

CHROMOSPHERIC FLARE ACTIVITY IN SOLAR CYCLE 20

Š. Knoška and J. Petrášek
Astronomical Institute, Slovak Academy of Sciences
059 60 Tatranská Lomnica, Czechoslovakia

Received 23 September 1983

ABSTRACT. The paper gives the daily values of the flare index for solar cycle 20, i.e. the years 1966 - 1976. Separate indices were calculated for the north and south solar hemisphere and for longitudinal zones of 30° from the central meridian.

ХРОМОСФЕРНАЯ ВСПЫШЕЧНАЯ АКТИВНОСТЬ В СОЛНЕЧНОМ ЦИКЛЕ №. 20. В работе приведены ежедневные данные вспышечного индекса в солнечном цикле №. 20, 1966 - 1976 гг. Вспышечный индекс отличенный для северного и южного полушарий и для отдельных зон по 30° в гелиографической долготе от ц. м.

ČINNOSŤ CHROMOSFÉRICKÝCH ERUPCIÍ V 20 CYKLE. Práca obsahuje denné hodnoty erupčného indexu za 20. cyklus slnečnej aktivity, roky 1966 - 1976. Erupčný index je rozlíšený pre severnú a južnú pologuľu Slnka a pre dĺžkové zóny po 30° od centrálného meridiánu.

1. INTRODUCTION

The call for a systematic review of flare activity, which would aid the study of solar-terrestrial relationships, led to processing available observational material on chromospheric flares. One of the main problems in this connection was the determination of the total energy emitted during a flare. Kleczek (1952) processed chromospheric flare observations from 1936, when flares began to be observed systematically, to 1949. He introduced a simple flare index (q) which takes into account the duration of the flare (t in

minutes) for each day, as well as the flare's importance (i). His flare index $q = i \cdot t$, in its final consequence, comes closest to expressing the total energy emitted during a flare. These problems were further studied by Knoška and Letfus who determined the flare index for the period 1950 - 1965. The present paper is in fact a continuation of this research and presents the flare index (q) for solar activity cycle 20, i.e. the years 1966 - 1976.

2. DATA USED AND METHOD OF THEIR PROCESSING

The flare index was determined from observational data on chromospheric flares published in the Quarterly Bulletin on Solar Activity (1966 - 1976). No further data were added to these in order to preserve the continuity and homogeneity with earlier studies of Kleczek (1952) and Knoška and Letfus (no published), of which this paper is a continuation. The flare index was determined for each flare published in the Quarterly Bulletin on Solar Activity using the formula

$$q = i \cdot t, \quad (1)$$

where i is the importance of the flare as shown in Table 1, and t is the duration of the flare in minutes.

Table 1

Importance	i	Importance	i
SF, SN, SB	0,5	2B	2,5
1F, 1N	1,0	3N, 3F, 4F	3,0
1B	1,5	3B, 4N	3,5
2F, 2N	2,0	4B	4,0

A review of flare activity is given for each day from Jan. 1, 1966 to Dec. 31, 1976, based on the flare index q . The first column contains the date. On days which are not given, no flare was observed on the disk. The solar disk has been divided in heliographic longitude into 6 zones of 30° , and q was calculated for each zone separately. In each zone, the index q is divided with respect to the solar equator. The symbol N is used to mark the index for the northern part of the disk and values with no symbol apply to the southern part. In this way, we obtained the distribution pattern of flare activity on the solar disk for each day of solar cycle 20. The last column (Σ) gives the value of the flare index for the particular day and the disk as a whole, and represents the sum of the values for the individual zones. If the position of an observed flare was not determined, the flare could not be assigned to any zone and was included in the sum Σ for that particular day. The sum is then marked with an exclamation mark (!).

The second part of the paper gives the total time of observation t_n for each day, 1966 - 1976, in hours, as adopted from the Quarterly Bulletin on Solar Activity.

The variation of quarterly averages of hourly values of the flare index q for the whole cycle was compared with the average quarterly values of the sunspot number R (Fig. 1). The average quarterly value of q was obtained

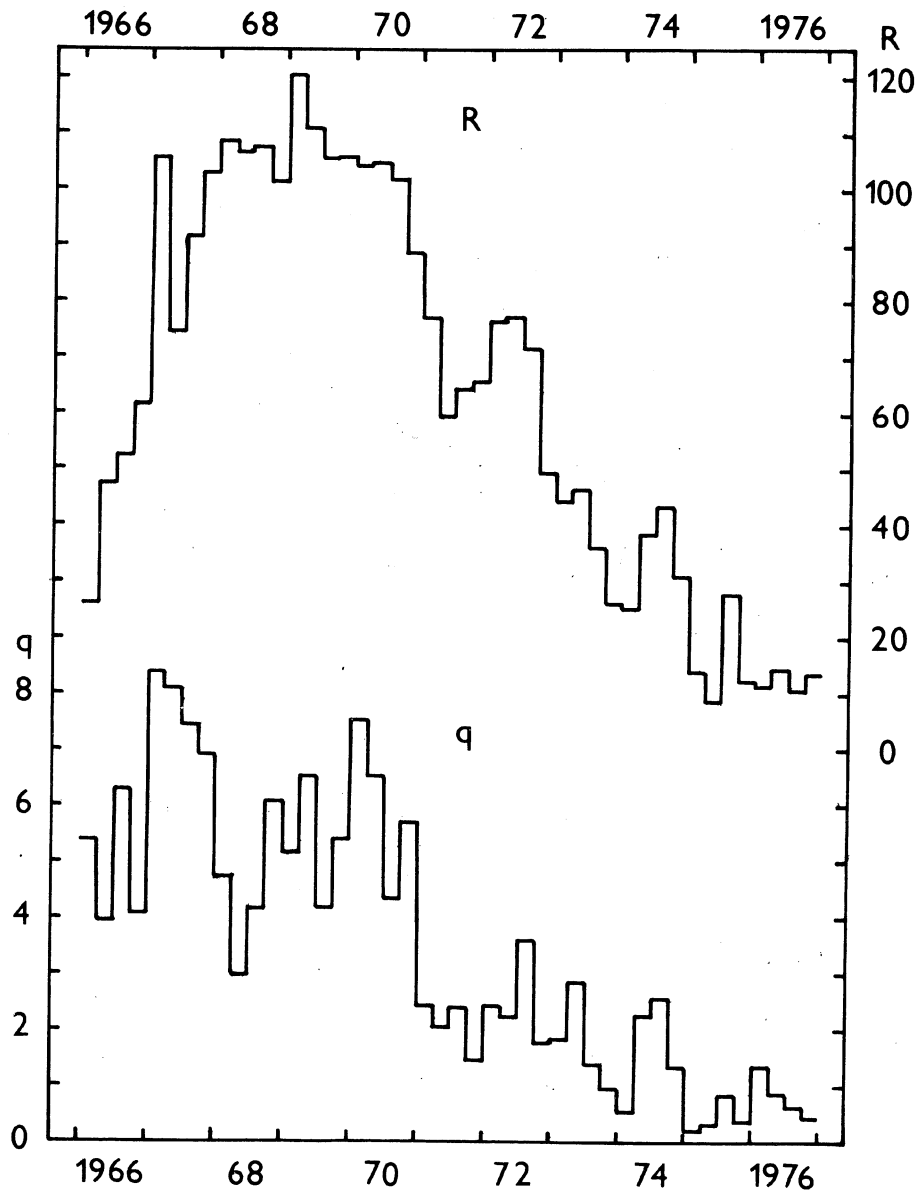


Fig. 1

1966

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
January	10					14N			14
	11							114N	114
	13		14N						14
	14		79N						79
	15			18N					18
	16			42N					42
	17			18N	362N				380
	18				355N				355
	19			35N	77N	81N			193
	20					44N			44
	22						27N		27
	23				73				73
	24						42N		42
	28		27N						15N
29						37		23N	60
February	2		89N	33N	57N				179
	3			10N					10
	5		7N						7
	7						62N		62
	10						74N		74
	11						100N		100
	12		29N					16N	45
	13							30N	30
	16							23N	23
	18			67N					67
	20				26N				26
	22		52N		69N				121
	23		31N				27N		58
	24						51N		51
	25							89N	89
	26							162N	162
	27		39N					167N	81N
28		309N				21N		192N	522
March	1					80N		36N	116
	2					146N		24N	170
	14		4N						4
	15		244N						244
	16		281N	197N					478
	17			292N					292
	18			161N	43N				204
19			327N	136N				463	

1966

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
March	20			943N				29N	972
	21			112N	675N				787
	22				177N				177
	23				54N	92N			146
	24					440N			440
	25					589N	114N		703
	26						376N		376
	27	248N					67N		315
	28	617N					33N		650
	29	703N	34N			32N			769
	30	38N	500N						538
31			502N					502	
April	1			311N					311
	2			238N					238
	3			13N	56N				69
	4				440N				440
	5				24N				24
	6	10N					83N	13N	106
	7					8N	45N	21N	74
	8					139N		172N	311
	9						78N	22N	100
	10						79N		79
	11						67N	242N	309
	12							127N	127
	13					131N		139N	270
	14			75N					75
	15			175N					175
	17				86N				86
	18				147N				147
	20			169N			8N		177
	21						25N		25
	22				26N				26
23						10N		10	
24					26N	41N	12N	79	
25	24N				28N			52	
26			20N					20	
27							188N	188	
28						12N		12	
29			17N				24N	41	
May	1	51N							51
	2		20N		14N				34

1966

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
May	3			16N			23N		39	
	4					12N		45N	57	
	6						123N	12N	135	
	8							3N	3	
	9							15N	15	
	10							29N	29	
	11		104N							104
	12		29N							29
	13		52N							52
	14					108N				108
	15							37N		37
	16							15N	31N	46
	17								8N	8
	18								6N	6
	19							68N		68
	20				142	64	118N			324
	21			34N					34N	68
	22		64N						6N	70
	23		22N	57N					35N	114
	24			163N	8N		81	81N		333
	25				297N		11	274		582
	26						26N			26
	27			12N						12
	28				64N			445N		509
	29			7N	32N				316N	355
	31		20	49N						69
	June	2				30N				30
		3						5N		5
		4							66N	66
		6		45N						45
		8							8N	8
9				25N					25	
10				25N					25	
11					187N				187	
12				42N	103N				145	
13					174N	28N		48N	250	
14						27N		12N	39	
15								5N	5	
16								30N	30	
19					22N			22		
20							11N	11		
22		29N						29		

1966

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
June	23					17N			17	
	24		38N				60N		98	
	25		32N			111			143	
	26						49N		49	
	27						85			
							213N		298	
	28			44N				83N	127	
	29				31N				31	
	30			12N	5N			40	57	
	July	1					11N		41N	52
2					30N	8N			38	
3						40N	4N		44	
4							66N		66	
5								10N	10	
6							159N	30N	189	
7							470N	18N	488	
8						10N	14N	293N	317	
9								380N	380	
10								252N	252	
11						47	18N	366N	431	
12			16N					442N	458	
13			60N	10			16N	32N		
			5						123	
14			165N				51	16N	232	
16							10		10	
17			10						10	
20							20		20	
21			20N						20	
22			39N						39	
23				88N					88	
24			34N		14N	18N			66	
25					122N				122	
26			111N	87N		40N			238	
27			97N	34N					131	
28			100N	494N					594	
29			281N	19N					300	
30				14N					14	
31			6N	6N					12	
August		1		25N			20N			45
		2			10N					10
	3			52N	115N	45N			212	

1966

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
August	4				42N	12N	30N		84	
	5						176N		176	
	6					17N		256N	273	
	7							101N	101	
	8							27N	27	
	9							6N	6	
	11				10N					10
	14				9	54N	144			207
	16		68N						28	96
	17		50N				134N		22	206
	18		28N	22N						50
	19		9N					34N		43
	21								65N	65
	22		88N	114N						202
	23		179N	81N	86N					346
	24		54N	59N			45N			158
	25						59N			59
	26			53N	110N					163
	27				91N			46N		137
	28		5N		264N	65N	105N		97N	536
	29		68N	53N			290N		241N	652
	30						89N			89
	31							523N		523
	September	1						70N		70
		2						512N		512
		3						4N	46N	50
		4							286N	286
		5		192N						192
		6		24N						24
		7		48N						48
		8			67N					67
9							9N		9	
10				86N	91N			12	189	
11					14				14	
12			70N		33N				103	
13								75	75	
14			92N				17N		33	142
15				12N						12
16			206N	340N				18N		564
17				39N	22N				130N	191
18				81N					14N	95
19				11N	147N	71N			28N	257

1966

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
September	20			92N	186N	639N	4N		921	
	21		37N	123N	25N	14N	22N	38N	259	
	22		14N						14	
	23			99N	90N				189	
	25				94N			8N	102	
	26				16N			61N	77	
	28		50						50	
	29						67N		67	
	October	1					54		209N	263
2			55N			6		97N	158	
4			40N						40	
6				156N					156	
7			43N			86			129	
8					49N				49	
9						146N	86		232	
10							19		19	
11				66N				55	121	
12			53N						53	
13			39N	130N					169	
14				188N			90N		278	
15				96N	99N				195	
16					85N				85	
17					272N				272	
18							8N		8	
20			97N	70N				45N	212	
21				128N				31N	159	
22				12N					10N	22
23					41N	18N			164N	223
24					15N				24N	39
26						16N	27N			43
27						60N				60
29								10N		10
30									17N	17
31			14N							14
November		1				50N				50
		2						24N	34N	58
		3			10N					10
		4						17N		17
		5		14N	16N	118N				148
	6			86N					86	
	7		27N						27	

1966

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
November	8		28N						28
	9						16N		16
	10			4N					4
	11			10N	14N	6N			30
	12				29N				29
	14		160N			99N			259
	15					34N	22N		56
	16		16N				9N		25
	17		92N				87N		179
	18							21N	21
	19			10N				8N	18
	22				165N	37N			202
	25					22N		8N	30
	26							90N	90
	28				11N		80N		91
	29							29N	29
	30					47N			47
December	1				20N				20
	2						10N		10
	3		135N						135
	4						175N		175
	5			55N				60N	115
	6			46N					46
	7		106N	28N				15N	149
	8		68N	75N				10N	153
	9		11N	269N	21N				301
	10		107N	270N	115				492
	11		44N		28N	29			101
	12				23N	98			121
	13			125N			35		160
	14					9N	12		21
	15				217N				217
	16				35N				35
	17				52N	359N		22	433
	18					60N		34N	94
	19							25N	25
	20		65N						65
	21		50N	26N					76
	22		177N	12N					189
	23		160N		72N				
			18						250
	24		107N	18N					125

1966

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
December	25			292N					
				10					302
	26			8					8
	27					26N			
						6			32
	28					28N		80N	108
	29				25N				25
	30		27N		34		45N		106
31					113	50N		163	
1 9 6 7									
January	1			53N	113				166
	2		20	22N		61			103
	3		21N		42N	26N	140	33N	
						95			357
	4		23N	17N	70N		61		
			23						194
	5			290	73N		10N		
							18		391
	6							11	11
	7			16N				65	81
	8				36N				36
	9				11N			40	51
	10							193N	193
	11		10					4N	92N
								543	22
	12			39					34N
									20
	13						184N	111N	
								184	479
	14		74N				67N	136N	277
	15		22N				116N		138
	16						29N	5N	34
	17		16N	8N				13N	
		6						43	
18		65N	63N					128	
19		30N	42N					72	
20		88N					9	97	
21			259N					259	
22			57N	35N				92	
23				55N		18N		73	

1967

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
January	24				103N					
					15				118	
	25		30N							
			18						48	
	26		29N			104N	10N		143	
	27						96N		96	
	28			51N	68				119	
	29				156			30N	186	
30			20		11			31		
31		72N		47N	9		86N	214		
February	1		37N				20	15N	72	
	2		43N		15				58	
	3		102N							
			28						130	
	4		19N	388N					407	
	5				85	50	17N		152	
	6		113N	72N					185	
	7		164N	65N	221N				450	
	8		67N		50N	55N		30N	202	
	9				103N				103	
	10		20N						20	
	12			10N	57N			8N	30N	105
	13						780N	55N	16N	851
	14		28N		13N	4N				45
	15		47N							47
	16		104N	18N					12N	134
	17		44N	27N	41N				17N	129
	18			411N						411
	20		17N							
			16							33
	21		211N							211
	22		649N	86N			181N	5N		921
	23		10N	254N					39N	303
	24			218N	134N					352
	25				462N					462
	26				129N					129
	27				226N	214N				440
	28				125N	31N			15N	171
March	1		12N	74N	56N	13N	36N		191	
	2		22N	45N	12	32N	156N			
			5	21					293	

1967

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
March	3		6N		33	40N	70N	98N		
			26						273	
	4		94		7N		14N	343N		
					113				571	
	5				7	19		68N	94	
	6			205N	130N			27N	362	
	7			38				30	68	
	8							46	46	
	9						78N		78	
	10						32N		32	
	11			5N				6N	19N	30
	12								26N	
									16	42
	14			23						23
	15			19					70	89
	16		28N						50	78
	17			30N	30					60
	18				73					73
	19			56N		10				66
	20		70N	49N	70N	9				198
	21		81N	24N		10N				115
	22		345N	23N						368
	23		12N	198N					10N	220
	24			57N					26N	83
	25		35		190N	6N			19N	250
	26		55	38N	304N	129N	39N	13N		605!
	27			35	11N	217N		11N		274
	28					49N	59N	39N		
						71				218
	29		40N	91		97N	98N			
								29		355
30				4		251N	12N			
						102			369	
31			45N		18	87N	365N			
						34	28		577	
April	1			82N	86		224N			
							197		589	
	2				10		53N			
							164		227	
	3				140N		10	165	315	
4			117	20		50		187		
5		24N	44					68		

1967		E ← → W							
	1	90°	60°	30°	0°	30°	60°	90°	Σ
April	6						57N		57
	7				22N		25N		47
	8		80N			33	40		153
	9				33N		202		235
	10					33N	95		128
	11					96N		169	265
	12		15N				25N	60	
							50		150
	13						110N	19	129
	14							239N	239
	15			29N					29
	16		21						21
	17						362N		362
	18				13N		12N		25
	19		11N	40N	18N	163N		40N	272
	20			59N					59
	21			24	7N				31
	22		10N						10
	23		12N	16N	17N		100N	178	
					25		5		353
	24					26N		90N	116
	25		10	49N		53		99	
								70N	281
	26		222						222
	27		56		105N		6N	29N	
							50	160	406
	28		9			142	80N	157N	
								39	427
	29		12N	6N		48N		148N	
			24	130				40	408
30		45N	216			24N	144	429	
May	1	24N	83	59		38N		204	
	2	26N				10N		36	
	3		435N	11		128N	21N	595	
	4			263N				263	
	5					12		12	
	6						210	210	
	7							15	
								33N	48
	8						103	168	271
	10							168	168
	12							47N	47

1967

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
May	14				67				67	
	15		74						74	
	16			5N	9				14	
	17		21N	14	12N				47	
	18		200N		14	12	8		234	
	19		181N		117	6			304	
	20		129N	139N				49N	317	
	21		36N	434N	2N			26	498	
	22		14N	54N				24	92	
	23		160N	30N	591N				45	826
	24		125N	137N	124N	27N	20	46		
			114							593
	25		11		114N	285N				
					51					461
	26			9N	134N	334N				
						30				507
	27		46N	21N	65N	133N				
			9							274
	28		11N			50N	354N			415
	29		63N		10N		138N	34N		245
	30		53N				22N	18N		93
	31			53N				6N		59
	June	1		25N	102N	8	57N	12N		204
		2			121N		158N	47N		326
		3		34		86N	4N	89N		
							32			245
		4					289N	71	6N	
									182	548
		5						320		320
		6						86N		86
		7						24N	51	75
8								4N	4	
9			19N						19	
11				59N					59	
13							40	48N	88	
14		42N						42		
15							181	181		
16		71N					42	113		
17		148N	10N					158		
18		167N	144N				16N	327		
19		89N						89		
20		7N	4N					11		

1967

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
June	22		100N	133N					
			73	26					332
	23		10N	283N	24N				
				12					329
	24				14N	16N		94	
						18			142
	25				55N				55
	26			2N				26N	28
	27		75N						
			48						123
28				15N	16N	69N	25		
					39				
29						80N			
						18		98	
30		22N				84N	14N		
						10	97	227	
July	1			7N				196N	203
	2		129N				10N	44N	
								8	191
	3			19	40			26N	85
	4				72	126		20N	218
	5		24N	38N			94N		156
	6			21N				74N	95
	7		26N		70N			119N	215
	8		7N					31	61N
	9				19N				80
								30N	129
	10				18N	13N			31
	11							118	118
	12		90	15					105
	13			10				95N	81
	14			80				40N	16N
	15				20	45N			21N
	16				6			26N	
	17		12	18N				8N	
				74					112
	18							7N	7
	19		16	9		30			55
	20		14N	126				24	164
21		147N	12	16			15	190	
22		425N		83				508	
23		270N	12N					282	

1967

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
July	24	221N	434N			38			693
	25		434N						434
	26	9	118N	120N			15	7N	269
	27	28N		196N					224
	28	15	48N	228N				241	532
	29			175N	207N			303	685
	30			155N	305N	159N			619
	31	18N	68N	39N	199N	309N			633
August	1				38	5N	151N	144N	338
	2					65N	33N	122N	220
	3	56N					15N	75N	146
	4	365N						74N	439
	5	16N	20N	65N				59N	160
	6	55	121N			9N		10N	195
	7	35	45N						80
	8	22	19						41
	9		230					78N	308
	10					7N	106N		113
	11					18N			18
	12					206	52N	44N	302
	13							72N	72
	14	20						82N	102
	15					27	117		144
	16						11		11
	17	15				157N	12N	14N	
								39	237
	18	175N		122		90N		8N	395
	19	164N							164
	20	154N	35						189
	21	6N	304N			4			314
	22		133N						133
	23		344N	15N					359
	24		20N	186N					
				26					232
	25			6N				225	
				134					365
26					112N				
					120			232	
27					61N				
					45			106	
28						154		154	

1967

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
August	29						550N		
							106		656
	30			38N				144N	182
	31							28N	
								12	40
September	1		23N					63N	86
	2				74N			10N	84
	3		8	18N	54N			8	88
	5		58		9				67
	6		50		15				65
	8			12N			16N		28
	9		85N					33N	118
	10				3		116N		
							8		127
	11							17N	17
	12						27N	42N	69
	13							27N	27
	14						18		18
	15		20N						20
	16		82N						82
	17		68N					187N	255
	18								372N
	19			54N					78N
	20								12N
	21								8N
	22			32			34N		10N
	24							24N	8
								18	50
	25		58N						52
	26		11N						48N
	27		18N						56N
			32						
	28			194N					16N
				10					
	29			25N					
30		42		45N					
October	1		7		107N			7N	
	2			21			19N	33	
	3		19			13N		42	
	4						33N	10N	
	5				55	72			

1967

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
October	6				60N	19	156	35	270	
	7				4		232	4N		
	8							65	305	
	9				57N			176	176	
	10						14N		8	65
	11						28N			14
	12						31N			28
	13		100N					56N		31
	14							158N		156
	15							26N		158
	16					15				26
	17						10			15
	19		135N	55N						10
	20			69N	302N				16N	190
	21						108N	59N		387
	22			25N	186N	15N	6N			167
	23			70N	18N	24N			195	232
	24				67N	106				307
	25					121N				294
	26					150N	18N			168
	27						110N			110
	28		12N				45N	68N	11N	
	29		29							165
	30		65	128			7N		176N	376
	31		38				10		199N	247
	1		209	17N					143N	
	2			26						395
	3			90	153			46N		289
	4					165				
	5						83	120N	4N	165
	6						10		50N	207
7							44	15N	60	
8							64		59	
9							21		64	
10			91				14	67N	21	
11								8	180	
12								13	13	
13								116	116	
14								60	60	
15		22N	48N			81N			151	
16		52N	312N	6N	4N				374	

1967

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
November	15						70N		70
	16		547N						547
	17	13N	175N	130N	8N				326
	18	58N		10N	30N	80N			
						21			199
	19	16N	73N			52N	110N	54N	305
	20	365N					36N	49N	450
	21					12N	7N	79N	98
	22	6	45N						51
	23						37N		37
	24			150N					150
	25	28	55	48		112N			243
	26					47N			47
	27			8			125N		133
	28					35	12N		47
	29						63	16N	79
	30						60	101N	
								4	165
December	1						115N		
							210		325
	2						7N		
							117		124
	3						15		15
	4	10					51	36	97
	5	29N	60N					18	107
	6	48	28N						
			43						119
	7	12		12N					24
	8		18						18
	9		22	88					110
	10			89	10	22N			121
	11			9	124	90N			223
	12					92N			92
	13		53N			20N	120	59N	
						10			262
	14	8N	203N				52		263
	15	91N		6N			179	53	329
	16	309N		166N				7N	
								18	500
	17		9N	140N	139N	42N	57		387
	18		66N	14N	103N	77N	42		302

1967

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
December	19					36N	7N	17N	
	20						12		72
	21				45N			34N	59
	22			16	14	10N		25N	89
	23			6N	23	59N	8N	13N	61
	24			12		16	19N		109
				18N					65
	25	9	4	12			24N		49
	26	69		240				25	
								17N	351
	27	17	52	24	121				214
	28		65		188				253
	29	30	121		116			66	333
	30	12					31	2	45
31	7		6	40			10	63	

1 9 6 8

January	1	19		13	55	7	37		131
	2	47			17				
		25N							89
	3	8N				37	10N		55
	4	86N	35N			10			
		32							163
	5	30N	89N						
			20						139
	6	53N	4N	15				8	
			52						132
	7	28N	108N	37N					
				58					231
	8	192N	65N	3N					260
	9		14N	102N	55				
			25					196	
10		12N			7N				
					42			61	
11			10N	35N	55			100	
12			27N		74	12		113	
13	7			19N	59N			85	
14				39N	211N	44		294	

1968

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
January	15						188N	84N	
								24	296
	16		4N				57N	44N	105
	17		41				33N	36N	110
	18		97	3N				11N	111
	19		12N	4					16
	20		9N	12	11N			42N	74
	21			8N	18N				26
	22		8N				52		60
	23		67N	20N					87
	24						10		10
	25		6N					52N	58
	26			78N			6N	16N	100
	27			34N				28N	
								24	86
28			158N	14N			12N		
			16					200	
29			74N	90N			22N		
							11	197	
30		8	139N	70N	108N				
			12					337	
31		30N	13N	16N	107N			166	
February	1		28	10	282N	92N			412
	2			53N	95N	211N			
				22					381
	3						130N		130
	4					62N	6N	20N	88
	5				9	12N	24N	66N	111
	6					22N			
						8			30
	7		24N						24
	8		71N						
			12						83
	9		15N	21N					36
	10			80N					
				193					273
	11			60N	11N				71
12				45N			7N	52	
14				13N	26N			39	
15		9N		22N	106N				
					75			212	

1968

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
February	16				25N 78		26N		129
	17		49N	8N		22N	84N		163
	18		4N			40N	11N	146N	
			65			18	124		408
	19		4					264	268
	20		37N				20	23N	80
	21		28N	8N				15	
			11	53					115
	22		13N	53N	38				
			16						120
	23		81N	31N	16				
			6						134
	24		10N	6N	19N	22			
				9					66
25		58N	16N	18N	86		30		
				40				248	
26			59N	130		32	72N	293	
27		2		4		138		144	
28					30		6	36	
29				11N				11	
March	1						11N		11
	2			29		64	14N	22N	
							8		137
	3			42					42
	4			34				25	59
	6				9				9
	7				18N	54			72
	9				10N		6		16
	10			9			10		19
	12				14		5N		19
	13		11N					3N	
								8	22
	14			25N			44		69
	15			56N					56
16				11				11	
17				48N				48	
18		11N				6N		17	
19				11N				11	
20						12N		12	
21		6	92				81N	179	
22			2		109			111	

1968

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
March	23			51	20				71
	24				88	90			178
	25					140			140
	26				38N		14		52
	27		8	32N			140	54	
				18					252
	28			68			54	59	181
	29				26N				26
	30		8	4	12				24
	31			12	14	18			44
	April	1			16	10			
2							68N		68
3							41N		41
4								12N	
								8	20
5						12N	10N		22
6			20N					30N	50
7			40N						40
10				8N		12		10	30
11				10N				8N	18
12				36	12N			34N	82
13					16N	6N			22
15				12		13N	6	35N	
								4	70
16				18		5N		15N	38
17				25					25
18							10N		10
19						10N	15N	29N	54
21								10	10
23				10N					10
24					24N		25N	49	
25		18			20N	38N		76	
26						4N	16	20	
27			148			8N		156	
28		25N	17N				35N		
			28				4	109	
29		20N			9N			29	
30		34N			5N			39	
May	1		24N	4N		20N			48
	2					13N			13
	3		7N	67N	6N	37N			117

1968

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
May	4			26N	39N		42N		107	
	5			95N	15N	10N	10N		130	
	6				16N				16	
	7		4N				8N		12	
	8						26N		26	
	9			6N			61N	4N	71	
	10						45N	44N	89	
	11							10N	17N	27
	13								14N	14
	14		14N	11					6N	31
	15		56				24N			80
	16			6						6
	17		7N	4				12N		23
	18		16N	56				9N		81
	19			16N	12					
				46						74
	20			8N						
				8						16
	21				8N					8
	22				32N	61	48N			
							20			161
	23					43N		12		
						10				65
	24			48		12N		30		90
	25		66N	8N				16N	7N	97
	26		6N	60N				40N		
				10						116
	27		4		38N					42
	28		22				8N		30N	60
	29				20N	8				28
	30			14	47	25N	34			120
31			26	77						
				45N					148	
June	1			36N	4N					
				35					75	
	2			62	18N				80	
	3		6	28N	27N		12			
					45				118	
	4		58	12		120		4N	194	
5		24N	43		14			81		
6			9	188				197		

1968		E ← → W								
	1	90°	60°	30°	0°	30°	60°	90°	Σ	
June	7		9N	7N	46N		30N			
					139		13		244	
	8				40	12		17	69	
	9			180N		26N		24		
						420			650	
	10				37	15N		9	61	
	11				97	46		8		
					8N				159	
	12					30			30	
	13		6	31	6				54	97
	14		7	40			32			79
	15			6				39		45
	16				92N					92
	17				92N		21	14	2N	129
	18					33N				33
	19					144N	30			174
	20					90N	52N			142
	21				21		22N			43
	23		11N	6N				27N		
								10		54
	24							46N	2	48
	25		5			15N		36N	7N	63
	26		120	18			7		38N	183
	27					12			47N	59
	28						28N	22		50
	29					10	22N	22		54
	30					34	9N	45N	27	115
	July	1						14N		14
		2			3			18N	4	25
		3							53N	53
4								52N	52	
5			80N	11					91	
6			126N						126	
7			115N	14N					129	
8			27N	287N	11N				325	
9				233N					233	
10			8	71N	42N				121	
11					58N	60N		4N	122	
12					110N	230N			340	
13						9N			17	
						8				
14			18N		41N			59		

1968

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
August	21					59N	216			
						32			307	
	22				12	36	88	26	162	
	23				14	24N	14N	81	133	
	24				34	22	14N		70	
	25		33			18		12	63	
	27				13				13	
	29		76N					25N		
			7						108	
	30		23N	36N					10N	69
31					11			12N	23	
September	1			26N	18N			38N		
				6					88	
	2			53	32N				85	
	3				118				118	
	4				8N	111N				
					14	190			323	
	5					37	32N		69	
	6						120N			
							16		136	
	7		6	12N			10N			
							64		92	
	8		16				36	74	44	170
	9		69			46	8N		69	192
	10		53	8				6		67
	11			52			59			111
	12			24N						24
	13			12N			8	22		42
	14		42			10N			12N	64
	15		8			22N				30
	17		29N	10				65		104
	18							12N		
								46		58
	19		17N					44	20	81
	20			18N				16N		34
	21			8N	17N				6	31
	22		105N	20N	36N					161
23		84N		14					98	
24		6		6N					12	
25		47	26N	15N					88	
26			114N	28N			90N	44		
			39						315	

1968

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
July	15		36						36
	16						42N		46
	17						4	30N	30
	18		46N			10N		22N	78
	19			16				16N	32
	20			118N			14N		132
	21						16N		16
	22							31N	31
	23				5		36		41
	24				9				9
	25					16	24	8	48
	26			42			12N	5	59
	27						12	26	38
	28			60N			39		99
	29				94N				94
	30		22N		18N	58N		8N	106
31			15N		10N			25	
August	1					8N			8
	2		69N	6N					75
	3		58N				44N		114
	4						12		120N
	5			26N				38N	61N
	6			31N	47N			23N	28
	7				28N				283N
	8				283N	152N	14		47N
	9					47N			6N
	10						6N		20N
	11		33		6N		20N	11N	6N
	12		29N				6N	6	37N
	13		32N						11
	14		14N	69			6N	66N	20
	15			10				55	175
	16				18			24	65
	17			36	17		2N		42
	18						35		90
	19					52			52
	20			14		20			20
						129		143	

1968

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
September	27		36	14N	24N				74
	28		322	52N	23N	7N			426!
	29			8					425
	30			21	296N	108N			198
October	1		10N			43	80N	6N	139
	2		50N	40					90
	3			59N		59N	352	64N	534
	4			175N				114N	289
	5			40N	20N			36N	96
	6				39N	78N	14N		131
	7					8N	6N		14
	8		6			11N		8N	25
	9						12N		
							6		18
	10			24				29N	53
	11		16N					29N	11N
			18						69
	12							50N	
								38	88
	13			18N					
	15						39		
	16		104N						
	17		81N		4N	40N			
						4			129
	18		174N	16N		10N			
	19		8N	242N					
			4						254
	20			328N				3N	
	21			90N	430N				
				14					534
	22		77		88N			14N	
	23		6	277	61N	16N	10		
					35				405
	24		7	104	29	15N			155
25		38	32	20			54N	144	
26			92	6N					
				335				433	
27				296			8N	4N	
				36	16			6N	
28		10						68	
29		35	27	48N	348			458	
30					398	408		806	

1968

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
October	31					2	379		381
November	1				16N		272	5	293
	2				118N		12N	232	
							40		402
	3			11N		20	6N	124	161
	4	8N		8N		5		162	183
	5	24N				8	6		38
	6	28N					5		33
	7				49			13N	
								2	64
	8			10N				59	69
	9				20N			38N	58
	10				18N		90N	46	154
	11			39	24N	29N			92
	12			10N		90N		62N	162
	13	37N			12	52N			101
	14	93N					22N		115
	15	35N			48N	8	20N		111
	16			34N			35N	16N	85
	17	4		28N				15N	47
	18				25N			98N	133!
	19	19				4 N			23
	20	32		99					131
	21					28N			28
	22			74	10				84
	23			12	22				34
	24			134	47				181
	25				48				48
	26				10			16	26
	27						30		30
	28						11		11
	29	2N							2
	30	104N							
		7							111
December	1			4N			12	16N	
								56	88
	2	369N		12N				17	398
	4	19N			67N		45N		131
	5					18N			18
	7					21N			21
	8						47 N		47

1968

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
December	9		17	10			80N		107
	10			40				22N	62
	11		24	48	22		8	17N	119
	12		7N		6		6	16N	35
	13							3N	3
	14							62N	62
	15						2	20N	22
	16						28N		
							30		58
	17						40N	124N	
							50		214
	18							142N	142
	19						20	29N	49
	20		14N				12		26
	21		121N		11			127N	
			42						301
	22		25N		42		54	19N	140
	23		14N	34N			10		
				60					118
	24		36	130N	23N	50	60		
				2	8				309
	25				22N		163		
					26				211
	26			4	42N		82	10	138
	27				162N	16N		88	
					23				289
	28		30N				36N	60N	11
			6					15	158
	29			8			16	190N	214
	30			7N	27N	30N	86N		
						10			160
31				4N		51N		55	

1 9 6 9

January	1						5N	5
	2		16N		4		36N	
							23	79
	3		86N	25N				111
	4		10	300N				310
	5			24N				24
6			19N	58N			77	

1969

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
January	7		98	50	152N				300	
	8			131	20				261	
					110N					
	9			168		10N			178	
	10			6	8	42N	12N	40N	108	
	11		18		21	34N			73	
	12						19N			
							34		53	
	13						32	16N	48	
	14		21N			10	6	28N	65	
	15				15		52N	16N		
							16		99	
	16							32	32	
	17		46N	69N				3N	118	
	18			110N				11	121	
	19		56N						56	
	21			118N					118	
	22			8N		22N			30	
	24				40N	432N			472	
	25				29N	75N		8N	112	
	26					104N	44N		148	
	27		12N			38N			50	
	28						18N	120N	138	
	29						26N	38N	64	
	30							34N	34	
	31		6N					8N		
			6						20	
	February	1		71N					33N	104
		2		48N	10		18N		66N	142
		3		11N	48		22N			81
		4			16N	42N		4N		62
5				30N	40N				70	
6				28N	75N				103	
7				6N	12N	76N				
						18			112	
8					44N		13		57	
9					9N	16N	14		39	
10						12N	18N	5N		
								8	43	
11							157N	42	199	
12						8N		8		
13							76N	76		

1969

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
February	14							10N	10
	17				12				12
	18					12			12
	19			45N					45
	20			82N	22N			6	110
	21				16N		12		28
	22				40N	38N			78
	23		24		16N	132N			172
	24		57		6N	72N	202N		
							8		345
	25			59		16N	463N		538
	26		34N	29		22N	228N		
							2		315
	27				148		9N	214N	371
28		63N		263			32N	358	
March	1			7N	15	31		58N	111
	2		23N	102N		72			197
	3			45N	40	12			97
	4				16N				16
	5		36N		15N	10N			
						16			77
	6				4N	34N		7	45
	7		11			52N			63
	8		6N			22N			28
	9						78N		78
	11						27N		27
	12		23					206N	229
	13			48				126N	174
	14		25N	28	8N			6N	67
	15		76N						76
	16		12N	10N	63N	40N			125
	17		35N	60N	10N	13N	8		126
	18			38N	96N				134
	19			32N	18N	17N			
			19					86	
20			14N	72N	24N			110	
21				594N	38N	8			
				46				686	
22				34N	114N		20		
				8	14			190	
23				12	218N				
					32			262	

1969

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
March	24					4N	36N		40
	25		31				174N	3N	234
	26		29N	22			133N	37N	221
	27		28N	6N				272N	306
	28		30N					62N	92
	29		36N	118N				6N	160
	30			44N	48N				122
					30				
	31				31N	4N			54
						19			
April	1				8N	10N			18
	2				20N	174N			194
	3				50N	56N			106
	5		17				50N		67
	6			10N			43N	4N	57
	7				16N				16
	8							6N	6
	9		34N	28	15			46N	
			44						167
	10			5	12				17
	12			4N				18N	22
	13		18N	78N	34				130
	14		114N	156N	40N	18			
			5		5				338
	15			74N	152N	27			253
	16			19N	169N	24N			
						16			228
	17				17N	63N			80
	18			45N	158N	34N			237
	19				84N	114N		22	220
	20				52N	146N	36N	28	262
	21					125N	238N	36N	
						22			421
	22					15	8N	30	53
	23		12N				166N	84N	
							174		436
24		23N				41N	172N		
						12	15	263	
25			26N					26	
26			171N	50N			26N		
			6					253	

1969

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
April	27			31N				18	49	
	29		49N		36N	18N	45N		148	
	30					51N			51	
May	1		29						29	
	2		74	10N			124N		208	
	3		22				21N	35N	78	
	4						47N	70N	117	
	5		56	7	34			125N	222	
	6		93		5				98	
	7			54		12			66	
	8			108					108	
	9		8		51	29			88	
	10		33N						33	
	11			18N					18	
	12		28N	318N	19N					
						115				480
	13		4N					10		14
	14				41N	56N				
						22				119
	15		10N		18N	5N				
						162				195
	16					14N	6N			
							32			52
	17		58N				8N	31N	40N	
			16							153
	18		300N	9				440N		
			12							761
	19		220N	8				11	12N	251
	20		40N	42N	67					149
	21			38N	163				4N	205
	22		72N	126N	173N	6				
				7					384	
23						16N				
						16			32	
24			46N	18N	10N					
					82				156	
25		10N		32N	141N	6N				
						90			279	
26		80N		19N	30N	56			185	
27		20N			42N	30		21	113	
28			15N			152N	34N			
							18		219	

1969

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
May	29						250N		
							126		376
	30				4N		62N		
							52		118
	31				14N				14
June	1		23N						23
	2			8					8
	3		56N	26N					
			56						138
	4		20N	12N					32
	5		206N	529N					
				39					774
	6		107N	31N	146N				
				445					729
	7			84N	16N				
				148					248
	8			4N	38N				
				8	98				148
	9				141N	12N			
					58				211
	10				33N	38N		52	
					12	20			155
	11				17N	240N		15	
						63			335
	12					14N	48N		
						28			90
	13		11N				16N	43N	
			260						330
14							28N	24N	
								458	
15								203	
16								10	
17					14		9N		
								23	
18					73N	10	22N	8N	
								113	
19					92N		16N		
					32			140	
20		19N				80N		4N	
						15			
21							28N		
								55	
22							40N		
								40	
23		14					73N		
								87	

1969

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
June	24		33		27N		16N		76
	25		11					6N	
								20	37
	28		4N						4
	29		22N						22
	30		30N	7N				28	
		40							105
July	1		53			7		6	66
	2		22		9N				31
	3			60	20N		74		154
	4			106N			6		
				16					128
	5				88		16	8	112
	6		8N		118	20			146
	7		10N		23	40N	13N		
			46			47			179
	8		11N			94			105
	9				8N	32		24	
					70				134
	10			16			123		139
	11			62			15		77
	12					20N		68	88
	13					14N		25	39
	14					41N		8	
						8			57
	15						46N	10N	56
	16						94N		
							12		106
	17						12	8N	
								32	52
	18							8N	
								29	37
	19						14N		14
	20						4N	23	27
	22							28	28
	23		6	15					21
	24			8					8
	25		10	12	12				34
26		16	28					44	
27					23		6N	29	
28			5N	40					
			31					76	

1969

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
July	29			64N	71	20			155	
	30		6		8		17		31	
	31						48		48	
August	1			20	54	209			283	
	2					108N	47			
						206			361	
	3		8N			26	31		65	
	4		24N	76	46		20N			
							23		189	
	5			23N			18	44	85	
	6				32N	34		4	70	
	7				108N			10	118	
	8		4				20N	6	4N	34
	9		36							36
	10							43	14N	57
	11			31N			27	54	24N	
									125	261
	12		10					24N	116	150
	13		11						13	24
	14			34	20					54
	15			20						20
	18					12		88		100
	19						10			10
	21		103N							103
	22		54N			20		20		94
	23		146N	18N				16		180
	24			214N						214
	25			66N						66
	26		64N			125N				189
	27		20N			52N				72
	28					74N	10N			
							23			107
	29			90N			25N			115
	30							6N		6
31						30			30	
September	1							15N	15	
	2		42N			46N		23N	111	
	3					12	62N	5N		
							14		93	
	4				60N	62	96N	16	234	
5		4				22N	112N	142		
							4			

1969

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
September	6			42			29N		71	
	7			78	30N			98N	227	
	8					9N		21	9	
	9				22	7N			29	
	10	46		9		11		18N	84	
	11	8		24		12	20		64	
	12			5N			14		24	
	13			65N			57		122	
	14	54							54	
	15	33			11	133		45	222	
	16	7N			7	259			273	
	17					130	58		188	
	18					23	44		67	
	19			32N					32	
	20	5							5	
	21	65N					46	12	123	
	22				5			32	37	
	23			50N	34	12N			96	
	24	51N		44N	6	24N			213	
	25	88		20N	18N	366N	51N		511	
	26			27	6				77	
	27			5	16N				535	
	28				56			55N	40	
	29				480N			40N	27	
	30			88				27N	158	
	October	1	60N					61N		121
		2	114N			15			94N	223
		3	12N	12N	8N				26N	75
		4	40N		10	7				68
		5			183	43N			10	236
6				18N		62N			80	
7				16N		19N			35	
8				12N		16N	44N		72	
9							124N		124	
10						18N		14N	32	
11							12N	77N	89	

1969

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
October	12		5N				10	16N	31	
	13		19N				6		25	
	14					38		74N	112	
	15			6N			9		15	
	16							17N	17	
	17		8N						8	
	18					10		8N	18	
	19		120N						120	
	20		156N	30N					196	
				10						
	21		8N	12N	48N				77	
			9							
	22			166N					180	
				14						
	23		6	23N				22	115	
				64						
	24		6N	10N	161N				211	
				20	14					
	25				12N	10N			46	
					24					
	26			8	15	31N			54	
	27		99N			65N			164	
	28			12N		18N	72N		102	
	29			16N		14	6N		36	
	30			31N			100N		131	
	31							44N	44	
	November	1			11N				33N	44
		2		20N			10		78N	108
		3		27N					38	65
		4		270N					12	282
		5		95N	109N					204
6				52N	12N				64	
7			10	32N	194N				236	
11							6N		6	
12				4N		4N	54N		62	
13					18		18N		36	
14			8N	11N			16N		35	
15			38N						38	
16			75N					26N	101	
17			9N	62N			34		105	
18			16	656N					672	
19				292N	298N			22	612	

1969

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
November	20			32N	370N				419
				17					
	21				112N	268N			380
	22					350N		20N	370
	23		8			383N			391
	24		23			25N	336N		384
	25		41			18N	241N		300
	26			8			16N	204N	228
	27		11N	101				156N	268
	28			26	25		28	80N	159
30						12	21N	33	
December	1			17N	12N	46N			75
	2			93N		15			108
	3						111N		111
	4					60N			60
	5				35N		24N	104N	
							33		196
	6				116N	36	16	60N	
								16	244
	7					12N		12N	24
	8					26N	39		65
	11		17N						17
	12		30N						30
	13		68N	28					96
	14		120N	18N					
				54					192
	15		102N	68N	16				
				34					220
	16			11N	16				27
	17		10N	270N	123N				
					164				567
18				58N				58	
19		11N				44N			
						137		192	
20			34N			6N	42N		
						15	66	163	
21							16	16	
22			33				12	5	
23			38				77N	15N	
24					82			31N	
25					8	21N			
26						46	16	62	

1969		E ← → W							
	1	90°	60°	30°	0°	30°	60°	90°	Σ
December	27				20N	8	68		96
	28		35N		6			23	64
	29		26N				72	36	134
	30			32N					32
	31				61N		6	11	78
1 9 7 0									
January	1					47N	17		
						95			159
	2		15N	320N	48N				383
	3					37N		4	41
	4			30N				55	85
	5					77N	148N	54	279
	6				55				55
	8				58N				58
	10						22		22
	11		15	52			49		116
	12		42	34				25	101
	13		50		30	54			134
	14		8	29		30		29	96
	15		41N			76		38	
			24						179
	16		8N		13	9	27		57
	17		35	69N			32		136
	18				12N		90N	35	
							48		185
	19			6N					6
	20		14		42				56
	21			37N			12N	5	54
	22		12N				10		22
	24							22	22
	25				52				52
	26				106	45	18		169
	27				40	70			110
	28				15	258	175		448
	29					135	171		306
	30		8			56	262		326
	31						52	169	221
February	1					32	33	65	
	2				58	39N	140	237	

1970

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
February	3							52	52
	4					60N	28N	14	102
	5							7N	7
	6				128	6	32		166
	7					16			16
	8			59N	14N	59			146
					14				146
	9			20	83N	18	2		123
	10	10			123N	18N			177
						26			177
	11			14N		754N			768
	12	38			7	352N	12N		430
						21			430
	13	9				12N	133N		154
	14		119				103N		222
	15		83				27N		110
	16		5	50			61	45N	339
								178	339
	17	114	4			30	3N	14	165
	18	18N	80			27			213
		88							213
	19	43	66	12	70	38			229
	20		180	15	49	14			258
	21	38N	32	85		50	6N		211
	22	8N	12N	40	12	39			111
	23		42N	28N		16			86
	24		36N					38	74
	25			48N	36			8	92
	26	33N				43			76
	27	120N				14N	52	39	225
	28	13N	153N				9N	62	260
		23							260
March	1		414N			86N	352N	24	939
							63		939
	2	4	244N	74N			17N	17	364
			8						364
	3	27	8N	50N	30N	122N	187N		436
				12					436
	4			43N				201N	244
	5	174				21N		52N	247
	6	30	30	42	6N				108
	7		119	288			60N	70	537

1970

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
March	8			34	75	8N			117	
	9			112					112	
	10			88	34	10			132	
	11				84N			105		
					13					202
	12				174N		98	20		302
					10					46
	13					28	6	12		63
	14				10		53			29
	16					18		11		66
	17						14N			146
							52			60
	18		36N					110		37
	19		40N						20N	437
	20		37N							8N
	21		300N	104N					33	213
	22		8	91N	78N		16N	8N		206
					12					218
	23			118N			66N	22N		513
	24				111N	31N		76N		427
	25		70N		284N	78N		57N		162
						9		15		39
	26		182N		75N	162N		8		324
	27			5N		157N				110
	28					12N	9N			204
						18				85
	29		6				275N	43N		99
	30						60N	34N		28
							16			41
	31		42	162						181
	April	1	23N				14N		36N	427
		12							391	
2						46N	18N	35N	134	
3		2					26N		85	
4						41			99	
5				46N			38N	33N	28	
				64					41	
6				41N	3N	74			181	
			212	97				427		
7		41N		26N	94N			391		
				230				391		
8			122N	8		4N		134		

1970

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
April	9			100N	11	49N	4N			
				22					186	
	10			54N	22N	26N	6N			
						190			298	
	11				32N	30	38N			
					10				110	
	12			72	46N	15	187N	23	343	
	13		7N				9N	8	6	30
	14		8N				6N		6N	20
	15								192N	
									14	206
	16			8				72N	14N	94
	17			10			16N		42N	68
	18							14N	134N	148
	19		4N							4
	21						10N		80	90
	22			18N				8N		26
	23						11	6N		17
	24							10N	86N	96
	25		22N	10				24	39N	
			12							107
	26		60							60
	27							22	16	38
	28			41	23N				16N	
					10				26	116
	29		36N	179	12				10	237
	30		77N							77
	May	1				86	10		16N	112
		2					8		14N	22
		3			18N			18N		36
4			20N		316N			10N	346	
5				66N				32N	98	
6				51N			15N		66	
7				16N	31N	13N		40	100	
8					200N	12N	20N	63		
								11	306	
9					103N		24N		127	
10						22		16	38	
11			24N	38N			54N		116	
12		52N	8N			58N				
		9						127		

1970

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
May	13		8N	22N	24N				
				72	24				150
	14			11	38	57			106
	15				486				486
	16					245	44		289
	17			38N	27N			60	
					11				136
	18		6N			34	24		64
	19					58N	38	10	
						10			116
	21				27N		25N	92N	144
	22		44N		104N		53	26N	227
	23							136N	136
	24				14N			57	71
	25		28		15N			17	
					6				66
	26				121	58		14	
						42N			235
	27				42		12N		54
	28			6			15N		21
	29					126	89		215
	30					13	434	50	497
	31		116N		12		79		207
	June	1				22N		162	184
		2				20N	12N	134	166
		3					6N		6
		6		16N				4N	20
		7		45N	18N				63
		8		24N	12N			26N	62
		9		15N	38N				53
		10		36N	8N	64N			108
11			108N	18N	8	11		145	
12			66N	152N	73N	83			
			8					382	
13				346N	18N			20	
14			32	807N	51N	239N			
				6				1135	
15				38N	291N	78N		407	
16					206N		8N	214	
17					54N	83N	90N		
						49		276	
18		8			100N		2N		
								110	

1970

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
June	19		12N			11N	138N		161
	20		16N	15N			17N		48
	21						6N	12N	
							93		111
	22		26N					9N	35
	23							15N	15
	24		29	28N	31N				88
	25				207N	276	12		495
	26		21N	16N	100N		22		
				19					178
	27			116N		19N			
				58					193
	28		8N	100N	149N			4N	
				8				269	
29		24		150N	15N			189	
30		3	51	118N				172	
July	1		24	28		154N			
						24			230
	2		14N		200	268N			
			5						487
	3		24N	12N	75		25N		
							8		144
	4			15N	6	96	8N		
						11N			136
	5				19N	96N	16		
						46			177
	6					11	12N	104N	
							75		202
	7					14	14N		28
	8			9N	59N	15		20N	
								23	126
	9				63N	17		65	145
	10		37		10N	15N	18		
							14N		94
11		124				70		194	
12					58N			58	
13		6N	18				7N	31	
14		4N				22N	7N	33	
15		29N						29	
16		8N						8	
17		60N						60	
18		142N			12	22N		176	

1970

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
July	19		138N				20N	7N	165
	20		4N	232N			14N		250
	21		24N	125N		14	23	54N	240
	22		45N	104N	52N	13N		28N	242
	23		9N	36N	272N				317
	24			15N					15
	25		16	21N	28N	21N	10N		
				16					112
	26			51N	12N		112N		
					50				225
	27			76N	24		110N		
				50					260
	28			50	71N	29N	66N	50N	266
	29				50N	44N		83N	
				21	10			208	
30		20N		40N	32N	60	20N		
				58				230	
31					26N	22			
					8			56	
August	1					262N	12		274
	2		8N					6N	14
	3		14N					68N	82
	5			14N				47	61
	7				35N				
					21				56
	8			10N					10
	9					26			26
	10				29N	36N			65
	11					20N			20
	12		110N			32N	44N		186
	13		78N			144N	68N	72N	362
	14		87N			16N	3N	246N	352
	15						106N	59N	165
	16			36N		11		70N	117
	17							18N	18
18				67N				67	
19				30N			6N	36	
20			24N	60N				84	
21			2N					2	
22			17N		20N			37	
23			36N					36	
24			6					6	

1970

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
August	25							8N	8
	26					18N		24	42
	27		2N				18N		20
	28		86N						86
	29		32N						32
	30		24N				10		34
	31		22N	8N				3N	33
September	1		9N					13N	22
	2		74N		54N			4	132
	3		23N						23
	4				26N	182N			208
	5		4	83N	14N	44N			145
	6					30N			30
	7		12			8N	56	25N	101
	8			20N			106N	46N	
								21	193
	9		9	12			17N	45N	83
	10							46N	46
	11							49N	49
	13		8						8
	14		15					6N	
								48	69
	15				17N		62N		
					24				103
	16			8		9N		29N	46
	17		7N	7N			17N		31
	18						18N		18
	19						14N		
							28		42
	21		8N				38N		46
	22			4N	20N	68N			
						11			103
	23			15N			17N		32
	24				1N	68N			69
	25				26N				26
	26			24	95N	15N	8N	22N	164
	27					168N			168
	28				8N	10N		6N	
					122				146
	29			12N	24N				36
	30				13N	19			32

1970

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
October	2							15N	15
	3					72N	6	37N	115
	4		14			21N	46N	32N	113
	5			38			20N		58
	6	49		246			34N		329
	7		12N			26		82N	120
	8		10			26		40N	76
	9		34					11N	45
	10						18		18
	11				30N		8		66
					28				66
	13		3N			120		6	129
	14		35N	36N			67N		138
	15		54	56N					124
				14					124
	16	8N		14N				14	58
				22					58
	17	22N							22
	18		8N				32N	17N	57
	19		13N					18	31
	20						18N		18
	21	12N	6N					4N	22
	22	67N					22N	13N	102
	23	160N							160
	24	296N	22N			14N	24N	11N	367
	25	70N	58N				6N		134
	26	47	214N						261
	27		95N	14N				23N	132
	28			197N	40N	13N			250
	29	29				27N		6N	62
	30		19	3	28N	121N			171
	31			8		64N	60		132
November	1	4N	24				87N		115
	2	134			7N		16N	50N	217
					10				217
	3		14N	10N	10				88
			54						88
	4			204N				31N	235
	5		906				16		922
	6	6N		12			15		33
	7					12N			12
	8							22	22

1970

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
November	9		51N				10N		61
	10		36N	20N			25N	14N	95
	11			26N					26
	12		34N		122N			84N	240
	13			21N	90N				
				114					225
	14			26N	158N	148N			
				15					347
	15					509N			509
	16			9N	30N	667N	125N		
					51				882
	17	68			74N		487N		
					34				663
	18					172N	299N		
						32			503
	19					50N	42N	8N	100
	20					80N	56N	6N	142
	21						197N		197
	22				15N		26N	33N	74
	23				11N		7N	106N	124
	24							30N	30
	25	10							10
	27		22N						22
	28		61N						
			11						72
	29		28N						28
	30		12	57N					69
December	1		8	12				12 N	32
	2				151	15	12		178
	3			20	58				78
	4		42N	8		6N			
						14			70
	5		22N			9	87N		118
	6		62N			12N	8N		82
	7		4N			26			30
	8		112N	34N					146
	9		73N	24N	114N				211
	10			9N	176N	12			197
	11		24N	126N	35N	158N			343
	12				107N	54N			161
	13				35N	54N	16		105
	14		7N			114N	7		128

1970

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
December	15							24	24
	16	5	14N			12N			31
	17		12N						12
	18	110		36N					146
	19	22		23N	6N			10N	
								14	75
	20	42						8N	50
	21		14						14
	22					188N			188
	23					54N			54
	24					10N		7N	17
	25		25N					50N	75
	26		11N					5N	16
	27	24N							24
	29					6			6
	30		31					59N	90

1 9 7 1

January	1						22N		22
	2							12	12
	4	26N						115N	141
	5	4N							
		18							22
	6		28N						28
	7		19						19
	8	10							10
	9			46		33N			79
	10	8N				27			35
	11	22N	12N			7			41
	12		9N				60		69
	13						17		17
	14	4N					42	24	70
	15	6N						8	14
	16	308N						40	348
	17		7N						7
	18	14N	32N						46
	19	26N	11N	34N	14N				85
	20		36						36
	21			50N	16N				66
	22		8N	30N	71N				109

1971

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
January	23				10N	18N	18N		
					11				57
	24						588N		588
	26						24N	5N	
							19		48
	27		72N				4N	12N	88
	28							31N	31
	29		41N			55			96
	30				4N		61		65
	31						115		115
February	1					7			7
	2						60		60
	3			106				22	128
	4				8		31N		39
	5				140		22N	12N	174
	6						178N		
							12		190
	8							69N	69
	10						5		5
	11		17N				200N		217
	12						11N		11
	14		44					18N	62
	15		17			45N	20N		82
	16		24				16N		40
	17		54		20N			9N	83
	18		52				12N	6N	70
	19		6		92	60	38N		196
	20							91N	91
	21					10		7N	17
	22		34N			4		59	14N
23		14N					118N		132
26								12N	52
27					7N			4	11
28								14N	14
March	1							10	10
	3					24			24
	4			65					65
	5					6N			6
	7					112		36N	148
	8							7N	7
	12				8N				8

1971

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
March	13		4	150N	20N				174
	15			60N			4N		64
	16				20N				20
	17					8N			
						30			38
	18						46		46
	19						20		20
	21							8	8
	24		10			14			24
	25		31						31
	26		21						21
	27							10N	10
	28			10					10
	29				50	14			64
30				46	79	8N		133	
April	1				102	6			108
	2					64			64
	3					8			8
	4					180			180
	5		10						10
	6		6N	24			32N	78N	140
	7			30			27N		
							22		79
	8						52N	38	90
	9		3N					4N	7
	11					60			60
	12			14					14
	13		62N		16		24		102
	14		40N	10N	48				
		10	20					128	
15			20N	11N				31	
16			30N		8			38	
17				54N				54	
18				14N	52N	8			
				14				88	
19			14		5N				
					82			101	
20			47		241N	174			
					22			484	
21						39N			
						9		48	
22						10N	30N	40	

1971

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
April	23				30			37N	67
	24							46N	46
	25				10				10
	26			45	24N				69
	29		18						18
May	2		66N		14N				80
	3			8N			12		20
	4			8N	13N				21
	5				100N				100
	6						18N		18
	7				11N	25N			36
	8		25N			20N			45
	9			10N					10
	10						26N		26
	11						10N	40N	50
	12		11N					184N	195
	13			16N	38N			25N	79
	14				174N				174
	17							8N	8
	18						82N	14	96
	19		33N				10N	9N	52
	20							202N	202
	22				32N				32
	24			24N	30N				54
	25				66N				66
27						10		10	
28							24	24	
29				10N				6	
31		10N		18N			10N		
		8							46
June	3			41				14N	55
	6						30N		30
	12							7	7
	13							26N	26
	14		13						13
	15							18N	18
	17				18				18
	18							14	14
	19							11N	11
	20		26N		15N				41
22					4N		90	94	

1971

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
June	23							38	38	
	24				15	32			47	
	25			37N		12			49	
	26		8		18N				26	
	27		10N							
			4						14	
	28		136			8N		34N	178	
	29				32		47N	21N	100	
	30				13			8N	86N	107
	July	1			20	136				
					26N				182	
2					148				148	
3					12				12	
4								9N	9	
5			60						60	
6			6					20	26	
7					106			46	152	
8					24				16	40
10			154N			16				170
11						16	12			28
12					12N	9	7			28
13			16N							16
14			8N							8
15								4		4
16					10N	26N			11	47
17					22N	75N				97
18					6N		14N			20
19								22N	13	35
20			38N		8N		16N			62
21			10N						56N	66
23								76N		76
24								111N	35N	146
26							32N	10N	2N	44
27			4N					47N	8	59
28					14	55		8N		77
29						14				14
30					20N					20
31			14		18				4N	36
August		1					4		6	10
		2					8N			8
	3		128				45N		173	

1971

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
August	4	134		31					165
	5	117	44						161
	6			53	126	26N			205
	8				20				20
	9	18		18			18		54
	10				8				8
	11				95				95
	12						13		13
	13						64	6N	70
	16		12N						12
	18		93						93
	19		84	37		3N	8		132
	20			48					48
	21		10	24	42				76
	22				161				161
	23				37	36			73
	24					34	10N		44
	25						6		6
	26						14		14
	27					32	12		44
	28					20	130	34	184
	29							23	23
	30							330	330
	September	1						4	4
		5			21	110			131
		6				7	80		87
		7					64		64
		8						4N	
								14	18
		10						11	11
11			12N					12	
13			83					83	
14			24	17				41	
15				88				88	
16				12N					
				12				24	
17					194				194
18				20N			56		
				6				82	
19					25		39	64	
21						52N		52	
22			56N			45N	10N	111	

1971

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
September	23		4				12		16
	24		34		15N		35	72N	156
	25		7					4N	11
	26			22N					22
	27			36					36
	28		2N	34					36
	29			8					8
	30				12				12
October	1							44N	44
	2					18			18
	3				268N				268
	7						10N		10
	10							51N	
								9	60
	12			32					32
	15		9N						9
	16		98N						98
	17			15N					15
	18			32N					32
	19			106N					106
	20				18N				18
	22					8N			8
	25			20N			9N		29
	27							48N	48
	29							14N	14
	30						10		10
November	2						20	19	39
	4			22N	14N				36
	5		6N		12N			2N	
								4	24
	9						18		18
	10						10		10
	12		43N			26		46	115
	13		22						22
	14		39						39
	15		6	98					104
	16			28					28
	17			29	8				37
	18				9N				9
	19				32N				32
	20							16	16

1971

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
November	21		48N						
			19						67
	22		74N						74
	23		8	110					118
	24			8N	27			18	
				12					65
	26				6N				
					47				53
	27				14N				14
	28						42N		42
30		3					4	7	
December	1						11	5	16
	2						23N	9N	
								209	241
	3		12			11		30N	53
	7				22			35	57
	8					7			7
	9						7		7
	10			53N					53
	11				155N				155
	13					28N	20N		48
	14					103N			103
	15						24N		24
	16		110						110
	17			20N					20
	18		4	8				2N	14
	20			55				10	65
	22			4				3N	7
	23				18	7		26N	51
	24					6			6
	25					248			248
26					14	8		22	
28							14	14	
29							14	14	
30							22	22	
31					10			10	

1972

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
Januar	2				2				2	
	3				10		20		30	
	6			9	14			35N	58	
	7						33N		33	
	8				10			15N	25	
	10			61					61	
	13		35				21		56	
	14		54	42			39		135	
	15		80						80	
	16		18	97					115	
	17			24					24	
	18			10					10	
	19					20N				
					104					124
	20				20	42				62
	21							18N		18
	22					102		83		185
	23							64N		
								44		108
	24							51	11	62
	25			18N		6			41	65
	26			62N						62
	27								8	8
	28			20N				4		24
	29				77				50	127
	30				6N	50				56
	31					13	27	42N		82
	February	1						12	35N	47
		2					14N			14
		3						44N		44
		4							54	54
9			10N						10	
10			126	18N					144	
11			80						80	
12			14	92					106	
13				135					135	
14			31	20	44				95	
15			4	34	162	10N			210	
16			42N	13	40N					
					20				115	
17			24N	48	39					
			24						135	

1972

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
February	18		36	4N	8				48
	19		26	65N			9	20N	126
	20		79		34N			6	113
	21			6	87N	8N	14		115
	22				102N	264N		12N	378
	23				7	44N		11N	62
	24				6	26N	20N		52
	25						12N		12
	26		2			87	14N	94	197
	27							10N	10
28						8	8N	16	
March	1		14		2N				16
	2		38		10	58			106
	3			8			24N		32
	4			102		55		19N	176
	5			148	9			14N	171
	6			19	98				117
	7		8N		57				65
	8		8N		14				22
	9			10N				10	20
	10			6N			10		16
	11						36		36
	13					12			12
	16			8N				6	14
	17					12			12
	18			11	12N		8N		31
	19				22N				22
	20				6				6
	21			18N	14N				32
22			21					21	
23		41N	25N		37N			103	
24				8N		14N		22	
25						84		106	
26				12		24		36	
27					21N	22	18	61	
28						8N	8	16	
29		3				9N		12	
30		14						14	
April	6		12N						12

1972

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
April	7		17	18N					
				4					39
	8		14	8N					
				10					32
	9		35	24				38	97
	11			8	44				52
	13						10		10
	14					4	58		62
	15					81	21		102
	16				7			10	17
	17			21					21
	18			96					96
	21				8	20			28
	22					12			12
	25						6		6
27							10N	10	
28							52N	52	
May	2		6						6
	3		25						25
	5			6N					
				37					43
	7				15				15
	8				32				32
	9					8N			
						14			22
	10					22			22
	11		22N			7N	14N		
			36						79
	12		4				41N		45
	13		30	10N			4N		44
	14		14	68	15N			16N	113
	15		5	118	6	56		8N	193
	16				84	94			178
	17			193N				10	203
	18			5	16N				
					140				161
	19				12				12
20			9			25N		34	
22						8N	10N	18	
23							9N	13	
24		52N					26	10N	
25								7N	
								7	

1972

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
May	26			26N					26
	27			76N					76
	28			95N	304N				399
	29				98N				98
	30		15		140N				155
	31		32				40N		72
June	2			26					26
	3			8N			88N	10N	106
	4				10N				30
					20				30
	5				40			33N	73
	6						10	42N	52
	7						65		65
	8						10		10
	9		10				33		43
	10						8	8	16
	11		5					54	59
	12				99			32	131
	13				63				63
	14					38			38
	15					62	133		195
	16		38N				18		90
			34						90
	17		14		20N		12		46
	18						13	12	25
	19					14N		10	39
	20		12N			10			29
	21		22N						80
	22				18N				18
	23				65N		149		214
	24				75N	19N		18	112
	25					170N		18	188
	26							14N	14
	27		30					50	94
	28					8N			16
	29					18N		75	93
30					16N			16	
July	1					27N		27	
	2					41N		41	
	3		15			6N	28N	49	
	4		86					86	

1972

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
July	5			6			2		8	
	6			45				82N	127	
	7				76N			12N	88	
	8				32	16N			48	
	9					16N				
	10					134			150	
	11					69			69	
	12					73			73	
	14						28N		28	
	15				9				68N	77
	16				6		12		56N	74
	17				15		8			23
	19					12	26			38
	21		11						11N	22
	22		6				10	45N		55
	23		10					62		68
	25		4							65
	26									4
	27							14		14
	28				14	14			5	33
	29				12	52				64
	30							7N		7
	31				8					8
							84			84
	August	1			188N		14			228!
		2			492N	624N		44	6N	1166
		3				16N		23		39
		4				792N	16N			808
		6						12	11	23
		7					107N	722N		
		8						10		839
9								10	10	
10								39	39	
11							101N	12N		
12								22	135	
13								6N	106N	112
15			16N	16					27N	27
16			15N		16N				6N	6
17			6N					22N		32
18								15N		31
					7N					28
										22

1972

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
August	19		50		22N		8N	39N	119
	20		24		16N			2N	42
	21		16	14					30
	22			238	22				260
	23			42	37				79
	24			18	132				150
	25		54N		88				
			10						152
	26		16N	10					26
	27		58N						58
	28		36N			27	60		
			9						132
	29		12	20N			6	16N	54
	30		24N	29N					
				31					84
31			19N	51N					
			29					99	
September	1		24N						24
	2		8	29N		14			51
	3					60			60
	4					67	17N		
							22		106
	5					96N			
						98			194
	6					63	16	50	129
	7					12	6N		18
	8							22N	22
	9							14N	14
	10				32N		20N	5N	57
	11					106N			106
	13				6	49N			55
	17						11		11
	18		34	50					84
	19			58					58
	21		102		64		8N	6N	180
	22		20N	106		8			134
23			10					10	
24		3N	12		26			41	
25					16		2	18	
26		24		59		64		147	
27							37	37	
29						6		6	

1972

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
September	30			3N			18		21
October	1				140N			30	170
	3					30N			30
	4		6						6
	7				150N				150
	8							6	6
	11		53N				12	48	113
	13			23N					23
	14			35N					35
	15	15						10N	25
	16		4						4
	17		5						5
	19		8	16					24
	20		9						9
	21	74							74
	23	26				13			39
	24	142					42		184
	25	97	139						236
	26		296						296
	27		42	52				7	101
	28	79		79				5	163
	29			58	74				132
	30				200				200
	31				180		8		188
November	1						14	20	34
	2						13		13
	3							57	57
	4							5	5
	5						16	45	61
	12							10N	10
	15		20						20
	18	16							16
	20	6							6
	21						21		21
	22		45		41	5			91
	23				26	18			44
	24					23			23
	25					138			138
	26					64			64
	27				10				10
	28							30	30

1972		E ← → W							
	1	90°	60°	30°	0°	30°	60°	90°	Σ
November	29					8			8
December	2						14		14
	8		62N						62
	10			94N					94
	11			11N					11
	12		12	53N					65
	14						38N		38
	15		124						124
	16		8			12	96N		116
	17		7						7
	18			112					112
	19	4				18			22
	22		4						4
	23			40N					40
	24					10N			10
	25					10N	8N	35N	53
	26						26N		26
	27						36N		36
	28					8		11	19
	29					15			15
	30		1N						1
	31		24N						24
					1 9 7 3				
January	1		4N						4
	2							47	47
	3		36N						36
	4		39N	35N					74
	5		6N	61N					67
	6		25	58N		4N		16N	
						13			116
	7			26N		8N			34
	8						27N		27
	9						18N	19	37
	10							37N	37
	11							93N	93
	12		5N	22				185N	212
	13							67N	67
	14							15N	15
	20					15N		8	23

1973

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
January	22			18N					18
	25		11N	17N	28				56
	28			36N		3N			39
	31		8						8
February	1					56N			56
	2			12					12
	11		10						10
	12			6	60				66
	13		11			23N			34
	14						6N	20N	26
	15						42N	36N	78
	16				17				17
	17					4			4
	18					120			120
	19					124			124
	20						20		20
	21							10	10
	22		69N				20		89
	23		32N					24	56
	24		22N						22
	25			4N					4
	27				55N				55
28				41N	75N			116	
March	1				4N	206N			210
	5		66						66
	6			102					102
	7			15					15
	8		133	8					141
	9			147	14				161
	10				23				23
	11				22				22
	12					143			143
	13				112		50N		162
	14				21	35	49N	51N	
							41		197
	15							18N	18
	16					10			10
18						20	16	36	
19							20	20	
20				19N				19	
21		4N		20N				24	

1973

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
March	23		42N	8N					50
	24					94N	7N		101
	25						68N		68
	26				90N		8N	13N	111
	27				24N			10N	34
	28		6			15N		65N	86
	29		6						6
	30		5N		3				8
	31		16N					8N	24
April	1			106N	101		71N		278
	2			54N					54
	3		24			27			51
	4		86				25		111
	5					68N			68
	6						8	18	26
	7				7				7
	8			201				6	207
	9					22			22
	10				58	280			338
	11					371			371
	12					27			27
	13						55		55
	14						41		41
	15						10	11	21
	16							21	21
	17		15N						15
	18		11N						11
	19		39N						39
	21				16N				16
	22		22			50N			72
23		33						33	
24						26N		26	
25				19		58N		77	
26					10		150N	160	
27					25		36N	61	
28					8	22	14N	4N	48
29						14		521N	535
30		34				171		42N	247
May	1	118		12				4N	134
	2	60		59					119
	3	13		181					194

1973

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
May	4			93					93	
	5				390			8	398	
	6				47				47	
	7					56			56	
	9					18	85		103	
	10						22		22	
	14		10N							10
	15		20N							20
	16		37N							37
	17			113N						113
	18		4	74N						78
	19				142N					142
	20				70N			25		95
	21			12			8N		61N	81
	22						25N		9N	34
	23							36N		36
	24				16			83N	13	112
	25							84N		84
	27							6		6
	28							17		17
	June	2							13N	13
		6		23N						23
		7		5N						5
		9			16N					16
		12		45N						45
		13			26N					26
		14							94N	94
		15			6N		30	78N		114
16					150N			24N	174	
18							8N		8	
20			8						8	
21			15						15	
23					12				12	
24							51		51	
26						160	30		190	
27							14		14	
28			10N					21	11	42
29			63N					12		
			32							107
30			59N							
		4							63	

1973

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
July	1		6N						6	
	2			6					6	
	4				37				37	
	6				19N				19	
	7					53N	17			
						11				81
	8					6N	52N			
							16			74
	9						97N			97
	10						6N	14N		20
	18						23N			23
	24							80		80
	26		13N							
			8							21
27		8N							8	
28		6N							6	
29			588N	14					602	
August	1		8			12			20	
	2		6			16			22	
	3		10	36					46	
	4			6			34N	5	45	
	5				10N				10	
	6					235N			235	
	7					26N			26	
	8						10N		10	
	9							12N	12	
	10						14N		14	
	21		98N						98	
	27				30N		14N		44	
	30			20					20	
	31		9N	8					17	
September	1		12N	18		17N				
			4						51	
	2			61					61	
	3			53		14N			67	
	4			14	44N	12			70	
	5				22N	45		6N	73	
	6					7N	95			
						6			108	
7						327		327		
8					30	7	6N	43		

1973

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
September	9							6N	
	10						52	10	62
	11						73		73
	12							4	4
	13							14	14
	14							54	54
	15			5					5
	23			14					14
	24		18N			18N			36
	26				10N	12N			22
	27		5	14		6N			25
	29			27			2N		29
	30				22		80N		102
October	1				16			12N	28
	2				11				11
	3				16N			32N	48
	4					42	122		164
	5						42		42
	6						128	19	147
	7							6N	6
	8							24	24
	10							21	21
	21		38						38
	22		8						8
	24		34	27					61
	25		6N						6
	26				30				30
	27			238N					238
	28			6N		41			47
	30			25	10				35
November	1					12N	14	44	70
	3							48	48
	4							22	22
	6							35N	35
	13		28N						28
	19		10						10
	20			14					14
	21		19						19
	22		53						53
	23			10					10

1973

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
November	25			18	21				39
	26				83				83
	27				10				10
	28						9		9
	30						36		36
December	2						33	84	117
	3							18	18
	12				20N				20
	14		5N						5
	16		112						112
	17		60						60
	18			12					12
	19			65					65
	20				14				14
	21				41				41
	23						22		22
	25						32		32
	26							19	19
	27							19	19

1 9 7 4

January	2					6			6
	6						2		2
	10		23						23
	11					25N			25
	12		22	10					32
	13		22				10N		32
	14							5N	5
	15		10					44N	54
	16			10					10
	18							15N	15
	21						34N		34
	22						168N	46N	214
	23							9N	9
	24							4	4
	25							11	11
	31			8					8

1974

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
February	9		20						20
	11				31				31
	13		10		21				21
	15						54		54
	16				14		140		154
	17						15		15
	18							6	6
	20					10	32		42
	21						22		22
	23						40	6	46
	24							32	32
	25							50	50
	March	4		15N					
6				40N					40
16						31			31
30				38					38
April	1							9N	9
	7			10					10
	8			4					4
	10				25				25
	11			16	58	45	49		168
	12					225			225
	13					425	240		665
	14						142		142
	15						88	124	212
	16						208	38	246
	17						10	131	141
	18						8	17	25
	19						49	8	57
	20							28	28
21							6	6	
25				14					14
26						16			16
30			70						70
May	1		110						110
	2		21						21
	3			69					69
	5				13				13
	6					16N	94N		110
	7		8		69				77

1974

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
May	8		23N		68	26			117
	9					17	79		96
	11						14		14
	12							116	116
	13							315	315
	15							18	18
	26						8		8
	27		16					10	26
	29		7						7
	30		86						86
	31		108		42				150
June	1		10	6					16
	2			32					32
	3			10		12			22
	4				6	70			76
	6					20	38		58
	7				9N	64	2		75
	9						6		6
	10			44N					44
	11			8N				24	32
	14					63N			63
	17				32				32
	18				10				10
	21					178			178
	22						46		46
	23						321		321
	24							24	24
	27		25						25
	28		6						6
	29		61	113					174
	30		12N	140	4				156
July	1		137	136	7				280
	2			290					290
	3			411			12		423
	4					534			534
	5					366		12	378
	6						321	10	331
	7						256		256
	8		7					82	89
	9		4					101	105
	10							39	39

1974

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
July	14		50						50
	23			8	7				15
	26			55					55
	28				8				8
	30					28			28
	31						6		6
August	1						89		89
	2						14		14
	3							11	11
	4							20	20
	6		14						14
	7			7					7
	9			26					26
	16			11					11
	17						234		
							15N		249
	20							31N	31
	21			25N		18			43
	22						29		29
	24				16N			12	28
26							81	81	
September	5			16					16
	7				36				36
	8		3N						3
	9		38N						38
	10		51N	358N					409
	11			12N					
				2					14
	12			20N				8	28
	13				16N				
					422				438
	14				14N			11	25
	16					17N			17
	17					32N			32
	18						334N	4	338
	19						10N	312N	322
	20							14N	14
	21							7N	7
22							9N	9	
23							36N	36	
29		16	13					29	

1974

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
September	30			94					94
October	1			10					10
	3					58N			58
	5		24N	2N		10			36
	6		134N						134
	7		48N						48
	8			48N					48
	9			8N	19N				27
	10				59N	24N			83
	11				86N	208N			294
	12				30N	70N			100
	13					245N			245
	14						14N		14
	15						246N	6N	252
	16						120N	128N	248
	17							57N	57
	18							17N	17
	23							5	5
	31		7N						7
November	1		4N			20			24
	3		14N	4N					18
	4			125N					125
	5		30N	20N	11N			127	188
	6				86N			62	148
	10						59N		59
	15		7N						7
	16							6N	6
	18		10N						10
	19		20N						20
	27							5N	5
	29						39N		39
	30						12N		12
December	12				14N				14
	14			38N					38
	17						7N		7
	19			29N					29
	22				143N				143
	23				52N				52
	25					126N			126
	27		42						42

1974		E ← → W							
	1	90°	60°	30°	0°	30°	60°	90°	Σ
December	29		18					31N	49
					1 9 7 5				
January	3							16N	16
	5			30N					30
	6				93N				93
	9		5N						5
	10							40N	40
	12			10N				9N	19
	13				12N				12
	14				12N				12
	19							8N	8
February	3		10						10
	5			21N					21
	7			8N					8
	13						32N		32
March	12						42		42
	14						14	43	57
	31		34						34
April	6		11N						11
	29			8N					8
May	4				20				20
	5					20	6		26
	8						21		21
	9		30						30
June	19							40N	
							176		216
	20						56		56
	24		39N						39
	27						26	22	48
	28							177	177
July	2					12N	15N		27
	4		42N				4N		46
	11		9						9
	12						6N		6

1975

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
July	13						42N		42
	14							9N	9
	15		6						6
	21		8N						8
	22		10N						10
	24			24N					24
	25				31N				31
	29							8N	8
August	2		48N	20N				6N	74
	3		66N		220N				286
	4		54N		9N				63
	5			8N	10N	14N			32
	6					32N			32
	7					192N	62N		254
	8						5N		5
	9				18N			6N	24
	10					72N		54N	126
	11					36N			36
	12						41N		41
	13						4N		4
	14							76N	76
	15							18N	18
	21							71N	71
								11	82
	22							311N	311
24					11N			11	
25							7	7	
September	1			17N					17
	2			9N					9
	19					25N			25
	21							52N	52
October	13		5		25N				30
	15					8N			8
	20							4N	4
November	4		11N						11
	5		70N						70
	6		42N	30N					72
	10				6N				6
	14		14						14

1975

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
November	15		88						88
	16		96						96
	17		28						28
	18			46					46
	19			26					26
	21				124				124
December	5				102N				102
	7					9N			9
	8					15N			15
	23	18							18
1 9 7 6									
January	1						2		2
	5						12N		12
	11	124							124
	12	216							216
	13	26							26
	14		94						94
	15		34						34
	16			7					7
	17			14					14
	18				30				30
	19				44				44
	20				14	12			26
	21					5			5
	28		27N		11				38
	29		8N						8
	30						2N		2
February	1						2		2
	2						7		7
	10					4N			4
	12			8					8
	13			8					8
	14				2				2
	15				4				4
	16	21					5		26
	17						4		4
	20		24						24
	21			8					8

1976

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
February	25				6				6	
	26		22N						22	
March	7			2			24		26	
	8			20			8		28	
	9			8				4	12	
	11				10				10	
	13					6			6	
	14						9		9	
	16			61N			4		65	
	17				34N				46	
	18				12				56	
	19				56N				22	
	20				8N	14N			94	
	21					94N			229	
	22					160N	69N		66	
	23		21				66N	20W	19N	60
	24		31						58N	89
	25		219						6N	225
	26		106	20			7			133
	27			145						145
	28			79	159			34N		272
29				110				36N	146	
30				56	6			22N	84	
31				6	232			18N	256	
April	1					26			26	
	2					20	44		64	
	3						28		28	
	5							4	4	
	6		4						4	
	9		31N						31	
	11			8N					8	
	14				5N	38N			58	
	16					15			21	
	17			2N		5N	14N		12	
	18			12				1N	1	
	19								6N	6
20						24N	82N	106		
21						9N		9		
22			6			30		36		

1976

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
April	25		10N		13				23
	27				6				6
	28				10N	14			24
	29				32N	52	47		131
	30						128		128
May	1							36	36
	4				68N				68
	5		2N					41N	43
	7					5N			5
	13		4	10N					14
	15			68			45		113
	16							24	24
	17							10	10
	18		46		3				49
	19						8N		8
	21			2	12	54			68
	22			4	20				24
	23				16				16
	26					18		22	40
28			3N					3	
June	8				3	4	25		32
	9						9		9
	10						29		29
	11			21					21
	12			10	5				15
	14		11N						11
	15		36N	9N					45
	16			62N		24			86
	17			98N					98
	18				63N				63
	19				7N				7
	20						30N		30
	21						5N		5
	22		42					20N	62
23			4					4	
25							4	4	
26							6N	6	
July	13							26N	26
	14							10N	10
	15							6N	6

1976

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ	
July	16						7N		7	
	24				3				3	
August	1		18N						18	
	2			12N					12	
	4			17N					17	
	5				44N	12			56	
	6				44N				44	
	7				7N	24N			31	
	8					10N			10	
	9							2N	2	
	10							8N	8	
	13						22N		22	
	15					18			18	
	16						5		5	
	17						8		8	
	18		6					14	13	33
	19		20					8		28
	20								10	10
	21								17	17
22				32				88	120	
25						2			2	
31							20N		20	
September	1						36N	56N	92	
	2							75N	75	
	3				63N			38N	101	
	4					74N		7N	81	
	6		8N			20N	3N		31	
	7						8N		8	
	8				30			8N	38	
	9				3				3	
	10					80	10		90	
	11						32		32	
	14							12	12	
	17		60		4				64	
	18				4	17			21	
	19		6N						6	
	20				8N	44			52	
	21						69		69	
24						14N		14		
27				9N				9		
28				4				4		

1976

E ← → W

	1	90°	60°	30°	0°	30°	60°	90°	Σ
September	30				10N				10
October	5						12N		12
	6			18					18
	13	2							2
	14			8					8
	15			14					14
	16				8				8
	19						23		23
	22		4N		30N			4	38
	23				21N			12	33
	27						16N		16
	28						5N	19N	24
	29							24N	24
November	17		24N					4N	28
	18			6N				36N	42
	19			48N					48
	20			13N					13
	22				8N				8
December	8			20N	6N				26
	9			28N	50N				78
	10				20N				20
	13				16N				16
					9				9
	14		8N			22	45N		75
	15					8	36N		44
	16			10			8		18
	25		20						20
	27			19					19
	28				27				27
	29			8	68				76
	30				66				66
	31					65			65

THE TOTAL TIME OF OBSERVATION FOR EACH DAY, 1966 - 1976, IN HOURS:

1 9 6 6

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1	23,7	24,0	24,0	24,0	24,0	24,0	23,0	24,0	24,0	24,0	21,5	24,0
2	24,0	24,0	24,0	24,0	24,0	24,0	24,0	22,6	24,0	23,2	23,8	23,3
3	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,7	24,0	24,0
4	24,0	24,0	22,8	24,0	24,0	24,0	24,0	24,0	24,0	24,0	22,8	24,0
5	24,0	24,0	23,2	24,0	24,0	24,0	24,0	24,0	23,5	18,4	23,7	21,9
6	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	21,8	22,4	23,0	21,2
7	23,8	23,2	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8	22,2	21,1
8	24,0	22,8	24,0	24,0	24,0	23,8	24,0	24,0	24,0	23,2	23,5	22,9
9	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8	23,8	23,3
10	21,2	23,7	24,0	23,6	23,8	24,0	24,0	24,0	24,0	24,0	24,0	24,0
11	23,0	23,8	24,0	24,0	24,0	23,6	24,0	23,7	23,5	23,2	23,5	24,0
12	22,9	23,4	24,0	24,0	24,0	24,0	23,4	24,0	24,0	23,2	24,0	24,0
13	23,7	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,7
14	24,0	23,7	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
15	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8	24,0	24,0
16	23,8	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8	23,8	24,0
17	22,9	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	21,1	23,8	24,0
18	23,8	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	22,9	23,6
19	22,3	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,4	22,5	24,0	22,6
20	23,8	24,0	24,0	24,0	23,8	24,0	24,0	24,0	23,1	22,6	24,0	22,9
21	23,6	24,0	24,0	23,5	24,0	24,0	24,0	24,0	24,0	24,0	24,0	22,0
22	23,5	23,3	24,0	24,0	24,0	24,0	21,0	24,0	24,0	24,0	22,9	24,0
23	23,1	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,7	20,3	24,0
24	24,0	24,0	23,6	23,8	24,0	24,0	21,0	24,0	24,0	22,6	22,6	24,0
25	24,0	23,8	23,6	24,0	23,5	24,0	24,0	24,0	24,0	24,0	21,7	23,4
26	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8	23,3
27	23,8	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8	24,0	23,4	21,5
28	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,3	21,6	24,0
29	24,0		24,0	24,0	24,0	24,0	24,0	24,0	23,3	24,0	23,8	23,8
30	23,4		24,0	24,0	24,0	24,0	24,0	24,0	23,7	24,0	24,0	24,0
31	22,6		24,0		24,0		24,0	24,0		24,0		23,4

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1	24,0	23,5	24,0	19,1	24,0	24,0	24,0	24,0	23,7	24,0	24,0	23,0
2	24,0	21,3	23,8	24,0	24,0	23,8	24,0	24,0	23,4	23,7	21,8	18,8
3	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8	23,2	24,0
4	24,0	23,7	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	22,4	21,0
5	23,2	21,6	24,0	24,0	24,0	24,0	24,0	22,8	24,0	23,5	21,8	20,9
6	22,9	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,6	22,7	23,4	23,1
7	20,5	24,0	23,4	23,8	24,0	24,0	24,0	24,0	24,0	23,7	24,0	20,2
8	24,0	23,8	23,6	24,0	24,0	24,0	24,0	24,0	23,7	24,0	20,8	24,0
9	24,0	24,0	23,6	24,0	24,0	24,0	24,0	24,0	24,0	24,0	21,5	23,8
10	24,0	23,6	24,0	24,0	24,0	24,0	24,0	24,0	24,0	22,9	24,0	24,0
11	19,4	24,0	19,2	23,8	24,0	24,0	23,2	23,6	24,0	23,7	22,6	24,0
12	22,3	24,0	23,6	24,0	24,0	24,0	23,6	23,5	24,0	23,2	24,0	24,0
13	24,0	23,7	24,0	23,1	24,0	24,0	24,0	23,5	24,0	21,9	24,0	19,8
14	24,0	23,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	20,4	24,0	15,9
15	24,0	24,0	24,0	24,0	24,0	24,0	23,7	24,0	23,8	23,1	23,4	21,0
16	24,0	24,0	24,0	24,0	24,0	23,8	23,4	24,0	23,1	23,6	23,2	19,6
17	24,0	23,1	24,0	24,0	23,8	24,0	24,0	24,0	23,7	23,6	24,0	23,2
18	24,0	24,0	22,9	23,6	24,0	24,0	24,0	24,0	23,8	21,8	22,8	18,4
19	24,0	23,6	24,0	24,0	24,0	24,0	23,8	24,0	24,0	24,0	24,0	21,2
20	24,0	23,4	24,0	23,7	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,2
21	24,0	20,7	24,0	24,0	24,0	24,0	24,0	24,0	23,1	23,8	23,7	23,2
22	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,5
23	23,5	22,4	24,0	24,0	24,0	24,0	23,3	22,9	24,0	23,4	23,6	23,8
24	20,5	24,0	24,0	24,0	24,0	24,0	24,0	24,0	22,5	24,0	23,8	24,0
25	23,7	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	22,6	23,2	24,0
26	23,2	24,0	24,0	24,0	24,0	24,0	24,0	23,2	22,6	24,0	23,4	24,0
27	22,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	22,5	24,0	24,0	24,0
28	24,0	23,6	23,5	24,0	24,0	24,0	24,0	23,3	24,0	23,7	23,4	23,8
29	24,0		24,0	24,0	24,0	24,0	24,0	23,7	24,0	22,4	23,7	24,0
30	24,0		24,0	24,0	24,0	24,0	23,4	23,2	24,0	24,0	21,1	24,0
31	24,0		23,1		24,0		24,0	23,4		24,0		24,0

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1	23,2	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
2	23,5	24,0	23,5	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	22,0
3	22,8	24,0	23,8	24,0	24,0	24,0	23,2	21,6	24,0	24,0	24,0	23,5
4	23,7	24,0	24,0	24,0	24,0	24,0	22,6	24,0	24,0	24,0	24,0	23,4
5	23,4	24,0	24,0	24,0	24,0	24,0	23,4	24,0	24,0	24,0	24,0	24,0
6	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
7	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
8	23,8	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
9	23,3	24,0	22,3	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
10	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8
11	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
12	24,0	23,8	24,0	24,0	22,5	24,0	24,0	24,0	24,0	24,0	24,0	24,0
13	24,0	21,7	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8	24,0
14	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	22,9	24,0
15	24,0	24,0	24,0	24,0	24,0	23,8	24,0	24,0	24,0	24,0	23,5	24,0
16	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,4
17	24,0	24,0	24,0	24,0	24,0	23,8	24,0	24,0	24,0	24,0	24,0	22,9
18	23,4	24,0	24,0	23,6	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8
19	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
20	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8	23,2
21	24,0	24,0	23,6	24,0	24,0	24,0	23,8	24,0	24,0	24,0	24,0	24,0
22	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,5	24,0	24,0	24,0	24,0
23	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
24	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,5	24,0	24,0	24,0	24,0
25	24,0	24,0	24,0	24,0	24,0	24,0	23,3	24,0	24,0	24,0	24,0	24,0
26	23,1	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8
27	18,6	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,7	24,0
28	24,0	24,0	24,0	24,0	24,0	23,1	24,0	24,0	24,0	24,0	24,0	24,0
29	22,7	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
30	24,0		24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	21,5	24,0
31	23,7		24,0		24,0		24,0	24,0		24,0		24,0

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1	24,0	24,0	24,0	23,7	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8
2	24,0	24,0	24,0	24,0	23,7	24,0	24,0	24,0	24,0	24,0	24,0	24,0
3	24,0	24,0	24,0	24,0	24,0	23,8	24,0	24,0	24,0	24,0	24,0	24,0
4	24,0	24,0	24,0	24,0	24,0	24,0	22,8	24,0	24,0	24,0	24,0	24,0
5	24,0	23,8	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,7
6	24,0	24,0	24,0	24,0	23,5	24,0	24,0	24,0	24,0	24,0	24,0	23,0
7	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	21,0	24,0
8	22,8	22,3	24,0	24,0	22,5	24,0	24,0	24,0	24,0	23,6	24,0	24,0
9	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
10	23,8	24,0	23,7	23,7	24,0	24,0	24,0	24,0	24,0	24,0	22,8	23,8
11	24,0	24,0	23,8	24,0	24,0	24,0	24,0	24,0	24,0	21,3	21,4	24,0
12	24,0	23,8	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,6	24,0
13	23,7	23,6	24,0	24,0	24,0	23,6	24,0	24,0	24,0	23,6	24,0	23,0
14	23,1	24,0	24,0	24,0	24,0	24,0	23,8	24,0	23,2	24,0	23,6	24,0
15	23,6	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,6	24,0
16	23,6	24,0	24,0	24,0	24,0	24,0	23,7	24,0	24,0	24,0	24,0	23,6
17	24,0	24,0	24,0	23,7	23,7	24,0	24,0	24,0	24,0	24,0	23,6	24,0
18	24,0	24,0	24,0	24,0	23,7	24,0	24,0	24,0	24,0	24,0	24,0	24,0
19	23,6	19,8	24,0	24,0	24,0	24,0	23,8	24,0	24,0	23,2	24,0	23,7
20	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
21	24,0	21,9	24,0	24,0	24,0	24,0	24,0	24,0	23,8	24,0	24,0	23,2
22	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
23	24,0	24,0	23,4	24,0	24,0	24,0	24,0	24,0	23,8	24,0	24,0	21,4
24	24,0	23,3	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,0	24,0
25	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	21,2
26	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
27	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,7	23,5	24,0
28	22,5	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	20,6
29	22,4		24,0	24,0	24,0	24,0	24,0	24,0	23,6	24,0	24,0	24,0
30	23,8		24,0	24,0	24,0	24,0	24,0	23,2	23,5	24,0	24,0	23,0
31	24,0		24,0		24,0		24,0	23,6		24,0		23,3

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1	20,4	24,0	22,2	24,0	24,0	24,0	23,8	24,0	24,0	23,8	24,0	23,8
2	23,8	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
3	23,4	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	22,2	24,0	24,0
4	23,5	23,2	23,6	24,0	23,8	24,0	24,0	23,8	24,0	24,0	24,0	23,1
5	22,6	23,6	23,4	24,0	23,8	24,0	23,6	24,0	24,0	23,6	21,4	23,8
6	24,0	23,2	24,0	24,0	24,0	24,0	24,0	24,0	24,0	21,6	22,8	24,0
7	24,0	24,0	23,8	24,0	23,8	23,6	24,0	24,0	24,0	24,0	24,0	24,0
8	23,6	24,0	22,5	24,0	24,0	24,0	23,1	24,0	24,0	24,0	24,0	23,7
9	24,0	24,0	24,0	24,0	24,0	24,0	23,4	24,0	24,0	24,0	23,6	23,0
10	22,4	24,0	24,0	24,0	23,6	23,4	23,6	24,0	24,0	21,8	24,0	24,0
11	23,8	24,0	24,0	24,0	23,8	24,0	24,0	24,0	24,0	22,5	24,0	24,0
12	24,0	22,1	24,0	24,0	22,9	24,0	23,4	24,0	24,0	19,9	24,0	22,8
13	22,7	24,0	23,7	24,0	23,4	24,0	24,0	24,0	21,5	24,0	23,5	23,8
14	24,0	24,0	23,8	24,0	23,5	24,0	23,7	24,0	22,4	24,0	23,1	22,2
15	23,0	23,7	23,6	24,0	24,0	23,6	24,0	24,0	24,0	24,0	24,0	22,7
16	24,0	24,0	24,0	24,0	24,0	23,8	24,0	24,0	24,0	24,0	24,0	23,4
17	23,6	24,0	24,0	24,0	24,0	24,0	23,8	24,0	23,7	24,0	24,0	24,0
18	24,0	24,0	23,8	24,0	24,0	24,0	22,2	23,7	24,0	23,3	24,0	21,0
19	24,0	24,0	23,0	24,0	24,0	24,0	20,2	24,0	24,0	24,0	24,0	23,6
20	24,0	24,0	24,0	24,0	24,0	24,0	21,9	24,0	23,0	24,0	24,0	22,8
21	24,0	23,3	24,0	23,8	24,0	23,2	24,0	24,0	24,0	20,9	23,0	22,8
22	23,6	23,8	24,0	24,0	23,8	24,0	24,0	24,0	20,1	24,0	24,0	23,4
23	23,8	24,0	24,0	24,0	23,4	24,0	24,0	24,0	22,4	21,6	24,0	23,3
24	22,4	24,0	24,0	24,0	23,8	24,0	24,0	24,0	21,7	24,0	24,0	20,8
25	22,5	23,3	24,0	24,0	24,0	24,0	24,0	24,0	23,6	24,0	20,7	23,3
26	21,3	24,0	24,0	24,0	23,8	24,0	21,9	24,0	24,0	24,0	16,6	22,4
27	23,8	24,0	24,0	24,0	22,9	24,0	24,0	22,9	24,0	24,0	19,6	23,1
28	23,8	24,0	24,0	24,0	24,0	23,8	24,0	22,2	24,0	24,0	22,3	24,0
29	24,0		24,0	24,0	23,8	23,8	22,3	24,0	24,0	23,3	21,6	24,0
30	24,0		24,0	23,8	23,2	24,0	22,3	24,0	24,0	23,0	23,4	24,0
31	24,0		24,0		24,0		24,0	24,0		24,0		23,8

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1	23,8	23,5	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
2	23,8	24,0	24,0	24,0	22,8	23,1	24,0	24,0	24,0	24,0	24,0	23,0
3	23,5	24,0	24,0	24,0	24,0	23,8	24,0	24,0	24,0	24,0	24,0	23,2
4	24,0	23,4	24,0	24,0	24,0	24,0	24,0	23,5	24,0	24,0	24,0	24,0
5	24,0	24,0	24,0	24,0	23,6	24,0	24,0	23,1	24,0	24,0	21,5	24,0
6	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,2	24,0	24,0	23,7	24,0
7	24,0	24,0	24,0	24,0	23,7	24,0	24,0	24,0	24,0	24,0	24,0	23,8
8	22,3	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0
9	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,1	24,0
10	24,0	24,0	24,0	24,0	23,2	24,0	24,0	24,0	24,0	24,0	23,7	23,8
11	19,5	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	20,8	24,0
12	22,4	24,0	23,6	24,0	24,0	24,0	24,0	24,0	22,9	24,0	22,5	22,9
13	23,5	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8	22,6	24,0	24,0
14	22,3	24,0	24,0	24,0	23,8	24,0	24,0	24,0	24,0	23,3	23,7	24,0
15	22,9	24,0	24,0	24,0	24,0	24,0	23,8	24,0	23,4	23,8	24,0	24,0
16	24,0	24,0	24,0	24,0	24,0	21,6	23,8	24,0	24,0	24,0	24,0	24,0
17	24,0	23,8	24,0	24,0	24,0	24,0	23,8	24,0	24,0	22,3	24,0	23,8
18	24,0	24,0	24,0	24,0	24,0	24,0	23,5	24,0	23,8	24,0	23,4	22,1
19	23,1	22,9	24,0	23,6	24,0	24,0	24,0	24,0	24,0	23,6	21,4	24,0
20	24,0	16,9	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8	24,0
21	23,5	24,0	24,0	24,0	24,0	24,0	23,8	24,0	24,0	24,0	24,0	23,6
22	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,5
23	23,7	24,0	21,6	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8	23,4
24	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,2	24,0	23,5
25	24,0	24,0	24,0	22,0	24,0	24,0	24,0	24,0	22,2	24,0	23,4	23,0
26	23,0	24,0	24,0	24,0	23,6	24,0	24,0	24,0	24,0	23,9	20,8	22,5
27	23,5	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,5	23,1	24,0
28	23,4	24,0	24,0	23,8	24,0	24,0	24,0	24,0	24,0	24,0	22,0	23,4
29	24,0		24,0	23,4	24,0	24,0	24,0	24,0	24,0	24,0	21,7	20,6
30	24,0		24,0	24,0	22,9	24,0	24,0	24,0	20,8	24,0	23,7	20,3
31	22,5		23,8		23,6		24,0	24,0		24,0		23,5

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1	22,5	24,0	23,9	24,0	24,0	23,8	23,5	22,8	22,8	22,9	23,5	18,8
2	22,2	23,8	23,6	23,9	24,0	24,0	24,0	22,2	17,9	23,5	21,9	18,7
3	23,0	24,0	23,7	23,3	24,0	24,0	22,5	23,7	21,5	24,0	21,7	15,0
4	21,2	21,5	24,0	23,6	23,1	24,0	24,0	23,8	24,0	18,7	21,5	17,0
5	23,3	23,0	24,0	23,4	24,0	24,0	23,7	23,6	23,0	23,3	23,0	24,0
6	23,7	22,3	24,0	24,0	23,4	24,0	24,0	23,7	23,4	22,9	23,4	23,6
7	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,8	24,0	24,0	23,6	24,0
8	24,0	24,0	24,0	24,0	24,0	24,0	23,3	23,5	24,0	23,7	23,4	23,0
9	24,0	23,8	24,0	24,0	24,0	22,3	24,0	23,3	23,7	24,0	23,3	23,7
10	24,0	24,0	22,9	23,2	24,0	24,0	23,3	23,3	23,6	24,0	22,1	21,3
11	24,0	24,0	24,0	24,0	24,0	23,8	23,2	24,0	24,0	20,0	17,7	24,0
12	23,2	24,0	24,0	22,7	24,0	23,4	23,7	24,0	24,0	22,3	23,2	24,0
13	23,8	24,0	24,0	24,0	23,7	23,7	24,0	24,0	24,0	24,0	23,4	24,0
14	23,8	24,0	24,0	24,0	24,0	23,5	24,0	24,0	24,0	21,9	23,6	23,7
15	24,0	24,0	24,0	24,0	24,0	23,8	22,8	24,0	24,0	24,0	24,0	24,0
16	24,0	24,0	24,0	24,0	24,0	23,4	23,8	23,8	24,0	24,0	24,0	19,0
17	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,4	24,0	23,1	21,7	23,7
18	24,0	23,3	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,3	24,0	23,8
19	24,0	24,0	24,0	23,0	24,0	23,4	24,0	24,0	24,0	24,0	24,0	24,0
20	24,0	24,0	23,7	24,0	24,0	22,4	22,8	22,9	24,0	23,7	24,0	24,0
21	24,0	23,5	24,0	24,0	24,0	23,8	23,0	24,0	24,0	23,6	24,0	23,4
22	24,0	24,0	24,0	24,0	24,0	22,6	24,0	24,0	23,7	23,6	24,0	23,8
23	23,5	24,0	24,0	24,0	24,0	22,7	24,0	23,3	24,0	23,4	24,0	23,8
24	22,0	24,0	24,0	24,0	23,3	24,0	24,0	23,4	23,1	24,0	24,0	23,3
25	24,0	24,0	24,0	24,0	24,0	23,8	22,6	24,0	23,6	24,0	24,0	23,6
26	24,0	24,0	24,0	24,0	24,0	23,5	24,0	23,4	24,0	22,4	23,2	22,6
27	20,8	24,0	24,0	24,0	24,0	22,6	24,0	23,3	24,0	21,6	23,1	22,8
28	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	24,0	21,2	22,0	22,2
29	23,0	23,3	24,0	24,0	24,0	24,0	24,0	24,0	24,0	23,7	24,0	23,0
30	24,0		24,0	24,0	24,0	23,6	24,0	24,0	23,9	22,0	23,6	23,7
31	24,0		24,0		24,0		22,2	23,4		24,0		20,8

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1	21,8	20,6	21,4	23,2	24,0	23,7	24,0	24,0	22,6	22,8	22,5	23,2
2	17,8	23,0	18,6	23,4	23,8	24,0	22,9	22,9	23,4	23,7	21,6	23,8
3	20,1	24,0	17,2	24,0	24,0	21,8	23,0	24,0	19,8	23,6	22,4	24,0
4	19,9	24,0	24,0	23,7	23,8	24,0	24,0	24,0	23,3	24,0	23,2	23,7
5	23,0	22,1	24,0	23,8	24,0	23,8	24,0	23,1	20,7	24,0	23,0	24,0
6	21,8	24,0	24,0	22,9	21,8	22,2	24,0	24,0	24,0	21,6	17,4	24,0
7	21,5	24,0	22,9	21,3	24,0	24,0	24,0	24,0	24,0	21,3	22,7	24,0
8	22,2	21,0	23,7	24,0	24,0	23,3	23,4	23,7	24,0	21,4	23,8	23,4
9	23,6	24,0	19,8	22,7	24,0	24,0	23,5	24,0	23,7	24,0	24,0	23,3
10	24,0	24,0	22,0	22,7	23,8	23,7	24,0	24,0	23,7	24,0	23,0	22,5
11	24,0	23,6	23,7	24,0	21,3	24,0	24,0	24,0	21,7	23,3	23,2	24,0
12	24,0	22,7	23,0	23,3	24,0	24,0	24,0	24,0	22,2	22,8	24,0	24,0
13	22,0	21,7	23,4	24,0	23,5	22,8	24,0	24,0	22,5	23,3	23,5	24,0
14	24,0	21,4	23,6	24,0	23,1	24,0	23,1	24,0	24,0	22,8	22,5	24,0
15	23,3	20,4	22,9	23,0	23,7	24,0	24,0	24,0	24,0	24,0	24,0	24,0
16	22,4	21,5	22,0	22,8	24,0	23,4	23,6	22,5	19,7	23,2	24,0	24,0
17	23,6	22,5	23,8	24,0	23,4	23,3	23,8	24,0	22,8	23,6	23,8	24,0
18	23,5	24,0	22,2	23,5	24,0	23,6	24,0	23,5	24,0	23,8	23,5	23,5
19	20,6	21,9	23,6	22,2	24,0	22,0	23,5	22,5	22,4	20,3	22,4	24,0
20	20,4	22,7	23,5	20,0	24,0	23,0	24,0	23,1	23,0	22,4	23,7	24,0
21	24,0	16,8	24,0	23,6	24,0	24,0	23,0	24,0	20,6	24,0	23,5	24,0
22	22,8	16,3	24,0	23,8	23,8	22,7	24,0	24,0	23,2	22,0	24,0	24,0
23	22,7	16,8	24,0	24,0	24,0	23,4	22,6	24,0	23,6	24,0	24,0	24,0
24	24,0	23,4	24,0	24,0	24,0	23,1	24,0	22,9	24,0	23,6	24,0	22,9
25	24,0	24,0	23,8	23,7	22,7	23,8	23,5	24,0	21,4	24,0	23,4	23,4
26	23,2	24,0	24,0	24,0	21,8	22,5	23,2	22,6	24,0	24,0	22,8	23,6
27	22,4	24,0	24,0	23,8	23,8	24,0	24,0	22,4	22,6	22,8	23,8	24,0
28	24,0	24,0	24,0	24,0	24,0	23,8	23,4	24,0	24,0	20,4	24,0	23,5
29	23,8		22,2	24,0	24,0	24,0	24,0	22,0	23,8	23,7	24,0	22,6
30	23,7		21,6	23,4	24,0	23,4	24,0	24,0	17,0	20,6	22,7	21,0
31	24,0		23,8		24,0		22,8	23,7		21,4		18,5

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1	13,0	24,0	19,0	23,6	24,0	23,0	22,5	24,0	23,1	24,0	23,8	24,0
2	21,1	24,0	24,0	23,4	24,0	20,9	24,0	22,9	21,6	23,7	24,0	23,9
3	23,8	24,0	24,0	22,5	23,5	23,6	23,4	23,8	23,2	20,1	24,0	22,7
4	24,0	24,0	22,2	23,4	20,8	23,1	24,0	23,8	20,5	20,8	23,3	24,0
5	19,7	23,7	22,9	24,0	23,2	21,5	24,0	24,0	22,2	23,4	23,3	21,9
6	21,2	24,0	24,0	24,0	22,9	21,4	23,4	24,0	23,8	23,6	24,0	24,0
7	20,8	24,0	24,0	23,4	23,8	21,7	19,1	22,1	24,0	24,0	23,4	23,8
8	20,6	23,8	23,7	24,0	24,0	23,0	23,1	22,2	24,0	23,2	23,6	22,7
9	24,0	24,0	23,6	23,5	23,8	24,0	24,0	23,3	20,2	23,7	23,8	22,8
10	23,7	24,0	24,0	23,5	24,0	20,8	24,0	22,9	21,8	23,4	24,0	22,6
11	23,6	23,8	24,0	23,0	24,0	21,6	23,5	22,7	24,0	23,5	22,7	23,7
12	23,2	24,0	23,1	23,1	24,0	23,6	22,9	23,6	24,0	24,0	21,5	24,0
13	24,0	22,2	22,6	24,0	24,0	23,0	23,2	24,0	21,0	23,7	22,7	23,5
14	19,4	21,8	23,7	24,0	23,8	22,9	23,5	23,6	23,3	24,0	23,5	24,0
15	22,1	22,0	24,0	24,0	23,0	22,4	24,0	23,2	22,6	23,1	23,8	24,0
16	23,5	24,0	23,8	23,8	24,0	22,8	23,1	23,7	23,2	23,1	23,3	24,0
17	23,3	22,2	22,3	23,4	24,0	23,2	20,5	24,0	21,6	21,6	23,5	24,0
18	21,5	24,0	23,7	21,9	24,0	23,5	22,9	24,0	23,2	22,3	23,3	23,8
19	22,7	16,2	22,5	23,8	24,0	24,0	23,8	23,8	23,2	24,0	24,0	24,0
20	24,0	22,7	22,8	21,7	24,0	23,4	21,0	22,8	22,4	23,8	21,8	23,0
21	23,8	24,0	24,0	23,6	24,0	24,0	22,8	23,4	23,0	24,0	24,0	19,9
22	23,6	24,0	22,6	23,8	24,0	23,6	23,3	23,5	22,4	24,0	24,0	23,3
23	24,0	22,2	23,3	23,4	23,0	24,0	23,5	24,0	19,4	20,6	23,4	21,3
24	24,0	22,8	24,0	23,1	23,8	24,0	24,0	24,0	21,4	23,8	23,3	22,4
25	23,2	22,7	24,0	23,9	22,9	24,0	24,0	23,1	23,8	23,8	23,4	24,0
26	24,0	20,4	24,0	23,4	24,0	24,0	24,0	23,0	24,0	24,0	22,8	23,4
27	23,5	21,6	24,0	24,0	22,2	22,7	23,6	24,0	22,7	23,0	23,8	23,5
28	23,8	21,8	24,0	23,8	23,1	22,9	23,5	23,1	24,0	22,3	23,3	22,9
29	23,0		24,0	21,9	24,0	23,6	22,8	23,8	23,2	24,0	23,8	22,3
30	22,5		23,2	23,5	22,4	24,0	24,0	24,0	20,4	23,8	24,0	24,0
31	23,8		18,8		21,7		23,8	24,0		19,7		22,6

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1	23,2	24,0	24,0	24,0	24,0	20,9	21,0	24,0	24,0	22,7	23,0	19,7
2	23,5	23,4	24,0	23,4	24,0	24,0	23,8	24,0	21,0	23,0	24,0	18,5
3	22,5	24,0	20,3	22,0	24,0	23,5	22,6	22,4	24,0	23,6	21,1	22,3
4	23,0	24,0	24,0	24,0	23,1	22,1	22,8	24,0	23,6	24,0	24,0	22,4
5	23,6	23,2	24,0	24,0	23,0	24,0	23,6	24,0	24,0	24,0	23,2	23,2
6	21,9	24,0	24,0	24,0	23,8	23,5	24,0	24,0	23,0	24,0	23,0	21,0
7	23,3	20,1	24,0	24,0	22,8	23,4	23,6	24,0	23,4	23,2	24,0	21,8
8	22,4	23,4	24,0	24,0	21,8	24,0	23,0	23,8	23,4	20,4	23,1	23,0
9	19,9	24,0	23,8	23,3	23,6	24,0	24,0	22,7	24,0	24,0	21,9	23,5
10	23,0	21,8	23,2	24,0	22,2	23,7	22,9	19,8	23,6	24,0	22,4	22,4
11	24,0	21,0	23,7	23,8	21,7	23,6	23,1	23,4	20,4	23,8	23,8	21,6
12	23,0	23,0	24,0	23,7	21,0	22,7	23,6	23,1	23,2	24,0	23,8	19,1
13	21,6	23,3	23,6	24,0	24,0	24,0	23,8	24,0	23,2	24,0	22,4	17,9
14	22,8	22,9	23,7	23,8	23,1	21,1	22,9	23,0	22,4	24,0	24,0	17,9
15	22,0	23,5	23,3	22,8	22,6	22,6	24,0	23,7	23,4	24,0	23,3	20,8
16	21,9	24,0	24,0	24,0	24,0	23,3	24,0	24,0	24,0	22,9	23,5	22,2
17	23,7	23,8	23,4	23,5	23,6	24,0	23,8	24,0	23,8	23,4	22,5	17,1
18	24,0	24,0	23,4	24,0	21,6	24,0	23,4	24,0	23,8	23,0	19,3	22,8
19	24,0	24,0	22,5	23,6	23,5	21,1	24,0	23,0	24,0	21,7	22,1	23,6
20	24,0	21,8	24,0	24,0	21,2	21,0	24,0	22,5	23,5	23,3	23,3	22,8
21	23,1	23,1	23,1	24,0	23,6	22,9	24,0	22,3	23,6	24,0	22,7	23,0
22	22,8	22,2	23,2	24,0	22,3	21,0	24,0	23,8	23,4	23,8	23,6	20,0
23	21,4	23,0	23,8	23,8	21,8	22,6	23,3	24,0	24,0	20,8	23,3	23,4
24	20,5	24,0	24,0	24,0	24,0	20,7	23,3	23,8	24,0	23,2	23,6	23,8
25	21,8	24,0	22,5	23,4	23,0	20,9	24,0	24,0	23,1	24,0	22,8	22,8
26	22,0	24,0	24,0	24,0	23,4	23,5	24,0	23,6	24,0	24,0	19,0	22,8
27	21,5	24,0	23,8	23,7	23,6	24,0	24,0	24,0	24,0	24,0	18,4	21,7
28	22,8	23,6	24,0	24,0	21,9	24,0	23,1	24,0	23,0	24,0	23,4	22,7
29	18,9		24,0	23,8	22,9	23,8	24,0	24,0	20,7	24,0	21,7	23,2
30	23,8		21,8	23,8	23,6	21,1	23,3	24,0	20,4	22,0	21,0	18,4
31	24,0		22,9		20,3		22,6	24,0		21,8		21,0

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1	20,8	17,2	24,0	23,5	23,1	22,5	22,2	23,3	21,5	23,4	24,0	19,9
2	22,9	21,7	20,0	20,2	23,1	21,3	23,3	24,0	24,0	21,3	21,4	22,1
3	24,0	23,4	21,5	24,0	23,4	22,7	23,5	23,8	23,0	21,4	22,6	19,9
4	24,0	20,5	19,6	24,0	23,8	24,0	23,7	23,4	24,0	22,2	23,1	19,7
5	22,7	23,2	24,0	19,5	23,4	23,6	24,0	24,0	23,1	20,1	20,3	20,5
6	20,8	23,5	22,8	22,6	23,8	21,5	21,9	24,0	24,0	22,5	19,4	21,9
7	21,4	22,3	24,0	20,1	23,4	23,4	23,6	20,7	24,0	20,2	18,2	24,0
8	24,0	21,5	24,0	22,9	23,7	23,2	23,3	21,0	22,6	16,0	21,0	23,2
9	23,4	19,2	24,0	23,5	21,8	23,8	21,8	22,5	21,0	18,7	22,3	19,6
10	21,4	21,5	24,0	16,5	21,2	23,2	20,9	22,1	21,2	17,0	18,3	20,9
11	23,4	21,5	24,0	22,8	21,1	23,4	23,2	23,8	18,9	20,1	22,0	24,0
12	21,7	20,9	24,0	23,3	23,8	23,0	19,5	24,0	23,1	20,2	21,2	22,6
13	24,0	21,6	20,6	24,0	22,7	20,7	21,4	20,2	24,0	17,9	21,2	23,6
14	23,5	21,7	24,0	22,6	23,2	22,8	24,0	20,1	22,5	16,0	21,5	23,1
15	24,0	22,5	23,6	21,4	22,7	21,6	23,6	24,0	22,6	22,5	23,8	23,1
16	22,4	22,6	23,8	23,7	21,2	22,9	24,0	22,3	23,6	14,2	22,4	22,2
17	23,3	21,7	24,0	23,7	22,1	21,1	22,7	23,7	22,9	17,4	24,0	23,1
18	22,8	23,4	21,2	24,0	23,0	22,6	23,1	24,0	24,0	17,1	22,8	21,2
19	16,2	20,3	24,0	23,0	24,0	23,8	22,2	23,8	17,0	15,7	17,3	24,0
20	22,0	23,2	24,0	24,0	23,6	20,8	22,8	24,0	18,5	13,5	21,1	19,4
21	21,8	23,7	21,7	20,8	22,0	22,4	19,8	24,0	20,2	18,2	19,7	20,4
22	20,7	22,5	24,0	24,0	20,8	23,0	20,6	24,0	24,0	23,7	23,0	21,6
23	19,6	23,6	24,0	23,5	23,1	21,4	21,0	24,0	24,0	17,4	22,3	22,7
24	21,1	23,4	23,8	21,0	21,8	17,6	21,8	24,0	23,5	14,3	24,0	24,0
25	20,2	22,0	23,0	22,8	21,9	21,4	17,2	24,0	21,4	19,5	20,8	20,8
26	17,7	22,8	23,8	22,1	22,1	21,8	21,8	20,4	24,0	20,3	22,4	21,8
27	24,0	23,8	24,0	22,2	23,2	21,5	23,8	24,0	23,3	24,0	20,6	23,6
28	22,3	22,4	24,0	23,0	21,1	21,5	23,7	23,7	23,6	23,1	24,0	19,6
29	19,6	23,4	23,4	24,0	23,1	19,9	22,9	22,4	23,6	23,6	22,0	21,7
30	17,0		24,0	23,6	23,7	22,9	24,0	24,0	23,4	17,4	16,2	22,4
31	18,7		24,0		20,6		23,7	23,4		14,7		21,7

by dividing the total sum of the flare index q for the quarter by the total time of observation for the particular quarter. The diagrams show that the behaviour of the flare index in cycle 20 differs from that of the sunspot number. With regard to other solar activity indices, it was found that the flare index is better characteristic of activity in the 11-year cycle than the sunspot number.

REFERENCES

- Kleczek, J.: 1952, Publ. Inst. Centr. Astron., No. 22, Praha 1952.
Kleczek, J.: 1953, Publ. Obs. Astrophys. Acad. Tchécosl. Sci. Ondřejov, No. 24, Praha 1953.
Knoška, Š., Letfus, V.: Chromospheric Flare Activity 1950 - 1965, no published.
Quarterly Bull. on Solar Activity: 1966 - 1976.