

The 20–th solar cycle minimum and its daily soft X-ray flare index (1975–1976)

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Abstract. The longitudinal distribution of the daily soft X-ray flare index is given for 1975–1976 years. The soft X-ray flare index was determined from the daily continuous GOES profile of solar soft X-ray flux (0.1–0.8 nm), as published in Solar Geophysical Data. The Eastern (E), Central (C) and Western (W) LDE–type flare indices, as well as a daily flare index of the impulsive (I) flares at present cover the decreasing part of the 20–th solar cycle (from January 1, 1969 to December 31, 1976).

Key words: the Sun - flares

1. Introduction

The 1969–1974 daily soft X-ray (0.1–0.8 nm) flare index has already been published in the Contributions of the Astronomical Observatory Skalnaté Pleso (26 and 27 volumes). This paper gives the 1975–1976 continuation of the daily flare indices (FIs). They were constructed by weighing the SXR flare-classes (in units of 10^{-6} W/m^2) regardless the duration of a flare (Antalová, 1996) so, for example, a M3.7 (X6.1) soft X-ray flare index bears the value equal 37 (610).

2. Description of the table

The left (right) columns of Table 1 comprise the 1975 (1976) daily soft X-ray flare index, which was computed separately for: (i) the LDE-type flare (duration in soft X-ray ≥ 2 hours), which is identical with the flare-type known as a 'long decay' (Kahler, 1977) and related to an eruptive flare definition (Švestka, 1995), and (ii) the impulsive-type flare (lasting in SXR less than 2 hours). The distribution of FI into E, C, and W belts is given only for LDE-type flares, because the I-type is short-lasting and very often the corresponding H_α data are not available. The following flare subsets are given in Table 1:

E - the daily flare index for LDE-type flares located from $E90^\circ$ to $E45^\circ$ on the solar disk;

Date	E	C	W	D	I	T	E	C	W	D	I	T
FEB 10	0	0	0	0	0	0	0	0	0	0	0	0
FEB 11	0	1	0	1	0	1	0	0	0	0	0	0
FEB 12	0	0	0	0	0	0	0	0	0	0	0	0
FEB 13	0	0	3	3	0	3	0	0	0	0	0	0
FEB 14	0	0	0	0	0	0	0	0	0	0	0	0
FEB 15	0	0	0	0	0	0	0	0	0	0	0	0
FEB 16	0	1	0	1	0	1	0	0	0	0	0	0
FEB 17	0	0	0	0	0	0	0	0	0	0	0	0
FEB 18	0	0	0	0	0	0	0	0	0	0	0	0
FEB 19	0	0	0	0	0	0	0	0	0	0	0	0
FEB 20	0	0	0	0	0	0	0	0	0	0	0	0
FEB 21	0	0	0	0	0	0	0	0	0	0	0	0
FEB 22	0	0	0	0	0	0	0	0	0	0	0	0
FEB 23	0	0	0	0	0	0	0	0	0	0	0	0
FEB 24	0	0	0	0	0	0	0	0	0	0	0	0
FEB 25	0	0	0	0	0	0	0	0	0	0	0	0
FEB 26	0	0	0	0	0	0	0	0	0	0	0	0
FEB 27	0	0	0	0	0	0	0	0	0	0	0	0
FEB 28	0	0	0	0	0	0	0	0	0	0	0	0
MAR 01	0	0	0	0	0	0	0	0	0	0	0	0
MAR 02	0	0	0	0	0	0	0	0	0	0	0	0
MAR 03	1	0	0	1	0	1	0	0	0	0	0	0
MAR 04	0	0	0	0	0	0	0	0	0	0	0	0
MAR 05	4	0	0	4	5	9	0	0	0	0	0	0
MAR 06	0	2	0	2	0	2	0	0	0	0	0	0
MAR 07	0	1	0	1	0	1	0	0	0	0	0	0
MAR 08	0	0	0	0	0	0	0	0	0	0	0	0
MAR 09	0	0	0	0	0	0	0	0	0	0	0	0
MAR 10	0	0	0	0	0	0	0	0	0	0	0	0
MAR 11	0	1	0	1	0	1	0	0	0	0	0	0
MAR 12	0	0	0	0	0	0	0	0	0	0	0	0
MAR 13	0	0	3	3	0	3	0	0	0	0	0	0
MAR 14	0	0	0	0	0	0	0	0	0	0	1	1
MAR 15	0	0	0	0	0	0	0	0	0	0	0	0
MAR 16	0	1	0	1	0	1	0	0	0	0	0	0
MAR 17	0	0	0	0	0	0	0	0	0	0	0	0
MAR 18	0	0	0	0	0	0	0	0	0	0	0	0
MAR 19	0	0	0	0	0	0	0	1	0	1	0	1
MAR 20	0	0	0	0	0	0	0	1	0	1	12	13
MAR 21	0	0	0	0	0	0	0	98	0	98	0	98
MAR 22	0	0	0	0	0	0	0	1	5	6	10	16
MAR 23	0	0	0	0	0	0	100	0	1	101	5	106
MAR 24	0	0	0	0	0	0	0	0	16	16	3	19

SUPPLEMENT

Date	E	C	W	D	I	T	E	C	W	D	I	T
MAR 25	0	0	0	0	0	0	39	2	6	47	2	49
MAR 26	0	0	0	0	0	0	17	0	0	17	11	28
MAR 27	0	0	0	0	0	0	25	0	0	25	2	27
MAR 28	0	0	0	0	0	0	13	133	0	146	7	153
MAR 29	0	0	0	0	0	0	0	2	0	2	3	5
MAR 30	0	0	0	0	0	0	0	3	1	4	1	5
MAR 31	0	0	0	0	0	0	0	14	0	14	5	19
APR 01	0	0	0	0	0	0	0	1	0	1	0	1
APR 02	0	0	0	0	0	0	0	0	0	0	2	2
APR 03	0	0	0	0	0	0	0	0	0	0	0	0
APR 04	0	0	0	0	0	0	0	0	0	0	0	0
APR 05	0	0	0	0	0	0	0	0	0	0	0	0
APR 06	1	0	0	1	0	1	0	0	1	1	0	1
APR 07	0	0	0	0	0	0	0	0	0	0	0	0
APR 08	0	0	0	0	0	0	0	0	0	0	0	0
APR 09	0	0	0	0	0	0	0	0	0	0	0	0
APR 10	0	1	0	1	0	1	0	0	0	0	0	0
APR 11	0	0	0	0	0	0	0	0	0	0	1	1
APR 12	0	0	0	0	0	0	0	0	0	0	0	0
APR 13	0	0	0	0	0	0	0	0	0	0	0	0
APR 14	0	0	0	0	0	0	0	0	0	0	0	0
APR 15	0	0	0	0	0	0	0	0	0	0	0	0
APR 16	0	0	0	0	0	0	0	0	0	0	0	0
APR 17	0	0	0	0	0	0	0	0	0	0	0	0
APR 18	0	0	0	0	0	0	0	0	0	0	0	0
APR 19	0	0	0	0	0	0	0	0	0	0	0	0
APR 20	0	0	0	0	0	0	0	2	1	3	0	3
APR 21	0	0	0	0	0	0	0	1	0	1	1	2
APR 22	0	0	0	0	0	0	0	1	0	1	0	1
APR 23	0	0	0	0	0	0	0	0	0	0	0	0
APR 24	0	0	0	0	0	0	0	0	0	0	0	0
APR 25	0	1	0	1	0	1	0	0	0	0	1	1
APR 26	0	2	0	2	0	2	0	0	0	0	0	0
APR 27	0	0	0	0	0	0	0	0	0	0	0	0
APR 28	0	0	0	0	0	0	0	0	0	0	1	1
APR 29	0	0	0	0	1	1	0	14	0	14	1	15
APR 30	0	0	0	0	0	0	0	9	180	189	5	194
MAY 01	0	0	0	0	1	1	0	0	9	9	1	10
MAY 02	0	0	0	0	0	0	0	0	1	1	0	1
MAY 03	0	0	1	1	0	1	0	0	1	1	1	2
MAY 04	0	1	1	2	0	2	0	0	0	0	0	0

Date	E	C	W	D	I	T	E	C	W	D	I	T
MAY 05	0	1	0	1	0	1	0	0	0	0	0	0
MAY 06	0	0	0	0	0	0	0	0	0	0	0	0
MAY 07	0	1	0	1	0	1	0	0	0	0	0	0
MAY 08	0	1	0	1	0	1	0	0	0	0	0	0
MAY 09	2	0	0	2	2	4	0	0	0	0	0	0
MAY 10	0	0	0	0	0	0	0	0	0	0	0	0
MAY 11	0	0	0	0	0	0	0	0	0	0	0	0
MAY 12	0	0	0	0	0	0	0	0	0	0	0	0
MAY 13	0	0	0	0	0	0	0	0	0	0	0	0
MAY 14	0	0	0	0	0	0	0	0	0	0	0	0
MAY 15	0	0	0	0	0	0	1	0	0	1	0	1
MAY 16	0	0	0	0	0	0	0	0	10	10	0	10
MAY 17	0	1	0	1	0	1	0	0	2	2	0	2
MAY 18	0	0	0	0	0	0	1	0	0	1	0	1
MAY 19	0	0	0	0	0	0	0	0	0	0	0	0
MAY 20	1	0	0	0	0	0	0	0	0	0	0	0
MAY 21	0	0	0	0	0	0	0	5	0	5	0	5
MAY 22	0	0	0	0	1	1	0	0	0	0	0	0
MAY 23	0	0	0	0	0	0	0	0	0	0	0	0
MAY 24	0	0	0	0	0	0	0	0	0	0	0	0
MAY 25	0	0	0	0	0	0	0	0	0	0	0	0
MAY 26	0	0	0	0	0	0	0	0	0	0	0	0
MAY 27	0	0	0	0	0	0	0	0	0	0	0	0
MAY 28	0	0	0	0	0	0	0	0	0	0	0	0
MAY 29	0	0	0	0	0	0	0	0	0	0	0	0
MAY 30	0	0	0	0	0	0	0	0	0	0	0	0
MAY 31	0	0	0	0	0	0	0	0	0	0	0	0
JUN 01	0	0	0	0	0	0	0	0	0	0	0	0
JUN 02	0	0	0	0	0	0	0	0	0	0	0	0
JUN 03	0	0	0	0	0	0	0	0	0	0	0	0
JUN 04	0	0	0	0	0	0	0	0	0	0	0	0
JUN 05	0	0	0	0	0	0	0	0	0	0	0	0
JUN 06	0	0	0	0	0	0	0	0	0	0	0	0
JUN 07	0	0	0	0	0	0	0	0	0	0	0	0
JUN 08	0	0	0	0	0	0	0	1	0	1	0	1
JUN 09	0	0	0	0	0	0	0	2	0	2	0	2
JUN 10	0	0	0	0	0	0	0	0	1	1	0	1
JUN 11	0	0	0	0	0	0	0	0	0	0	0	0
JUN 12	0	0	0	0	0	0	0	0	0	0	0	0
JUN 13	0	0	0	0	0	0	0	0	0	0	0	0
JUN 14	0	0	0	0	0	0	0	0	0	0	0	0
JUN 15	0	0	0	0	0	0	0	0	0	0	0	0

S U P P L E M E N T

Date	E	C	W	D	I	T	E	C	W	D	I	T
JUL 28	0	0	0	0	4	4	0	0	0	0	0	0
JUL 29	0	1	0	1	0	1	0	0	0	0	0	0
JUL 30	0	0	0	0	1	1	0	0	0	0	0	0
JUL 31	8	0	1	9	0	9	0	2	0	2	0	2
AUG 01	9	17	0	26	15	41	4	0	0	4	0	4
AUG 02	6	14	0	20	62	82	0	1	0	1	1	2
AUG 03	26	51	0	77	31	108	0	1	0	1	0	1
AUG 04	0	6	0	6	2	8	0	1	0	1	0	1
AUG 05	1	3	0	4	3	7	0	1	0	1	0	1
AUG 06	0	16	0	16	4	20	0	2	0	2	1	3
AUG 07	0	45	0	45	25	70	0	0	0	0	3	3
AUG 08	0	1	0	1	6	7	0	0	0	0	1	1
AUG 09	0	0	0	0	14	14	0	0	0	0	1	1
AUG 10	0	44	18	62	15	77	0	0	0	0	2	2
AUG 11	0	4	0	4	1	5	0	0	0	0	0	0
AUG 12	0	13	0	13	5	18	0	0	0	0	0	0
AUG 13	0	0	3	3	1	4	0	0	0	0	0	0
AUG 14	0	0	16	16	5	21	0	0	0	0	0	0
AUG 15	0	0	2	2	0	2	0	0	0	0	2	2
AUG 16	0	0	0	0	2	2	0	3	0	3	1	4
AUG 17	0	0	0	0	1	1	0	0	0	0	0	0
AUG 18	0	0	0	0	0	0	0	0	0	0	15	15
AUG 19	0	0	0	0	0	0	0	0	0	0	0	0
AUG 20	0	0	0	0	2	2	0	0	0	0	0	0
AUG 21	0	3	134	137	0	137	0	0	1	1	0	1
AUG 22	0	0	256	256	3	259	0	0	27	27	0	27
AUG 23	0	0	0	0	2	2	0	0	0	0	0	0
AUG 24	0	14	0	14	0	14	0	0	0	0	0	0
AUG 25	0	1	1	2	2	4	0	0	0	0	0	0
AUG 26	0	1	0	1	0	1	0	0	0	0	0	0
AUG 27	0	0	0	0	0	0	0	0	0	0	0	0
AUG 28	0	1	7	8	0	8	0	0	0	0	0	0
AUG 29	0	0	1	1	0	1	0	0	0	0	0	0
AUG 30	0	0	0	0	1	1	0	0	0	0	0	0
AUG 31	0	0	0	0	0	0	0	0	0	0	0	0
SEP 01	0	1	0	1	2	3	0	0	5	5	0	5
SEP 02	0	0	0	0	2	2	0	0	1	1	0	1
SEP 03	0	1	0	1	1	2	0	0	4	4	3	7
SEP 04	0	3	0	3	1	4	0	3	1	4	0	4
SEP 05	1	0	0	1	0	1	0	0	0	0	0	0
SEP 06	0	0	0	0	0	0	0	0	0	0	0	0
SEP 07	0	0	0	0	2	2	0	0	0	0	0	0
SEP 08	0	0	0	0	2	2	0	0	0	0	0	0

Date	E	C	W	D	I	T	E	C	W	D	I	T
OCT 22	0	0	0	0	0	0	0	0	0	0	0	0
OCT 23	0	0	0	0	0	0	0	0	0	0	0	0
OCT 24	0	0	0	0	0	0	0	0	0	0	0	0
OCT 25	0	0	0	0	0	0	0	0	0	0	0	0
OCT 26	0	0	0	0	0	0	0	0	0	0	0	0
OCT 27	0	0	0	0	0	0	0	0	1	1	0	1
OCT 28	0	0	0	0	0	0	0	0	4	4	0	4
OCT 29	0	0	0	0	0	0	0	0	1	1	0	1
OCT 30	0	0	0	0	0	0	0	0	1	1	0	1
OCT 31	0	0	0	0	0	0	0	0	0	0	0	0
NOV 01	0	0	0	0	0	0	0	0	1	1	0	1
NOV 02	0	0	0	0	0	0	0	0	0	0	0	0
NOV 03	0	0	0	0	0	0	0	0	0	0	0	0
NOV 04	0	0	0	0	2	2	0	0	0	0	0	0
NOV 05	8	0	0	8	2	10	0	0	0	0	0	0
NOV 06	11	0	0	11	3	14	0	0	0	0	0	0
NOV 07	0	0	0	0	1	1	0	0	0	0	0	0
NOV 08	0	0	0	0	0	0	0	0	0	0	0	0
NOV 09	0	0	0	0	0	0	0	0	0	0	0	0
NOV 10	0	2	0	2	4	6	0	0	0	0	0	0
NOV 11	0	1	0	1	0	1	0	0	0	0	0	0
NOV 12	0	1	0	1	0	1	0	0	0	0	0	0
NOV 13	0	0	1	1	0	1	0	0	0	0	0	0
NOV 14	7	2	0	9	1	10	0	0	0	0	0	0
NOV 15	8	0	1	9	2	11	0	0	0	0	0	0
NOV 16	17	6	0	23	5	28	0	0	0	0	0	0
NOV 17	0	6	0	6	5	11	2	0	0	2	0	2
NOV 18	0	9	0	9	4	13	2	0	1	3	0	3
NOV 19	0	2	0	2	7	9	1	0	0	1	1	2
NOV 20	0	1	0	1	0	1	0	0	0	0	0	0
NOV 21	0	23	0	23	0	23	0	0	0	0	0	0
NOV 22	0	1	0	1	0	1	0	0	0	0	0	0
NOV 23	0	2	0	2	0	2	0	0	0	0	0	0
NOV 24	0	0	0	0	0	0	0	0	0	0	0	0
NOV 25	0	0	0	0	0	0	0	0	0	0	0	0
NOV 26	0	0	2	2	0	2	0	0	0	0	0	0
NOV 27	0	0	0	0	0	0	0	0	0	0	0	0
NOV 28	0	0	0	0	0	0	0	0	0	0	0	0
NOV 29	0	0	0	0	0	0	0	0	0	0	0	0
NOV 30	0	0	0	0	0	0	0	0	0	0	0	0
DEC 1	0	0	0	0	0	0	0	0	0	0	0	0
DEC 2	0	0	0	0	0	0	0	0	0	0	0	0
DEC 3	0	0	0	0	0	0	0	0	0	0	0	0

Date	E	C	W	D	I	T	E	C	W	D	I	T
DEC 4	0	0	0	0	1	1	0	0	0	0	0	0
DEC 5	0	10	0	10	0	10	0	0	0	0	0	0
DEC 6	0	1	0	1	0	1	0	0	0	0	0	0
DEC 7	0	1	0	1	1	2	0	0	0	0	0	0
DEC 8	0	0	1	1	0	1	0	0	0	0	1	1
DEC 9	0	0	0	0	0	0	0	3	0	3	0	3
DEC 10	0	0	0	0	0	0	0	2	0	2	0	2
DEC 11	0	0	0	0	0	0	0	0	0	0	0	0
DEC 12	0	0	0	0	0	0	0	0	0	0	0	0
DEC 13	0	0	0	0	0	0	0	0	0	0	0	0
DEC 14	0	0	0	0	0	0	3	2	1	6	1	7
DEC 15	0	0	0	0	1	1	0	4	0	4	5	9
DEC 16	0	0	0	0	0	0	0	0	0	0	1	1
DEC 17	0	0	0	0	0	0	0	0	3	3	0	3
DEC 18	0	0	0	0	0	0	0	0	1	1	0	1
DEC 19	0	0	0	0	0	0	0	0	3	3	0	3
DEC 20	0	0	0	0	0	0	0	0	0	0	0	0
DEC 21	0	0	0	0	0	0	0	0	0	0	0	0
DEC 22	0	0	0	0	0	0	0	1	0	1	0	1
DEC 23	0	0	0	0	0	0	0	9	0	9	0	9
DEC 24	0	0	0	0	0	0	0	1	0	1	0	1
DEC 25	0	0	0	0	0	0	0	0	0	0	1	1
DEC 26	0	0	0	0	0	0	0	0	0	0	0	0
DEC 27	0	0	0	0	0	0	0	0	0	0	0	0
DEC 28	0	0	0	0	0	0	0	3	0	3	0	3
DEC 29	0	0	0	0	0	0	0	2	0	2	0	2
DEC 30	0	0	0	0	0	0	0	1	0	1	0	1
DEC 31	0	0	0	0	0	0	0	1	0	1	1	2

C - the FI for LDE-type flares located from E44° to W44° on the Sun;
W - the same as above but for LDE-type flares located from W45° to W90°;
D - the soft X-ray flare index of all LDE-type flares observed in the given day;
I - the daily flare index of the impulsive-type flares;
T - the daily flare index of all soft X-ray flares (total, $T = D + I$).

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