07		SWB		
		08		CS		
		09	0.42	ICME		
		10		ICME		
		11		SH, ICME?		
		12/13		SWB/CS		
		15		ICME?		
		16		ICME?		
		17/18		SWB/CS		
		19		ICME		
		21		ICME?/CS ?		
		22		CS		
		23/24	0.64	SH, ICME		
		25		SWB		
		27/28		CS, SWB		
	05	01		SWB		WE,SA
		02/03	0.69	CS, ICME?		
		04		ICME?		
		05		SWB		
		07/08/09		SWB		
		12		CS		
		13	0.57	SH, ICME		
		14/15		SH, ICME		
		16		SWB		
		17/18		ST		
		19		SWB		
		20		SH, ICME		
		22/23		SWB		
		24	0.36	ICME?		
		26/27/28	27SE12	SWB		
	06	02	0.06, P1	CS, ICME?	EE,SA	RE,RSA disk passage
		06	E12S7	ICME		
		09		CS		
		10	0.34	ICME?		
		11/12		ICME?	WSA	
		22		CS		
		30		ICME		
	07	01	0.68	ICME	WSA	
		02		ICME		
		05		ST		
		06		CS		
		07		ICME		

		09	0.73	ICME?		
		10		CS		
		11		SH, ICME		
		12		ICME?		
		14		SWB		
		17/18	0.76	ICME		
		19		ICME		
		20		CS		
		21		SWB		
		24		ICME?		
		25		SWB		
		28		CS		
		30/31	0.74	ICME?		
	08	7-12		HSS		
		16	0.59	ICME		
		18		ICME		
		20		ICME		
		23		SSW, SWB		
		24		ICME		
		25		CS		
		29	0.34	ICME	WSA,WE	
		30		ICME?		
		31		BI		
	09	01	SE13	SWB		
		03/04		SSW		
		05	0.10	SH, ICME	WSA,WE	
		06	P	ICME, CS		
		07	0.08	ICME?	ESA,EE	
		09		ICME		
		12	0.27, E13S11	ICME		
		14		CS		
		17		ICME?		
		18	0.43	ICME		
		21		CS		
		22		ICME?		
		24		ICME		
		25	0.56	ICME, CS?		
	10	01	0.64	ICME?		
		05		CS?		
		07		CS		
		08		CS		
		11		SWB		
		12		ICME		
		13/14/15/16	0.73	CS, SSW		
		19/20/21		CS		
		26/27	0.76	CS?	ESA,EE	
		28		SWB		

		30		CS		
	11	13/14/15/16 /17	0.71	CS		
		18/19		SWB		
		24/25/26		SWB		
		28/29/30		CS		
	12	04/05	06SE14 0.32 AU	CS	WESTA	
		08		SW, SWB,P		disk passage
		12	11P14 16SE14 0.07 AU	CS		
		18/19		CS		
		23	BE			
		24		CS		
		25/26	0.46 AU	CS, ICME	EE	
		31		SWB		
2023	01	01/02/03/04		CS		
		07		CS		
		09	0.67 AU	ICME	EESTA	
		11		CS		
		12		ICME		
		17		CS		
		31		CS		
	02	09/10/11		CS		
		13/14	0.71 AU	ICME?		
		16		SWB		
		17/18/19		CS		
		21		SWB		
		22	0.62 AU	ICME?		
		23		ICMEs		
		25		CS		
		26	0.57 AU	CS, ICME		
		27		CS		
		28		SWB		
	03	07		CS		
		10	0.33 AU	ICMEs	EESTA	
		12	SE15 0.27 AU	CS		
		13		ICME		
		14/15/16/17	17PE15 0.08 AU	CS	EESTA	disk passage
		20	23SE15 0.25 AU	CS		
	04	05		CS		
		12/13		CS		

		15/16/17/18 /19/20/21/22		CS	WESTA	
		23	0.73 AU	ICME?		
	05	08		SH		
		09/10/11/12		CS		
		14/15	0.74 AU	ICMEs?		
		16		CS		
		18/19		CS		
	06	08/09		CS		
		11		CS		
		13/14	16SE16 0.28 AU	CS	EESTA	
		18		CS		
		22	PE16 0.06 AU	CS		disk passage
		24/25		CS		
		27	SE16 0.24 AU	CS		
	07	01		CS		
		03/04		CS		
		06		P?		
		08/09		CS		
		11	0.56 AU	ICME?	RESTA	
		12		CS		
		14/15		CS		
		16	0.62 AU	ICME?		
		17/18		CS		
		19		ICME?		
		20		CS		
		25		ICME		
		26/27/28		CS		
		31		CS		
	08	05		CS		
		06		ICME		
		08		CS		
		11		CS		
		14		CS		
		17/18		CS		
		20		CS		
		25		ICME		
		28/29		CS		
	09	01		ICME? CS		
		02		MQ		
		11/12		CS		
		16		MQ		
		17		ICME		
		18		ME		
		19		ME		

		20		CS		
		22	SE17	ICME		
		23		CS		
		25/26		CS		
		27	PE17	CS		
		28		CS		
	10	01	E17S03	SH		
		17		CS		
		26		CS		
		28/29		ICME		
	11	04		ICME?		
		09		CS		
		20/21		CS		
		23		ICME		
	12	19	24SE18	CS		
		29	PE1828	CS		
		30		CS		
2024	01	03		ME		
		10		ICME		
		22		ICME		
		23		ICME		
		27		ICME		
		29/30		CS		
	02	01	03SE18	ME		
		08/09		ICME?		
		14		ICME		
		16		ICME		
		19		ICME		
		21		CS		
	03	06		CS		
		08		ME		
		12		ICME		
		14/15		ICME		
		17		CS		
		18		ICME?		
		21	25SE19	CS		
		29		CS		
		30	PE19	CS		
	04	13	04SE19			

Abbreviations

BD = B decrease

BI = B increase

BS = B spike

CS = current sheet crossing

DE = density enhancement

ExS= Encounter x stop
 EE= east limb wrt earth
 ESA= east limb wrt STEREO A
 FS = fine structures
 HSS = High Speed Stream
 ME = magnetic enhancement
 MH = magnetic hole
 MQ = magnetic quiet interval
 P = periodicities
 yPx= day of month for perihelion x
 RC = radial directional change
 RE= radial alignment with earth
 SFR=Small Flux Rope
 SH = shock
 SIR = stream interaction region
 SSW = slow solar wind
 SWB = switchback
 Sex= start encounter x
 ST = stream transition
 TS = turbulent stream
 WE= west limb wrt earth
 WSA= west limb wrt STEREO A

From the PSP solar wind Investigation the following features have been listed:

- ICMEs
- High speed streams
- Switchback events
- Current sheet crossings where the IMF direction reverses
- Turbulent solar wind streams with strong plasma and magnetic field fluctuations
- Short time plasma density enhancements
- Periodicities in plasma and field parameters on time scales of a few hours
- Plasma fine structures in individual solar wind streams
- Very slow solar (~200 km/s) wind
- Signatures of interplanetary shock waves
- Transition between individual streams
- Short time enhancements of the magnetic field on time scales of a few hours
- Spikes of the magnetic field lasting about an hour
- Periods when the radial direction of the IMF reverses
- Stream interaction regions
- Time intervals of a few hours of relative quiet magnetic field conditions
- Magnetic holes when the field intensity vanishes

Acknowledgements

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E1
31 Oct - 5 Nov – 11 Nov 2018
CR 2210

E2
30 Mar – 4 – 10 Apr 2019
CR 2215

E3
27 Aug – 01 – 07 Sep 2019
CR2221

E4
23 Jan – 29 – 04 Feb 2020
CR2226

E5
01 Jun – 07 – 13 Jun 3020
2231

E6
21 Sep – 27 – 02 Oct 2020
CR2235

E7
12 Jan – 17 – 23 Jan 2021
CR 2239

E8
24 Apr – 29 – 04 May 2021
CR2243

E9
04 Aug – 09 – 15 Aug 2021
CR 2247

E10
16 Nov – 21 – 26 Nov 2021
CR2251

E11
20 Feb – 25 – 02 Mar 2022
2254

E12
27 May – 01 – 07 Jun 2022
CR2258

E13

01 Sep – 06 – 11 Sep

E14

06 Dec – 11 – 16 Dec

E15

12 Mar – 17 – 23 Mar

E16

16 Jun – 22 – 27 Jun

E17

22 Sep – 27 – 03 Oct

E18

24 Dec – 29 – 03 Jan