

1 Table: Events Properties

This appendix presents the dataset corresponding to the Stream Interaction Regions (SIRs) observed by the Wind spacecraft during 2007, 2008, 2018, and 2019. The table consists of several columns detailing the solar wind (SW) properties and related parameters.

Columns 1 to 8 provide the following information:

1. Date (yyyy/mm/dd) of SIR initiation.
2. Day of the year when the stream interface (SI) passes.
3. Minimum value of the Bz component.
4. Relative position (rp) of the SI.
5. Radial width of the compression region in astronomical units (AU).
6. Average upstream solar wind speed.
7. Average downstream solar wind speed.
8. Dynamic pressure ratio between fast and slow solar wind.

Columns 9 and 10 also display the maximum intensity of the Kp and Dst indices, respectively. The presence of forward shocks (FS), reverse shocks (RS), or both shocks (BS) in the SIRs is indicated in Column 11.

Tables 1, 2, 3 and 4 represent the SIRs recorded during the years 2007, 2008, 2018, and 2019, respectively.

2 Table: Properties of Coronal Holes

In this section, we analyze the coronal holes (CHs) locations from which the high-speed streams originate using synoptic maps. CHs can be near the solar equator, at midlatitudes, or as low-latitude extensions of polar CH (Figure ??).

Tables 5 and 6 provide insights into the association between CH types and the velocity of high-speed streams during solar cycles 23 and 24, respectively. The columns in these tables offer the following information:

1. CH class.
2. Percentage of high-speed streams with velocities greater than 700 km/s associated with a specific CH type.
3. Percentages of high-speed streams with velocities between 600, 500, and 400 km/s associated with distinct CH classes.

Table 1: Properties of SIRs registered by Wind observed during 2007

SOLAR WIND								GEOEFFECT.		Shock
Date yyymmdd	Date (SI) mmdd	min B_z nT	rp SI	Width [AU]	V_{slow} km/s	V_{fast} km/s	r_{dyn}	Kp	SYM-H nT	
20070227	58.33	-15.28	0.24	0.18	363	626	2.66	4	-41	
20070305	65.25	-8.20	0.28	0.52	425	618	0.67	5	-28	
20070311	71.56	-9.33	0.60	0.49	307	685	2.76	5	-43	
20070324	84.21	-10.63	0.68	0.20	364	453	1.34	5	-79	
20070330	91.06	-13.60	0.24	0.17	346	553	1.59	5	-71	
20070408	99.10	-10.26	0.27	0.14	297	472	0.61	4	-14	
20070422	113.22	-12.99	0.82	0.31	302	487	0.38	5	-32	RS
20070427	117.67	-9.20	0.28	0.40	433	633	3.03	5	-37	
20070508	127.50	-16.71	0.22	0.24	266	598	0.99	5	-38	FS
20070518	138.39	-15.51	0.20	0.30	318	597	0.98	4	-27	
20070601	153.71	-6.75	0.70	0.38	349	474	0.86	4	-12	
20070612	164.84	-10.35	0.36	0.46	295	604	3.24	4	-28	
20070621	172.43	-9.54	0.18	0.19	385	536	1.70	4	-34	
20070629	180.77	-11.85	0.37	0.11	349	531	2.19	4	-16	
20070711	192.09	-14.75	0.36	0.19	303	552	1.48	5	-39	RS
20070720	201.52	-11.06	0.46	0.16	316	478	2.30	4	-43	
20070727	207.67	-10.42	0.26	0.19	300	444	0.62	4	-22	RS
20070728	210.14	-9.75	0.27	0.19	351	583	2.90	4	-24	
20070807	219.00	-13.44	0.56	0.29	296	654	1.95	6	-34	
20070810	222.61	-11.14	0.48	0.11	359	558	0.86	4	-40	
20070826	238.75	-12.58	0.47	0.16	383	630	1.60	4	-40	
20070830	244.63	-9.57	0.40	0.27	414	628	1.29	5	-31	
20070920	263.60	-9.08	0.28	0.14	328	478	1.32	4	-18	FS
20070927	270.76	-09.12	0.12	0.53	384	644	2.28	6	-31	RS
20071017	291.82	-11.76	0.44	0.47	334	617	2.25	4	-37	
20071025	298.62	-13.41	0.35	0.12	365	689	1.20	6	-60	BS
20071112	317.15	-12.04	0.31	0.37	381	649	1.27	3	-16	RS
20071122	326.77	-9.09	0.58	0.17	502	638	0.89	4	-51	
20071210	345.06	-15.64	0.85	0.15	342	630	2.14	4	-35	
20071217	351.32	-18.10	0.26	0.18	361	606	2.67	4	-43	FS

Table 2: Properties of SIRs registered by Wind observed during 2008

SOLAR WIND								GEOEFFECT.		
Date yyymmdd	Date (SI) mmdd	min B_z nT	rp SI	Width [AU]	V_{slow} km/s	V_{fast} km/s	r_{dyn}	Kp	SYM-H nT	Shock
20080104	5.32	-13.78	0.19	0.42	311	631	1.31	4	-37	RS
20080113	13.64	-7.18	0.33	0.29	498	644	1.60	4	-42	
20080124	25.11	-7.05	0.62	0.14	412	504	0.90	4	-28	
20080131	31.74	-8.93	0.14	0.41	318	603	1.58	5	-50	
20080209	41.28	-12.28	0.39	0.33	381	704	1.64	5	-35	RS
20080218	49.49	-5.44	0.40	0.28	493	606	2.02	4	-32	
20080227	58.74	-9.65	0.09	0.37	347	671	1.82	5	-48	
20080308	68.75	-16.12	0.31	0.34	325	655	1.08	6	-100	
20080326	86.42	-10.55	0.38	0.23	393	601	1.57	5	-50	RS
20080404	95.83	-14.35	0.55	0.21	405	609	1.23	5	-36	
20080415	107.50	-9.18	0.56	0.22	385	572	1.07	4	-29	
20080421	114.25	-12.63	0.51	0.31	340	648	1.07	5	-47	
20080430	121.80	-7.59	0.51	0.07	392	496	1.75	5	-31	FS
20080502	124.52	-7.36	0.48	0.38	452	616	0.95	4	-39	
20080528	149.21	-8.01	0.23	0.16	350	516	0.96	4	-34	
20080606	158.43	-7.24	0.20	0.35	365	474	1.15	3	-24	
20080614	166.72	-16.90	0.16	0.23	313	602	2.49	5	-49	RS
20080619	172.03	-7.69	0.66	0.31	552	563	2.07	3	-37	
20080625	177.76	-9.30	0.10	0.21	384	627	0.91	4	-37	
20080711	193.37	-11.87	0.17	0.36	315	620	1.60	4	-41	
20080722	204.54	-07.82	0.21	0.29	375	628	1.48	4	-37	BS
20080809	222.25	-13.52	0.18	0.37	351	626	1.34	5	-43	RS
20080818	231.20	-09.82	0.17	0.30	373	597	0.87	5	-34	RS
20080914	258.98	-12.91	0.21	0.18	300	576	1.15	4	-39	RS
20080930	274.77	-7.61	0.12	0.42	339	671	1.70	4	-40	
20081011	285.47	-15.19	0.36	0.17	312	532	0.88	7	-65	
20081028	302.89	-09.61	0.36	0.44	313	655	3.02	4	-32	
20081106	312.76	-10.48	0.60	0.37	288	530	1.40	4	-37	BS
20081115	320.79	-13.01	0.17	0.17	311	509	1.07	4	-43	
20081125	330.17	-15.56	0.28	0.13	268	572	1.92	4	-20	
20081202	338.68	-7.96	0.52	0.29	286	418	1.37	4	-35	
20081222	357.73	-10.17	0.29	0.29	307	524	1.73	4	-22	

Table 3: Properties of SIRs registered by Wind observed during 2018

SOLAR WIND								GEOEFFECT.		Shock
Date yymmdd	Date (SI) mmdd	min B_z nT	rp SI	Width [AU]	V_{slow} km/s	V_{fast} km/s	r_{dyn}	Kp	SYM-H nT	
20180101	1.18	-8.82	0.53	0.17	352	415	1.37	4	-25	FS
20180107	8.57	-12.34	0.31	0.19	286	483	0.69	4	-22	
20180112	13.86	-9.01	0.42	0.29	322	574	1.14	5	-24	
20180120	21.34	-7.31	0.20	0.17	425	508	0.62	3	-26	
20180124	24.84	-9.50	0.29	0.29	385	459	2.01	4	-29	
20180131	31.49	-6.05	0.40	0.14	330	401	0.99	3	-14	FS
20180204	35.74	-5.34	0.18	0.24	321	419	0.90	3	-13	
20180216	46.66	-8.36	0.26	0.24	299	596	1.35	4	-27	
20180226	58.16	-10.81	0.30	0.19	380	516	1.43	5	-60	
20180314	73.72	-10.49	0.29	0.28	357	488	1.08	6	-53	
20180409	99.32	-8.63	0.10	0.40	357	516	0.63	4	-42	FS BS
20180420	110.32	-20.94	0.28	0.22	285	596	1.50	6	-86	
20180505	125.60	-13.61	0.18	0.20	326	636	1.56	6	-66	
20180516	137.44	-8.38	0.67	0.27	330	424	0.83	3	-38	
20180522	142.92	-10.65	0.29	0.28	301	459	0.77	3	-16	
20180531	151.72	-12.09	0.10	0.28	356	658	0.76	5	-49	FS
20180617	169.22	-13.40	0.42	0.29	300	502	1.52	4	-40	
20180622	174.16	-13.69	0.25	0.27	375	448	0.96	4	-28	
20180625	177.45	-9.26	0.23	0.23	433	568	0.96	4	-45	
20180716	197.75	-12.42	0.43	0.23	369	416	2.19	3	-28	
20180719	202.00	-9.00	0.26	0.22	367	463	1.04	3	-21	RS
20180723	205.25	-10.58	0.33	0.22	395	564	1.47	4	-24	
20180807	219.80	-7.15	0.65	0.23	323	411	0.69	3	-9	
20180814	227.35	-9.00	0.31	0.26	326	486	1.14	4	-49	
20180819	232.15	-6.82	0.60	0.20	452	640	1.57	4	-29	
20180907	250.18	-5.32	0.43	0.17	389	425	0.42	2	-10	
20180910	253.93	-12.66	0.36	0.31	375	552	1.10	6	-64	
20180916	260.12	-8.21	0.14	0.23	410	534	1.19	3	-24	
20180921	265.00	-10.27	0.26	0.30	323	445	1.89	5	-49	
20181007	280.60	-16.00	0.42	0.16	353	566	1.73	5	-56	
20181013	286.80	-8.49	0.72	0.25	402	568	1.41	4	-49	
20181104	308.96	-11.07	0.56	0.19	344	540	0.75	6	-66	
20181109	313.92	-9.30	0.35	0.27	435	588	2.18	4	-45	
20181119	324.18	-9.44	0.35	0.11	332	408	0.36	3	-9	
20181201	335.52	-8.52	0.35	0.22	322	443	1.76	4	-27	
20181206	341.37	-10.18	0.22	0.46	390	576	2.30	3	-26	
20181216	351.28	-5.80	0.26	0.34	305	527	1.21	3	-22	
20181227	362.00	-11.44	0.28	0.28	329	559	1.41	4	-30	

Table 4: Properties of SIRs registered by Wind observed during 2019

SOLAR WIND								GEOEFFECT.		
Date yyymmdd	Date (SI) mmdd	min B_z nT	rp SI	Width [AU]	V_{slow} km/s	V_{fast} km/s	r_{dyn}	Kp	SYM-H nT	Shock
20190117	17.50	-7.24	0.32	0.15	389	481	0.88	3	-24	
20190123	23.42	-8.96	0.31	0.31	309	610	2.66	4	-31	
20190201	31.66	-18.28	0.36	0.32	304	586	0.63	4	-39	
20190213	44.47	-7.63	0.54	0.19	369	471	1.91	4	-28	
20190220	51.93	-8.15	0.27	0.21	303	442	1.33	4	-20	
20190227	58.56	-11.31	0.26	0.20	311	510	2.24	5	-45	
20190319	78.49	-5.49	0.32	0.20	338	404	1.09	3	-18	
20190328	87.41	-8.55	0.42	0.19	364	523	1.18	4	-21	
20190404	94.56	-7.60	0.36	0.16	392	495	1.00	4	-33	
20190501	121.82	-9.03	0.43	0.18	332	563	0.80	4	-37	
20190503	123.79	-7.91	0.29	0.22	450	486	1.35	3	-28	
20190528	148.98	-8.09	0.40	0.21	322	537	1.80	4	-36	
20190608	159.81	-16.52	0.45	0.17	276	439	0.96	5	-24	FS
20190709	190.00	-9.49	0.10	0.42	307	627	1.85	5	-42	FS
20190805	217.18	-18.62	0.17	0.25	332	699	0.73	5	-64	
20190826	239.23	-7.45	0.53	0.18	318	447	1.24	3	-29	
20190830	242.62	-9.67	0.15	0.36	386	701	1.70	6	-63	
20190924	267.75	-10.62	0.42	0.10	306	481	1.43	4	-33	BS
20190927	270.49	-9.64	0.29	0.19	343	638	1.88	5	-61	FS
20191024	297.44	-12.00	0.25	0.29	331	633	1.41	5	-55	
20191116	320.76	-8.23	0.38	0.13	349	445	1.50	2	-15	
20191120	324.94	-8.48	0.16	0.40	320	516	1.22	4	-37	
20191218	352.20	-6.84	0.14	0.22	339	517	2.09	4	-35	

Table 5: Frequency of coronal holes (CHs) associated with the V_f from cycle 23.

CH class	Velocity range	700 km/s	600 km/s	500 km/s	400 km/s
Equatorial and low latitude		1 (1.6 %)	15 (24.2 %)	8(12.9 %)	4 (6.5 %)
Midlatitude		0 (0 %)	15 (24.2 %)	9 (14.5 %)	7 (11.3 %)
Polar with equatorial extension		0 (0 %)	1 (1.6 %)	2 (3.2 %)	0 (0 %)

Table 6: Frequency of coronal holes (CHs) associated with the V_f from cycle 24.

CH class	Velocity range	700 km/s	600 km/s	500 km/s	400 km/s
Equatorial and low latitude		1 (1.6 %)	7 (11.5 %)	15 (24.6 %)	13 (21.3 %)
Midlatitude		0 (0 %)	1 (1.6 %)	4 (6.6 %)	6 (9.8 %)
Polar with equatorial extension		0 (0 %)	0 (0 %)	6 (9.8 %)	8 (13.1 %)