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NOMOS INTERSCIENCE PUBLIC REPORTS

F.C.MAYR (2012)

CONTRIBUTIONS TO HELIOPHYSICS

'Heliophysics' is the correct scientific term for 'Solar Physics'; it encompasses all of the research aimed to achieve a better understanding of the Sun and its neighbourhood.

The 'Contributions to Heliophysics' by F.C. MAYR must be seen in this context.

His concept of a cosmic force which is constant at the scale of millions of light-years and of billions of terrestrial years is based upon the proof that the boundaries between geological periods on Earth are linked to recurrent positions of the Sun in its galactic orbit. The dimensionless constant K is a new fundamental constant in Physics and Cosmology.

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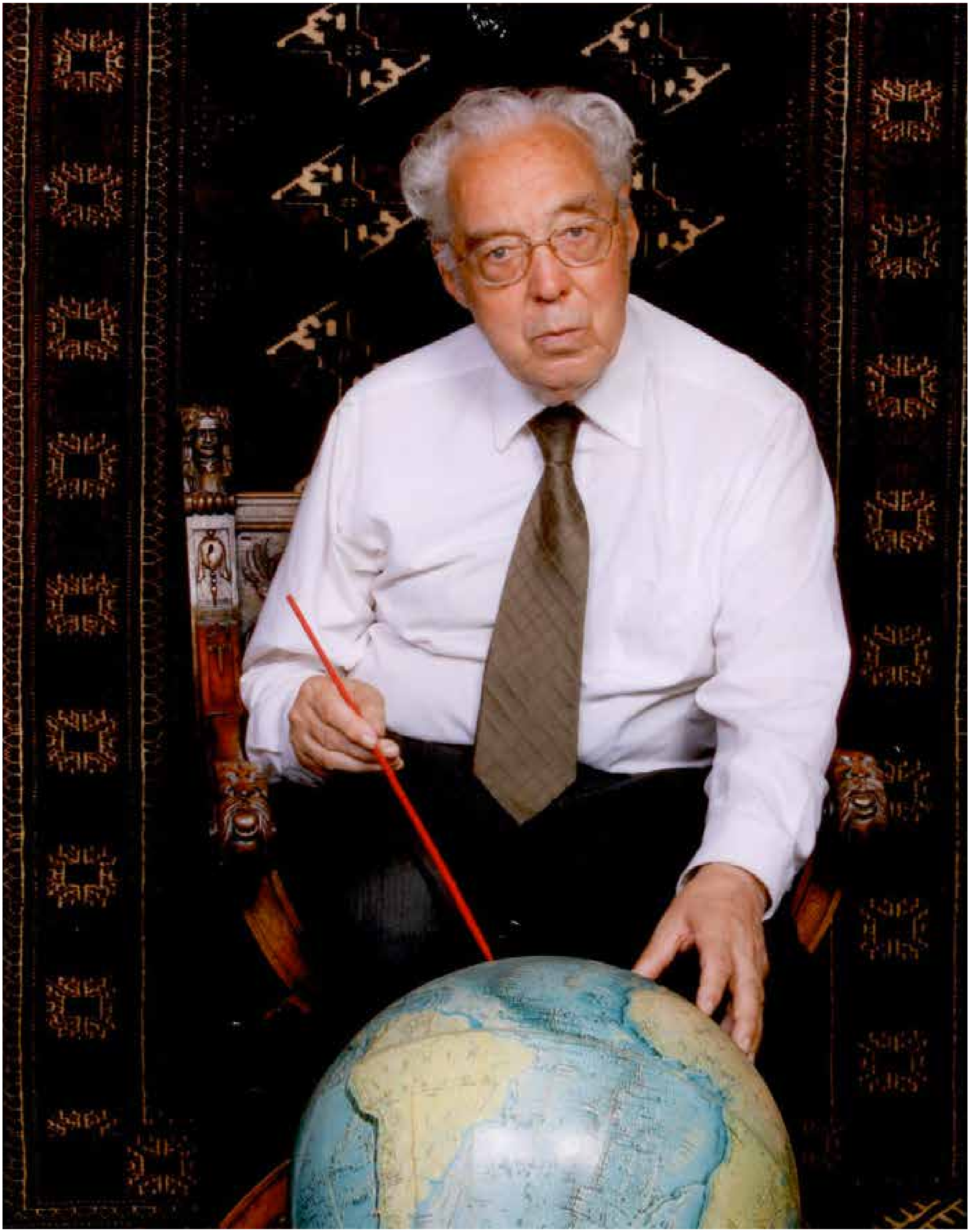

Par / by : J. Courtemanche, Magog (2013), pour / for www.mayrheliophysics.com

Dr. Franz C. MAYR (1933 -   )

Dr. Mayr was born in Lienz, Austria (Oct.12, 1933) and educated at the University of Innsbruck in an atmosphere of academic freedom, where the real teachers of a gifted student were the Masters of the Past: in the case of Dr. Mayr Alexander von Humboldt and Louis Agassiz, Ferdinand von Richthofen, Albrecht Penck and Albert Heim and many others.

He earned his doctorate in Botany. Eight years later he was a recognized authority on glaciers and glaciations in the Alps and accepted the invitation to teach at the University of Montreal.

He was a personal member of the IGCP-Project 73/01/24 of the UNESCO, a member of the New York Academy of Sciences, and a member of several other Learned Societies.

His study of the secular variations of the magnetic field during 10,500 years of glacial climate was the starting point for his contributions to heliophysics. The forcing function for climate on Earth was presented at the IGCP-Symposium in Kyoto (1981).

In 1985 Dr.Mayr created Nomos Interscience, a privately funded corporation for fundamental and applied research in geophysics and related fields. At the INQUA-Congress in Ottawa (1987) the booth of Nomos Interscience was visited by 121 scientists from 23 countries.

When Nomos Interscience had to close its doors Dr.Mayr obtained the coveted ultimate degree of academic freedom and devoted almost all of his time to reading, writing and research. His 'Contributions to Heliophysics' are only a small part of what he did and achieved.

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GUIDELINES

The present files were written for students (of science) with an open mind and no access to any of the big libraries of the Western World. Hence I have to tell them what Francis Bacon wrote in his essay "Of Studies":

> "Read not to contradict and confute, nor to believe and take for granted, nor to find talk and discourse, but to weigh and consider ...(these files) have to be read wholly, and with diligence and attention." (1597, version of 1625).

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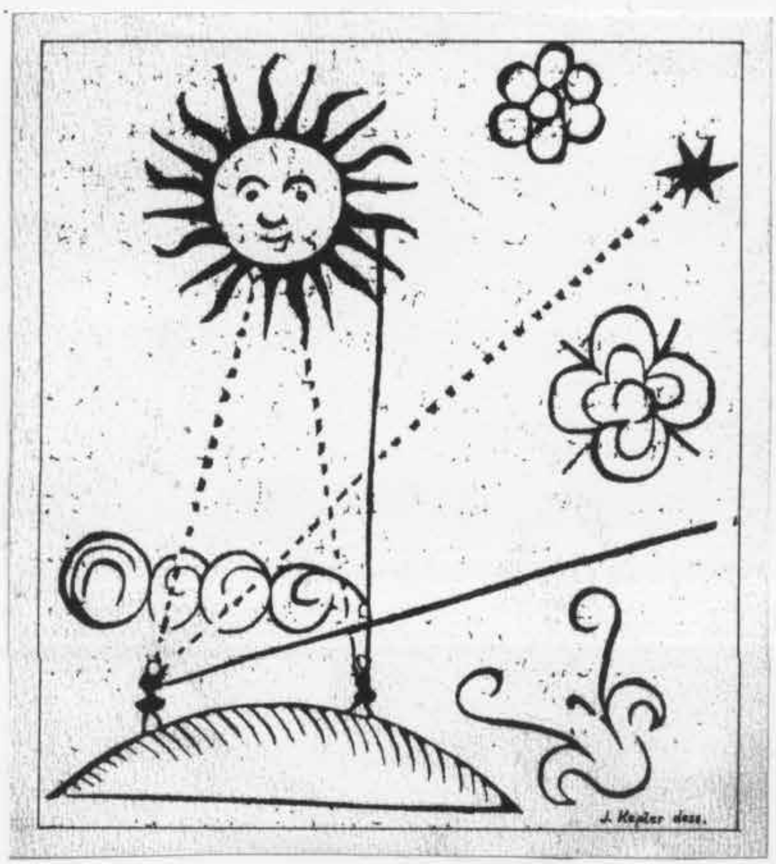


F.C.MAYR

File # 2

COSMIC EFFECTS ON SUN AND EARTH

Introduction

When Claudius Ptolemaeus conceived his brilliant system of circles, cycles and epicycles everybody assumed that the Earth was the centre of the Universe and immovable. There were no hints to prove its motion, and the available data suggested that the moon, Mercury, Venus, Sun, Mars, Jupiter and Saturn were satellites of Earth (1).

1400 years later Tycho de Brahe and Johannes Kepler provided the data for a heliocentric view which was reluctantly accepted.

On the following pages I will introduce some facts that cannot be denied, and a few arguments that cannot be refuted.

Sunspots and Solar Faculae

The daily mapping of sunspots is the oldest and most venerable program of heliophysics. 60% of the sunspots and sunspot-groups persist for less than 2 days, and only 5% have a lifetime of more than 11 days (2).

The latitudinal distribution of sunspots (3) and the rhythmic changes during a sunspot cycle (4) already received much attention, but little is known about longitudinal variations (5).

The figure on page 2 is a series of galactocentric diagrams for solar cycle 1(1755-1765) - 21(1976-1985). For each cycle, the month with the lowest sum of monthly means was considered to be the 'baselevel'(=100%) of the respective cycle. All deviations are, therefore, positive, and many of them are statistically significant (6).

It can easily be seen that each sunspot cycle had its own particular pattern of probabilities, but the clustering around certain galactic longitudes was not at random: the average for 230 years (1755-1985) shows two broad maxima (May, September) isometrically arranged around the annual minimum in January.

The salient point is the annual minimum. It cannot be understood unless there is a quasi-continuous energy supply on the galactic side of the Sun.

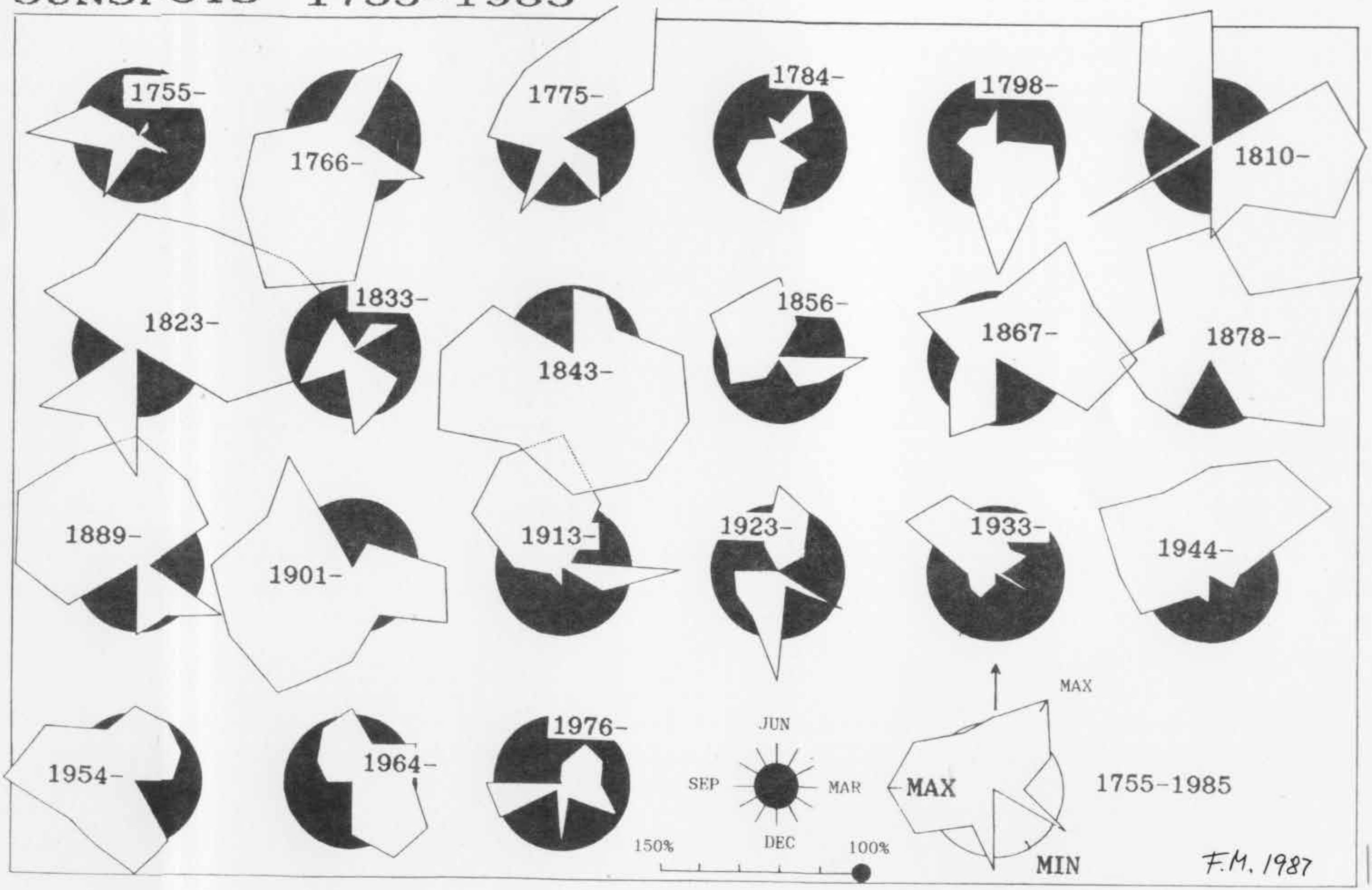
This energy input is not hypothetical. According to A.Shpitalnaya (7) solar faculae occur in two belts parallel to the galactic equator. This could not happen on an autonomous Sun.

Solar Magnetic Events

Solar magnetic events are convenientlly subdivided into a sequence of two events: the 'filament event' and the 'rotation event' (8).

The onset of a filament event is marked by a significant increase in the size and number of filaments and sunspots. It is usually followed by accelerated rotation, partial or total disappearance of filaments and a substantial decrease in the number of sunspots. Similar effects are brought about by a retarded rotation of the chromosphere (July 28, 2012).

SUNSPOTS 1755–1985



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In both cases the anomalous rate of rotation is followed by an anomaly of the opposite sign and the partial reappearance of photospheric (chromospheric) structures.

The irregular movement of sunspots produces twisted magnetic fields which may become the cause of 'rope structures' in the solar wind. The final outcome are flares on the Sun and magnetic shockwaves racing through interplanetary space.

Again an input of energy is needed to slow down or accelerate the movement of entire groups of sunspots. On Earth this energy input from space is measured by satellites of the NOAA. It may amount to several hundred, and even to more than 1000 gigawatt per day.

Auroral Flares

We have not had any great aurorae since January 25, 1938 (9). Ordinary Highs can be linked to events on the Sun; but the big flares on the Sun are definitely not the cause of powerful flares in the aurorae on Earth.

Auroral flares are very short. A difference of 1000 gigawatt may occur in less than 5 minutes, and a rise or fall of 200 gigawatt within a minute or two was observed many times (10).

Their seasonal distribution shows one, and only one significant peak early in November. At this time of the year the polar cleft of the magnetic field of the Earth points into the direction of the galactic centre.

From 2000 to 2005 one fourth of the reported flares (>200 gigawatt) occurred in the 22 days from October 29 to November 20, and there was a cluster of flares between 6h and 8h UT, and another one from 18h to 20h UT.

ENERGETIC AURORAL FLARES (2000-2005 AD)

DAYS	0	30	60	90	120	150	180	210	240	270	300	330	360
UT													
00-02	1	2	2	5	3	0	4	0	4	2	16	1	
02-04	4	2	3	1	5	2	8	4	6	0	25	2	
04-06	6	4	4	2	6	2	9	5	10	4	18	2	
06-08	8	3	5	5	16	8	8	12	12	12	36	3	
08-10	4	1	3	2	5	9	9	7	8	8	25	5	
10-12	4	3	4	0	6	2	14	10	2	8	16	2	
12-14	4	0	2	3	3	7	8	9	4	10	13	3	
14-16	1	3	1	3	4	1	14	4	9	11	16	2	
16-18	5	5	6	7	3	6	5	3	5	11	21	0	
18-20	7	1	5	8	11	9	5	8	9	5	28	1	
20-22	3	1	0	8	2	6	5	1	6	5	15	0	
22-24	3	0	0	6	7	2	5	1	4	1	16	1	
GW													
>200	50	25	35	50	71	54	94	64	79	77	245	22	
>300	9	0	5	13	22	6	31	10	21	11	86	4	

Solar magnetic events appear to occur on days with several auroral flares in the 100-500 Gigawatt range.

Cosmic Clouds 4

The observations were made at 45° N, 72° W; the device was a cube (750 ccm) of watersaturated infusorial earth The electric potential (mV) between top (+) and bottom (-) was measured 4 times per day:the figures below are the mean of 8 readings.

Voltages (mV) in a Cube of Infusorial Earth, 1996-2004

DAYS	1996	1997	1998	1999	2000	2001	2002	2003	2004
Ja 09/10		-17.5	-3.1	-66.8	**+183.1**	-9.6	**+258.8**	-11.0	+5.1
Ja 19/20		-21.6	+42.6	-4.1	+59.4	-6.1	**+248.5**	-9.3	+1.6
Ja 29/30		-25.2	+73.9	+7.6	+28.8	-2.3	**+205.2**	-11.5	+4.1
Fe 09/10		+9.3	**+108.5**	+5.7	-0.2	-2.6	**+125.4**	-10.8	+1.7
Fe 19/20		+39.5	**+133.9**	+5.5	+7.8	-1.5	+46.6	-13.0	+3.0
Fe 29/30		+25.0	**+136.0**	+23.0	-3.6	+0.1	+25.8	-13.3	+1.8
Mr 09/10		+20.0	**+130.5**	+17.8	-16.2	+32.2	+13.8	-14.9	+1.5
Mr 19/20		-14.8	**+121.3**	+25.1	-16.2	+26.5	+4.8	-17.2	+2.9
Mr 29/30		+24.3	**+139.8**	+30.5	+51.7	+59.0	-4.6	-14.8	-2.8
Ap 09/10		+39.0	**+129.3**	+26.2	+14.8	+19.9	-10.7	-15.6	-2.3
Ap 19/20	-16.6	-22.0	**+127.6**	+67.0	+20.5	+18.5	-14.3	-14.6	-4.9
Ap 29/30	-9.2	-38.5	**+137.9**	**+135.4**	+27.9	+11.1	-16.6	-20.1	-1.4
Ma 09/10	-12.7	-6.1	**+142.6**	+46.0	-0.8	+25.3	-23.7	-18.2	-3.2
Ma 19/20	-4.3	+25.9	**+148.0**	+42.6	+3.9	+6.0	-26.1	-27.1	-5.1
Ma 29/30	-21.5	-52.8	+71.6	+87.2	+33.7	+3.4	-30.0	-21.3	+0.6
Jn 09/10	-20.9	-44.0	**+114.2**	+43.2	+25.9	+6.8	-31.2	-26.1	
Jn 19/20	-10.5	+12.6	+69.9	**+105.5**	+16.8	+9.9	-30.4	-26.4	
Jn 29/30	-11.5	+13.1	**+114.9**	+72.0	+24.5	+0.0	-31.2	-31.2	
Jl 09/10	-11.6	+99.1	**+149.7**	+7.5	+2.2	+0.2	-27.2	-25.6	
Jl 19/20	-9.3	-50.8	+58.5	+41.8	+14.0	+12.4	-27.4	-23.1	
Jl 29/30	+12.8	-15.7	-8.7	+11.3	-11.7	-24.3	-24.8	-16.0	
Au09/10	+12.0	+50.8	+30.8	+7.3	+12.4	-21.3	-21.9	-30.0	
Au19/20	+59.9	**+118.6**	-10.5	-10.6	-8.9	-20.5	-23.2	-18.0	
Au29/30	+26.6	**+129.4**	+48.8	+2.4	-17.9	-16.4	-15.5	-9.0	
Se 09/10	-2.3	**+122.6**	+35.6	+36.8	-16.9	-7.7	-20.9	-4.0	
Se 19/20	+1.2	**+117.0**	**+114.7**	+4.7	-22.1	+12.1	-14.9	-9.7	
Se 29/30	+0.8	**+133.1**	**+159.3**	+7.9	-23.5	**+104.0**	-11.4	-4.3	
Oc 09/10	-4.4	**+133.9**	**+126.5**	+12.4	-17.8	**+121.5**	-11.4	-4.1	
Oc 19/20	-1.8	**+109.5**	**+142.6**	+10.2	-20.7	**+162.9**	-11.7	-0.6	
Oc 29/30	-6.2	**+119.6**	**+168.4**	-11.0	-17.5	**+163.2**	-10.9	-2.2	
No 09/10	-8.0	+45.9	**+166.8**	+15.9	-20.1	**+202.0**	-11.4	+0.3	
No 19/20	-6.3	+3.5	**+189.9**	-32.1	+18.3	**+234.9**	-10.5	-0.6	
No 29/30	-15.5	+14.9	**+193.8**	-30.9	-17.9	**+239.9**	-13.2	-0.4	
De 09/10	-16.6	+17.4	**+194.6**	-36.6	-16.4	**+253.1**	-12.6	+1.9	
De 19/20	-18.5	+36.9	**+193.9**	+11.5	-14.6	**+259.9**	-12.1	+0.2	
De 29/30	-17.4	-36.9	+12.8	**+214.0**	-12.0	**+262.5**	-11.0	+0.4	

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The recorded positive anomalies were far above the range known from atmospheric electricity and unrelated to any disturbance coming from the Sun.

A different type of cloud engulfed the Earth between July 19 and August 11, 2004, producing a phenomenal amplification of microwaves in the inchband (11). The cloud was drifting across the solar system at a speed of 6.3 km/sec and engulfing our planet a second time around Feb.1, 2006. Effects of this cloud could still be measured from June to December, 2011.

Concluding Remarks

Doubt is essential in Science, and fundamental in Sapience.
Both adore compelling evidence,
but, don't dare to discover facts that cannot be disputed.
Sapience will scoff and Science will wait -
for compelling evidence......

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End of File # 2

F.C.MAYR **File # 3**

A COSMIC CAUSE OF CLIMATIC VARIABILITY

Compelling evidence - of what?

The Concept

Climate as we understand it is a matter of energy exchange between Space and Earth. Almost all of this energy comes from the Sun. At the present time, one third of this incident solar radiation is reflected to space: the rest is absorbed and transformed into infrared planetary radiation.

Since the atmosphere is almost opaque to infrared radiation we live, to say so, in a sort of greenhouse.Evaporation keeps the greenhouse cool and comfortable; only 2% of the incident radiation is transformed into kinetic energy of atmospheric circulation (1).

Climatic variability is, above all, understood as a change in the pattern of atmospheric circulation. The energy needed is a fraction of the total kinetic energy of atmospheric motion. The origin of this small amount of energy is the subject of the present file.

The Data

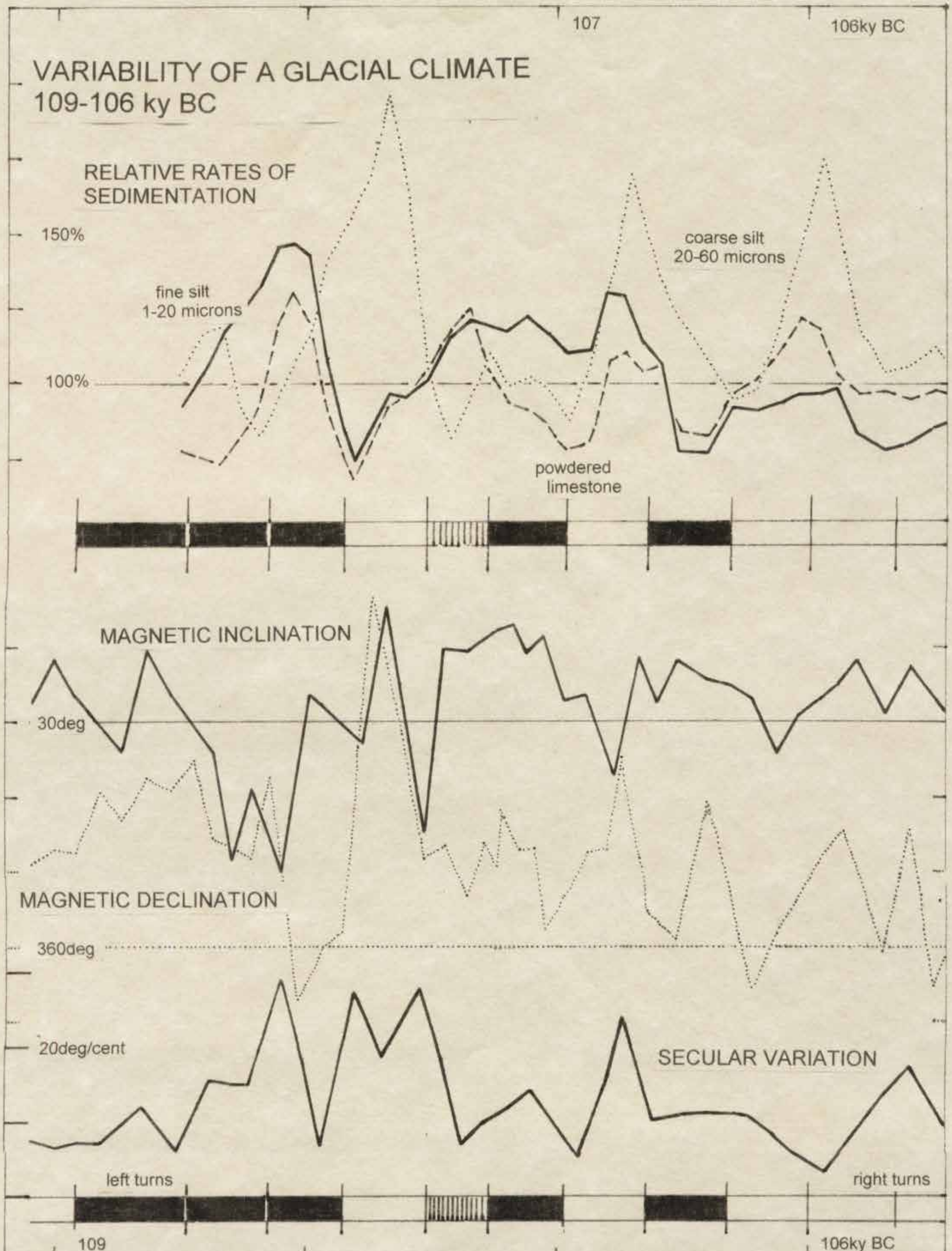
The prerequisites for the present report - a monograph on Eurasian paleoclimates of the Pleistocene (2) and a complete record of the last glaciation in the European Alps (3) - were published in 1968. The study of 10,500 years of paleomagnetic and paleoclimatic variations before, during and after the last paleomagnetc event on Earth (4) began in 1974. The investigated profile, a bluff of glaciolacustrine silt , was 56 m high.

90% of the sediment were flakelets of mica. The principal carrier of magnetism were spherules of micrometeorites. The boundaries between annual layers were mostly erosional and could be determined with confidence: the error was less than 20 years in 5000 years.
In spite of these unique conditions the first 10,000 paleomagnetic data were incompatible with magnetic data for the last 400 years; only the last 2000 measurements could be used to compute the secular variations of the magnetic field and to prove that and how magnetism was related to climate (5).

The Rules and the Law

In the High Alps dust (silt) is produced in several ways. The distribution of grainsizes is always lognormal, but the graphs for sediments of mixed origin show kinks. 20 microns is the smallest size produced by experimental torrential attrition (5, fig.1).

When the site of the bluff (47.3 N, 11.6 E) was still part of a lake (see graph on page 2) magnetic inclination was 30 degrees instead of 60, and it was only 10 degrees at the peak of the biggest anomaly. Magnetic declination was the same as today, with occasional 'excursions'. The worst anomaly - N 44 E - occurred when the percentage of coarse silt (20-40 microns) reached its highest value in 10,000 years.



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Modern data from the area suggest relationships which are not generally known (6, p.61 and fig. 49). Between 1909 and 1918 the gusty wind from the South ("Foehn") blew on 84 days of the year (max: 104 in 1916). Forty years later (1948-57) the number had dropped to 46 (min: 21 in 1955). During those 40 years the down-melting of the glaciers was spectacular, and the average amplitude of solar magnetic activity rose from 15.5 to 23.6 nT (7).

The first mathematical equation derived from this paleomagnetic survey linked the Gleissberg cycle of solar magnetic activity (80 yrs) to the observed periods of equal trend (112 yrs) and equal spin (280 yrs) of the magnetic field (file # 8, p.2).

Harmonic relationships among the intervals between important turning points enabled me to create a model of 22 solitons and to simulate the structure of the last glaciation. The true nature of the constant K of the model was not yet known (8).

The verified sequence for the Holocene was presented at the IGCP 73/01/24 Meeting in Kyoto (1981). The true constant K was now known: it was dimensionless and derived from the fine structure constant of matter (9).

Cross-checking with real magnetic data (1840-1980) made the model almost perfect. It had become the Law.

Computed Calendars of Climatic Change

The original model (9) was a set of 22 solitons of galactic origin, with periods from 3,000 to 12,000 years. The harmonics H1-18 were used to compute secular variations.. The Fibonacci series H45-63-108-171-279-450 was added to predict vacillations of climate without defining the energy balance of the Earth (10,fig.31). For the graph on page 4 of this file I used the percentage of decades with a very high or a very low sum of $\omega_i t$ to

$\sum b_i \omega_i t$ predict glacial and interglacial epochs of the Earth, to compute the beginning of Pleistocene and to define the glacial and interglacial periods of the Pliocene (11). The graph was exhibited at the INQUA Congress in Ottawa (1987) and explained to visitors from 23 countries.

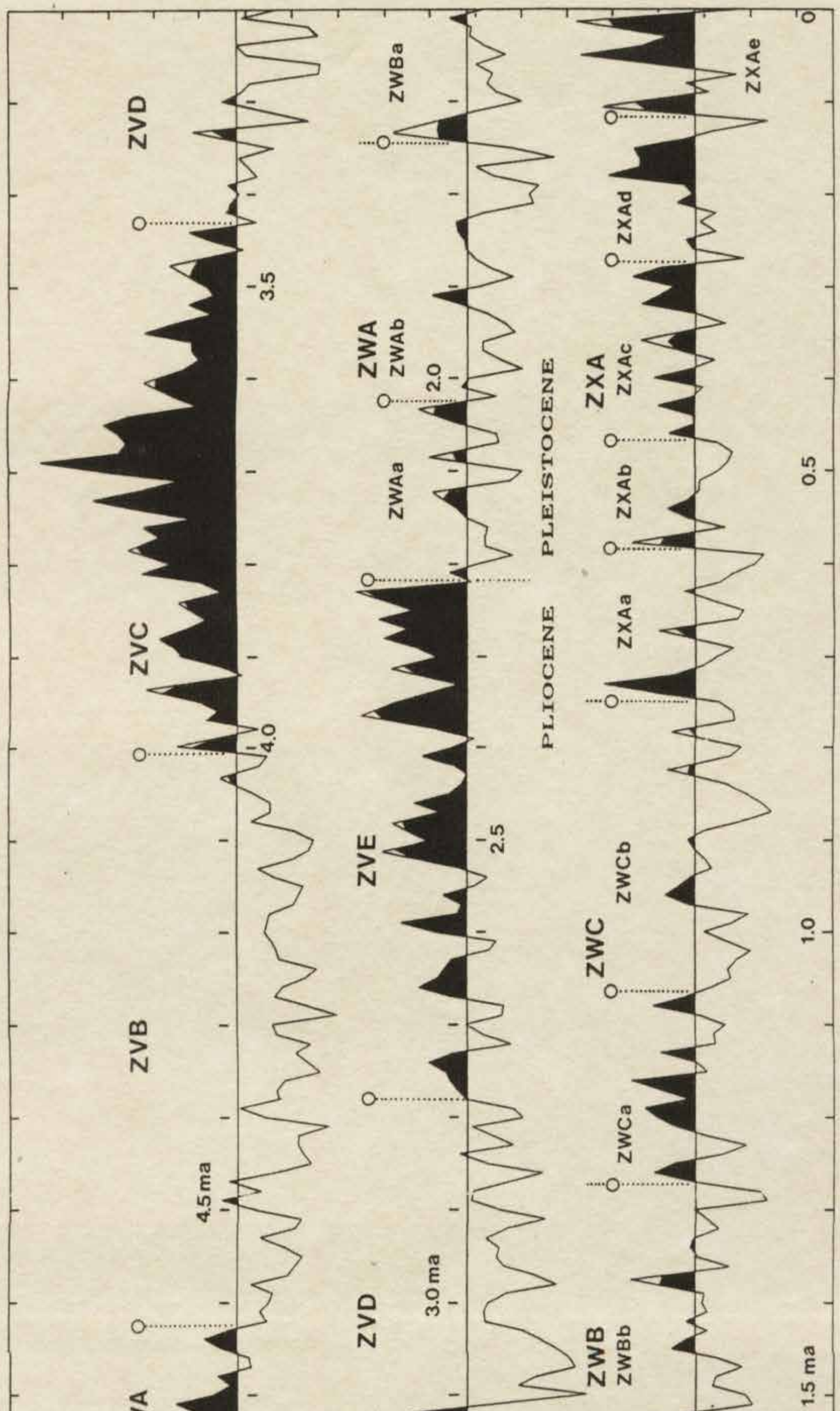
Synthetic Maps of Atmospheric Circulation

Dsin (+/-) and dcos(+/-) of the model define four types of "events": A(+,+), U(+,-), D(-,-) and V(-,+). The nature of the predicted "events" depends on the shortest period of the highest harmonic, and on the number of points per year.

The synthetic map on page 5 of this file was exhibited at the Arctic Policy Conference in Montreal (December 1988). It is an image of the trodden paths of cyclones in the. *Northern Hemisphere. Their alignment over Europe and* Northern Siberia *suggests a* "pole of circulation" over Northern Greenland, but there was also a strong polar vortex with a jet stream spiralling out from the north magnetic dip-pole.

The magnetic type AA describes, of course, only one out of four cosmic situations (A,U,D,V), and there are three other conditions (solar-positive, solar-negative and solar-neutral) which may occur on days when the predicted cosmic effect is close to zero.

4


ZVA
ZVB
ZVC
ZVD
60 ‰
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4.0
3.5
ZVD
ZVE
ZWA
ZWAa
ZWAb
ZWBa
50 ‰
40
3.0 ma
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PLIOCENE
PLEISTOCENE
ZWB
ZWBb
ZWC
ZWCa
ZWCb
ZXA
ZXAa
ZXAb
ZXAc
ZXAd
ZXAe
50‰
40
1.5 ma
1.0
0.5
0


WINTER
PREDICTIONS: NOMOS INTERSCIENCE
METEOROLOGY: DEUTSCHER WETTERDIENST
BAROMETRIC LOWS
60 Cases
October - March
1969 - 1988
1-7 = -(8-56)mb


Stereographische Projektion
1: 60 Mio in 60° Nord

The Role of the Sun

The Sun disturbs the pattern (A,U,D,V) created by cosmic forces.

In Eastern Canada predominant galactic influence tends to deepen or widen barometric Lows between the north magnetic dip-pole and the southern part of Hudson Bay. Solar-terrestrial magnetic coupling turns this alignment to the East: the difference is about 18 for solar-positive, and 33 for solar-negative days (12). In Northern Siberia the Lows are displaced to the West.

Magnetic polarity changes at the central meridian of the Sun will trigger pressure events at the 500 mb level of our atmosphere, usually between 30 and 90 Latitude (N). The pressure dropped on solar-positive days and rose on subsequent solar-negative days. In the midlatitudes the average change was +/- 3mb, enough to rearrange the pattern of barometric ridges and troughs.

In Search of a Base-Level

The absence of cosmic forces (magnetic type 00) on solar-neutral days yields the closest approximation to the base-level of atmospheric circulation. The map on page 6 of this file summarizes these conditions for the Northern Hemisphere and the years 1986, 1987 and 1990. The clustering of cyclones along the north-polar magnetic cleft was still there, and the internal dynamics of the system seem to favour a few other places as well; but the predominant flow of air was zonal. Arrows indicate barometric troughs.

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End of File # 3

F.C. MAYR **File # 4**

THE PREDICTION OF WEATHER AND CLIMATE

There is no royal road to science.

Introduction

Our memory is short and unreliable. The recurrence of events "that had not occurred from time immemorial" is less than 50 years, and disaster may strike again 10 years later.

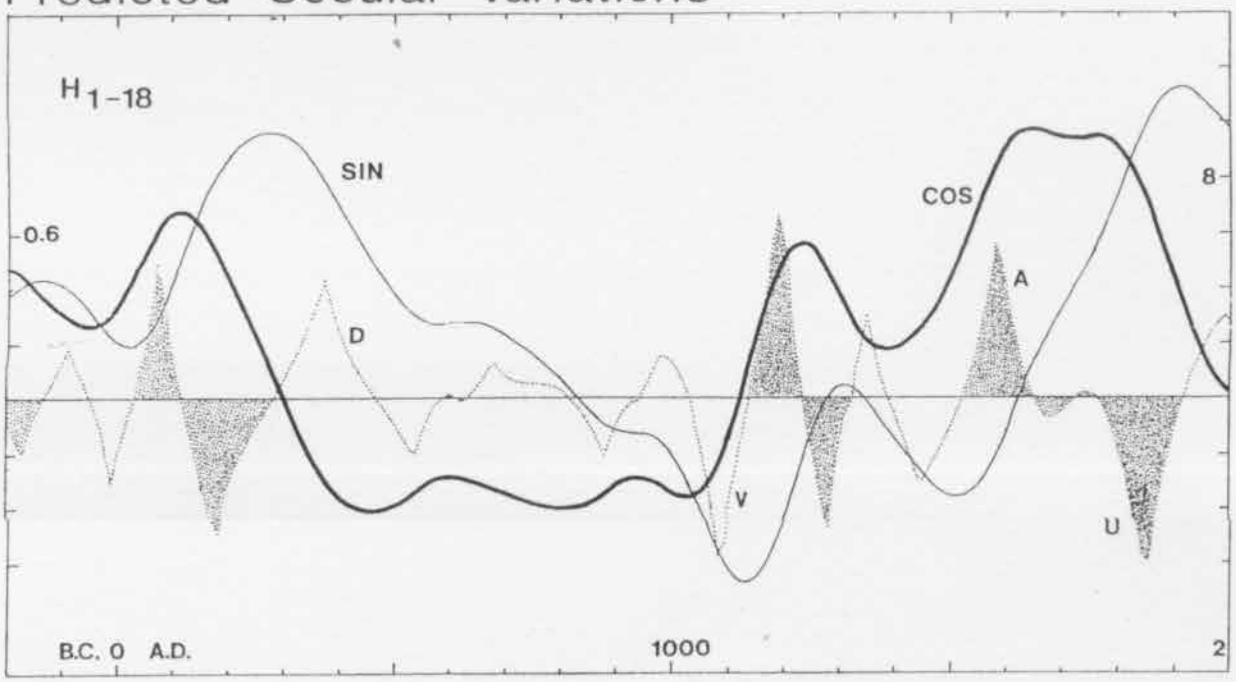
The case seemed hopeless until I could show that the small fluctuations of climate during the earliest phase of the last glaciation were of the same amplitude and duration as those of thelast 10,000 years (1). The resulting model enabled me to predict the climatic record as it occurred 100,000 years later (2).

The predictions made public at the Arctic Policy Conference in Montreal (file #3, p.5) were much more detailed, but the concerned departments had no ears to listen. I will have to explain again how the title of this file has to be understood.

The Global Model

As mentioned before (file # 3, p.3) the original model consists of 22 solitons of galactic origin and equal energy. The first 18 harmonics and the forcing function RTFI (file # 5,p.5) will suffice to predict fluctuations of climate on a global scale. The graph for the last 2000 years was published in 1990 (3).

Predicted Secular Variations



The addition of the Fibonacci Series H45-63-108-171-279-450 turns the global model of the preceding page into a powerful tool to predict anomalous patterns of atmospheric circulation which may last from 1 to 5 years (see file # 3, p.3; **(10) = 5 years**).

TYPE	LOW	YEAR	YEAR	HIGH	TYPE
V	- 737	1003.5			
			1039.0	+ 750	A
V	- 901	1086.0			
V	- 1161	**1101.5 (4)**			
			1129.0	+ 741	A
V	- 891	1160.5	1150.5	+ 715	A
V	- 960	1168.0	**1174.5 (4)**	+ 811	A
			1190.5	+ 812	A
U	- 832	1207.5	1203.0 (3)	+1141	A
U	- 703	1226.0			
U	-1233	**1257.5 (10)**	**1251.5 (5)**	+1500	A
U	- 710	1275.5			
U	- 807	1330.0	1325.5	+1010	A
U	- 808	1341.5	1346.0 (3)	+1481	D
U	- 705	1372.5			
V	- 699	1380.5	1377.5	+ 841	D
V	-1007	1407.0 (3)	1417.0	+ 924	A
			1441.0	+ 747	D
V	- 720	1456.5			
V	- 745	1469.5			
			1529.5	+ 739	A
			1539.0	+ 804	A
			1564.5 (5)	+ 858	A
			1588.5	+1055	A
U	- 785	1618.5 (3)	1624.5	+ 900	D
			1633.0	+ 723	D
U	- 746	1679.5			
			1711.0	+ 796	A
U	- 710	1728.5			
U	- 891	1749.0			
U	- 879	1766.0	1770.0	+ 744	D
U	- 744	1782.0	1777.5	+ 705	A
U	- 709	1813.0			
U	-1448	**1858.0 (5)**	1865.0 (3)	+ 855	D
			1877.5	+ 984	D
			1889.0	+ 848	D
V	- 763	1900.0			
U	- 851	1912.5	**1918.0 (4)**	+988	D
V	- 929	1922.0	1925.0	+ 705	A
U	- 770	1946.5			
U	- 710	1953.5	1962.0 (3)	+1104	D
V	- 769	1990.5			
V	- 742	1998.0	2001.5	+ 910	A
U	- 891	2019.0	2024.0	+ 815	D

The worst anomalies occurred at the beginning and in the middle of the 13th century. At that time weather in Southern France was so bad that dwellings in caves which were safe and comfortable before 1200 AD had to be abandoned (4, annex 17). At the same time (1215-1299 AD) the semiarid Southwest of the United States became exceedingly dry (5). The reported paleomagnetic "excursion" was the strongest in 1900 years (6).

The glaciers of the European Alps were growing, but only 3 of them became dangerous. The Ruitor Glacier in Aosta created several ice-dammed lakes. Their sudden discharge in September 1284 AD. destroyed the old church of Greissan (4, annex 13). The Allalin Glacier in Switzerland blocked the main valley and created a lake covering the flats of the Mattmark in 1300 AD (7). The Vernagt Glacier (Tyrol) did the same around 1310 AD. A sudden discharge of this lake devastated many a good pasture in the Oetz valley. Hence certain farmers were exempt from taxes in 1315 and thereafter (8). The event was still remembered 300 years later.

The european counterpart of the next dry spell in Arizona and New Mexico (1573-93) was the spectacular growth of glaciers in the Alps between 1550 and 1600 AD. A gold-mine at the Pasterze (Austria) was abandoned in 1570 AD when the surface of the ice was 20 meters above the entrance. The entrance remained hidden for more than 400 years (unpublished). The Allalin Glacier created the next lake in the Mattmark in 1589 AD. The spell ended between 1600 and 1620 AD (4,115-126 and 137-140).The table on page 2 of this file suggests a change in the pattern of atmospheric circulation around 1620 AD.

The anomaly around 1858 was of a different type: it marked the end of the latest "little ice age". A repetition of lesser magnitude occurred around 1918 AD..What followed was already mentioned on page 3 of file # 3.

Synthetic Maps

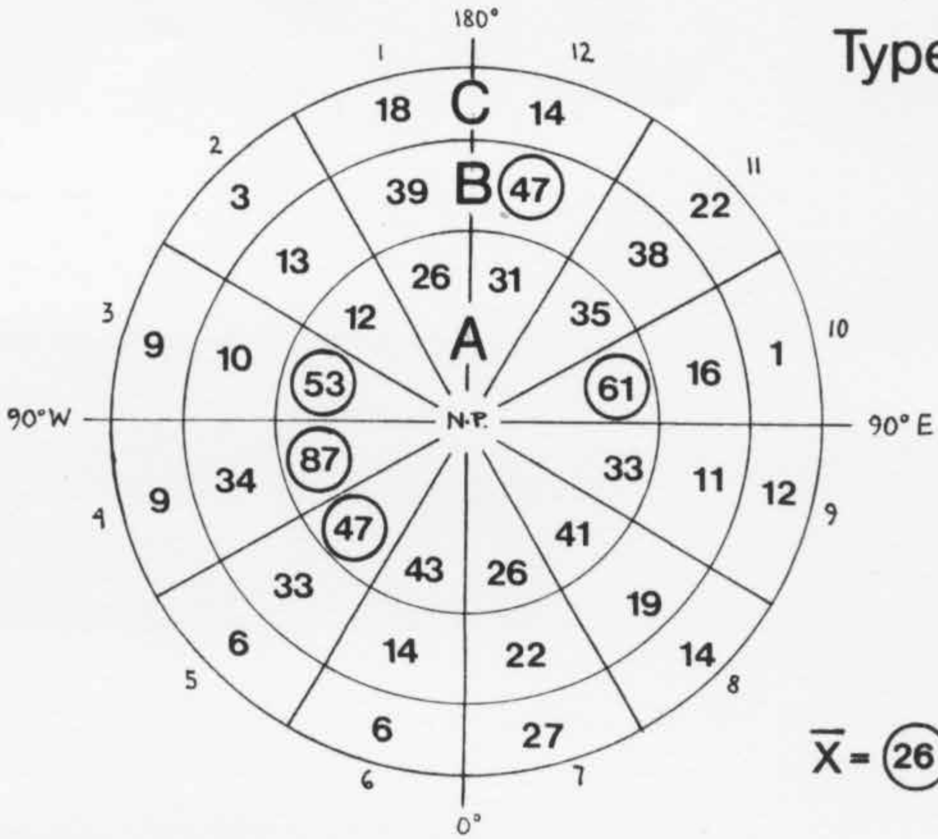
Extension of the global model to H379683 and the computation of 1 point every 4 hours created listings (MFC.SYN) that could be used to predict anomalous patterns of atmospheric circulation whenever they would occur. The synthetic map on page 5 of file # 3 is the sum of 60 cases of magnetic type AA between 1969 and 1988. The map speaks for itself and needs no comment.

AA was, by the way, the magnetic situation on New Year's Eve 1950/51, and the many avalanches in the Eastern Alps were the worst in more than 600 years. According to the files of Nomos Interscience they were the worst in more than 2000 years.

Charts of Cyclonic Activity

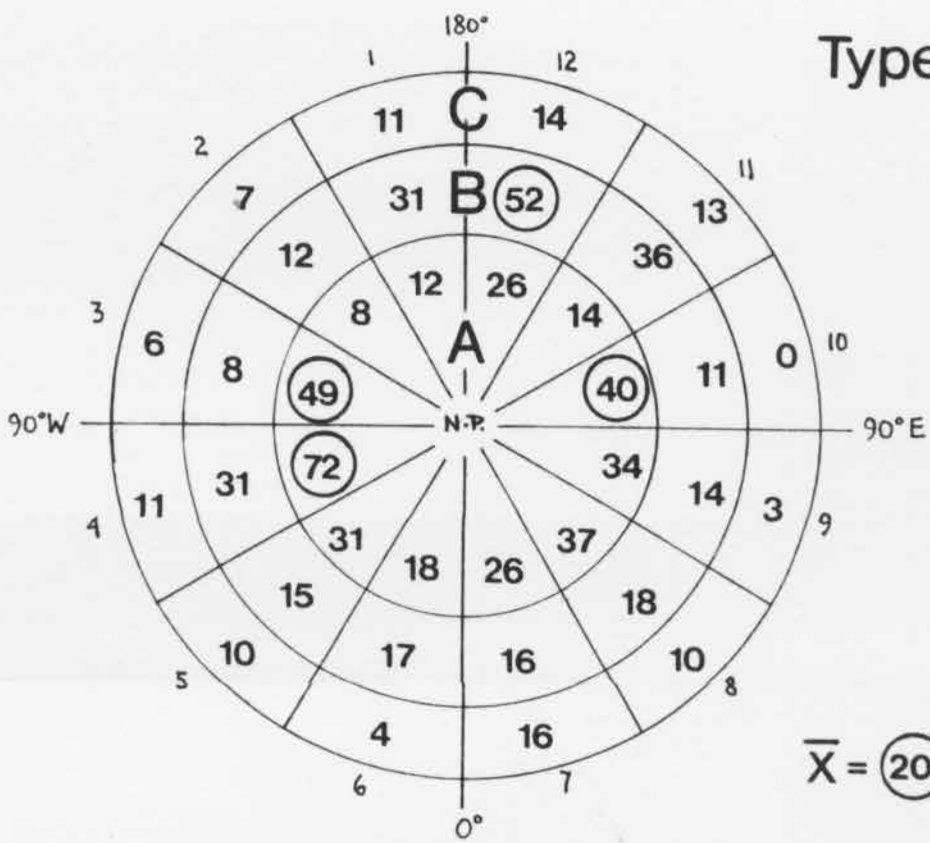
Synthetic maps must be complemented by charts of cyclonic activity. The charts on page 4-6 of this file were exhibited at the Arctic Policy Conference in Montreal (1988). On these graphs the Northern Hemisphere north of 37° Latitude was subdivided into three zones (37-47°, 47-60°, 60-90°) and 12 sectors of equal area. The weight **(a·b)** given to an area depends on both, the number **(a)** and the intensity **(b=1-7)** of the observed barometric Lows (at 500 mb). Each chart is the sum of 30 cases.

Type AA



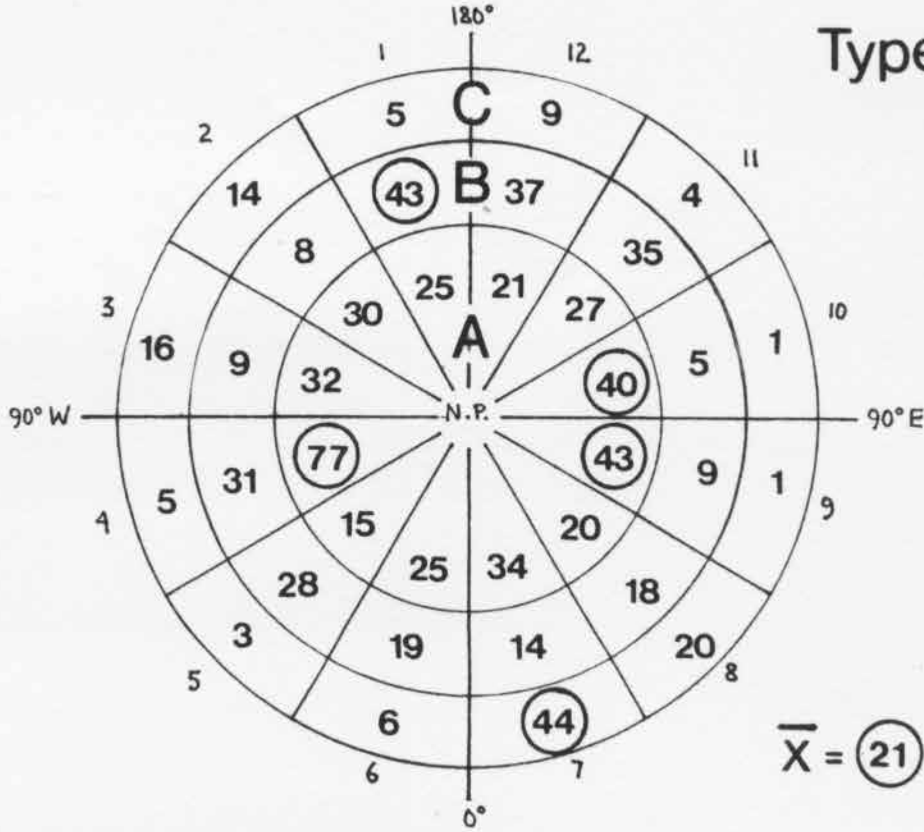
$\overline{X}$ = (26)

Type UU



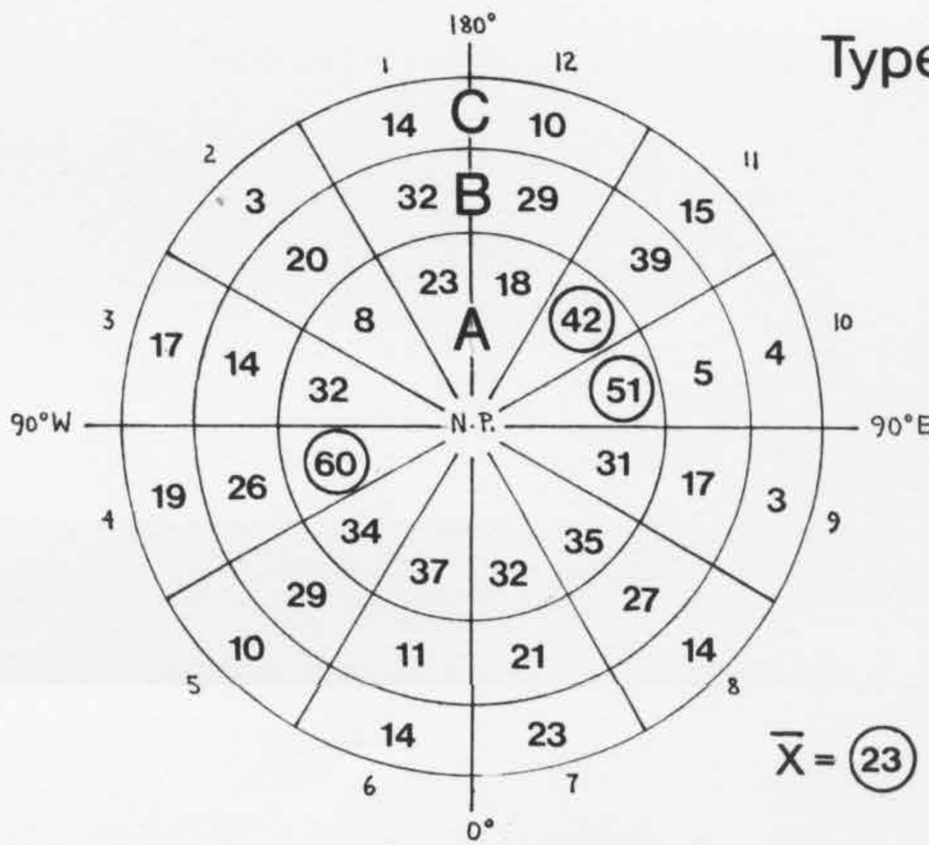
$\overline{X}$ = (20)

Type DD



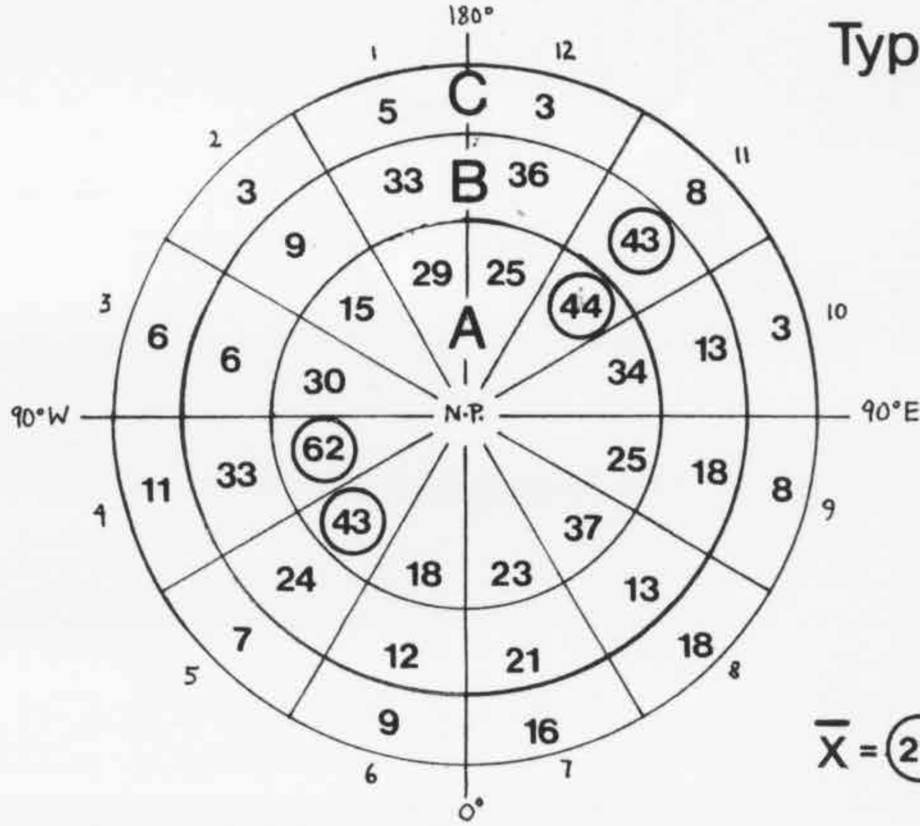
$\overline{X}$ = 21

Type VV



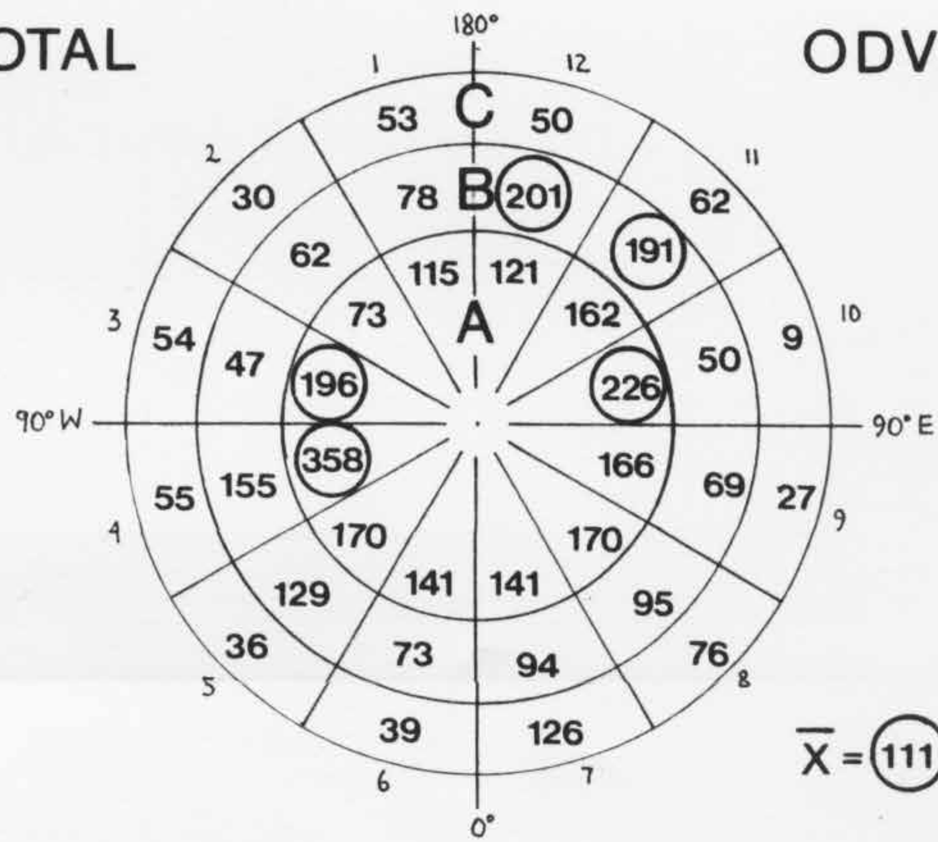
$\overline{X}$ = 23

Type 00



$\overline{X}$ = 21

TOTAL ODVAU



$\overline{X}$ = 111

Fig.7

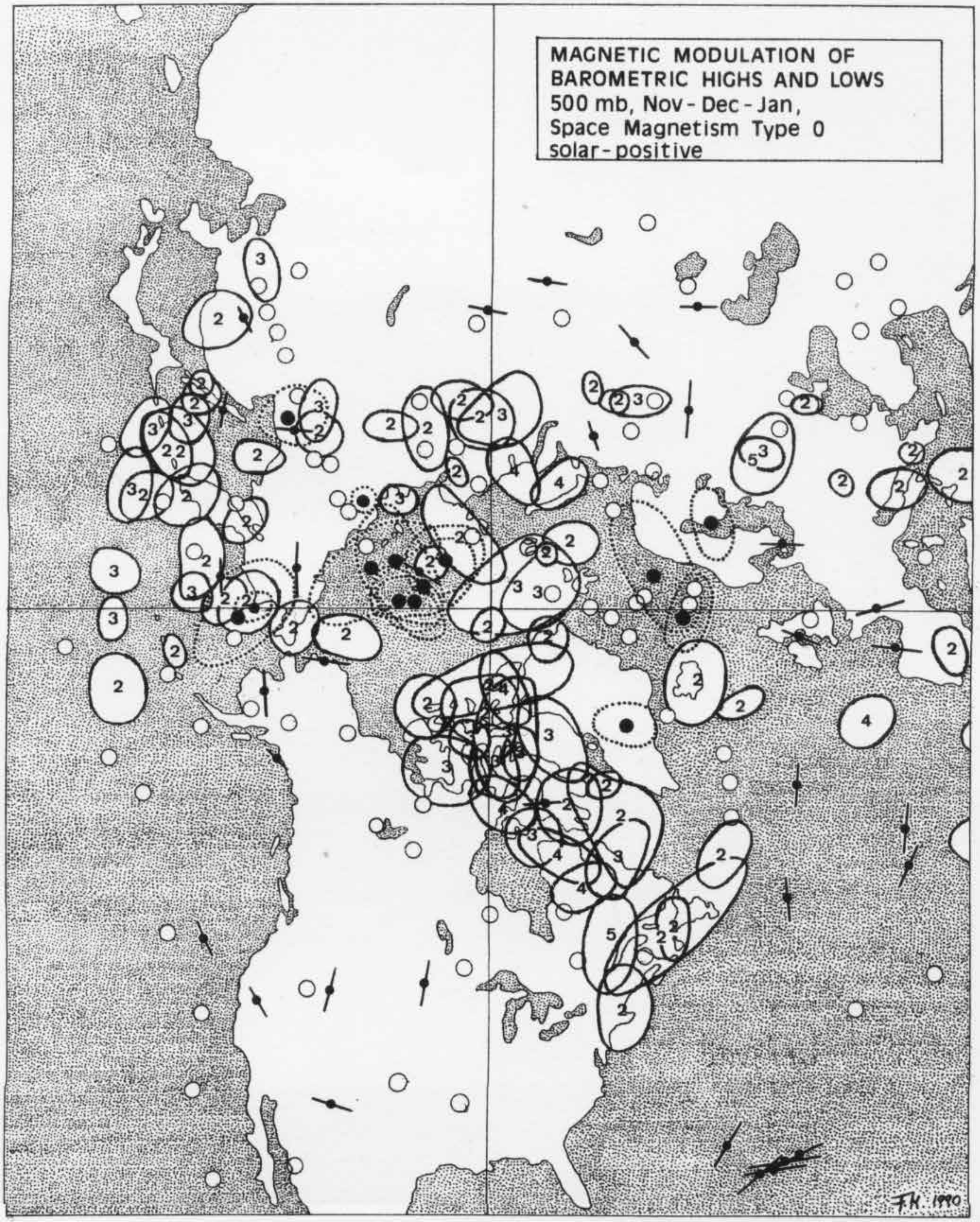


Fig.7: Magnetism and Meteorology. - Position of barometric highs and lows (500 mb, Nov.-Dec.-Jan.) on 19 days dominated by solar-terrestrial magnetic coupling (solar-positive).

Fig. 8

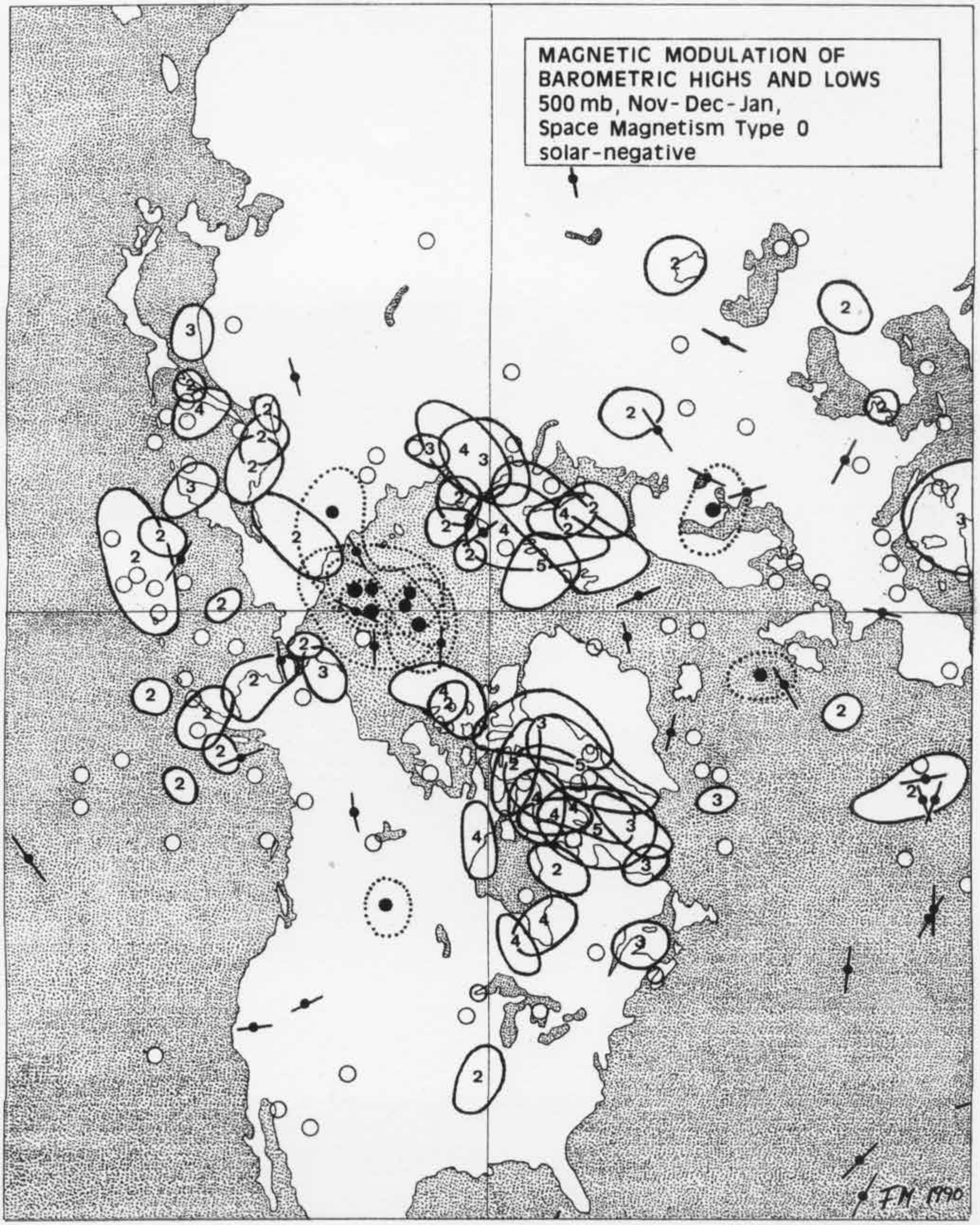


Fig.8: Magnetism and Meteorology. - Position of barometric highs and lows (500 mb, Nov.-Dec.-Jan.) on 17 days dominated by solar-terrestrial magnetic coupling (solar-negative).

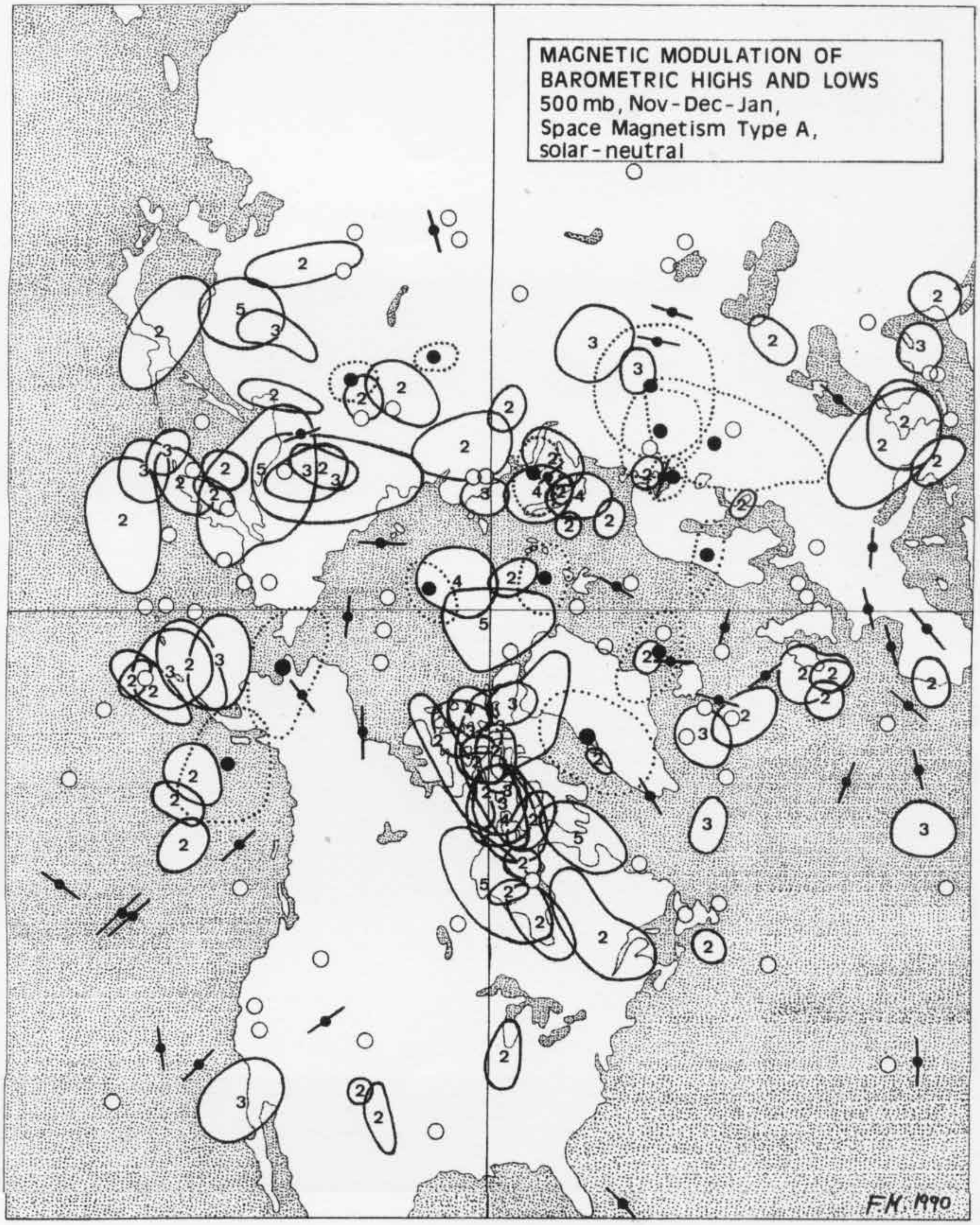


Fig.9: Magnetism and Meteorology. - Position of barometric highs and lows (500 mb, Nov.-Dec.-Jan.) on 17 days dominated by galacto-terrestrial magnetic coupling of type A(+,+).

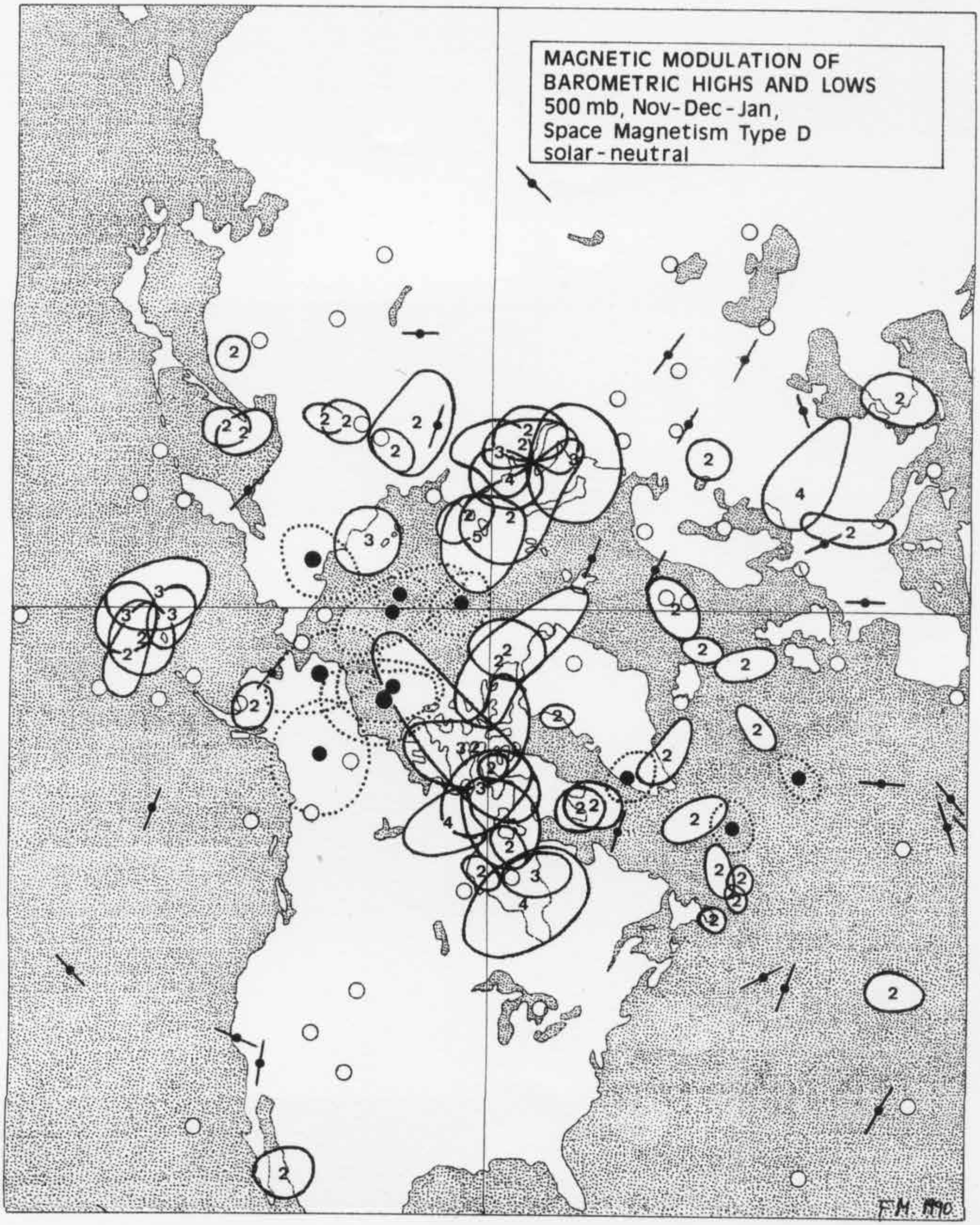


Fig.10: Magnetism and Meteorology. - Position of barometric highs and lows (500 mb, Nov.-Dec.-Jan.) on 13 days dominated by galacto-terrestrial magnetic coupling of type D(-,-).

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The average cyclonic activity of the Northern Hemisphere does not seem to change; it is the pattern which varies considerably. The charts will clarify what can be expected.

Atmospheric Pressure Events

Atmospheric pressure events occur when the magnetic poles of the Earth are coupled with strong photospheric fields on the Sun (3). Pressure at the 500 mb level will drop if the Earth is connected to strong positive fields at the central meridian of the Sun; and it will rise when the planet is connected to strong negative fields on the Sun (see file # 3,p.7).

Pressure events are predictable if their cause is cosmic. The respective model of Nomos Interscience (**N**) was derived from two independent models (for Sun and Earth,see Annex 1).

Some of these events will spell disaster on a local or regional scale.

Concluding Remarks

The study of atmospheric pressure events yielded compelling evidence that meteorology and magnetism - on the sun and in space - are linked to each other, although this may not be a common opinion in the United States.The four maps attached to this file (fig.7-10 from (3)) speak for themselves and need no comment except one: Faraday was right (9).

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End of File # 4

F.C.MAYR **File # 5**

A NEW MODEL OF SOLAR MAGNETIC ACTIVITY

Are you still confused? Yes, but on a higher level.

The Great Minimum of Solar Magnetic Activity

It occurred recently, between 2007 and 2009. Counting the absence of visible sunspots, it lasted 777 days and had two 100-day-periods with 90 or more spotless days(1).

There is, however, a better way to describe the event.

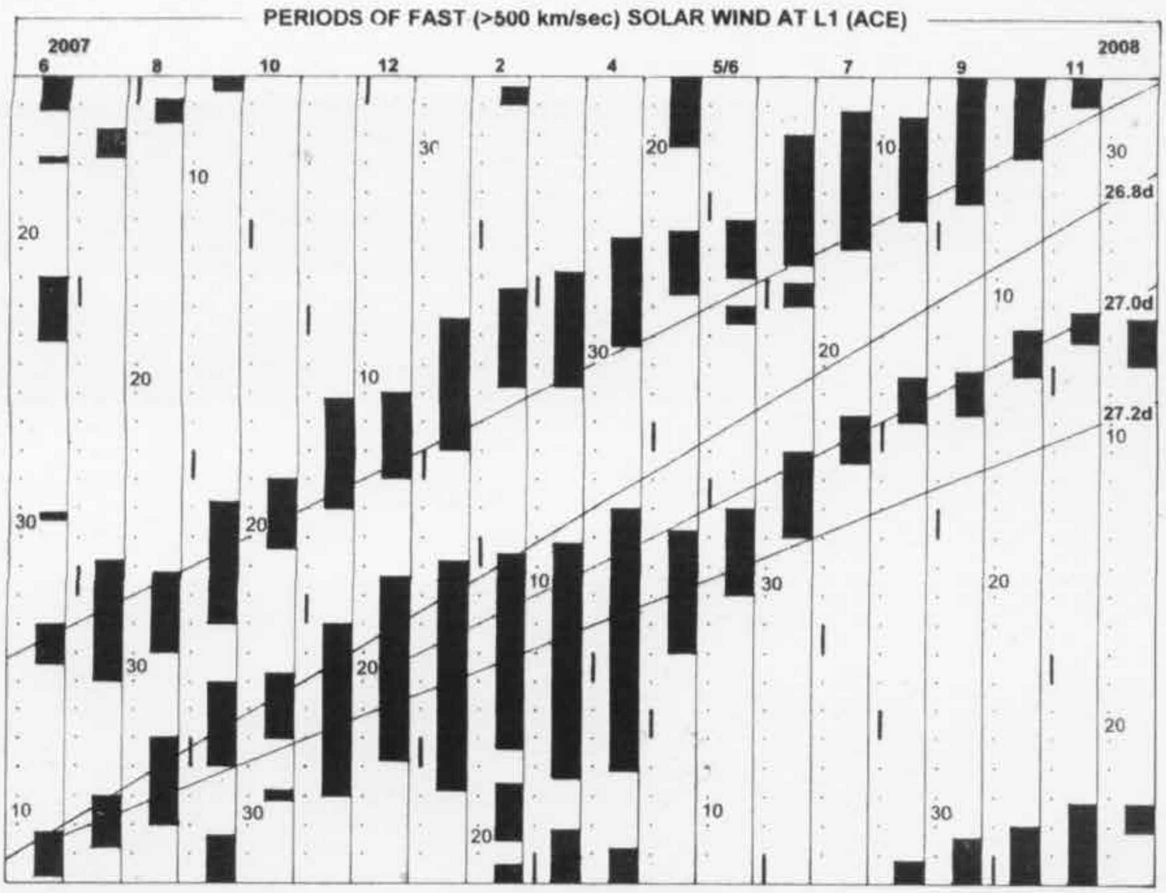
The Solar Wind at L1 (Spacecraft ACE)

	2007	**2008**				**2009**			
	OC-DE	JA-MR	AP-JN	JL-SE	OC-DE	JA-MR	AP-JN	JL-SE	TOTAL
blank	n = 65d	57d	62d	86d	64d	76d	66d	72d	= 75%
km/sec									
<278	10	-	-	2	7	-	13	7	39
287	12	1	-	18	**38**	12	28	20	129
302	17	4	8	**34**	**35**	20	**41**	29	188
318	15	6	14	18	27	**38**	**46**	30	194
335	27	6	11	**46**	27	**39**	**35**	**40**	231
353	27	11	24	**47**	27	**42**	**42**	**48**	**268**
372	23	14	19	**35**	30	**39**	**38**	**46**	244
392	26	20	31	27	31	**34**	30	**38**	237
413	17	**37**	19	20	21	**43**	20	24	201
435	17	25	15	17	15	29	13	25	156
458	15	25	28	13	17	22	11	25	156
483	14	19	**38**	11	11	8	13	15	129
509	10	21	27	11	14	9	5	13	110
537	10	19	25	13	18	7	9	5	106
566	18	19	28	17	12	4	1	2	101
596	23	21	22	13	4	1	-	1	85
628	20	**46**	24	16	8	3	-	-	117
662	8	31	12	7	10	-	-	-	68
>662	4	20	7	3	3	-	-	-	34

www.spaceweather.com 4 readings/day missing data not replaced average = 20

From January to October 2008 the frequency of fast solar wind (>600 km/sec) fell from 97 cases to 21; the frequency of the slowest solar wind (<290 km/sec) rose from 1 to 45: everything else was a side-effect..

An unexpected side-effect was the appearance of a second centre of fast solar wind in June, 2007. Its activity ended in March,2009.



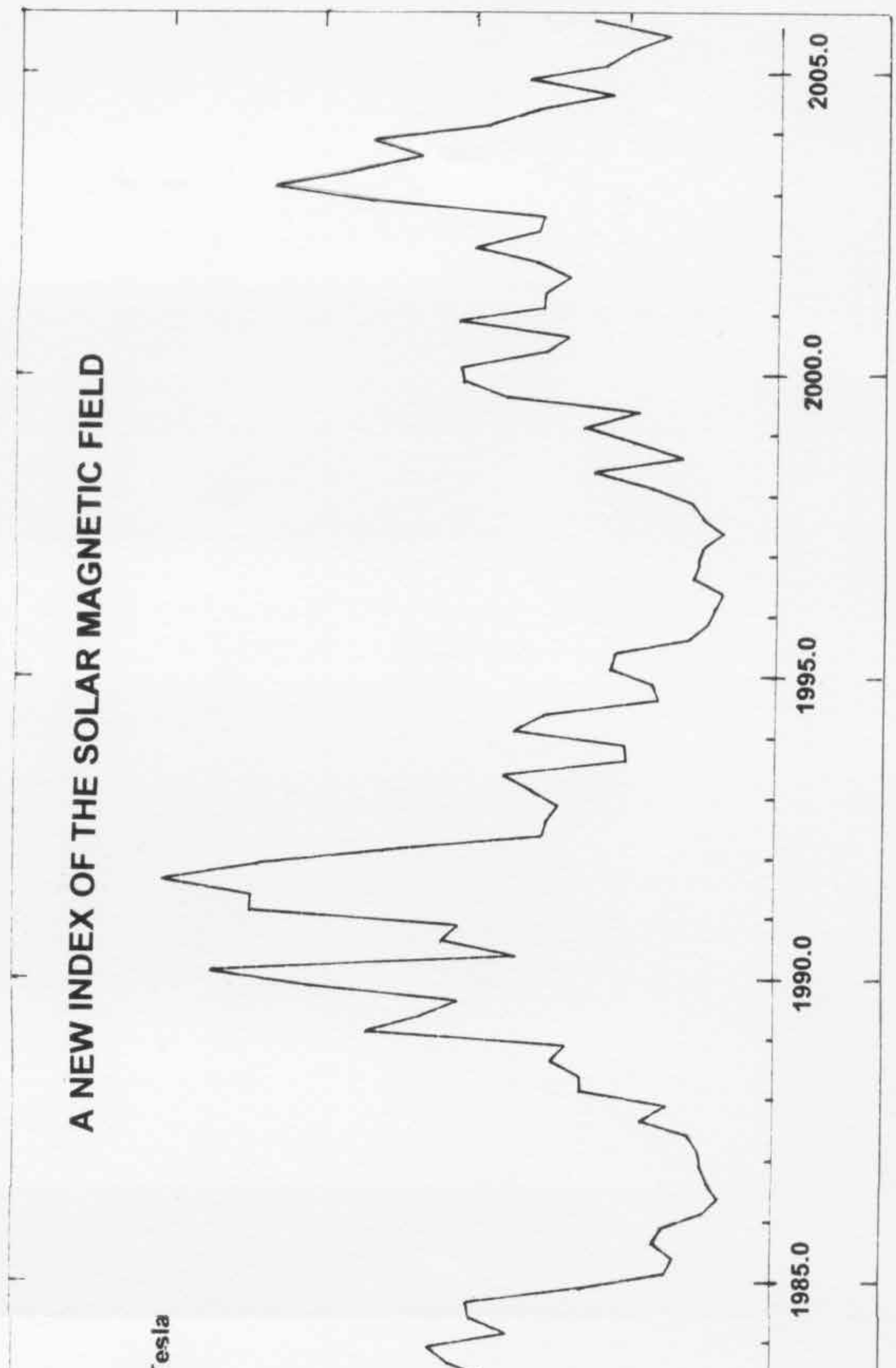
From an energetic point of view the ellipticity of the Earth's orbit is much more important than the difference between solar maximum and solar minimum (2); but the changes leading to Solar Minimum appear to be more interesting.

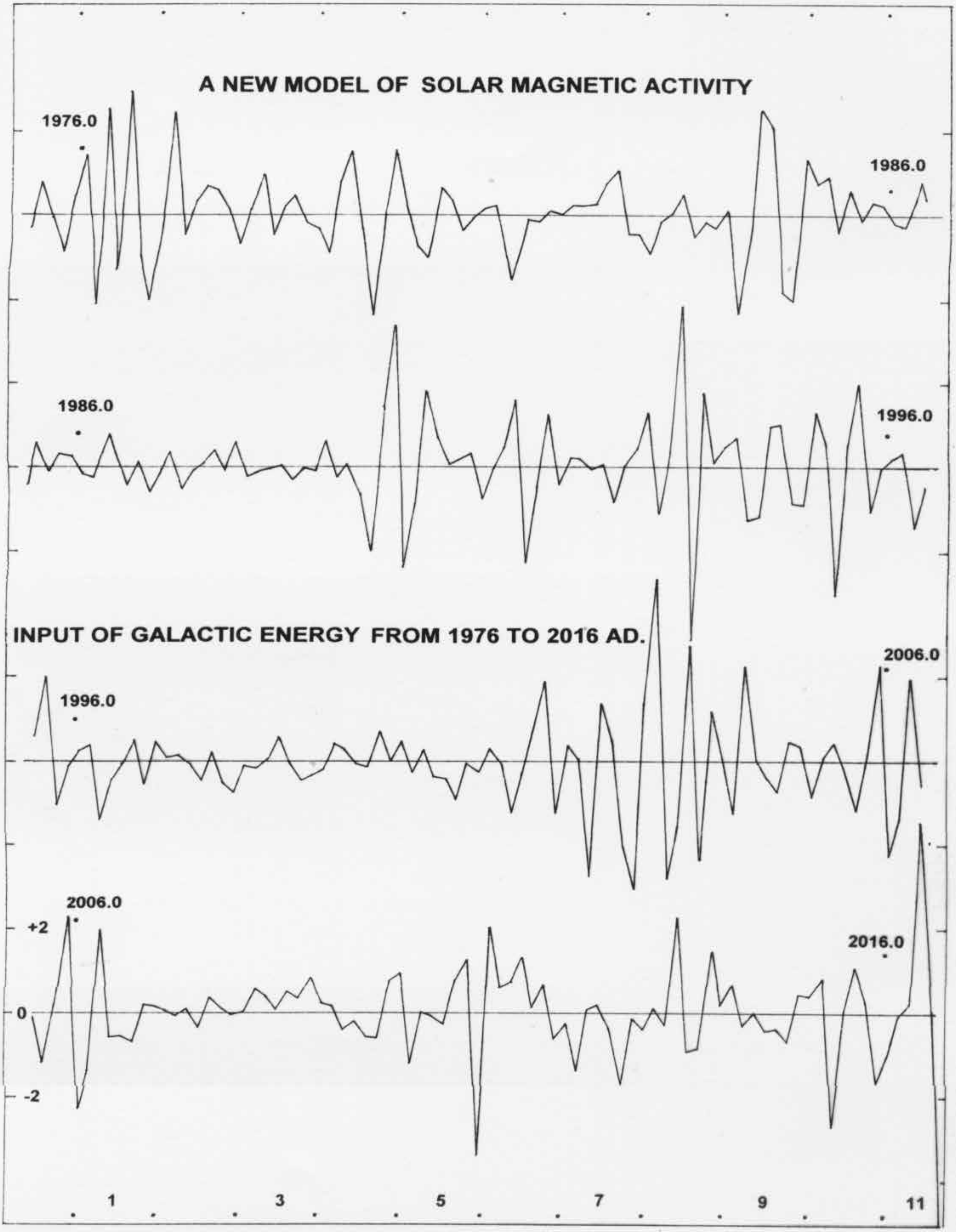
A New Index of Solar Magnetic Activity

The number of sunspots is a convenient but unreliable yardstick to measure magnetic activity on the Sun. *The only real measure are daily maps of the solar magnetic field* (3). They are available since 1976.

I have used the daily listings of the mean solar magnetic field and computed its average strength (+ = -) for intervals of three months (4 values per year) to minimize the effect of missing data and of the position of the Earth. The result was a graph of solar magnetic activity (page 3 of this file) based on a physical unit (micro-Tesla).

The principal feature of the new index are peaks which do not appear in the record of sun-spots. Several of them are 10.75 years apart - a sign for the presence of interfering waves.


A NEW INDEX OF THE SOLAR MAGNETIC FIELD
80 micro-Tesla
40
00
1985.0
1990.0
1995.0
2000.0
2005.0


A NEW MODEL OF SOLAR MAGNETIC ACTIVITY
1976.0
1986.0
1986.0
1996.0
INPUT OF GALACTIC ENERGY FROM 1976 TO 2016 AD.
1996.0
2006.0
2006.0
2016.0
+2
0
-2
1
3
5
7
9
11

A New Model of Solar Magnetic Activity

The method to predict patterns of atmospheric circulation (file #3, page 5) can also be used to predict solar magnetic activity; but the number of solitons, their period and the phase difference are not the same.

The new model uses 5 solitons of equal energy and a Fibonacci series of harmonics as needed. The 5 fundamental waves are defined by the equation $p*K^n$. K is the dimension-less constant for galactic magnetic waves (file # 8); n = -2, -1, 0, +1, +2, and p = 3916.8 days. The nature of "p" is explained in file # 7 (p.9). The phase difference, that is, the arrival of the 5 solitons (and their harmonics) on Earth has been recorded by satellites of the NOAA (4).

The graph on page 4 of this file uses the harmonics 1-18, 45, 63 and 108, and the interval between two points is 50 days. The computations were carried out as follows:

1. The 5 solitons and all of their harmonics were assumed to be sinusoidal waves of equal energy.
2. Their additon yielded the sum for each point of the diagram.
3. The difference dsin(+/-) and dcos(+/-) between two points was used to define RTFI.
4. RTFI is zero if one of the two components (dsin,dcos) is zero; it is the highest if the two numerical values (+ or -) are equal (at 45, 135, 225 or 315 degrees).
5 RTFI simulates, in fact, the rotation of polarized magnetic waves. If these waves are solitons of galactic origin, they will change the magnetic activity of the Sun.

The graph on page 4 of this file predicts the index of magnetic activity on the Sun from 1976 to 2016.

Major spikes mean "dangerous" periods which will occur at the computed date. There is no "Past" or "Future" in the models of Nomos Interscience..

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(4) NOAA, www.swpc.noaa.gov/pmap .....ftpsite.....

End of File # 5

NOMOS INTERSCIENCE PUBLIC REPORTS

F.C.MAYR **File # 6**

THE PREDICTION OF MAJOR MAGNETIC STORMS

Ignorance is protected by probabilities.

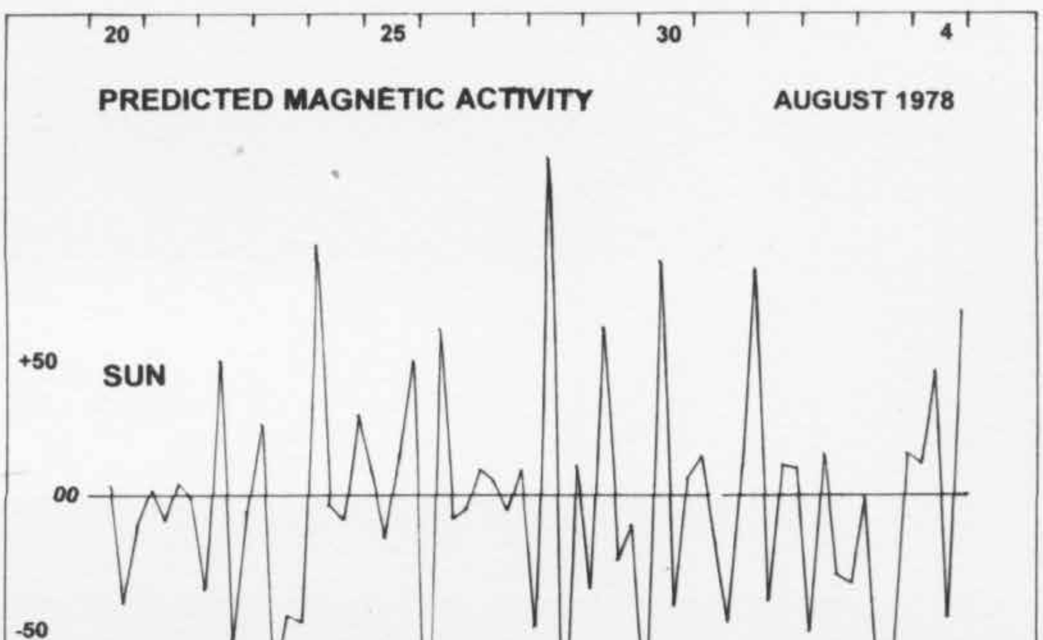
Introduction

Magnetic disturbances and magnetic storms have been a nuisance since the early days of the cable telegraph (1), but in a world of computers, artificial satellites and spacecraft the damage caused by a single failure to predict a major magnetic storm has become a question of national concern.

A published statement made by members of NOAA's Space Environment Services (2) may serve as an example:

> "At 02:47 UT (universal time) on August 27, 1978, the sudden commencement of a major geomagnetic storm occurred which eventually resulted in shortperiod geomagnetic fluctuations of over 500 gammas in Boulder, Colorado, and sightings of aurora as far south as Santa Fe, New Mexico.This event is significant not only for its geophysical effects (principally on communication and long-line electric power and telephone systems) but also because it was a surprise - no solar optical flare or appropiately located coronal hole heralded its arrival......."

What happened?



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Harbingers of Magnetic Storms

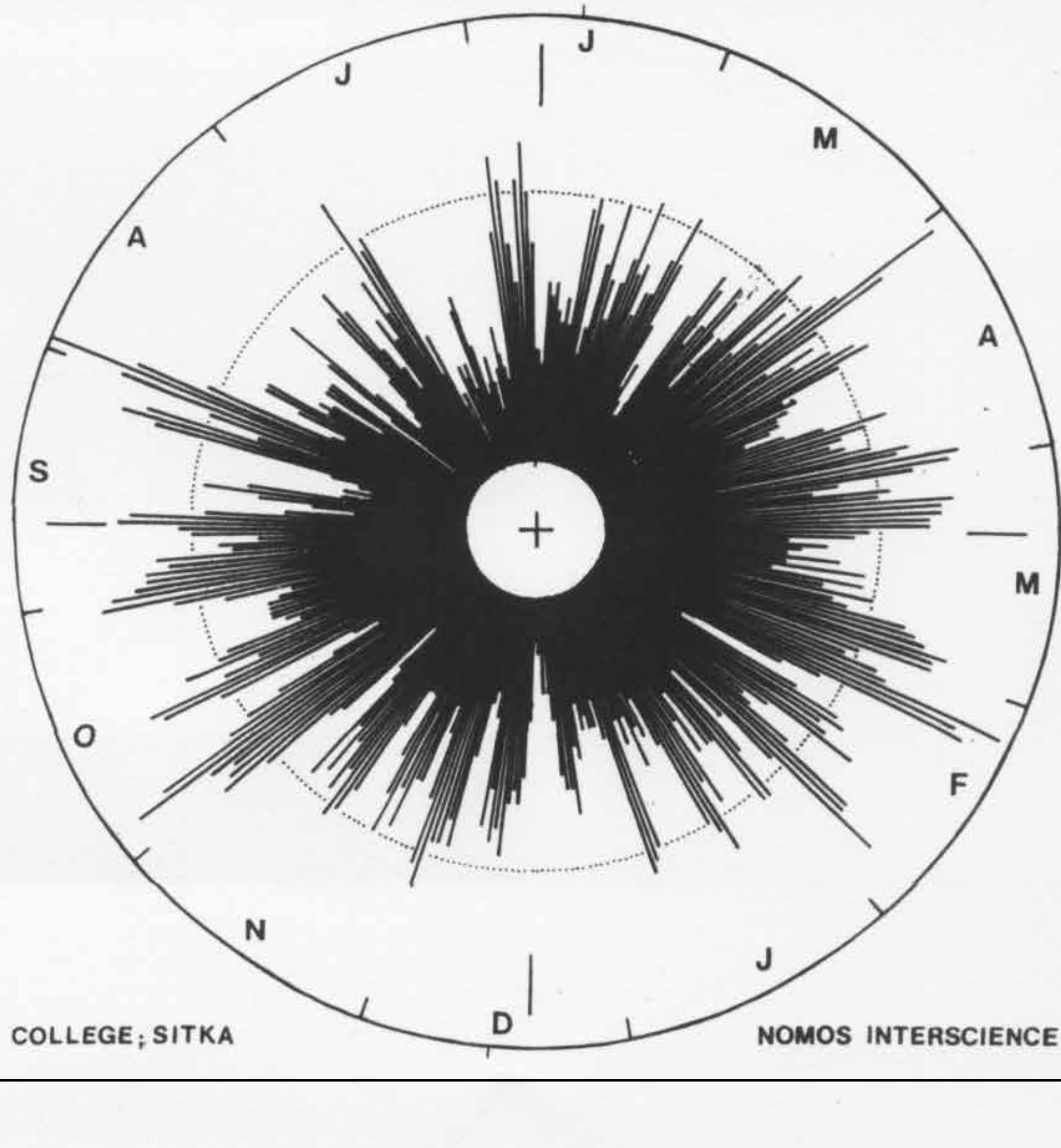
The magnetic storm on August 28, 1978, was preceded by a big solar magnetic event (18-22). Filaments and flocculi disappeared on August 23, but the warning was not heeded.

Solar Magnetic Events (3) create, in fact, the twisted magnetic fields which may become the cause of major explosions and coronal mass ejections. A magnetic storm on Earth will follow if the explosion occurs at the right place.

The speed of the ejected cloud (CME) can now be measured and the trajectory is computed for early warnings (4). Fast CME's may enhance existing storms to dangerous levels.

At first sight, all of these events are manifestations of an "unpredictable" Sun; but this is not true. In a study of 2540 magnetic storms in Alaska I discovered several negative singularities suggesting the existence of more than one cosmic cause of magnetic storms on Earth (5).

MAGNETIC SINGULARITIES 1949-1987



COLLEGE; SITKA NOMOS INTERSCIENCE

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Conditions for Major Magnetic Storms

There were only 83 major magnetic storms between 1937 and 2004: 40 with Ap = 1500-2000, 36 with Ap = 2000-3000, 6 with Ap = 3000-4000 and one with Ap above 4000 (1989).

Seasonal Distribution of 83 Major Magnetic Storms (1937-2004)

Day	n	Day	n	Day	n	Day	n
01-10	0	91-100	2	181-190	5	271-280	2
11-20	0	101-110	0	191-200	5	281-290	1
21-30	1	111-120	3	201-210	3	291-300	1
31-40	3	121-130	1	211-220	2	301-310	3
41-50	1	131-140	4	221-230	2	311-320	6
51-60	1	141-150	1	231-240	3	321-330	1
61-70	2	151-160	1	241-250	7	331-340	0
71-80	1	161-170	3	251-260	1	341-350	0
81-90	8	171-180	1	261-270	8	351-365	0

None of these storms occurred between the end of November and January 20, and none was recorded at solar minimum. There were, however, singularities: two in spring, one in summer, and two in fall. The symmetric arrangement of 5 major magnetic storms around equinox in fall, 1957, is particularly interesting.

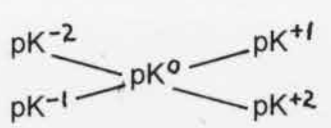
The absence of major magnetic storms between the end of November and January 20 is the geometrical proof that both, Sun and Earth, must be disturbed by solitons from the centre of our galaxy in order to produce a major magnetic storm on Earth.

Hence we need two models, one for the Sun, and another one for the Earth.

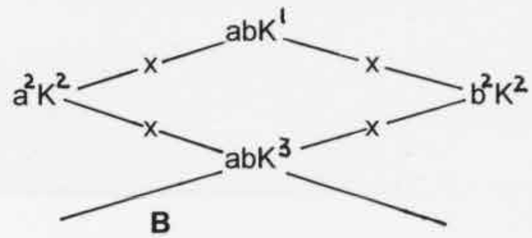
Magnetic Waves in Space

The five solitons of the model for the Sun (**A**) and the method of computation were already mentioned on page 5 of file #4. The edition for the prediction of magnetic storms uses a Fibonacci series of harmonics up to H4995. $p.K^0$= 10,723688 magnetic years.

The 8 solitons of the model for the Earth (**B**) form the upper part of the general model (6). abK^2 = 10,966564 magnetic years. All of the graphs are drawn at the same scale, without any corrections for heliospheric echoes or seasonal anomalies on Earth.

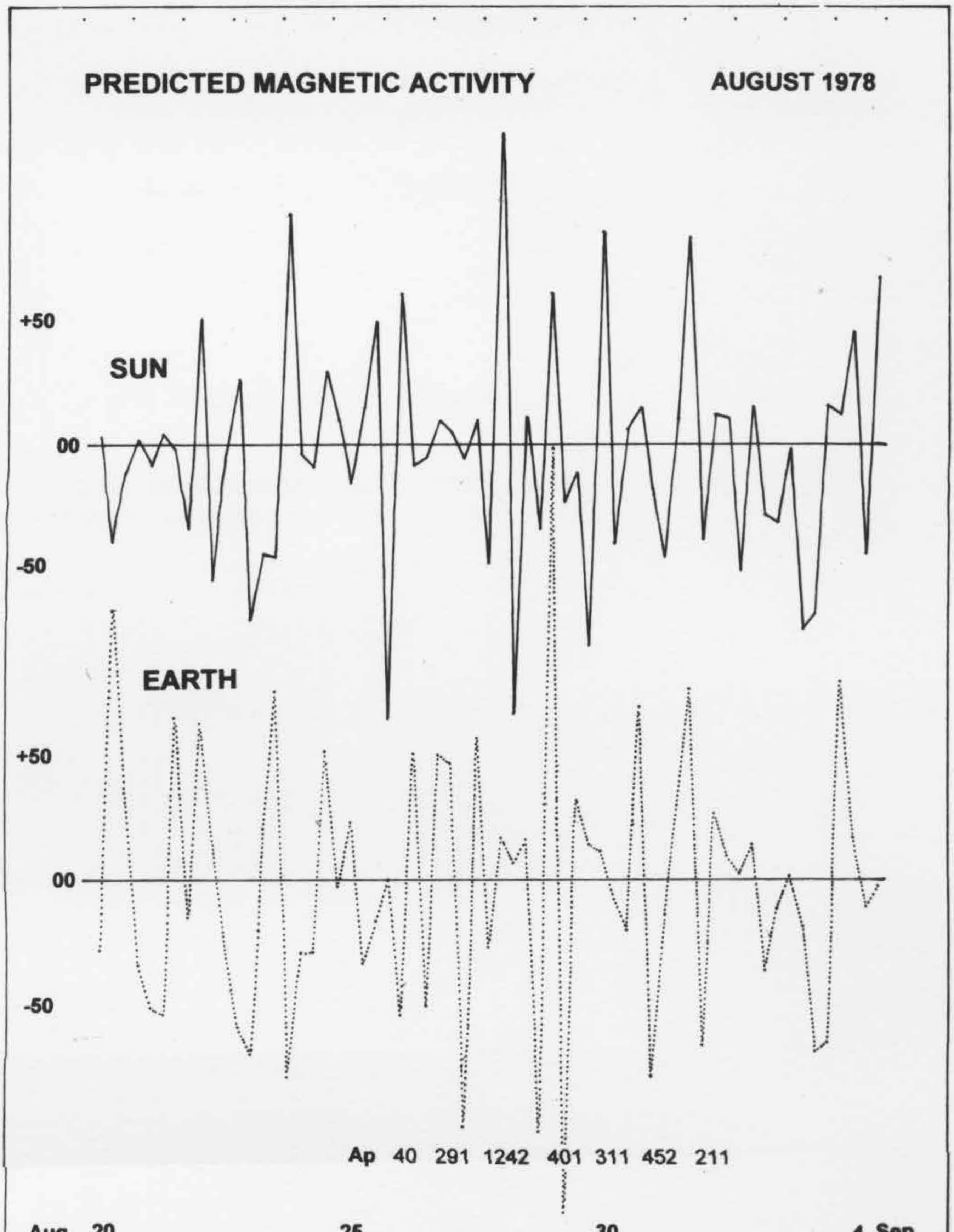


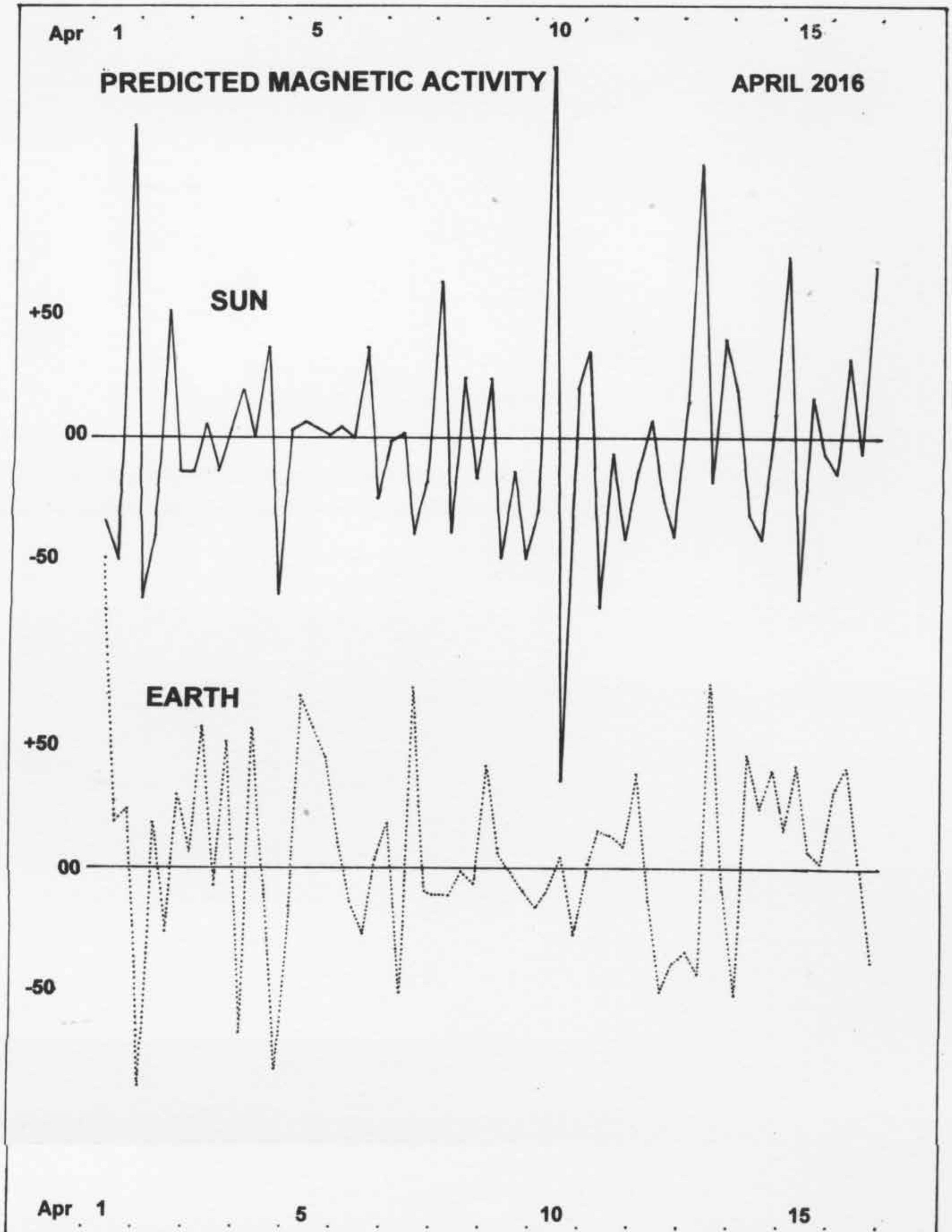
A



B

Two predictions - one for the Past and one for the Future - shalll illustrate the method and its potential value in the world of today and tomorrow.


PREDICTED MAGNETIC ACTIVITY
AUGUST 1978
+50
SUN
00
-50
EARTH
+50
00
-50
Ap 40 291 1242 401 311 452 211
Aug 20
25
30
4 Sep


Apr 1
5
10
15
PREDICTED MAGNETIC ACTIVITY
APRIL 2016
SUN
+50
00
-50
EARTH
+50
00
-50
Apr 1
5
10
15

Comments

The magnetic signal predicted for April 10, 2016, is bigger than the one on August 28, 1978: 630 units in 18 hours as compared to 520 in 1978; but no disturbance is predicted by model B..

The probability of a major magnetic storm on Earth is, indeed, less than 2%; even big explosions on the Sun may have very minor effects on Earth.

This has, for instance, happened on August 1, 2010, when an entire hemisphere of the Sun erupted (science.nasa.gov/science-news/science-at-nasa/2010/13dec_globaleruption/). The magnetic storm on Earth (Aug.4) barely reached 500 Ap (7). According to model A, B and C no major storm was due on these days.

Events on the far side of the Sun may produce powerful shockwaves racing to the anti-podal point in less than 15 minutes and on into interplanetary space. They can reach the planet Earth in 6.5-7.5 hours (6000 km/sec). A good example was the C5-flare on May 9, 2011, 21:18 UT; another example was the shockwave from the X9-flare on Dec. 5, 2006, 10:35 UT. The magnetic storms that followed were small (110 and 250 Ap). According to model A, B and C no major storm was due on these days.

On the contrary, model B predicted an event on July 23, 2012 (626 units in 18 hours). The event did occur, but on the far side of the Sun. The coronal mass ejection left the star with an estimated speed of 3400 km/sec (8).

Incidentally, the next remarkable days are not far away. Model N predicts a major event on Jan. 3/4, 2013. Strong cyclonic activity can be expected 3 days and 6 days thereafter, at 180-160 W, 90-70W and 0-20 E of the Northern Hemisphere. Model C predicts strong magnetic pulses hitting the Sun on Jan. 20/21, 2013. NOAA will tell us what happened.

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End of File # 6,

F.C.MAYR **File # 7**

MAGNETIC CLOCKS OF OUR GALAXY

Only Time can say what time will tell.

Introduction

There are only three things on Earth that are precisely known: the speed of light in vacuum (1), the oscillations of certain electrons (2), and the orbital motion of the moon. Equality of the second of Ephemeris Time with the second of the Atomic clock has been verified to within one part in 10E10 (3)

Since 1983 several companies took advantage of the signals emitted by radio-stations that are connected to atomic masterclocks. The GC-1000 by Heath (4) used several MHz-*frequencies to control the quartz oscillator of its clock and displayed time down to the* tenth of a second. Other models display time down to the second. These watches and clocks are usually 1-3 seconds ahead of time.windows.com; equality does occur, but only in about 10 cases out of 100.

I have used a Junghans Mega Alarm 1 (2004) and a Junghans Mega 1000 to control the diurnal variations of the other watches. Readings were usually made at 6h, 12h, 18h and 24 h Eastern Standard Time. A timegrapher of TYMC (MTG-3000) and a CD-metronome with short acoustical signals every 5 seconds enabled me to record pulsations of the hair-spring of mechanical watches.

Technical Data

The watches I examined were operating at 5 Hz, hence in tune with the longest Schumann resonance (5) in the waveguide between Earth and Ionosphere. I kept them on a plank of wood, stem up and face magnetic North, at constant temperature, away from the sun and away from electric appliances.

Terrestrial radiation above the site was about two orders of magnitude higher than in most parts of the United States, but well below its peak values in the Auroral Oval and the South Atlantic Anomaly (6). Pulsations of the hairspring were, therefore, also measured in a horizontal position.

The sensitivity of a watch depends, above all, on the alloy used for its hairspring. The Hamilton Watch Company used an alloy similar to Elinvar; their timepieces were almost insensitive to magnetic signals from Space. By comparison, a magnetized watch is *extremely sensitive to meteors and their dust.* On October 16, 2012, 14:45-14:50 UT, my TYMC-timegrapher recorded -200 sec/day for about 2 minutes, and up to +300 sec/day thereafter. The timepiece was a Waltham Vanguard, 23j.(1941), kept in a horizontal position, face up. Similar observations were made on October 21, 2012 (Orionid shower).

The Daily Record from 2008-2011

The watch was an Illinois Santa Fe Special (1923, size 12, 21j.) which had been used for less than 10 years (1939-1948). It was perfectly readjusted on May 18, 2008.

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To my surprise, the watch appeared to vary with conditons in space. Conclusive evidence was obtained on August 23, 2010.

At 17h EST, the solar wind at the site of ACE had a speed of 400 km/sec and a density of 75 protons/ccm.sec; Geostationary satellites, GOES 11 at 135°W and GOES 13 at 75°W, reported the same flux of fast electrons (35/cm^2.sec), hence no flow of electrons across North America. The timegrapher recorded an acceleration of the watch (up to +60 sec/day).

Two hours later, GOES 11 recorded a flux of more than 600 fast electrons per cm^2.sec whereas GOES 13 reported only 10. The resulting flow of fast electrons across Canada acted like a brake upon the hairspring of the watch. I measured up to -60 sec/day.

The following table is a heliocentric summary of the 4,400 readings of the survey.

SUMMARY IN A HELIOCENTRIC SYSTEM OF COORDINATES

Year	Month	18-00	00-06	06-12	12-18	m
2008	Jun	+5.6	+12.7	+5.1	-9.1	+3.6
	Jul	+1.3	+3.1	+8.0	+6.6	+4.7
	Aug	-13.4	-0.3	-14.5	-21.4	-12.4
	Sep	+2.7	-15.9	-2.9	-16.0	-8.0
	Oct	+10.2	+9.5	+1.3	-10.2	+2.7
	Nov	-22.4	-7.3	-14.1	-26.8	-17.7
	Dec	-34.5	-30.2	-25.2	-33.4	-30.8
2009	Jan	-27.0	-40.9	-27.9	-35.6	-32.8
	Feb	-32.9	-25.7	-36.6	-19.4	-28.6
	Mar	-47.6	-39.7	-39.5	-38.1	-41.2
	Apr	-43.1	-35.6	-50.7	-39.1	-42.1
	May	-50.6	-28.8	-44.1	-29.8	-37.1
	Jun	-54.0	-34.8	-44.0	-31.9	-41.2
	Jul	-28.0	+5.3	-25.8	-9.7	-14.5
	Aug	-19.6	+19.4	-13.7	-1.9	-4.0
	Sep	+3.1	+7.1	+2.0	+18.5	+7.7
	Oct	+42.1	+36.6	+44.6	+43.0	+41.6
	Nov	+28.0	+45.7	+29.1	+28.5	+32.8
2009	Dec	+26.3	+40.9	+27.2	+44.8	+34.8
2010	Jan	+13.3	+42.1	+16.8	+35.4	+26.9
	Feb	+4.9	+44.4	+9.9	+42.1	+25.3
	Mar	+13.8	+26.2	+15.5	+28.4	+21.0
	Apr	-14.1	-6.3	-22.0	+6.9	-8.9
	May	-10.2	+14.2	-2.1	+13.7	+3.9
	Jun	+3.5	-26.4	-8.3	-29.1	-15.1
	Jul	+1.4	+32.0	+13.8	+15.0	+15.5
	Aug	+9.7	+31.6	+7.0	+19.0	+16.8
	Sep	-7.6	+24.9	-0.9	+18.3	+8.7
	Oct	-18.6	+13.2	-23.7	+4.1	-6.3
	Nov	-40.0	+2.0	-38.4	-2.8	-19.8
	Dec	+15.0	+47.1	+7.6	+40.7	+27.6
2011	Jan	-12.5	+22.1	-11.9	+17.7	+3.9
	Feb	-28.1	+4.6	-20.1	+6.4	-9.3
	Mar	-18.2	+16.4	-18.9	+14.1	-1.6
	Apr	+4.8	+32.5	-6.3	+34.3	+16.3
	May	-36.8	-4.6	-35.6	-11.7	-22.2

12 = local noon; all values in seconds per day.

The worst negative deviations occurred in the spring of 2009 (March 21-28: -62 April 4-10: -67; June 3-7: -64 sec/day). A spectacular acceleration of the watch began on September 22 and ended on October 7, 2009 (+54 sec/day).

Correlation of the reported differences with conditions on the Sun made no sense: I had to use a galactocentric frame of reference to see what happened. The graphs on page 3 provide the answer: positive and negative deviations, isotropy and anisotropy are normal episodic changes along the galactic orbit of the Sun.

The hairspring of the watch did nothing less than record the physical conditions in our galactic environment.

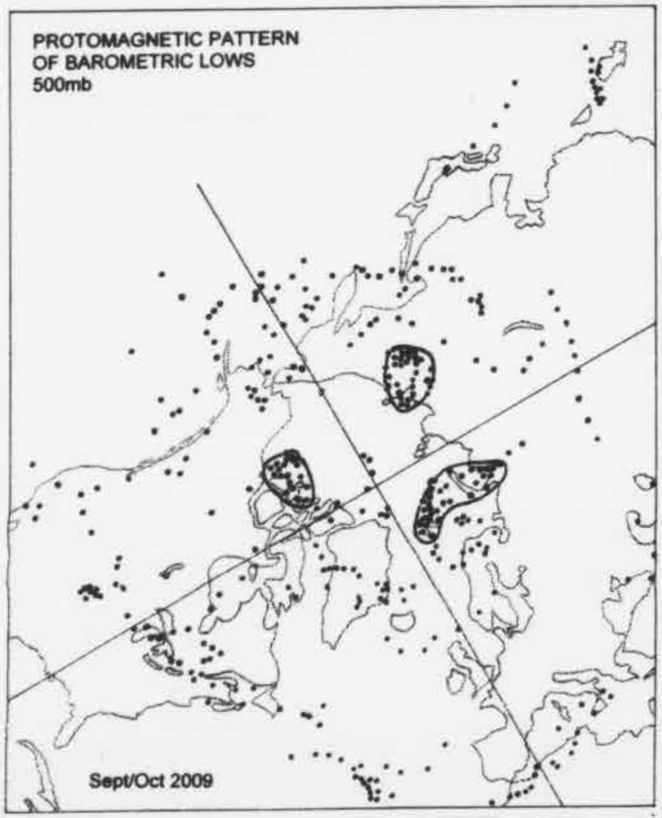
GALACTIC CENTRE

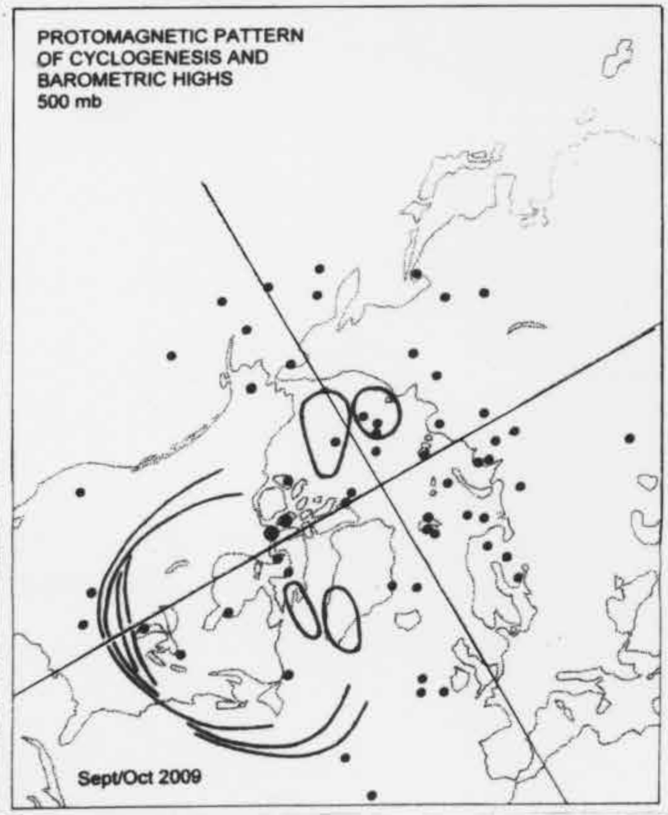
GALACTOCENTRIC GRAPHS

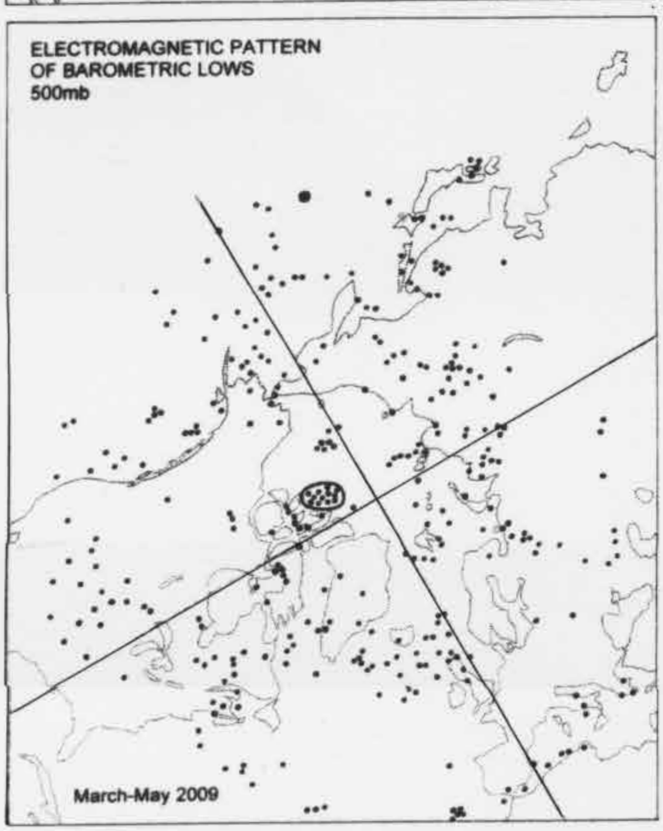
Date	Top	Left	Right	Bottom
AUG.1, 2008	-13.6	-14.0	-19.8	-9.6
NOV.1, 2008	-29.0	-13.6	-9.8	-8.6
FEB.1, 2009	-44.0	-40.4	-39.6	-38.6
MAY 1, 2009	-20.0	-60.0	-59.6	-29.6
AUG.1, 2009	-21.4	+9.4	-14.6	-24.2
NOV.1, 2009	+36.2	+34.8	+45.0	+34.8
FEB.1, 2010	+5.8	+37.6	+33.0	+2.6
MAY 1, 2010	-1.6	-23.2	-6.8	+12.2
AUG.1, 2010	+2.7	+9.5	+8.1	+5.3
NOV.1, 2010	-2.5	-11.2	-11.6	-1.0
FEB.1, 2011	-13.0	+13.0	+10.3	-20.8
MAY 1, 2011	+27.8	-13.1	-13.1	+16.2

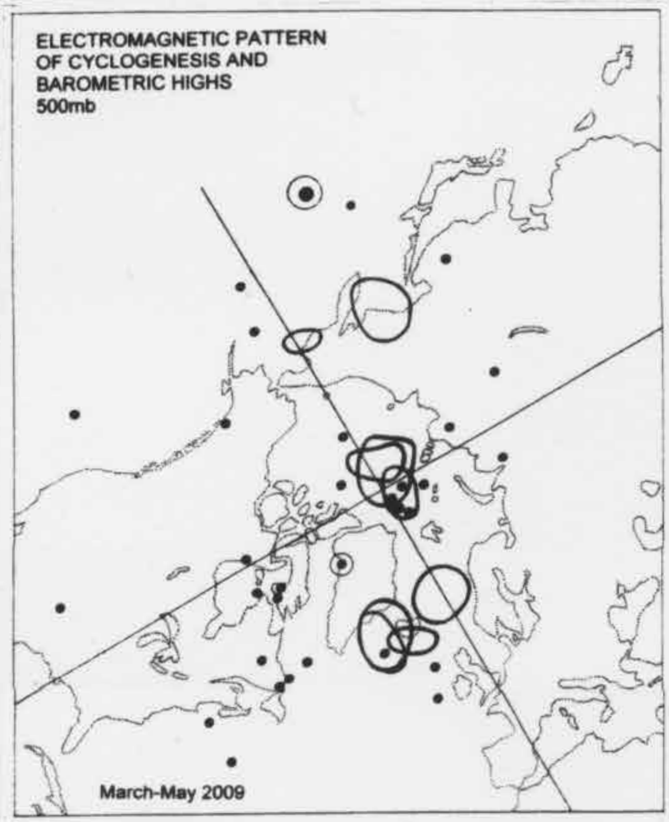
n=sec/day for 21 days (10+1+10)

GALACTIC ORBIT OF THE SUN









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Links to Weather and Climate

The conclusion at the end of page 2 is supported by daily data for the Sun and magnetic and other observations in space and on Earth (6). But, if a watch is affected by anomalous conditions in space, oxygen - and the whole atmosphere - could be affected as well (7).

I have, therefore, used the clusters of values below -50 sec/day and above +50 sec/day to establish correlations with the weather of the Northern Hemisphere (8). The resulting charts are on page 4 of this file.

The protomagnetic pattern (n=350) shows three clusters of Lows around the Arctic Basin, no cyclonic activity in Europe south of Scandinavia, and a small group of Lows over the Acores.

The electromagnetic pattern (n=320) has a centre of activity in the Canadian Arctic, and an abundance of Lows between Greenland and Scandinavia. Western Canada remains dry.

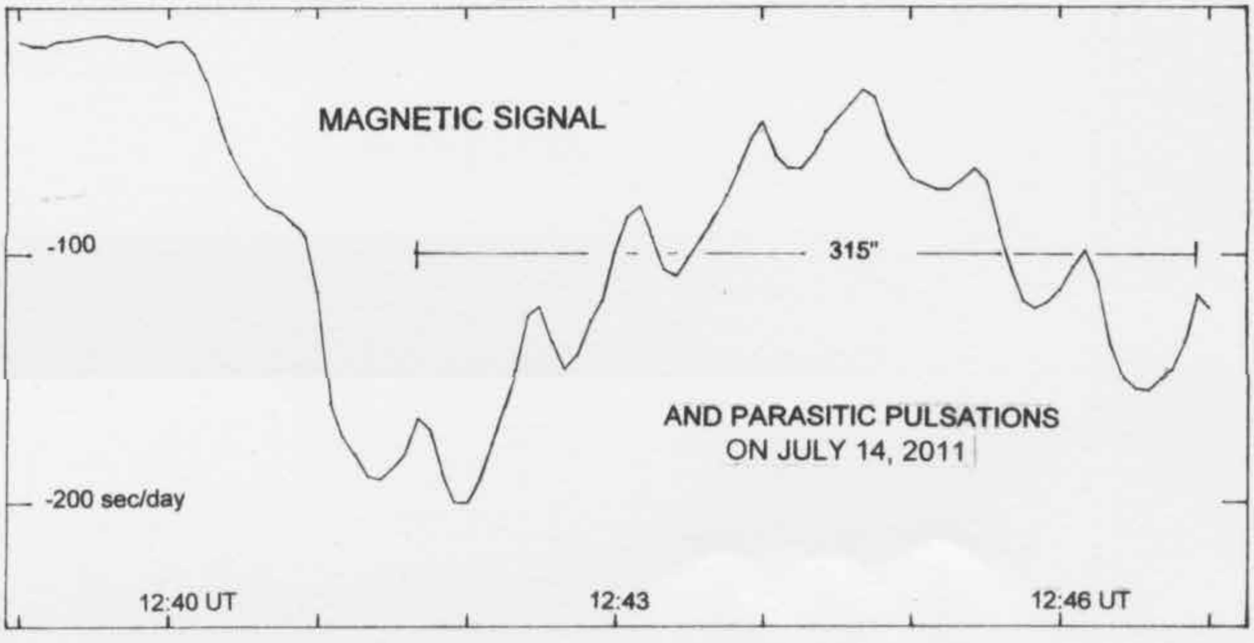
The pattern of high-pressure cells corroborates the statement that magnetic conditions along the galactic orbit of the Sun can change the weather on Earth - at least in the Northern Hemisphere. The predictions published in 1982 cannot be disputed (file # 3, ref. # 9).

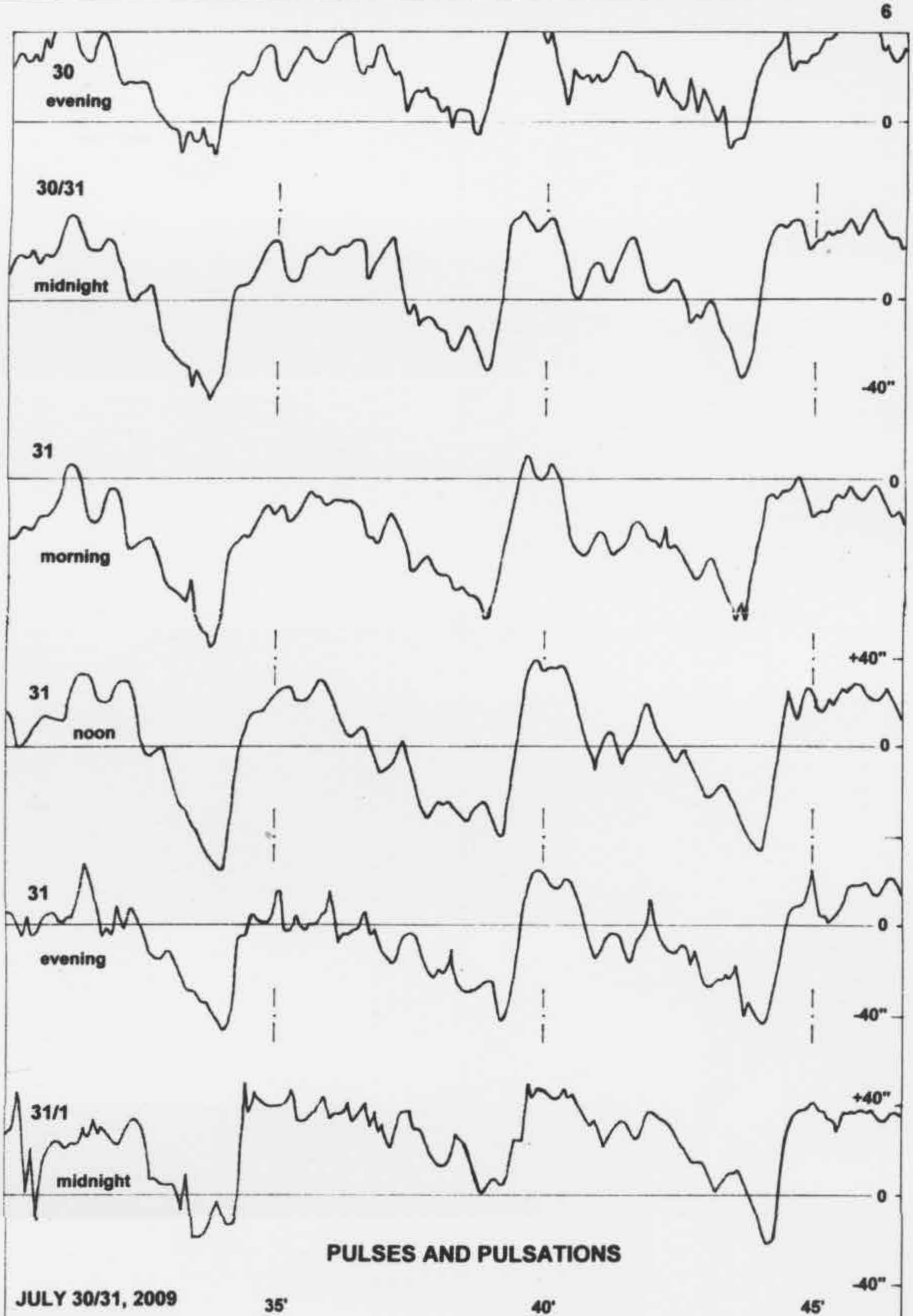
Pulses and Pulsations

I made nearly 200,000 readings to determine the nature and origin of magnetic pulses in the watches I examined.

The shortest signals appeared only for the time of one display (2 sec) on the screen of the timegrapher. There were usually 3-5 jerks in 1000 minutes of recording, but on July 29, 2011, I counted 6 in a single hour (12:35:00 UT-13:35:15 UT; +137, -191, -112, +134, +132 and -231 sec/day; background -40 sec/day). Somebody with 64 automated instruments will, eventually, be able to determine the nature and origin of these jerks.

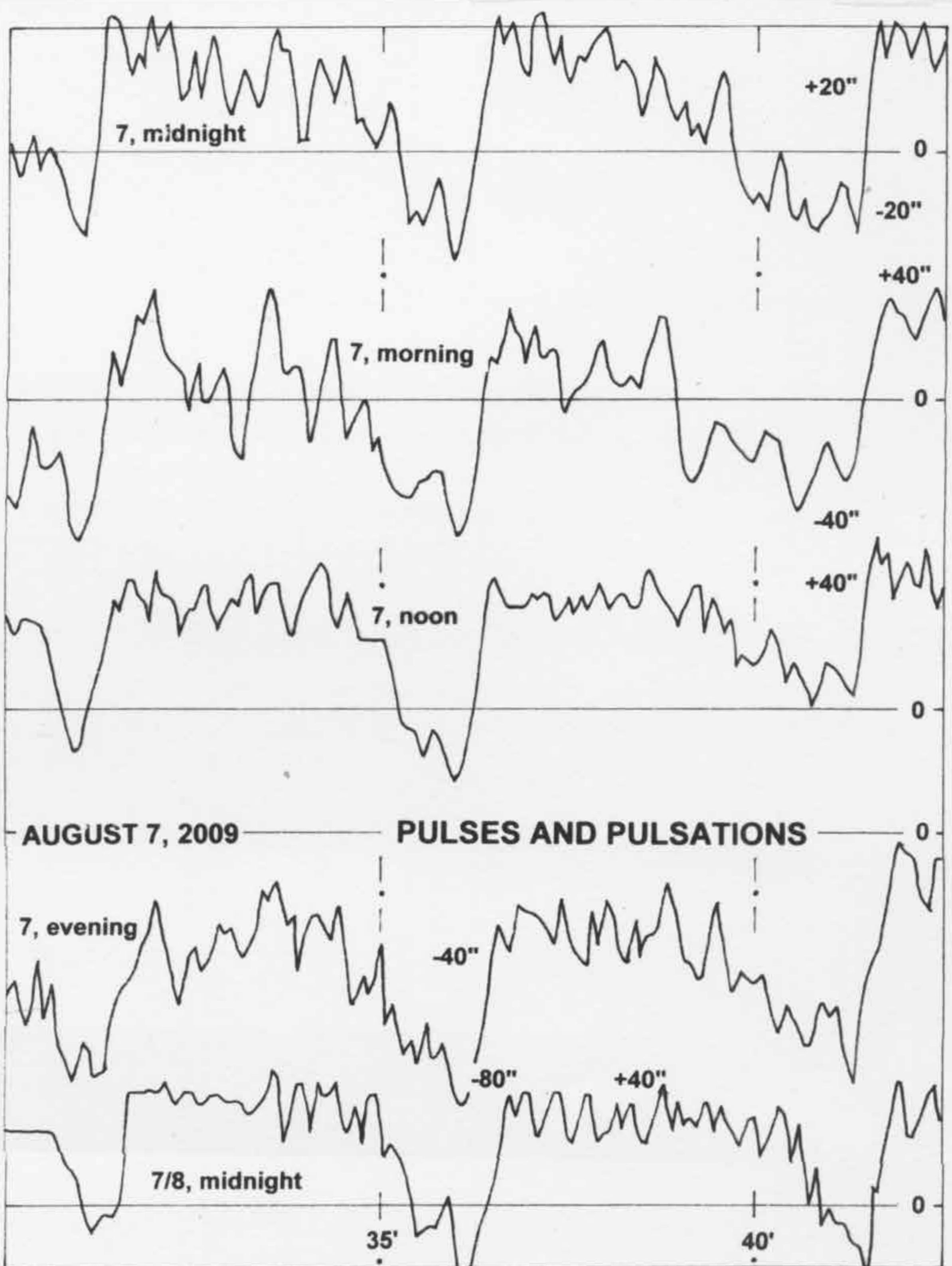
Most of the pulsations were parasitic features on top of a trend or major signal.

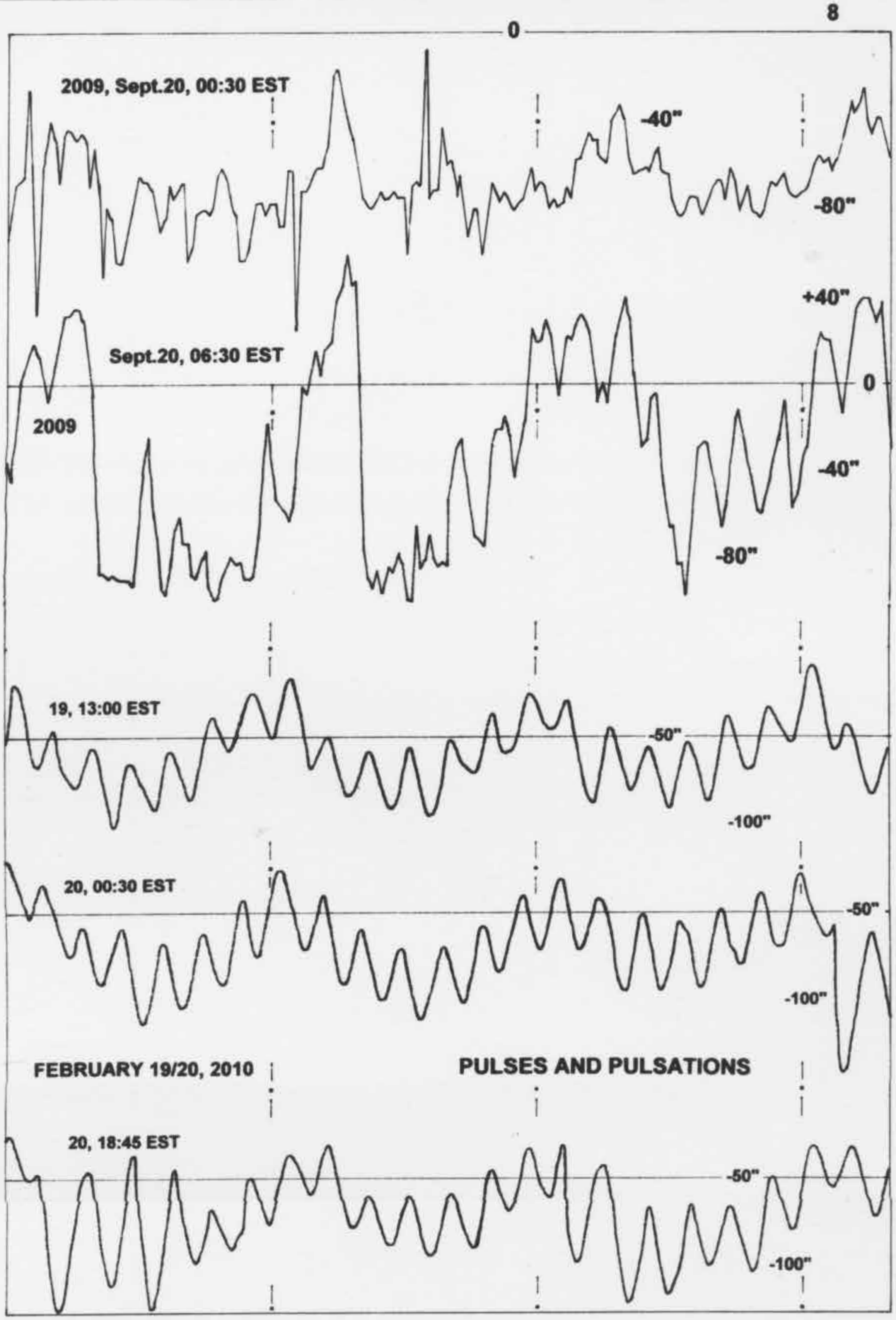




PULSES AND PULSATIONS

JULY 30/31, 2009


7, midnight
+20"
0
-20"
+40"
7, morning
0
-40"
+40"
7, noon
0
AUGUST 7, 2009
PULSES AND PULSATIONS
0
7, evening
-40"
-80"
+40"
7/8, midnight
0
35'
40'



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On quiet days, the period of these pulses was close to 45 seconds (July 30/31, 2009). On magnetically disturbed days, period and amplitude decreased and turned into a sequence of sawtoothed signals (August 7/8, 2009). On some days, however, the 45-second pulse became the leading feature (Feb. 19-20, 2010), was strong and regular and only once every 900 seconds in tune with the 300-second pulse of galactic origin.

The Pace-Maker

Systematic surveys with the TYMC-timegrapher revealed the existence of a magnetic pulse arriving once every 300 seconds. The signal occurs day and night and at any time of the year. It is usually positive (-+) and only occasionally negative (+-), weak or absent during magnetic storms and strong under quiet conditions (Kp=0).

Its equivalent on the Sun are the so-called umbral flashes above sunspots, with a period of 150 seconds and running waves in the penumbra spreading radially outward with a period of 300 seconds (9). On Earth, the duration of the pulse varies from 30 to 60 seconds, with 45 seconds being the usual average.

The pulse gives the impression of being in tune with the terrestrial day. It isn't. 288 periods are 44 seconds shorter than a civil day, or 192 seconds longer than the sidereal day.

I have recorded the timing of these pulses from September to December 2009. A drift of five minutes was accomplished in 5-9 days; a gain of 30 minutes was achieved in 40.6 or 41.0 days. In three Carrington revolutons of the Sun (3x27.2=81.6 days) the drift was one hour or 15 degrees in celestial longitude. A precession of 24 hours (360°) will take 5.36 sidereal years, and two turns are equal to 10.72 sidereal years (=p=3916.8 days) which was the average length of the solar cycle during the last 100 years (1901-2008).

From the above-mentioned facts I inferred the existence of a giant pulsar at the centre of our galaxy. It is our cosmic pace-maker and the ultimate cause of many cycles observed on Sun and Earth.

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End of File # 7,

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File # 8

F.C.MAYR

GALACTIC ORBITS OF THE SUN

? --- ? Well, I forgot to die in time, and now it's too late.

Time and Age in Geology

Geologists reckon in millions of years.

Fortunately enough, some of our terrestrial rocks have built-in radioactive time-keepers and can be dated (1). The method is not very precise, but applicable even to ages beyond three billion years. Ages of less than 600 million years are subject to paleontological arguments.

The best markers for an absolute time-scale are the deposits of true continental glaciations. The formation of a continental ice-sheet implies very cold conditions at its centre, with the underlying rocks being shattered by frost but not eroded. This inner zone is surrounded by a belt of glacial erosion, and by a second belt with glacial, fluvioglacial and glaciolacustrine deposits on land, and glaciomarine deposits at sea.

There are, however, many misnomers, mostly because of ice-rafted boulders which can be found far away from any real centre of glaciation. For the Upper Carboniferous, the remains of Glossopteris are compelling evidence of a glaciated former continent 'Gondwana' (2), but between 2.4 and 0.3 billion years we have to rely on physical evidence which only a very competent quaternary geologist could interpret correctly.

According to our present knowledge there were just 5 periods of widespread (continental) glaciation; the oldest one - represented by the Gowganda Formation in Canada - occurred 2.4 billion years ago (3).

Speed and Distance in Astronomy

When Sir Isaac Newton introduced the general principle of gravitation only the distance to the moon was fairly well known; the finite speed of light had just been discovered (4).

Since then, every major discovery in Physics became the source of remarkable advances in Astronomy. Galactic Astronomy is now an impressive array of ingenious methods (5) to figure out what has been going on for billions of years.

Speed and distance within our galaxy and beyond appear to be fairly well known. The key are pulsating stars of a particular type (Cepheids) which can even be identified in nearby galaxies. Within our own galaxy W.Baade (5,p.480) used stars of the type RR Lyrae to determine the distance to the galactic centre (8.2 pc = 26,732 lightyears). The Sun is known to drift towards the galactic centre at a speed of about 7.2 km/sec, but its orbital speed must be inferred from statistical studies on slower and faster stars in its neighbourhood: more than 200 and less than 250 km/sec is about all we can say.

speed must be inferred from statistical studies on slower and faster stars in its neighbourhood: more than 200 and less than 250 km/sec is about all we can say.

A New Approach

The new approach makes geological knowledge available to galactic astronomy.

The prerequisites - paleobotany on a continental scale (6) and a new survey of the Wurm type area in the Alps (7) - were published in 1968. The geological survey was followed by the study of 10,500 years of paleomagnetic and paleoclimatic variations before, during and after the last paleomagnetic event on Earth. The investigated profile was 56 m high, and the 112 paleomagnetic samples required more than 12,000 measurements (at the GSC in Ottawa) to determine the true secular variations of the magnetic field. The site is probably the most important deposit of micrometeorites on Earth (8).

Since the counting error was less than 20 years in 5000 years, the study became the starting point for the discovery of laws which could not have been detected otherwise. The first equation was published in 1979 (9). It described harmonic relationships between the Gleissberg cycle of solar magnetic activity (80 yrs), the observed periods of equal spin (280 yrs) and the observed periods of equal trend (112 yrs) of the magnetic field. The three periods are part of a Fibonacci series which can be written as follows

$$5040 \text{ yrs} = 280\times\mathbf{18} = 112\times\mathbf{45} = 80\times\mathbf{63} \qquad \mathbf{(1)}$$

The next step was the definition of 22 solitons of galactic origin which had a common link: the constant K which was derived from the fine structure constant of matter. (α^{-1}) The inferred phase differences were precise enough to publish a forcing function for climate on Earth for the last 10,000 years (10).

Continued cross-checking with magnetic records since 1840 determined the drift of the Sun towards the galactic centre (7,295 m/sec). The inferred orbit of the Sun on a logarithmic spiral was 27,028.0833 magnetic light-years away from the galactic centre. (The magnetic light-year is 767.9 seconds shorter than the sidereal year) (11).

The third parameter, the tangential speed of the Sun in its galactic orbit, was computed when it became clear that the general equation for K was

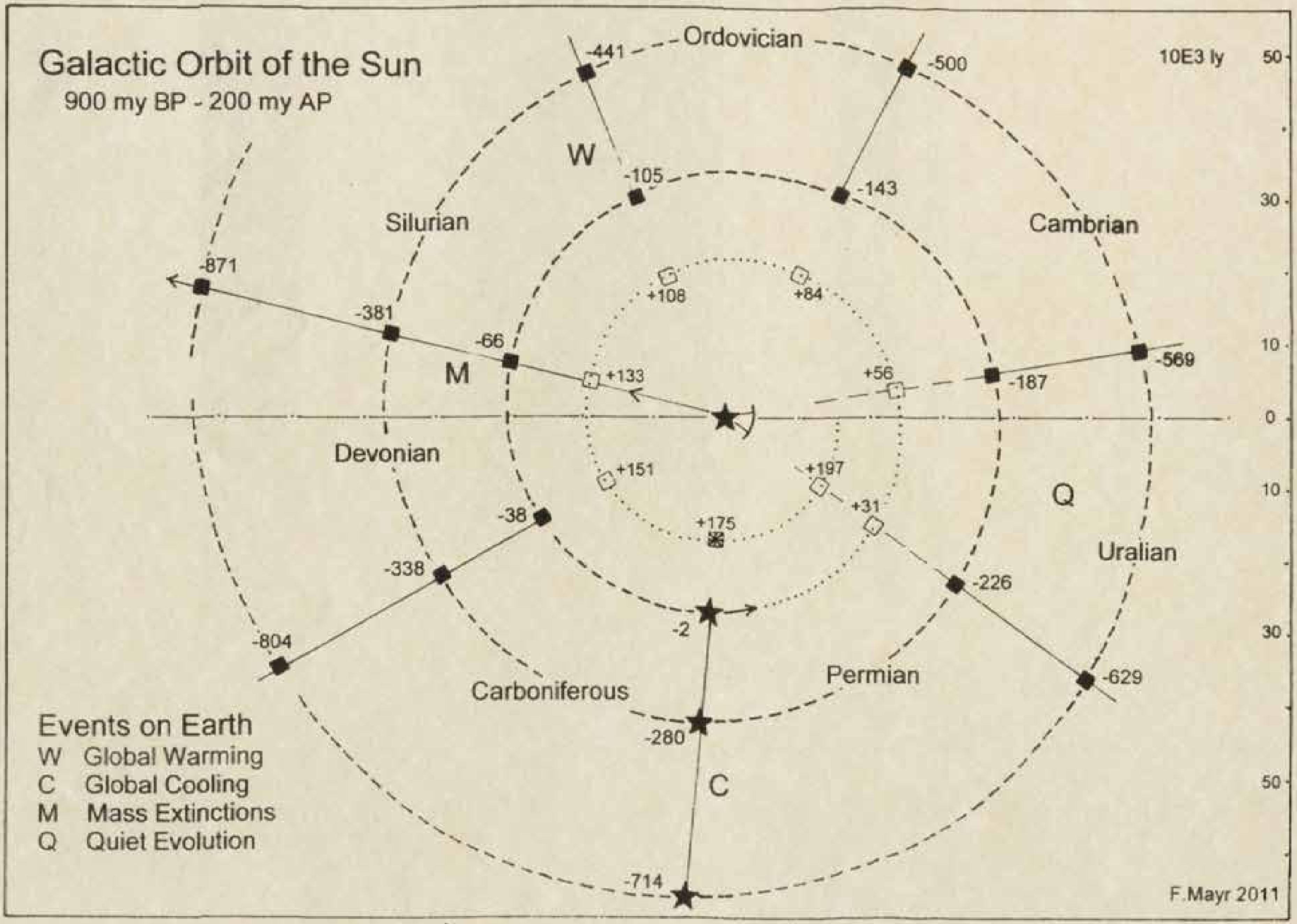
$$K^3 = \alpha^{-1} \cdot \frac{\tan\delta}{\pi} \qquad \mathbf{(2)}$$

The deviation δ from a circular orbit is 1.8°, $\tan\delta = \pi/100$, and the numerical value of K = 1.110737787. If δ diminishes to 1.3133 degrees, $\tan\delta = \pi/137.036$ and K = 1.00. At this point, the model (12, fig.19) is reduced to five solitons.

Applying equation **(2)** yields a tangential speed of the Sun of 232,207 m/sec.

Computed Galactic Orbits of the Sun

The figure on the next page is a right equiangular approximation in 80 steps per orbit. The ages were rounded off to millions of years. The point of reference is the present direction to the galactic centre. The generally accepted boundaries between geological periods lie on straight lines pointing to the galactic centre.


Galactic Orbit of the Sun
900 my BP - 200 my AP
10E3 ly
50
30
10
0
10
30
50
Ordovician
Cambrian
Silurian
Devonian
Carboniferous
Permian
Uralian
W
M
C
Q
-441
-500
-105
-143
-871
-381
-66
+108
+84
+133
+56
-187
-569
+151
+197
+31
+175
-38
-338
-804
-2
-226
-629
-280
-714
Events on Earth
W Global Warming
C Global Cooling
M Mass Extinctions
Q Quiet Evolution
F.Mayr 2011

This is astonishing, because the parameters of the spiral remained the same irrespective of the distance to the galactic centre.

The graph speaks for itself. It mentions the four salient features of the geological record: global warming, global cooling, mass extinctions and periods of quiet evolution. It introduces the name 'Uralian' for the geological period between the beginning of the 'Cambrian' in Russia and the onset of the 'Cambrian' in North America; and it suggests a subdivision of the 'Tertiary' at the beginning of the 'Oligocene' (38 my BP).

The tabulated geological calendar of the last 2.4 billion years was added for the convenience of the reader. The unnamed geological period in which we are living (file # 3, p.4) began 2.2 my ago with the abrupt end of the Pliocene and its glaciations (13).

Galactic Time-Table for Important Events on Earth

Event	Predicted Ages within post-archean Orbit number				
	1	2	3	4	5
I (C)	-2445	-1390	-714	-280	-2 my BP
II	-2240	-1259	-629	-226	+31
III	-2092	-1164	-569	-187	+56
IV	-1925	-1057	-500	-143	+84
V (W)	-1782	-965	-441	-105	+108
VI (M)	-1635	-871	-381	-66	+133
VII	-1531	-804	-338	-38	+151 my AP

Implications in Cosmology

A geometrical proof is a proof and cannot be disputed.

Gravitation and normal magnetic fields fall off with the square of the distance. If these were the leading forces in our galaxy, the boundaries between geological periods could not lie on straight lines pointing to its centre.

We have to admit the existence of another force. Let us call it **magnetation**. Its carrier are *magnetic* solitons emitted by a celestial body at the centre of a galaxy. The energy of these solitons appears to remain constant irrespective of the distance to their source.

Magnetation and magnetic solitons could, for instance, explain why our galaxy is moving at a speed of 300 km/sec towards the Virgo cluster of galaxies. Since the cluster is 50 million light-years away it will take 50 billion years to reach the point of destination (14).

How could that be if the Universe is only 15 billion years old ?

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End of File # 8

ADDENDUM A

F.C.MAYR (2013)

THE COSMIC TIME-TABLE.

The present time-table of cosmic events covers 35,000 years - from 30,000 BC to 5,000 AD. The paleomagnetic Blake Event (110 -107 KY BC) was added for comparison.

The model is the original model (H1-H18) of Nomos Interscience, with 22 waves of equal energy and periods of H1 between 3084 and 12018 years. The interval between computed points is 50 years, the computed functions are SSIN, SCOS and RTFI (see file # 4).

As mentioned before (file # 3) the graphs of the time-table do not simulate climate. They predict magnetic conditions in Space which are closely related to certain patterns of atmospheric circulation on Earth.

The leading feature of the graphs is the magnetic condition A followed by the magnetic condition U. These A/U events are marked in black. They are periods of global cooling and widespread glacierization. The predicted dates speak for themselves.

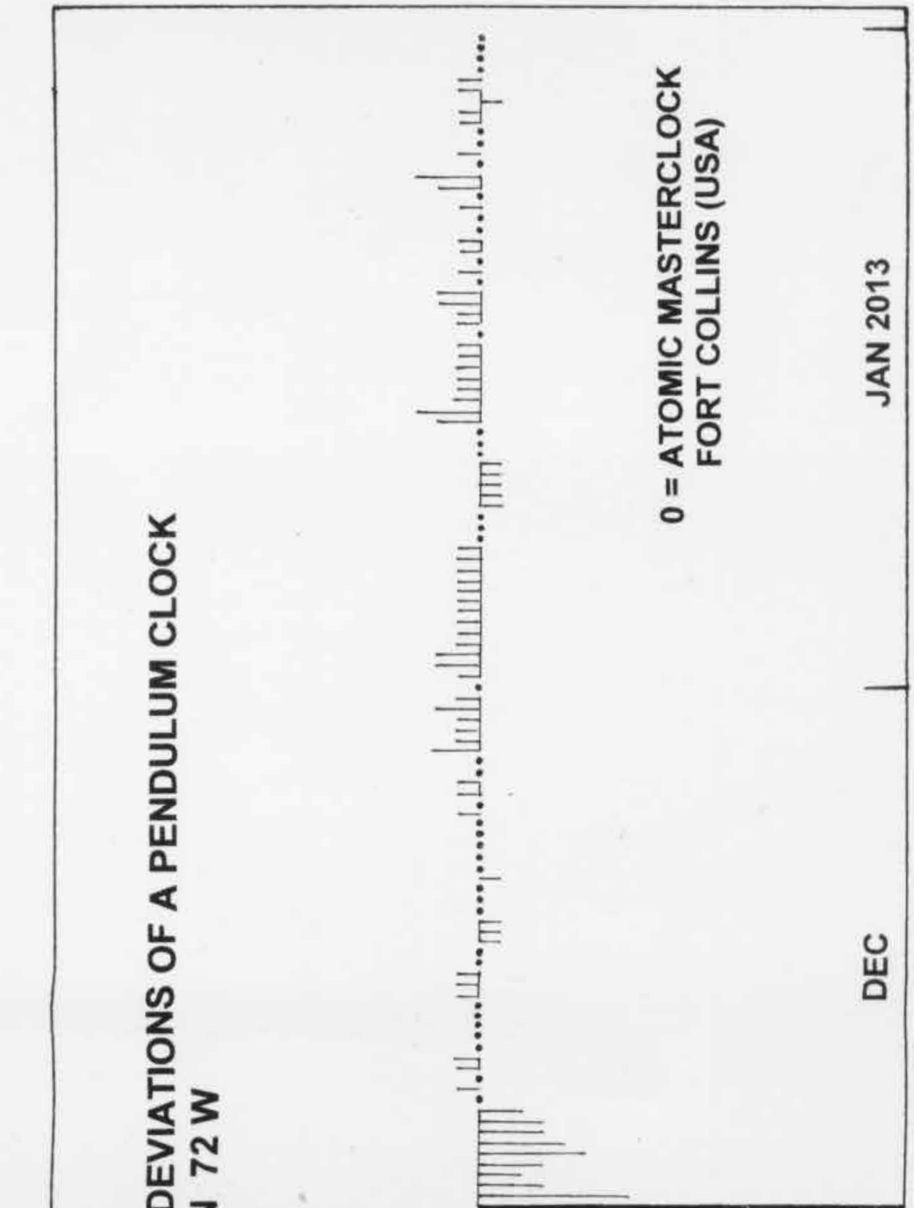
The graph for the Blake Event puts an end to speculations about the nature and duration of any of these events. It occurred at the peak of the first cold phase of the last glaciation and was preceded by 2000 years of exceedingly small fluctuations of climate, that is, by the uninterrupted growth of glaciers and ice-sheets. After the Blake Event true glacial conditions persisted for more than 10,000 years.

The.absence of A/U events at the onset of the last glaciation is amazing: there must be a second way to cool down a warm Earth. A long-case clock by Napier & Dun recorded what I could not see or feel. Its normal daily deviation was 1-2 seconds, but sometimes it lost or gained up to 60 seconds in 4-5 hours. The number of spots and flares on the Sun and of atmospheric pressure on Earth varied accordingly. The events recorded in 2013 were much smaller, but still significant. Gravitation was above normal from August 6 to August 9, and again from August 12 to August 15; lesser anomalies occurred on Aug.21/22 and 28/30. At this time of the year, a line Earth-Sun points to the Virgo cluster of galaxies and its powerful black holes. The black hole at the centre of our own galaxy produced an event on Dec. 14/15, 2013.

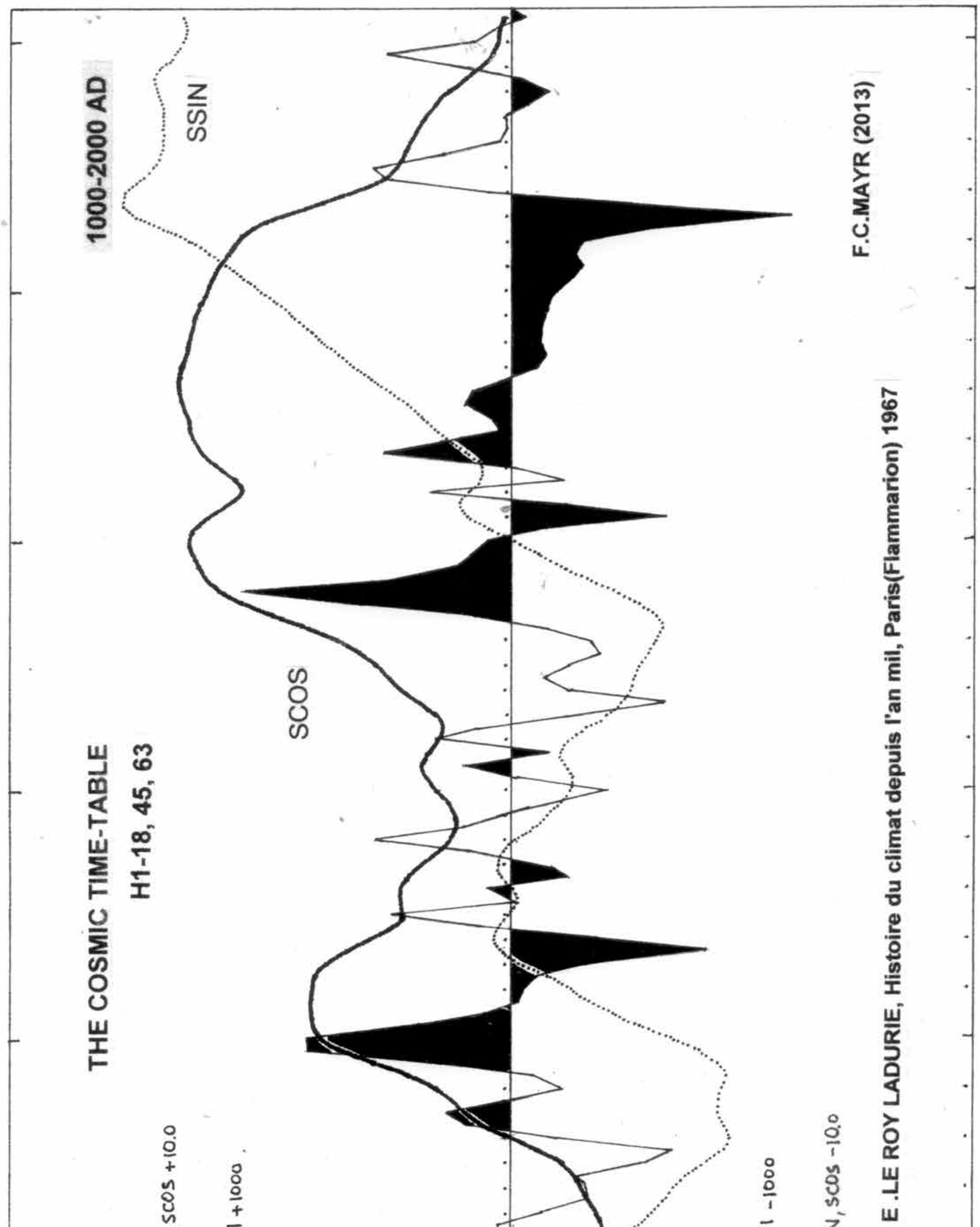
According to these observations and computations, Space Magnetism provides the time-table for secular changes of climate, but the onset of a glacial phase of the Earth is controlled by Gravitation. Ice Ages, or clusters of glacial phases, occur when the Sun is drifting through a certain part of its galactic orbit. Straight lines connecting ice ages in successive orbits point to the galactic centre (file # 8).

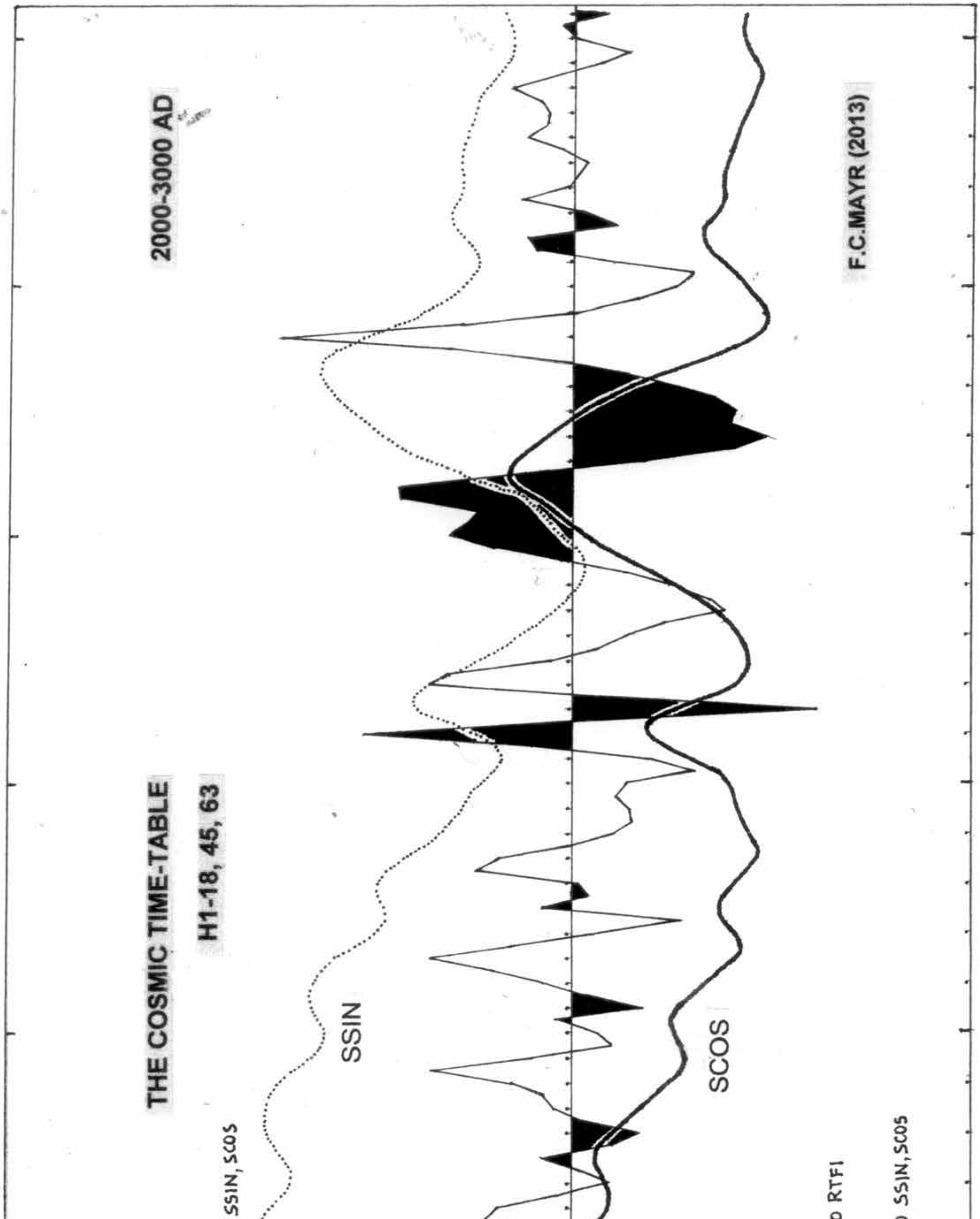
ENCLOSED

01 Daily Deviations of a Pendulum Clock at 45N 72 W
02 The Cosmic Time-Table, 00-5 ky AD
03 The Cosmic Time-Table, 5-00 ky BC
04 The Cosmic Time-Table, 10-5 ky BC
05 The Cosmic Time-Table, 15-10 ky BC
06 The Cosmic Time-Table, 20-15 ky BC
07 The Cosmic Time-Table, 25-20 ky BC
08 The Cosmic Time-Table, 30-25 ky BC
09 The Blake Event, 110-107 ky BC
10 Long-Case Clock by Napier & Dun, Glasgow 1770.

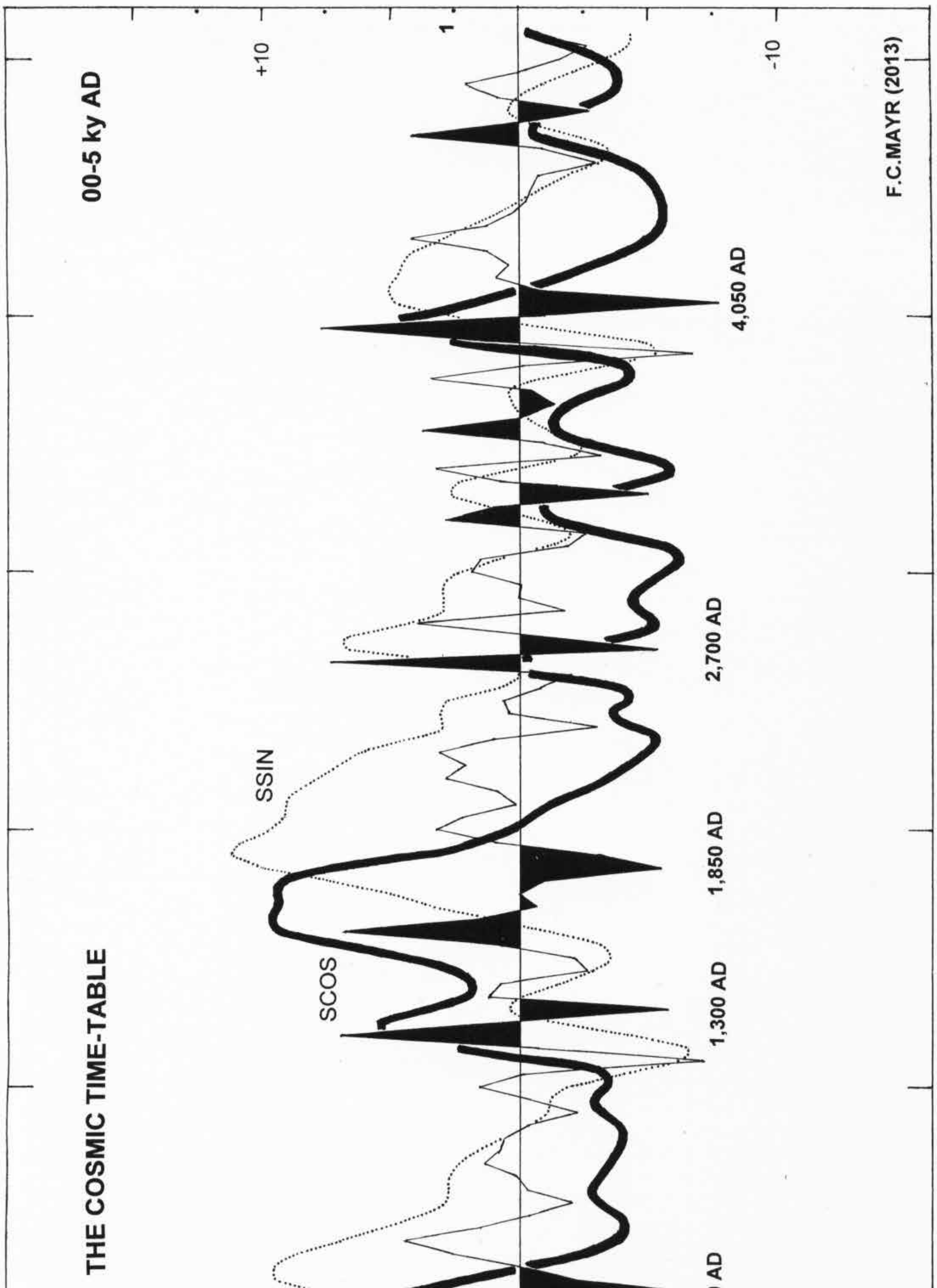


F.C.MAYR (2013)
DAILY DEVIATIONS OF A PENDULUM CLOCK
AT 45 N 72 W
0 = ATOMIC MASTERCLOCK
FORT COLLINS (USA)
DATA (sec/day) for
06-18 h EST
18-06 h EST
+10
0
-10
NOV
DEC
JAN 2013


THE COSMIC TIME-TABLE
H1-18, 45, 63
1000-2000 AD
SSIN
SCOS
SSIN, SCOS +10.0
RTFI +1000
RTFI -1000
SSIN, SCOS -10.0
cf. E .LE ROY LADURIE, Histoire du climat depuis l'an mil, Paris(Flammarion) 1967
F.C.MAYR (2013)



THE COSMIC TIME-TABLE
H1-18, 45, 63
2000-3000 AD
F.C.MAYR (2013)
SSIN
SCOS
+10.0 SSIN, SCOS
1000 RTFI
-1000 RTFI
-10.0 SSIN, SCOS



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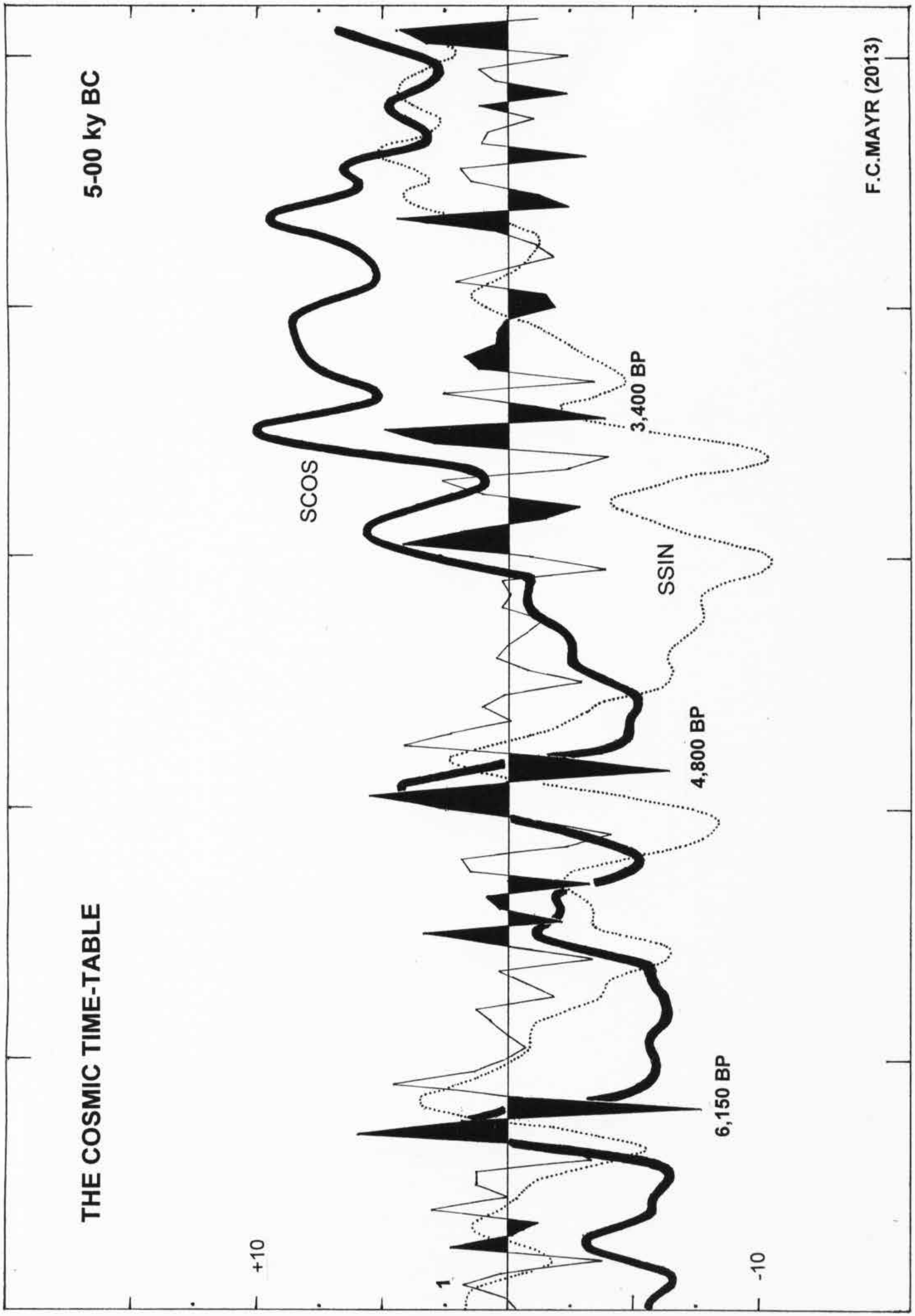
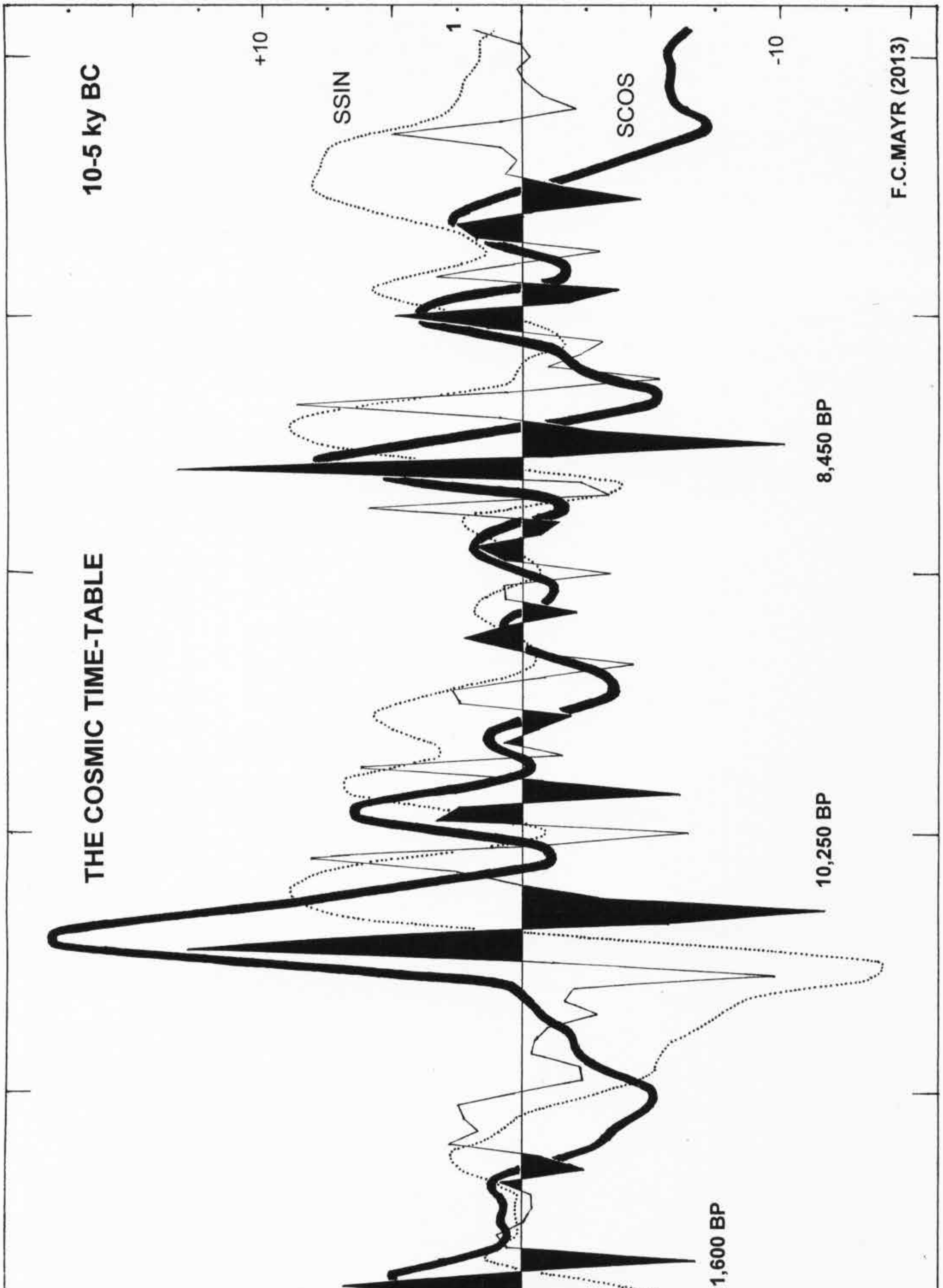

THE COSMIC TIME-TABLE
5-00 ky BC
F.C.MAYR (2013)
SCOS
SSIN
3,400 BP
4,800 BP
6,150 BP
+10
-10
1



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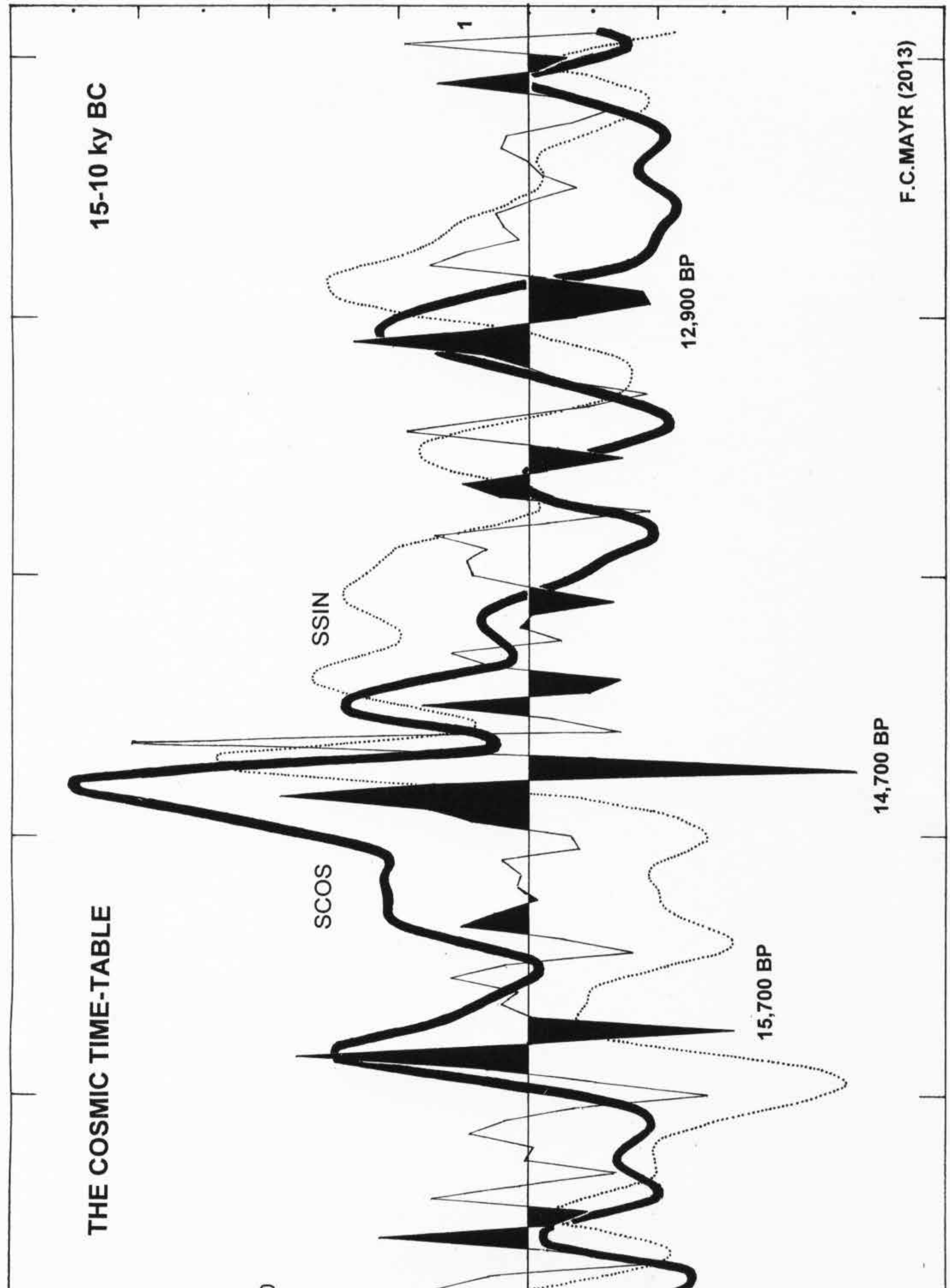
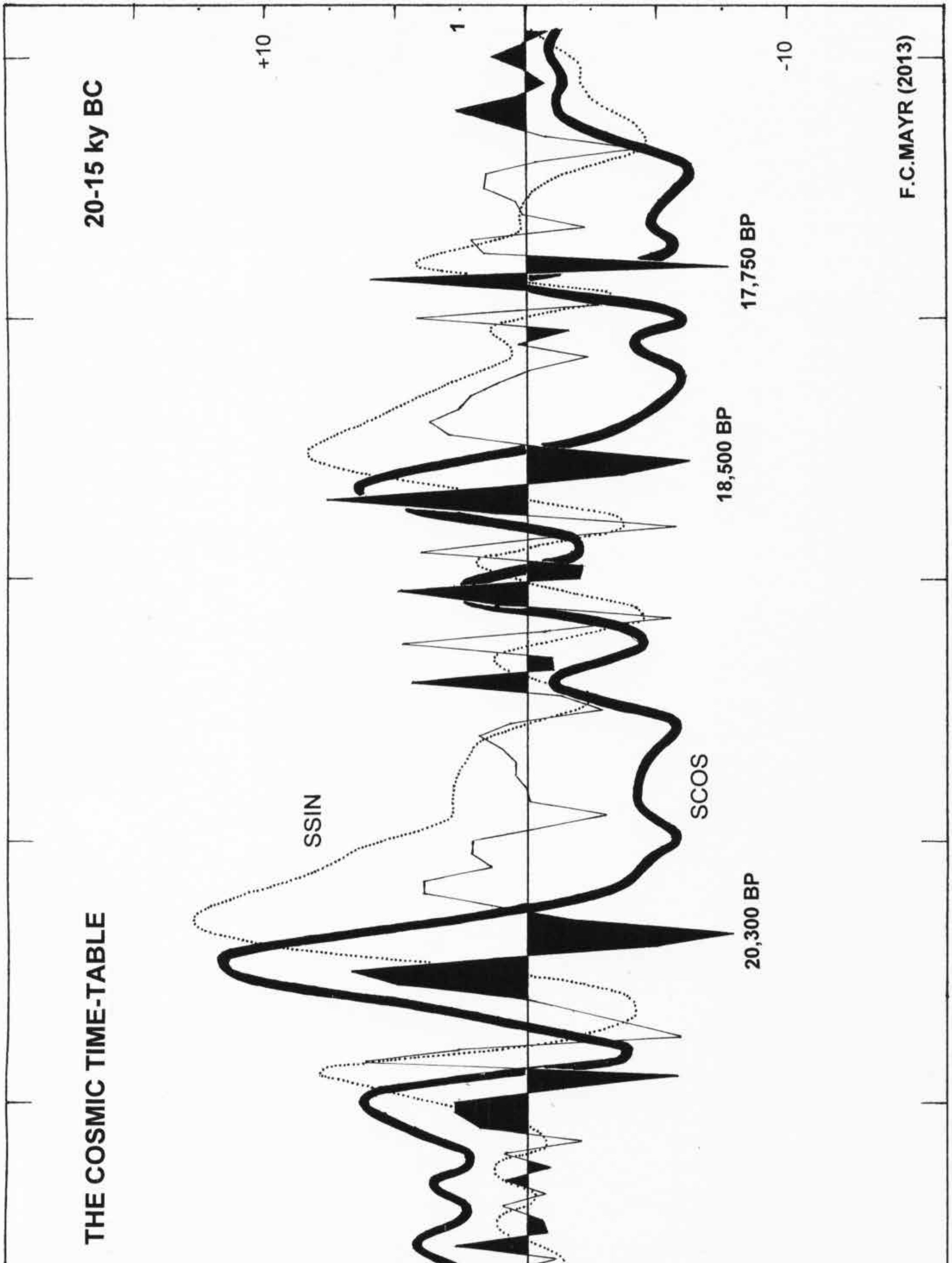
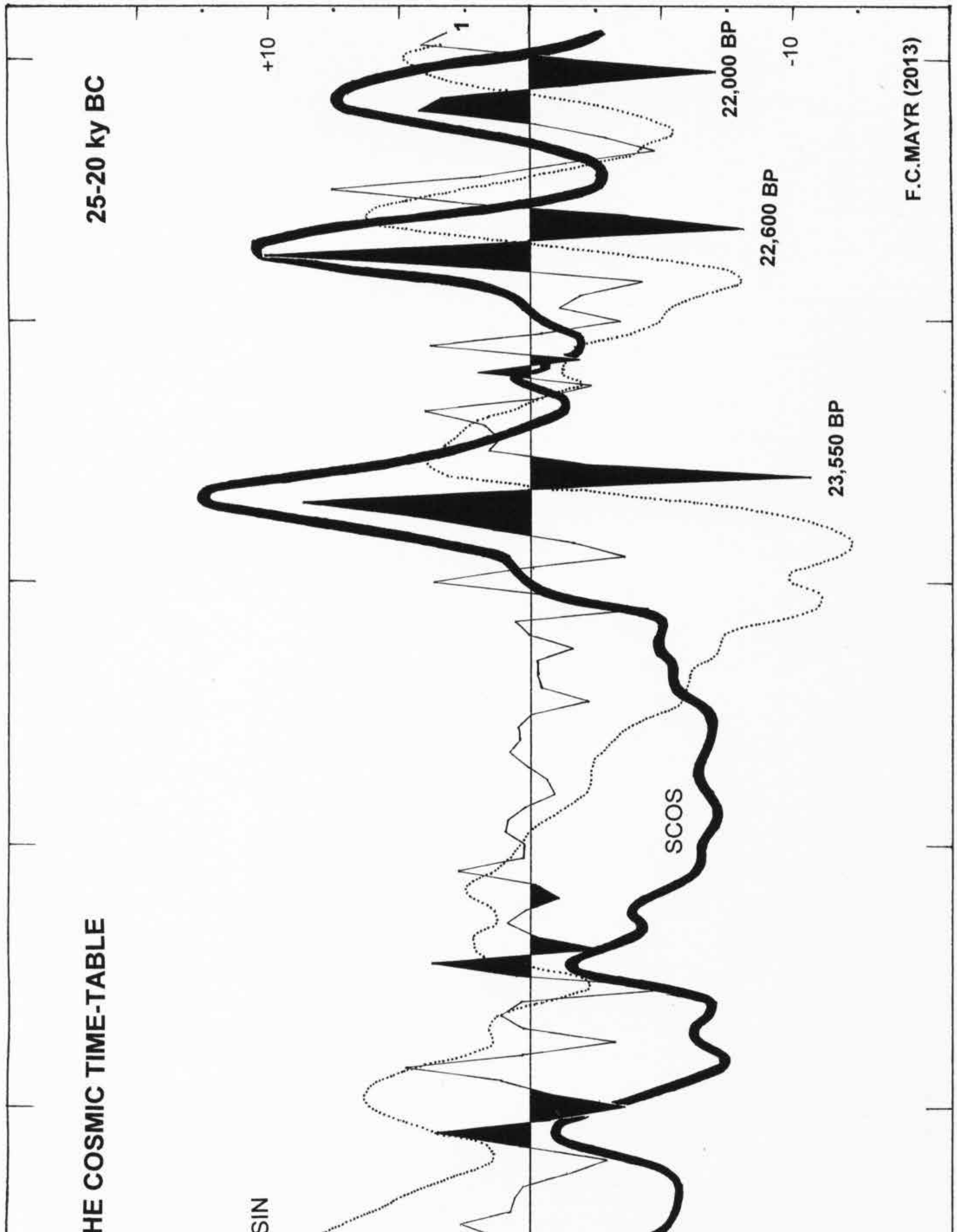
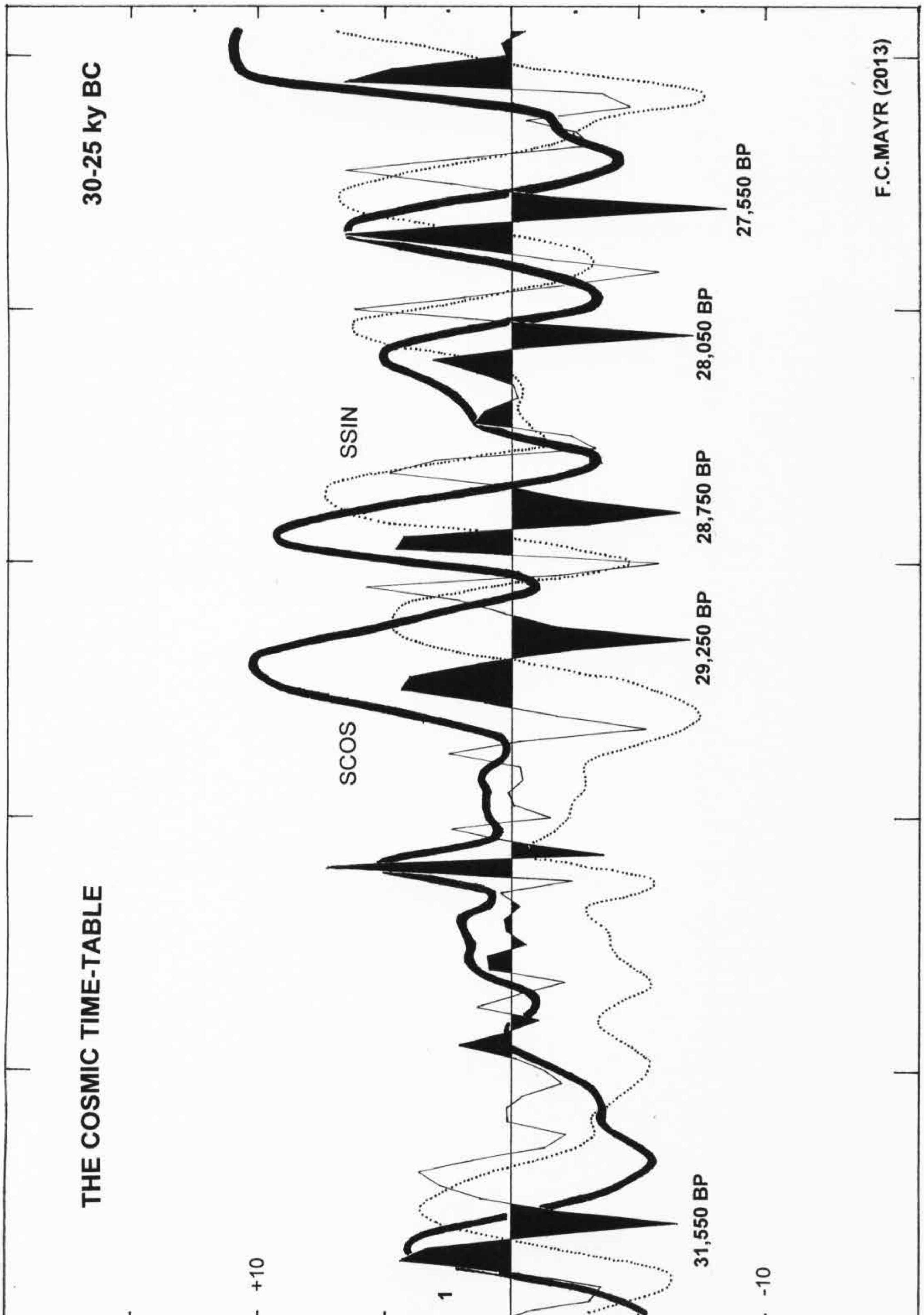
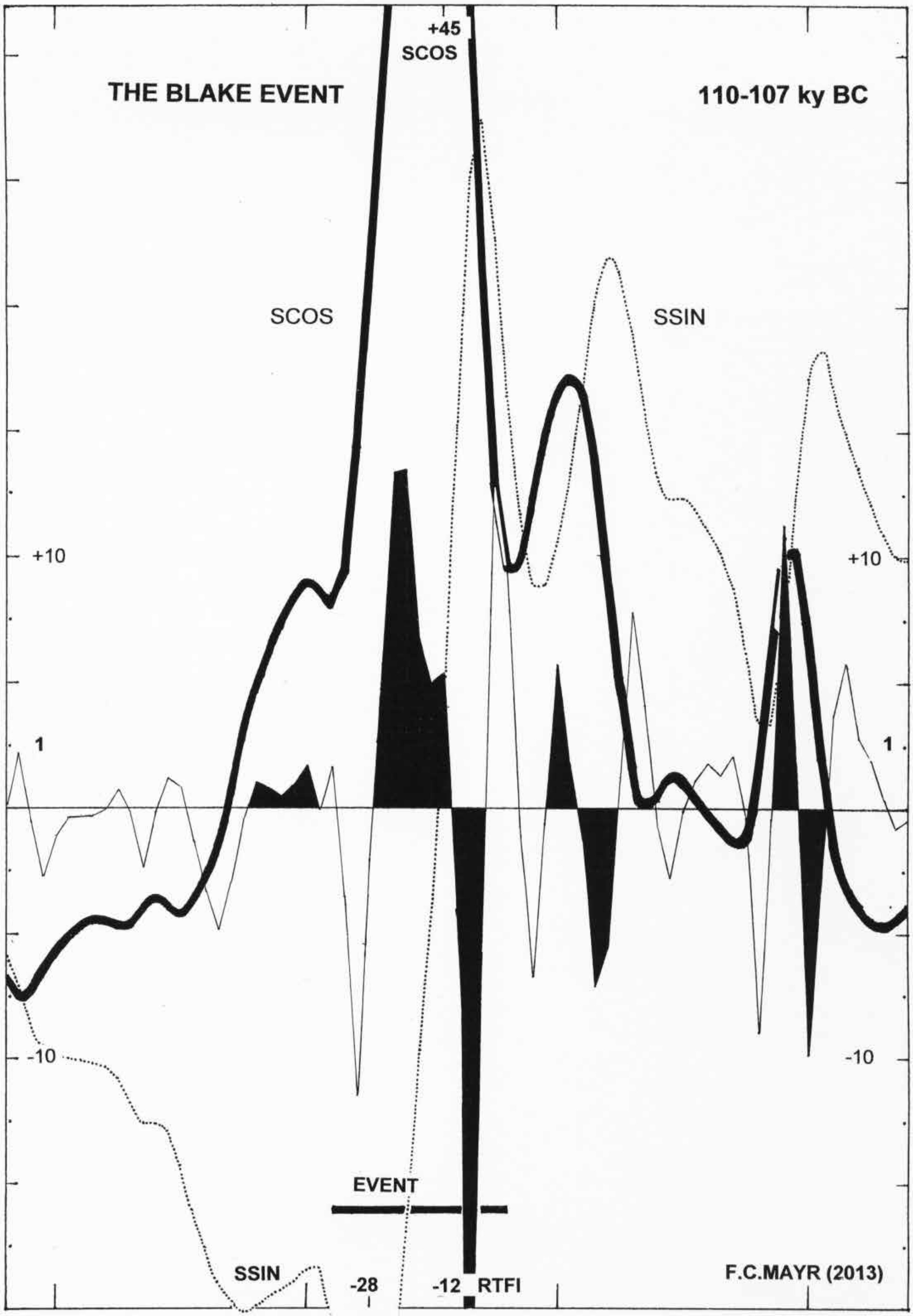

THE COSMIC TIME-TABLE
15-10 ky BC
SCOS
SSIN
15,700 BP
14,700 BP
12,900 BP
+10
-10
1
1
F.C.MAYR (2013)


THE COSMIC TIME-TABLE
20-15 ky BC
+10
1
-10
F.C.MAYR (2013)
17,750 BP
18,500 BP
SSIN
SCOS
20,300 BP


THE COSMIC TIME-TABLE
25-20 ky BC
SSIN
SCOS
+10
-10
1
26,750 BP
23,550 BP
22,600 BP
22,000 BP
F.C.MAYR (2013)


THE COSMIC TIME-TABLE
30-25 ky BC
SSIN
SCOS
31,550 BP
29,250 BP
28,750 BP
28,050 BP
27,550 BP
F.C.MAYR (2013)
+10
-10
1



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ADDENDUM B

F.C.MAYR (2013)

THE MAGNETIC CALENDAR.

When my paleomagnetic chart for 10,500 years of glacial climate was exhibited at the INQUA-Congress in Birmingham (1977), the Faraday rotation of polarized magnetic fields was an accepted fact on Earth and already known from the study of pulsars in space: yet nobody saw the law behind the reported data. I had to invent a new analytical method to find the 22 waves which determine the magnetic conditions along the galactic orbit of our Sun.The 'cosmic time-table' of www.mayrheliophysics.com was computed with the model used by Nomos Interscience since 1987.

Magnetic Calendars use the same model, but with recent improvements and the addition of a Fibonacci series of harmonics (H18-45-63-108-171-279-450 ...) up to H 379683. The shortest wave has a period of 71.2 hours which is a leading feature in the magnetic record of stations in Arctic Canada. The original listings have four points per day.

The magnetic calendars for the last 25 years (1989-2013) are now ready to be delivered. Three of them (2000, 2003 and 2013) are offered as free samples, the others can be ordered by institutions with the official mandate to monitor weather and climate within the boundaries of their state.

The chart of magnetic climate (from January 1, 1996, to December 31, 2008) is a primer and shows only the deviations of SSIN from the respective annual mean.

The magnetic calendar for the year 2000 predicts what folks in Eastern North America expect: a cold January and February, warming up in May, hot in August, pleasant in October and snow before Christmas.

This was, however, not the case in 2003. January was exceedingly cold, and half of the animals in the oyster beds around Prince Edward Island died. June, July and August were rather cool and dry, and the mild weather at the end of the year was not a boon for everybody.

The predictions for 2013 and 2014 are included without any comment.

A list of potentially dangerous situations (of magnetic type A,U,D or V) for the years 2000, 2003 and 2013 was added for the benefit of future experts.

The peaks of RTFI did or will arrive as predicted, but the conditions on and around the planet Earth may not be normal. There might be an active sunspot at the centre of the solar disk; the Sun could be peppered with coronal holes; the density and speed of the solar wind could be very high or very low; a high density of cometary dust could have changed the gradients in the surrounding electric fields; or an interstellar proto-magnetic cloud could be drifting through the solar system. On March 9, 2013, such a cloud engulfed the Earth, and the resulting anomalies (see file 7) are stronger and might last longer than the previous ones in the fall of 2009.

The effects of these other anomalies have yet to be gauged.

ADDENDUM B

F.C.MAYR (2013)

THE MAGNETIC CALENDAR (Update)

When my paleomagnetic chart for 10,500 years of glacial climate was exhibited at the INQUA-Congress in Birmingham (1977), the Faraday rotation of polarized magnetic fields was an accepted fact on Earth and already known from pulsars in space: yet nobody saw the law behind the reported data. I had to invent a new analytical method to find the 22 waves which determine the conditions along the galactic orbit of our Sun. The 'cosmic time-table' of www.mayrheliophysics.com was computed with the model used by Nomos Interscience since 1987.

Magnetic Calendars use the same model, but with recent improvements and the addition of a Fibonacci series of harmonics (H18-45-63-108-171-279-450...) up to H 379683. The shortest wave has a period of 71.2 hours which is a leading feature in the magnetic record of stations in Arctic Canada. The original listings have four points per day. The graphs of Addendum B have 4 points in 10 days.

The two functions SSIN and SCOS of a magnetic calendar can be understood as planetary indices predicting positive and negative deviations from an expected average. SSIN predicts deviations of temperature, SCOS the planetary turbulence of atmospheric circulation, but the arrival of dangerous weather in a particular place on Earth remains a probability and is not certain. The method yields a generalized image of "Wítterung", not of "Wetter".

The magnetic calendars for the past 25 years (1989-2013) are now ready to be delivered. The graphs for 2000,2003 and 2013 are free samples, the others can be ordered by institutions with the official mandate to monitor weather and climate within the boundaries of their state.

The chart of magnetic climate (from Jan.1,1996 to Dec. 31, 2008) is a primer and shows only the deviations of SSIN from the respective annual mean.

The magnetic calendar for the year 2000 predicts what folks in Eastern North -America expect: a cold January and February, warming up in May, hot in August, pleasant in October, and snow before Christmas.

This was, however, not the case in 2003. January was exceedingly cold, and half of the animals in the oyster beds around Prince Edward Island died. June, July and August were rather cool and dry, and the mild weather at the end of the year was not a benefit for everybody.

The predictions for 2013 and 2014 are included without any comment. A list of potentially dangerous situations (of magnetic type A,U, D and V) for the years 2000, 2003 and 2013 was added for students who want to know what happened.

After all, the conditions around the Sun are often far from "normal", and the response of the Earth varies accordingly. The effects of these anomalies have yet to be gauged.

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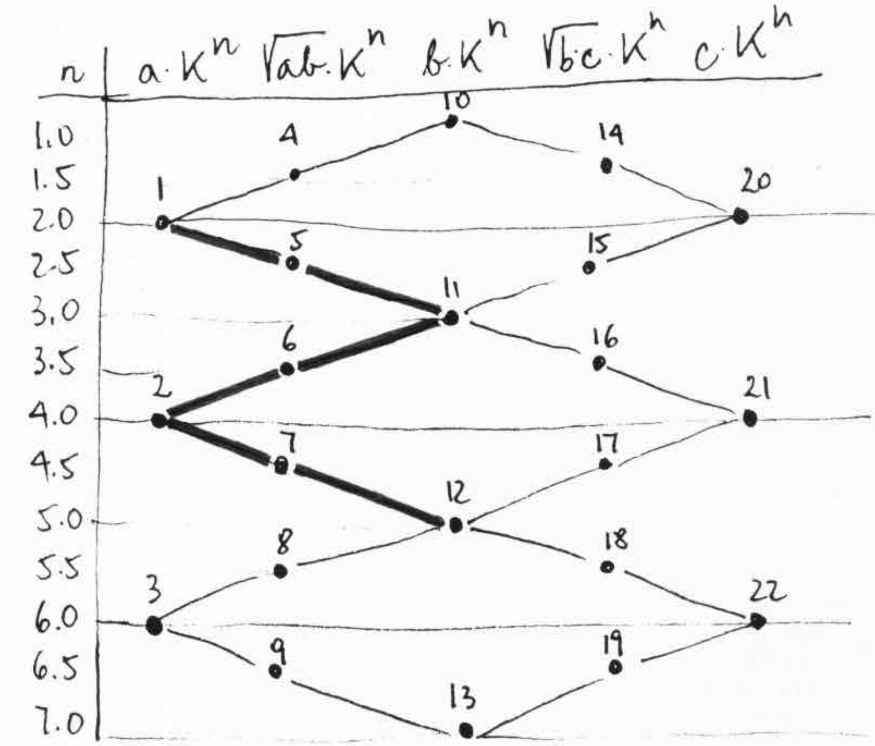
F.C. Mayr, Magnetic Monitor.

Formeln und Gesetze.

(1.) Das Grundmodell. Wellenlänge λ der Wellen No:



$a = 2500$ $b = 4000$ $c = 6400$

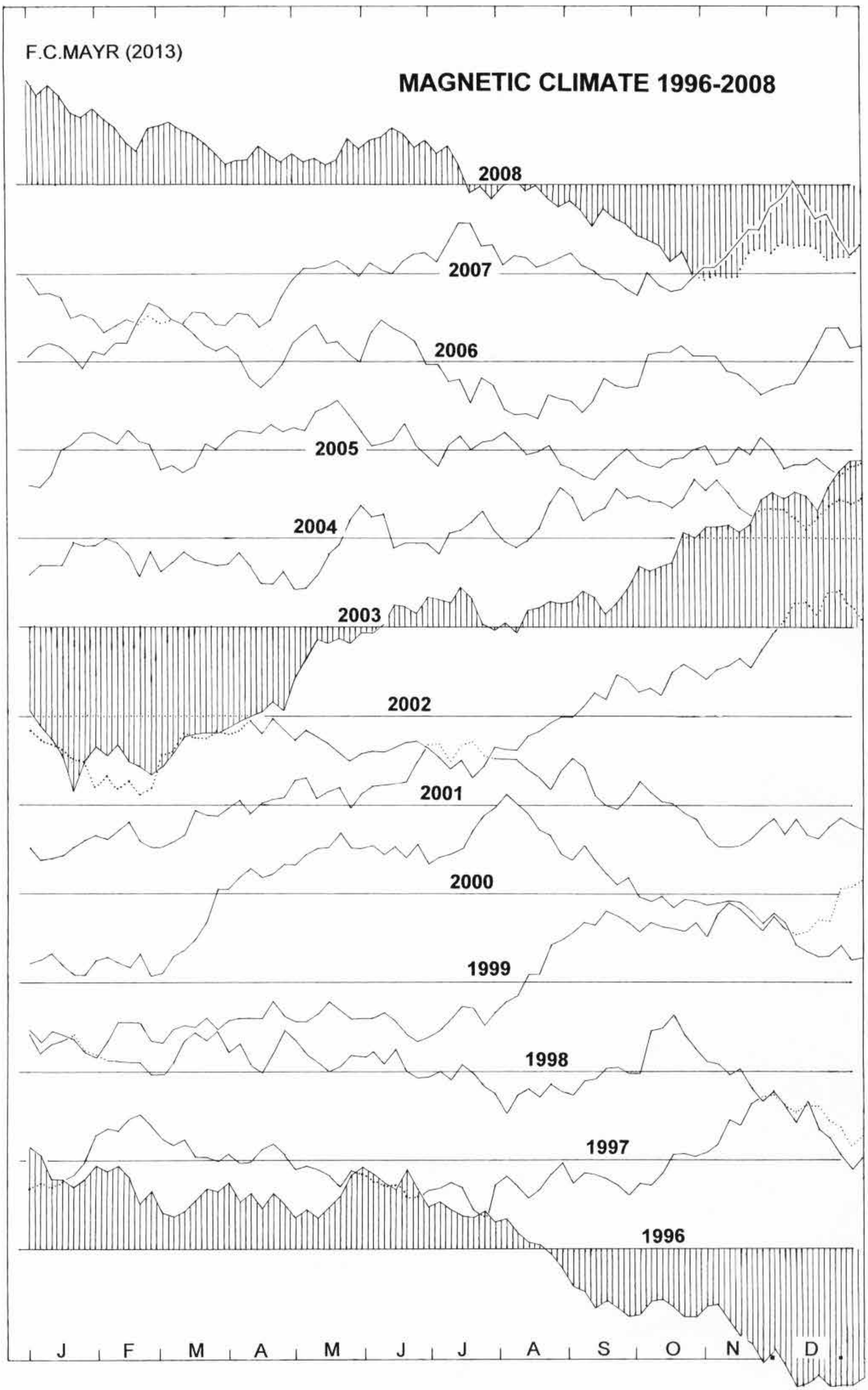
$K = 1.110737787$ (Cohen and Taylor 1986)

$$100\cdot K^3 = \alpha^{-1} = 137.0359895\,(61)$$

$$\alpha^{-1} = \frac{2h}{\mu_0\cdot c\cdot e^2} = \frac{h\cdot 10^7}{2\pi\cdot c\cdot e^2}$$

μ_0 = permeability of vacuum = $4\pi\cdot 10^{-7}\ NA^{-2}$.
h = Planck constant = $6.2620755\,(40)\cdot 10^{-34}$ Js
e = elementary charge = $1.60217733\,(49)\cdot 10^{-19}$ C

Notiz: Überprüfen: Verstärkung der galaktischen Signale entlang der Achse c der Heliosphäre nicht, 2π sondern $f\cdot h$?? = 6,2620755



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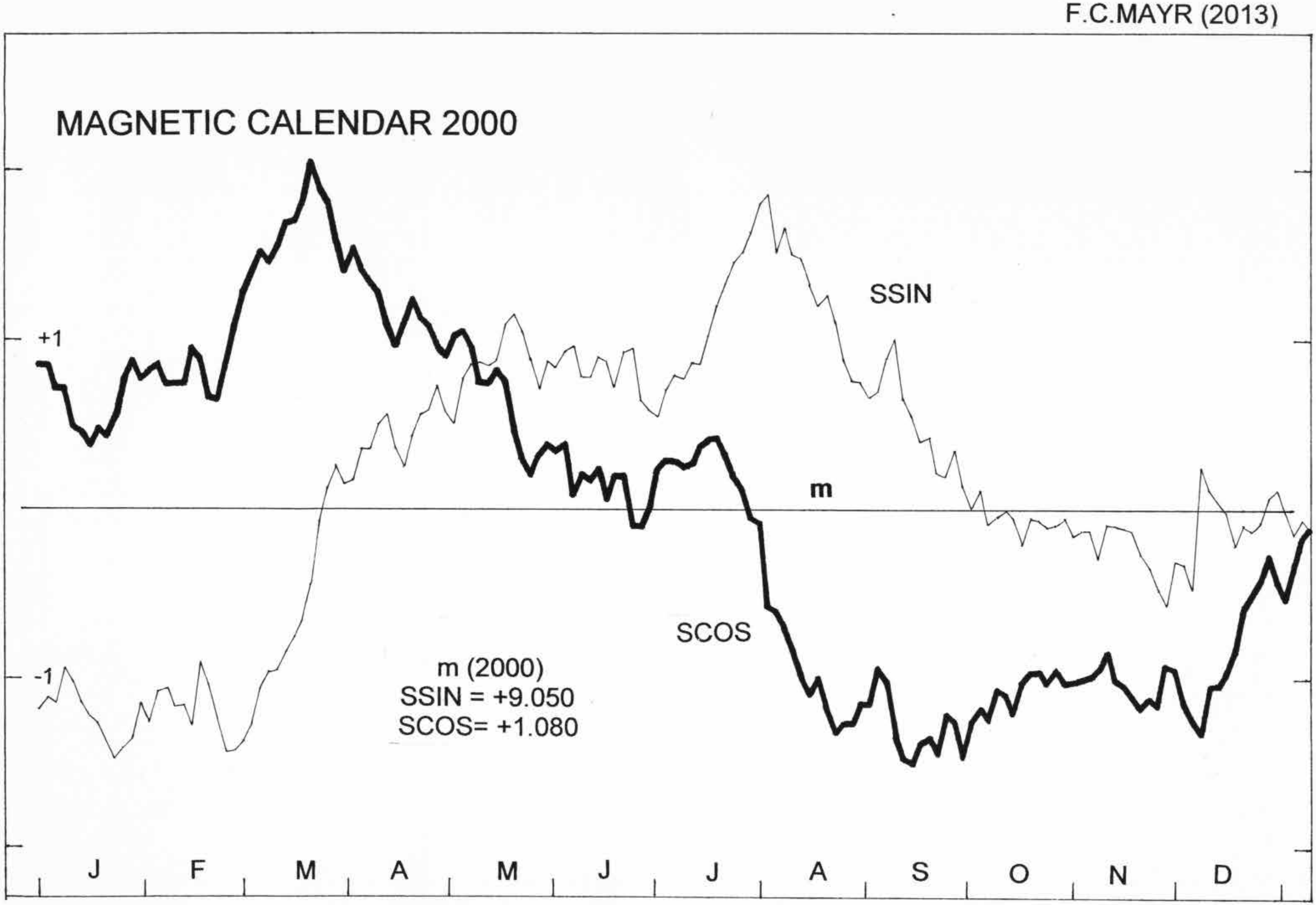
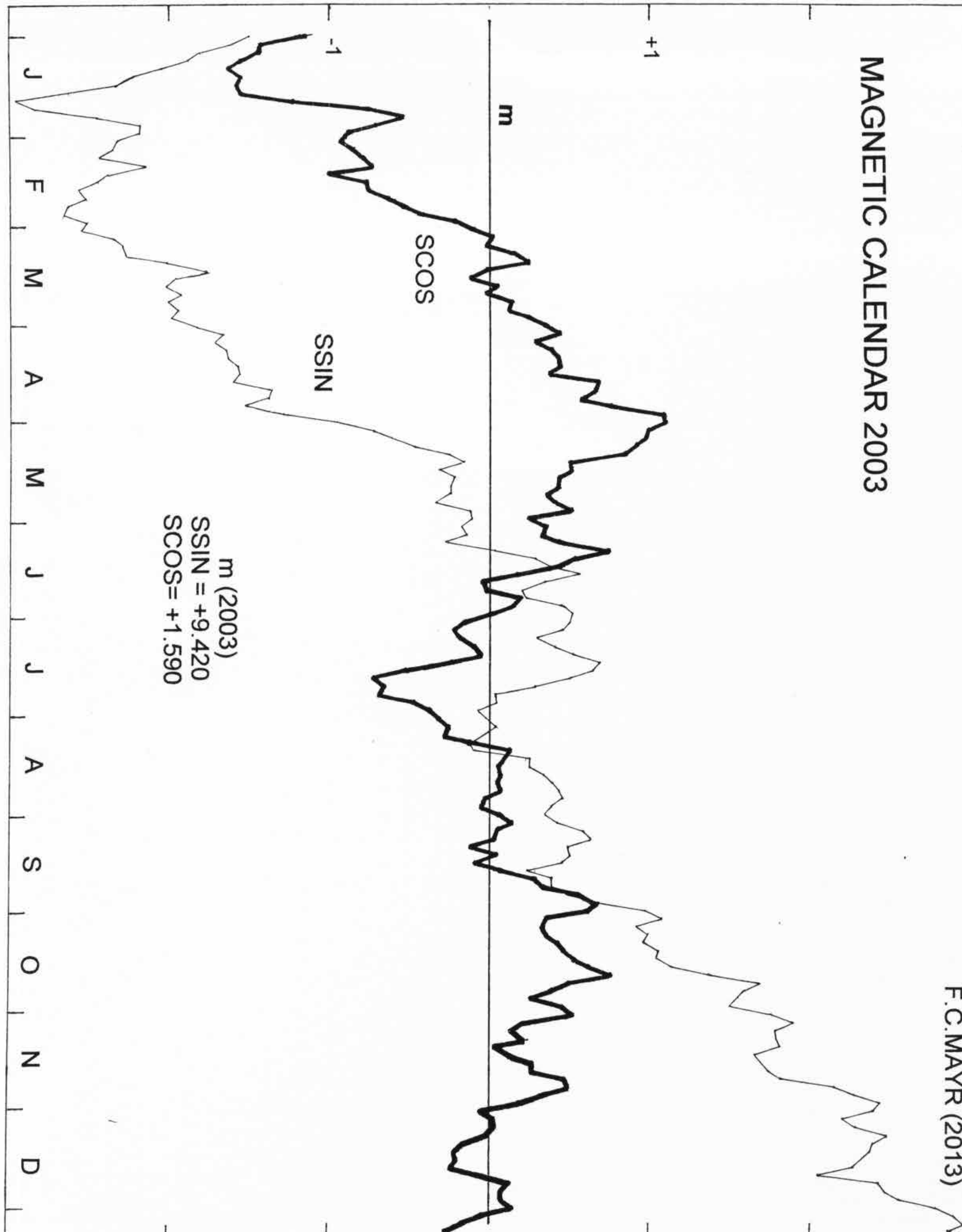
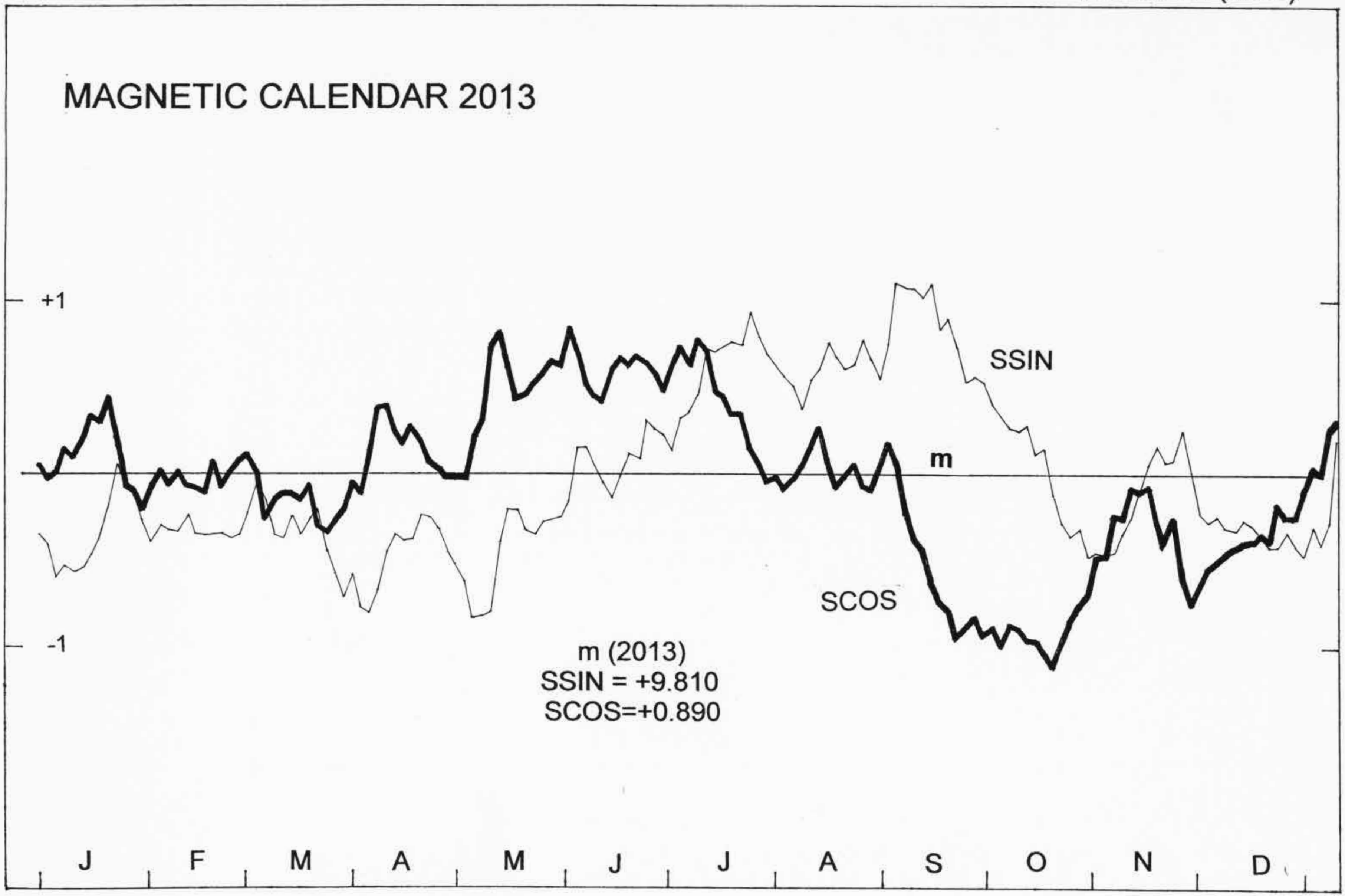
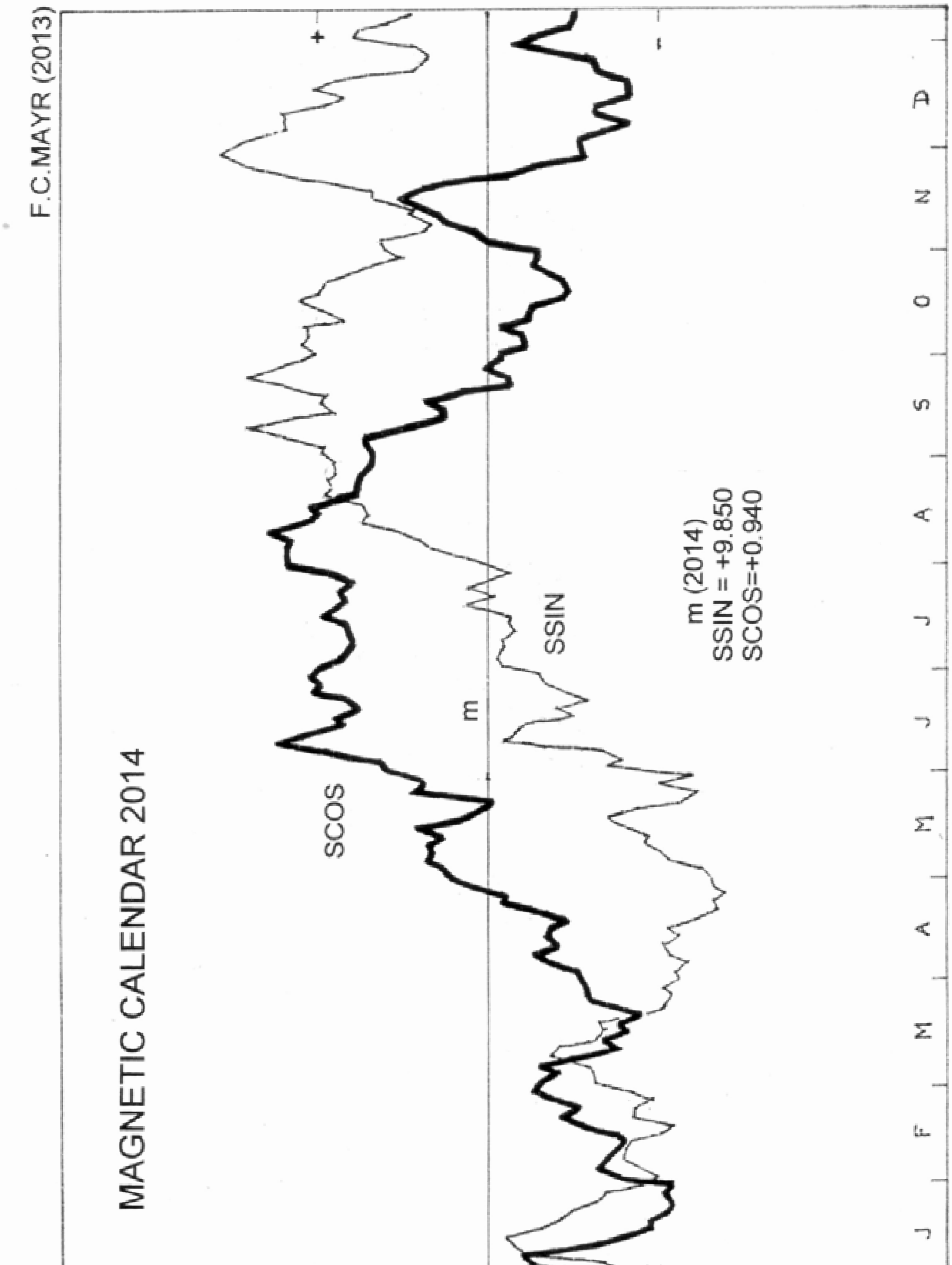

F.C.MAYR (2013)
MAGNETIC CALENDAR 2000
+1
-1
SSIN
m
SCOS
m (2000)
SSIN = +9.050
SCOS= +1.080
J F M A M J J A S O N D


MAGNETIC CALENDAR 2003
F.C.MAYR (2013)
+1
m
-1
SCOS
SSIN
J
F
M
A
M
J
J
A
S
O
N
D
m (2003)
SSIN = +9.420
SCOS= +1.590

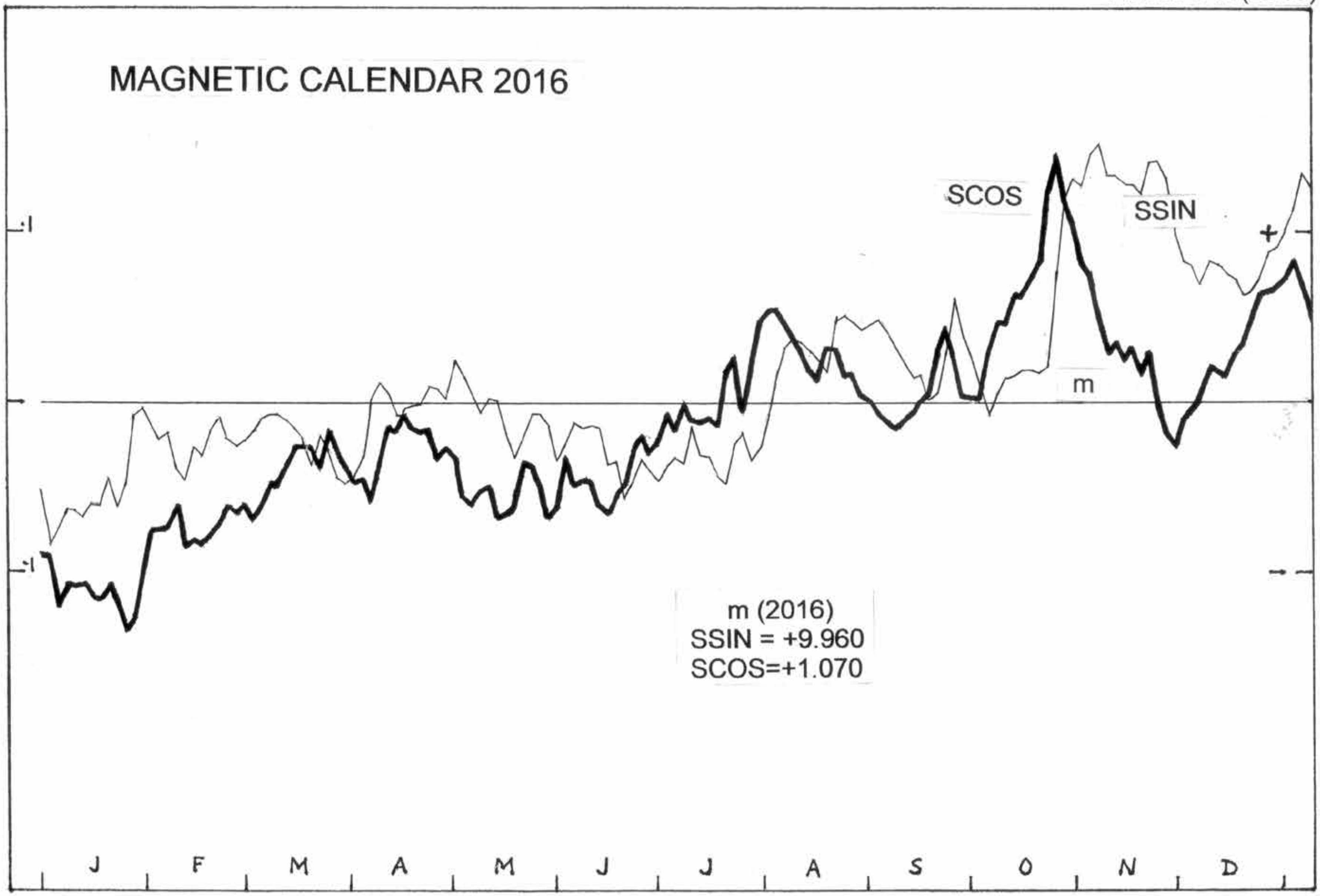
F.C.MAYR (2013)


MAGNETIC CALENDAR 2013
+1
-1
SSIN
m
SCOS
m (2013)
SSIN = +9.810
SCOS=+0.890
J
F
M
A
M
J
J
A
S
O
N
D


MAGNETIC CALENDAR 2014
F.C.MAYR (2013)
SCOS
SSIN
m
m (2014)
SSIN = +9.850
SCOS=+0.940
J
F
M
A
M
J
J
A
S
O
N
D

2016

F.C.MAYR (2013)



F.C.MAYR (2013) THE MAGNETIC CALENDAR (2000,2003,2013)

DAY	TIMING*	RTFI	TYPE	
JAN 08	1,2,	317,298	U	YEAR 2000
FEB 15	1,2	386,394	A	
16	3,4	331,391	U	
MAR 20	1,2	357,350	A	
22	3,4	328,430	U	
JUN 04	3,4	330,277	U	
06	1,2	401,290	D	
23	4,1	324,302	D	
JUL 31	3,4	433,435	U	
AUG 2/3	4,1,2	357,498.431	D	
SEP 09	4,1,2	400,444,296	D	
DEC 09	1,2	360,328	V	
17	4,1	289,328	V	
JAN 02	4,1	327,323	D	YEAR 2003
19	3,4	311,428	V	
20	1,2,3	524,416,307	V	
23	2,3,4	281,334,411	A	
24	1,2	457,362	A	
27	3,4	264,276	U	
FEB 08	1,2	277,333	A	
09	3,4	408,277	U	
11	1,2	311,395	D	
12	4,1	314,351	V	
APR 18	1,2	341,313	A	
27	1,2,3,4,1	292,347,400,347,300	A	
MAY 11	2,3,4	313,397,285	U	
JUN 08	3,4,1,2	308,477,416,279	A	
10	3,4,1	290,389,343	U	
16	2,3	347,298	U	
18	2,3	315,323	D	
JUL 24	4,1	283,367	V	
AUG 11	4,1	361,342	A	
OCT 21	3,4,1	317,467,330	U	
NOV 02	3,4	317,385	U	
DEC 22	3,4,1	474,515,278	A	
JAN 21	4,1,2	360,394,279	U	YEAR 2013
MAR 22	1,2	319,310	D	
MAY 04	3,4	326,314	V	
10	2,3,4,1	289,452,559,369	A	
14	2,3	297,291	U	
JUN 03	4,1	283,416	U	
JUL 12	2,3	304,351	U	
SEP 04	4,1,2	376,387,278	U	
16	1,2	315,401	D	
NOV 25	2,3	449,321	U	

TIMING: 1 = 0-6h UT; 4 = 18-24h UT

ADDENDUM C

F.C. MAYR (2013)

PREDICTIONS FOR THE SUN.

The events recorded by a pendulum clock at 45 N 72 W made me wonder if I had not overlooked an essential element in the system of galactic magnetic waves. The answer was: yes.

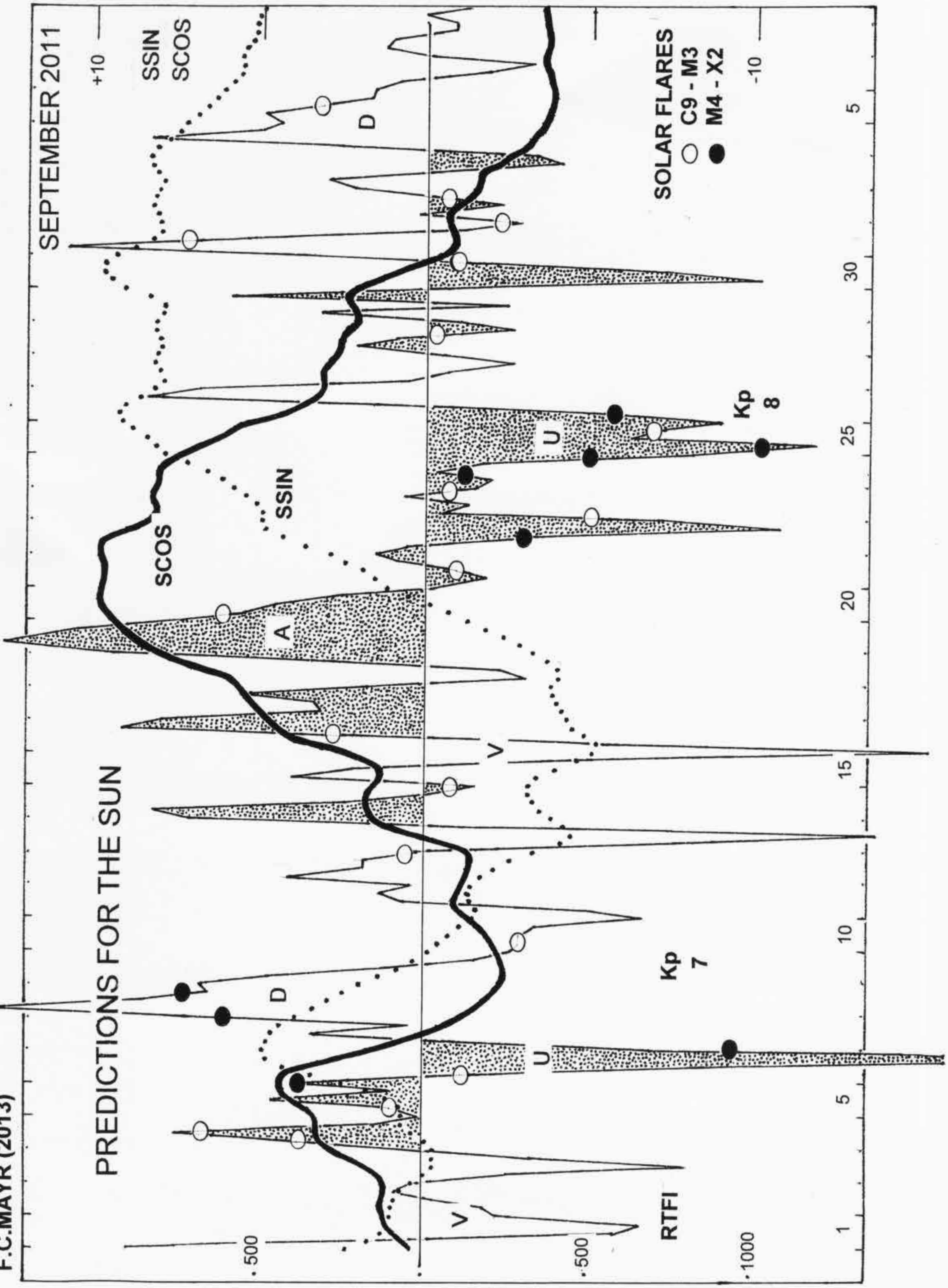
Data for the Nucleus of our Galaxy

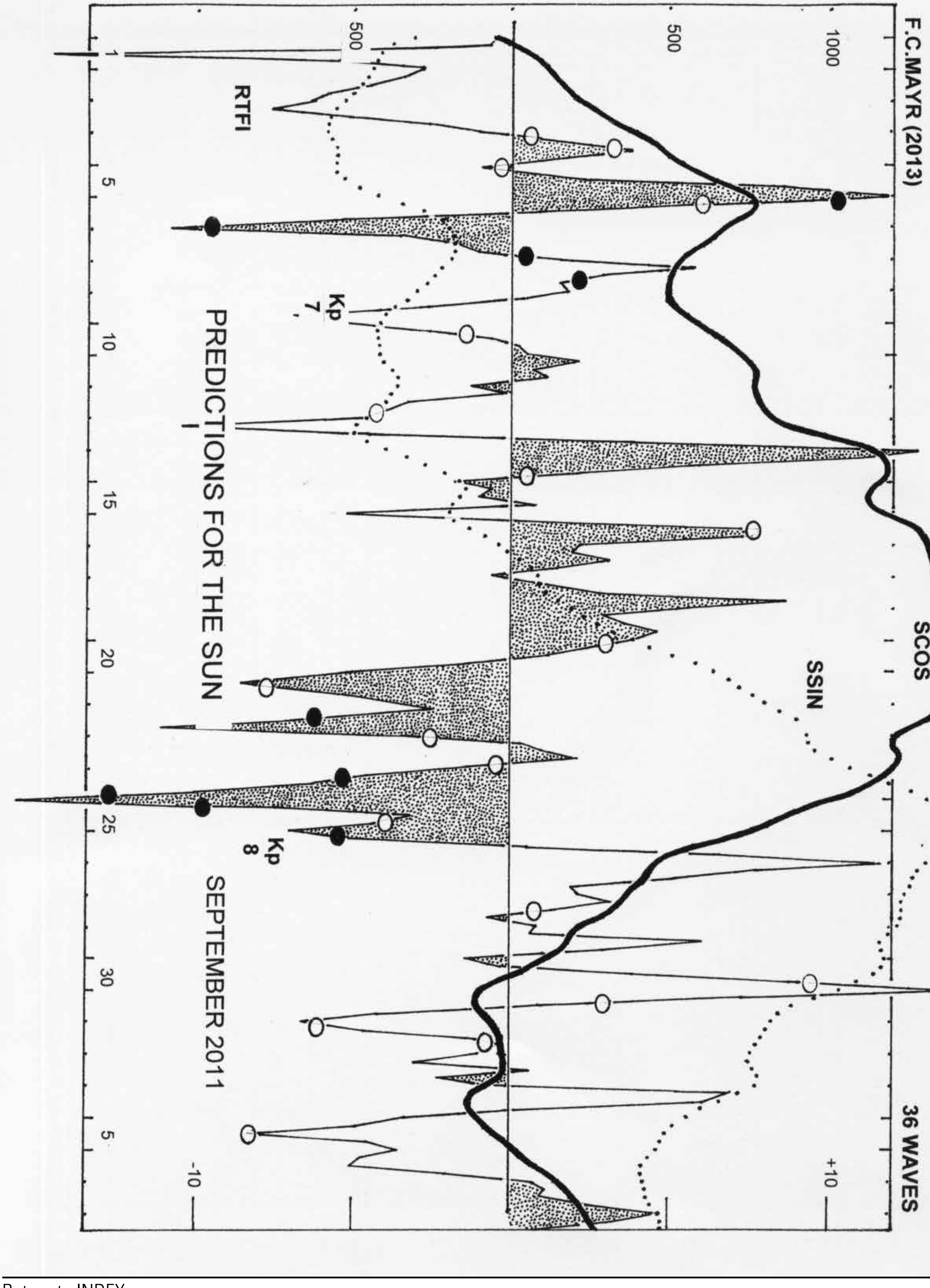
W	H450 of W1-W22	H450/144.5 = R	$U = 2R\pi =$ TAU	PHI /2000 A.D.
1	2503.443600	17.3248692	108.855364	
2	3088.594564	21.3743568	134.299045	
3	3810.517815	26.3703655	165.689893	
4	3004.637136	20.7933366	130.648387	
5	3337.363999	23.0959446	145.116100	
6	3706.936297	25.6535384	161.185935	
7	4117.434209	28.4943544	179.035309	
8	4573.389763	31.6497562	198.861283	periods and
9	5079.836836	35.1545802	220.882742	distances in
10	3606.170435	24.9561968	156.804409	light-days
11	4449.071028	30.7894189	193.455624	(civil days)
12	5488.989944	37.9860896	238.673640	
13	6771.977841	46.8648986	294.460842	
14	4807.419417	33.2693385	209.037419	
15	5339.782405	36.9535115	232.185760	
16	5931.098053	41.0456613	257.363178	
17	6587.894757	45.5909672	286.456495	
18	7317.423628	50.6396099	318.178053	
19	8127.738923	56.2473282	353.412386	
20	6408.815599	44.3516650	278.669730	
21	7906.802113	54.7183537	343.805556	
22	9754.925632	67.5081359	424.166127	

The geometry of this nucleus appears to be rather simple. It is a system of celestial bodies orbiting a giant pulsar at the speed of light. Their movement produces signals that are recorded by the Sun and monitored by satellites of the NOAA.

The table mentions only 22 celestial bodies and their orbital periods; but there are at least 36 which can be inferred from data for the Sun. Incidentally, the cycle of solar activity is in tune with the orbital periods of four of these bodies: 36xU1 = 30xU4 = = 27xU5 = 25xU10 = p, the average period of the solar cycle. The geometric mean of the four periods is 3919.12234 civil days. The value mentioned in file #5 (3916.8 days) was only an approximation.

The enclosed graphs show the clustering of solar flares in September 2011. The use of 36 waves changed the details but the general image is the same. Solar activity is usually high during the cosmic condition U, low in V and close to nil if RTFI = 0 .


F.C.MAYR (2013)
PREDICTIONS FOR THE SUN
SEPTEMBER 2011
SSIN
SCOS
+10
-10
500
-500
-1000
RTFI
SOLAR FLARES
C9 - M3
M4 - X2
Kp
7
Kp
8
V
U
D
A
1
5
10
15
20
25
30


F.C.MAYR (2013)
36 WAVES
PREDICTIONS FOR THE SUN
SEPTEMBER 2011
SCOS
SSIN
RTFI
Kp 7
Kp 8
1000
500
500
+10
-10

The Models of Nomos Interscience

The models of Nomos Interscience owe their origin to an exceedingly precise paleomagnetic survey in the Austrian Alps. The stairway through the bluff of glaciolacustrine silt was 56 m high(1).

The principal component of the sediment were flakelets of mica, the principal carrier of magnetism spherules of micrometeorites. The measurements were made at night, in the building of the Geological Survey of Canada in Ottawa.

The secular variations of the magnetic field were the same as today and up to 3 times as fast during the paleomagnetic event recorded in the basal part of the section. The period of equal spin (PES=280 yrs), its period of equal trend (PET=112 yrs) and the Gleissberg cycle of solar magnetic activity (X=80 yrs) appeared to resonate once every 5040 yrs (2).

There were other points of resonance and a host of harmonic ratios. The resulting model had 22 magnetic waves of equal energy, a Fibonacci series of harmonics and a constant K which was derived from the fine structure constant of matter ($100\ K^3 = \alpha^{-1}$).

The original data enabled me to predict the major fluctuations of climate of the last 100,000 years. Resonance between higher harmonics was, then, compared with the occurrence of great aurorae. At this stage, the vacillations of glaciers and climate in the Alps during the last 8000 years became predictable (3, 4). Comparison with the best magnetic data from 1840 to 1980 made the model precise enough to predict the day when atmospheric circulation patterns would change (5).

The prediction of the variable magnetic activity of the Sun is a recent (2011) achievement and not yet on the market (6, file 5).

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(1) MAYR, F.C. (1975-79) A Paleomagnetic Survey in the Austrian Alps. Reprint Edition, Nomos Interscience Public Report P89-02, 54p.

(2) MAYR, F.C. (1979) True and False Variations of the Magnetic Field. Acta Geol. Acad.Scient.Hungaricae 22, 171-183.

(3) MAYR, F.C. (1982) Magnetic Control of Climate. Proceedings, IGCP-Project 73/1/24, 8th session (Kyoto), Prague (Geol.Survey, 1984),152-171.

(4) NOMOS INTERSCIENCE MONTREAL (1985), Calendrier des Savants 1986-88. 17x22", 16 pages, 42 figures.

(5) MAYR, F.C. (1991) The Climatic Monitor of Nomos Interscience. Nomos Interscience Public Report P91-01, 49p + tables (14p).

(6) www.mayr.heliophysics.com (2012), 8 files, annex, addendum: 72p.

NOTE: The models were created, brought to perfection and tested by F.C. MAYR; the original program (Fortran F77) by Pierre CORMIER (UQAM, 1980) was modified and adjusted by Claude BEAUCHAMP (UdeM, 1985-88).

F.C.MAYR (1977)

OSCILLATIONS OF THE MAGNETIC FIELD AS A CAUSE OF CHANGES IN CLIMATE

The chart (serigraphy 210x260 cm) describes oscillations of the magnetic field and related changes in climate during the first cold phase of the lasr glaciation. The observed relationships between magnetic and climatic parameters appear, however, to be generally valid and still operating today.

The analyzed sediment is a varved clayey silt laid down in an ice-dammed lake that existed through more than 10,000 years. The locality (Fritzens, Tyrol, 11:34:19 E, 47:18:33 N, alt. 650m) is situated in the Austrian Alps where secular changes in climate have always led to marked changes in the size of alpine glaciers (MAYR 1964, 1968, 1969, PATZELT 1973).

The paleoclimatic interpretation of the sequence is based upon the varying sedimentation rates of i) fine silt and 'clay' (1-20 microns), ii) medium and coarse silt (20-60 microns) and iii) powdered limestone. Since most of the catchment area was glaciated, the changing sedimentation rate of fine silt and 'clay' (mg/cm /year) is thought to be the image of secular changes in the ablation rate of the surrounding glaciers, and a yardstick to estimate the average amount of energy available to produce glacial meltwaters. The medium and coarse silt (20-60 microns) is thought to be mainly a periglacial eolian component of the sediment; its sedimentation rate differs widely from that of the finer particles. The three salient positive anomalies concur with oscillations of the magnetic field that swing far beyond the usual limits of secular variations. The sedimentation rate of powdered limestone was low when the glacial ablation rate was high, and it was high when the surrounding glaciers grew again, and the sedimentatioin rate of fine particles (= the glacial ablation rate) was reduced. The periodicities are clear-cut and very significant.

The interpretation of the paleomagnetic data is based on more than 10,000 measurements, but only the last 2,000 measurements, or the most stable component of detrital magnetisation enabled us to draw and calculate the paleosecular variations of the magnetic field. Three basic types of variations were observed: a) left turns, or counterclockwise movements of the compass needle; b) right turns, or clockwise circular movements of the compass needle, and c) oscillations along a plane, or planar movements of the compass needle, with or without changes in paleomagnetic latitude. During the first 2570 years of the investigated period, left turns were the dominant form of movement (a:b:c=6:3:1); throughout the following interval of 2140 years, however, no left turn was observed (a:b:c=0:7:1); during the final 5060 years, left turns were as likely as right turns (a:b:c=6:5:1). Every change from clockwise movement to counterclockwise movement, and every beginning of a new full turn concur with a change in the trend of the sedimentological data. The correlation between oscillations of the magnetic field and changes in climate was, therefore, positive in 35 cases out of 35.

Statistical analyses of the data suggest only one basic oscillation (=82.0 years) to be the cause of the secular movements of the compass needle. The mean value is the same for left turns (80.8), right turns (82.3) and planar movements (84.6). The time for a complete turn, or the mean length of 4 periods of equal trend increases and decreases periodically; the variations of this mean length are, by themselves,harmonic oscillations. In our example, two main groups of cycles can be observed, with mean lengths of 1110 and 830 years respectively. Extension of this ratio (4:3) gives a harmonic series

1093.3	820.0	615.0	461.2	346.0	260.0	195.0	146.2	109.3
109.3	82.0	61.5	46.1	34.6	26.0	19.5	14.6	10.9

which is periodical. In our opinion, the series represents the periodical system of solar cycles. It is in perfect accordance with the already existing framework of geological and astronomical data on solar cycles.

F.C. MAYR, CONTRIBUTIONS TO HELIOPHYSICS
ANNEX 2a

F.C. MAYR (2013)

PALEOMAGNETIC DATING IN 1979. A LATE REVIEW

The respective Paper (**F.**C.MAYR(1979a) Oscillations of the Magnetic Field and Related Changes in Climate, 78p.) was prepared for and presented at the IGCP/73-01-24 Meeting in Ostrava (Czechoslovakia). It examines the data that had been exhibited at the INQUA-Congress in Birmingham (England,1977).

The study of these data had yielded an important discovery: the existence of harmonic relationships between the Gleissberg cycle of solar magnetic activity and the periods of equal trend and of equal spin of the magnetic field of the Earth. Moreover, the observed time-intervals between particular turning points of the terrestrial magnetic field formed a harmonic pattern of 22 'waves' which were assumed to be of external origin and equal energy. They turned out to represent the variable input of galactic energy received by the Solar System.

It was already known that once every 1134 years all of the major planets of the Sun were in conjunction (G.M.Stacey 1967). With G.M.Stacey's zero-check-cycle as a yardstick, the year "+0" in the floating time-scale of my paleomagnetic survey in the Austrian Alps appeared to be the year 108,171 BC. The same method was applied to determine the precise age of the Brunhes-Matuyama Boundary of the magnetic field of the Earth: it was found to be slightly less than 700 ky BC.

Errors in the inferred phase difference of the 22 'waves' of he model were discovered by errors in the computed date of observed historic events, most of them magnetic. The year "+0" of the original graph is now equated with 108.375 BC. The constant k* of 1979 was re-placed by a fundamental property of matter along the present galactic orbit of the Sun (file 8), and the undefined 'year' of 1979 was replaced by the magnetic year of the Earth which is 767.9 seconds shorter than the sidereal year. The checkpoint is 1900.0000 AD.

Admittedly, the diagrams presented at the IGCP-Meeting in Ostrava were crude and simplified - they had been prepared with a hand-held electronic calculator- but all of the predicted magnetic anomalies had actually occurred and my report was, therefore,well received by the participants of the Symposium. A few weeks later, at the IGCP-Meeting in Szeged (Hungary), I was honoured by a standing ovation of more than one hundred scientists - as a protest against the unbelievable behaviour of the (american) President of the Symposium.. The incident was followed by the proof that some 25,000 solar faculae of the Past occurred in two belts parallel to the galactic equator.(A.Shpitalnaya in; Solnechnye Dannye 1980/12)..

F.C.MAYR (2013)

EPILOGUE

The present collection of 42 graphs, 8 tables and 11 short notes is an update to the 'CALENDRIER DES SAVANTS' (1985) of Nomos Interscience. It fulfills the promise made at the INQUA Congress in Ottawa (1987).

The final edition, to be published after my death, will probably contain some 50-100 more graphs, all of them in Addendum A, B and C.

The generation brought up with computers and conditioned by their use does not want to read lengthy explanations of conceptual errors. What they want are undeniable facts and the privilege to make their own errors.

The graph on galactic orbits of the Sun uses the best available data. It will be improved in the Future. Please note that the alignment of ice ages forms an angle of 27 or 28° with the periods of global warming. Hence the nucleus of our galaxy, its dynamical centre, cannot be at the geometrical centre of the system. Addendum C mentions the method how to find it.

Addendum A, duly enlarged to 150,000 years, will become the new standard in Geo-chronology and enable us to transform radiometric ages into real ages.

Addendum B puts an end to the present techniques to predict the weather of the coming year. The curves (SSIN, SCOS) indicate deviations from the average. The influence of solar maxima and solar minima is clearly visible on the plate 'Magnetic Climate 1996-2008'. It should, however, be noted that the predictions are best in Eastern North America, less reliable in Europe and not too good in Eastern Asia. The steering mechanism for cyclones is not very precise, and cosmic conditions are rarely constant while air masses are on their way to Japan.

The statements in Addendum C are probably thought to be enigmatic. The ratio between ordinary magnetic waves and the timing of signals from the black hole of our galaxy was discovered when I tried to relate modern data to the Carrington event on September 1, 1859. PHI was inferred from spikes in the x-ray-flux of the Sun; RTFI was computed for intervals of 12 hours, and two listings were needed to provide 4 points per day.

The attempt to compute the distance to the nucleus of our galaxy from the inferred system of magnetic waves yielded $\lambda_{22} \cdot K^8 = \lambda_{36} \cdot K^4 = \lambda_{50} \cdot K^0 =$ 27844.64132 magnetic light-years, or 816.558 years more than the distance to the centre of the galactic orbit of the sun. The difference is real: it was a beat in the palaeomagnetic chart which was exhibited at the INQUA Congress in Birmingham (1977, MAYR 1979).

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Epilogue and last graphs issued on July 11, 2013

F.C.MAYR (2015)

FINAL REMARKS

I am now 82 and ready for retirement.

The 2015 edition of www.mayrheliophysics.com has, therefore, received special attention. The address and the photo of the author were replaced, an editorial oversight in file 8 was corrected, and forecasts for the Sun in september 2016, and for the Earth at the end of october 2016 as well as a more detailed cosmic timetable from 1000 AD to 3000 AD were added. The anomaly around 2019.0 AD was already listed in the 2012 edition (file 4,p.2).

Whoever wants to get in touch with me will have to write a letter - e-mail and FAX will not reach me. Moreover, answering mail will not be one of my daily duties.

The new address is simple:

Dr.Franz C. MAYR
Résidence Memphrémagog
1007 Merry Nord
MAGOG, Qc J1X 0G1
Canada

Fz Mayr

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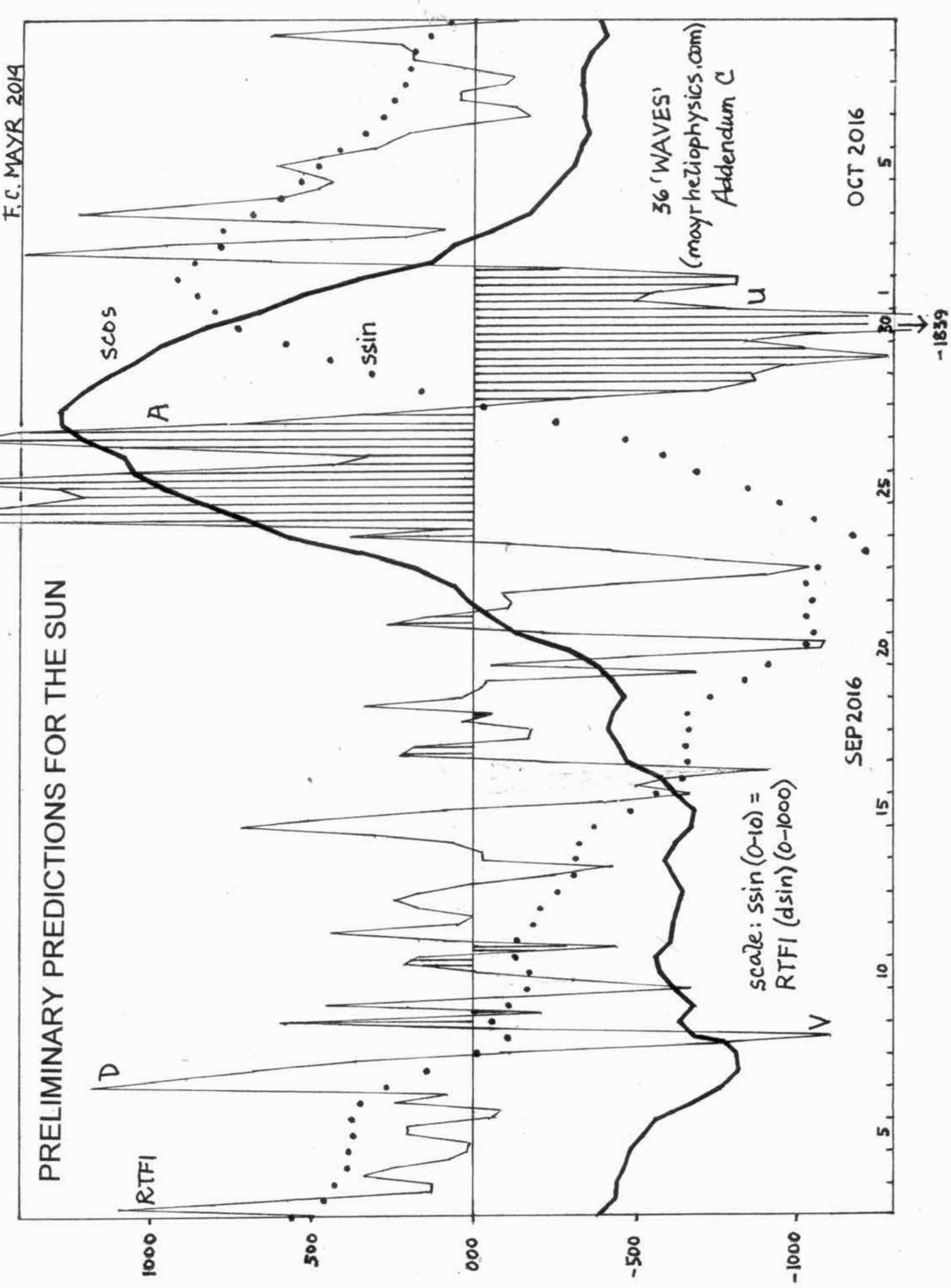
PRELIMINARY PREDICTIONS FOR THE SUN
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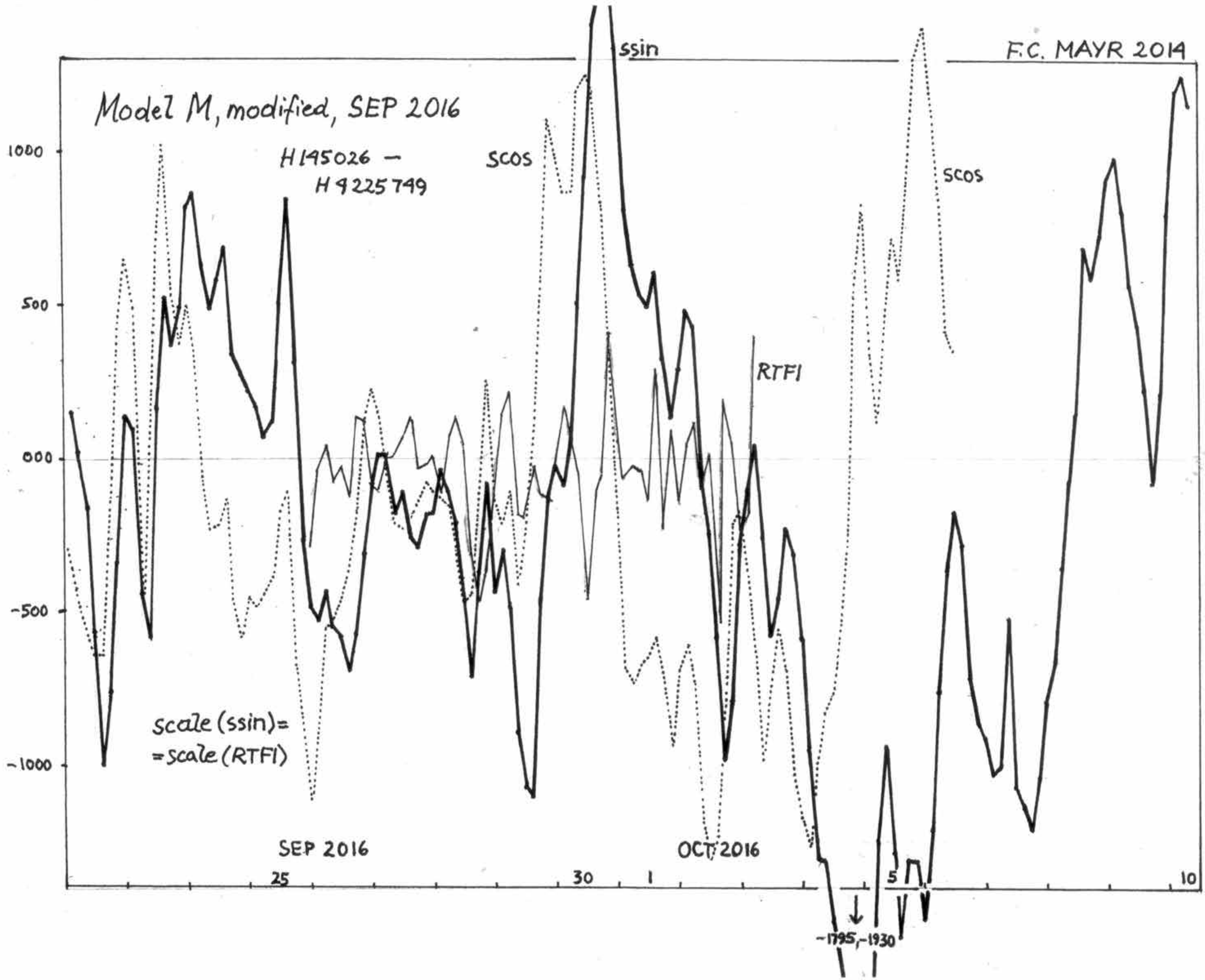

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