PPS

On October 5, 2020, 50 years of extraordinary efforts to decipher the fine structure of Sagittarius A came to a preliminary end. The public is now entitled to say that 'there is compelling evidence of a supermassive **black hole** at the centre of our galaxy'. Wikipedia informs us, that the star S2 in Sagittarius A is only 120 AU away from the center of the black hole and orbiting with a speed of 7650 km /sec. The respective measurements were eiither carried out or sponsored by Prof. Reinhard Genzel, Director of the Max Planck Institute for Astrophysics in Munchen-Garching. A quick calculation shows that the orbital period of S2 is the same as H8082 of W2 of the Mayr model of galactic magnetic waves. A printed copy (2014) of www. mayrheliophysics (with the computer program for the model and precise values of tau and phi for H450) is on the shelves of a National Library, less than 500 km away from the office of Prof. Genzel; but , being an astrophysicist and almost 30 years younger he is not supposed to know who I am and what I did. What matters, is the achievement. .Congratulations!

Magog,(Quebec), November 30, 2020. F. Mayr www.mayrcosmictimetable.com file 1

Introduction

Geology as we know it today was created in the 1960ies.The discovery of sea floor spreading and the ascent of Paleomagnetism were only two facets of a renewal of geological thinking which included also quaternary geology, or the study of ice-ages and their effects on Earth.

At the second biennial Meeting of the American Quaternary Association we learned, for instance, that the Pearlette volcanic ash, defintely older than the four classical continental glaciations of North America, was less than 700,000 years old. On the other hand, the last true interglacial period of the Earth, the Sangamonian, was older than anticipated: it ended some 120,000 years ago. My own data from the Austrian Tyrol supported this view, but my conclusions (Z.f.Geomorphologie 12,1968,256-295 and Proceedings, first biennial Meeting of the AMQUA,1970) were violently rejected by people who refused to believe anything but their own Radiocarbon data, although the spectacular enrichment with Uranium suggested that the wood was much older. I asked George Kukla what I could do, and he proposed a careful paleomagnetic survey of the respective sediment. "It might work" was his comment.

It took two summers to cut a giant stairway through a bluff of 56 meters of laminated glaciolacustrine silt, to count the annual layers in the N-S and W-E direction and to take 112 perfectly oriented paleomagnetic samples. The target was the reconstruction of the secular variations of the Earth's magnetic field during the earliest phase of the last glaciation.

The measurements were carried out at the Paleomagnetic Laboratory of the Geological Survey of Canada, that is, at night when magnetic noise in the building was inconspicuous; but after 10,000 measurements the inferred paleosecular variations were still at variance with any real secular variations as they would or could have occurred in Central Europe.I had followed professional advice and the samples had been contaminated by the use of an 'antimagnetic' knife. I should have used a copper-beryllium knife to avoid the trap. I cleaned the samples with a nylon brush and added 2000 more data after very careful additional magnetic cleaning in a tumbling device.

Finally, the inferred paleosecular variations were real and comparable to the historical record of magnetic observatories in Europe. This was certainly due to the fact that almost all of the magnetic particles were globules of micrometeorites embedded in flakelets of mica. Since my survey covered a timespan of more than 10 ky, I am reporting facts that could not be known from the instrumental record of the last 500 years, or inferred from any other paleomagnetic survey carried out under less stringent conditions. (F.C.Mayr in:Acta Geol. Scient Hung. 22(1979) 171-183).

The inferred paleosecular variations were a)either left turns, or counterclockwise movements of a virtual compass needle, or b) right turns, that is, clockwise movements, or c) planar movements of a virtual compass needle, with or without changes in paleomagnetic latitude. During the first 2570 years of the record, left turns were the dominant form of movement (a:b:c = 6:3:1); throughout the following 2140 years, 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 concurred with a change in the trend of the sedimentological data. The correlation between oscillations of the magnetic field and climate was, therefore, positive in 35 cases out of 35.

The two short but outstanding peaks of declination and/or inclination were 5040 years apart; between these peaks I counted 18 full turns, or 45 periods of equal trend. Since 5040 years equal 63 Gleissberg cycles of auroral activity, the relationship between these three units can be written as:

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

5040 is, by the way, the multiple of an impressive number of potential cycles which may - or may not - in fact exist and influence observed and inferred secular variations of the magnetic field of the Earth.

TABLE 1

H1	5040	H5	1008	H9	560	H15	336	H21	240
2	2520	6	840	10	504	16	315	24	220

3	1680	7	720	12	420	18	280	28	180
4	1260	8	630	14	360	20	252	30	168

The mean value between H4 and H5 (= 1134 years) is, for instance, known to be the interval when all of the major planets of the Solar System are in conjunction (C.M.Stacey 1967 = R.W.Fairbridge ed. The Encyclopedia of Atmospheric Sciences and Astrogeology, New York(Reinhold)pp.745-746).

The mathematical principle behind equation (1) is commonly known to be a FIBONACCI SERIES to honour the medieval mathematician Leonardo of Pisa who was the first to apply the principle to a practical problem: the phenomenal multiplication of rabbits. (K,DEVLIN, Finding Fibonacci, Princeton Univ.Press 2017, 126-127) In the original series, each number is the sum of the two preceding ones, or 1-2-3-5-8-13-21-34-55-89-144-233-377- (etc) whereas the harmonics implicitly postulated by equation (1) begin with H18 and continue through H45 and H63 ad infinitum. This is, of course, a MAYR SERIES and not a FIBONACCI SERIES, although the numerical progression is the same. The original method was already known to AL-KHWARIZMI (780-850 AD) (K.Devlin, op.cit. p.77) who, in turn, was standing on the shoulders of earlier mathematicians who had lived in *India.*

Intervals like those mentioned by the original Fibonacci series (3-21-34-55-89) occur also in any counting technique if the total sum per sample is less than 500, and if the frequency levels are 6 sigma apart which guarantees true significance in 8 out of 9 cases (Mosteller-Rourke-Thomas, Probability and Statistics, 1961, 207-208).

A systematic survey of the observed intervals between extreme values of declination and/or inclination showed that a certain observed interval A could be defined as $A = \sqrt{E.C}$, while B was equal to $\sqrt{D.C}$ and $E = \sqrt{D.G}$; hence I abandoned the concept of random fluctuations and replaced it by the postulate of a general law (fig.A). The law was expressed as a pattern of 22 magnetic waves with periods between 3000 and 12000 years.All of them satisfy the above-mentioned rule of geometric means. The phase differences of the 22 postulated magnetic waves were inferred from my own paleomagnetic data. The 1134 year cycle was used to predict the approximate year of the recent Past when the higher harmonics of each wave were in phase. All of the predicted dates were close to major magnetic storms and/or auroras of outstanding intensity. I reported my findings at the Ostrava Meeting of IGCP24/1973 and included them in a public report of Nomos Interscience (1989/2). The first predicted chronology of magnetoclimatic events of the Holocene was printed in Kyoto (Proceedings, IGCP24/1973 Meeting 1981), reprinted in Prague (Geological Survey) in 1985 and included in the Internet-files mayrheliophysics.com (2012) and mayrchronology.ca (2018, file 1).

What I had created were, in fact, virtual oscillograms of an external magnetic field which controlled in a subtle way what was going to happen in the Solar System. Each oscillogram did not only predict $\sum \sin \omega_i t$ and $\sum \cos \omega_i t$, but the difference between successive points enabled me to discern four situations named A,U,D and V which were defined as follows: A (ssin(+),scos(+)); U (ssin(+),scos(-)); D (ssin(-), scos(-)); V (ssin(-),scos(+). A,U,D and V are, as every crystallographer knows, the mathematical equivalent of polarized waves in anisotropic media.

The mathematical statements were translated into Fortran and the big Computer of my University provided the predictions which enabled me to correct erroneous input. It was up to me to identify the magnetic signals from space embedded in the published diagrams of great magnetic storms between 1840 and 1980 AD. Fortunately, these signals occurred at the same time in all stations while the ordinary noise of magnetic quakes changed from station to station.

When this search was accomplished I could define the phase differences of the postulated magnetic waves and their harmonics with the utmost precision and device mathematical models to predict their effects.

The model with the first 18 harmonics predicted all of the glacier maxima of the last 9000 years as they are known from the European Alps, that is, at the right time and with the same magnetic signature. The same was true for significant events of the latest glacial phase of the Earth (from 24,000 to 10,500 BP). The evidence is compelling for high altitudes in Central Europe and for areas around or within the Auroral Oval of the Northern Hemisphere.

The prediction of 'magnetic Grosswetterlagen' and their correlation with changes in the pattern of atmospheric circulation is quite a different matter. The respective model consists of 38x22 = 836 magnetic waves of equal energy. The unit of time is the magnetic year which is 769 seconds shorter than the sidereal year.

The point of reference is January 1, 1900, 00:00 h Greenwich Time when the Julian Day was redefined. The point "0" for phi was assumed to be 1900 magnetic years older than January 1,1900,00:00 h GT. The numerical values of TAU and PHI (and the program QRZBIN.F) can be found in the printed edition of mayrheliophysics.com (2014) which was mailed to a limited number of scientific libraries of the Northern Hemisphere so that interested scientists could make their own computations and correlations.

The shortest wave of the above-mentioned model has a period of 3 days (71 h) which is a common interval between disturbances in the vicinity of the North Magnetic Dip-Pole. The model enables the user to make four predictions per day, but there is only one meteorological map covering a substantial part of the Northern Hemisphere which is updated four times per day; the map is prepared for the US Air Force and cannot be studied by outsiders. I have used the daily maps of the Northern Hemisphere of the Deutsche Wetterdienst; the maps and charts in file 3 and file 4 of mayrheliophysics.com are derived from this source. They suggest that the link between magnetism and climate can be strong, moderate or weak. Above all, it is not a constant feature of any local climate, but the motor of its fluctuations. Reliable predictions of the timing of these changes are, of course, the condition for any successful planning.

The following files (2-6) can be freely used by any student. They offer knowledge which will be needed and which is not available elsewhere. But I warn you:

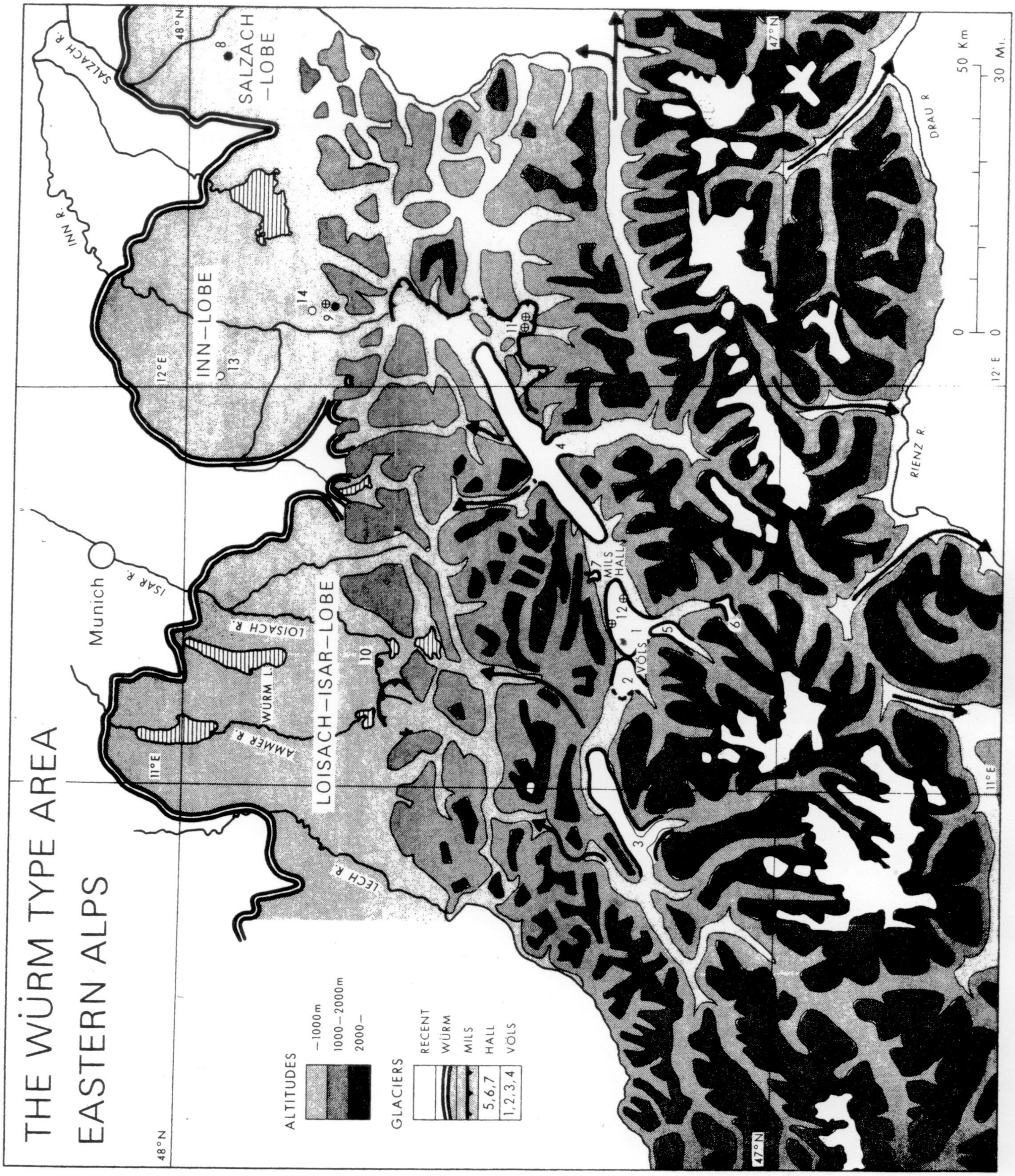
1. Be honest and quote the source of your knowledge, and use only what you believe to understand.
2. Do not condemn those who disagree: they might know much more than you think they do.
3. Take your time to provide compelling evidence.
4. Be prepared to move tons of errors to find another grain of truth.
5. And do not forget: nothing is perfect, not even you.

One last advice: read file 6 before trying to understand why the predictions of file 5 will come true.The file "Galactic Orbits of the Sun" is a bridge across the waters which separate Geology from Physics. At a banquet in Toronto in 1973, the late Richard Foster Flint predicted that a bridge will have to be built, but I did not understand that it would be my task to do it; The bridge is now there and can be seen from afar, and you are invited to use it.

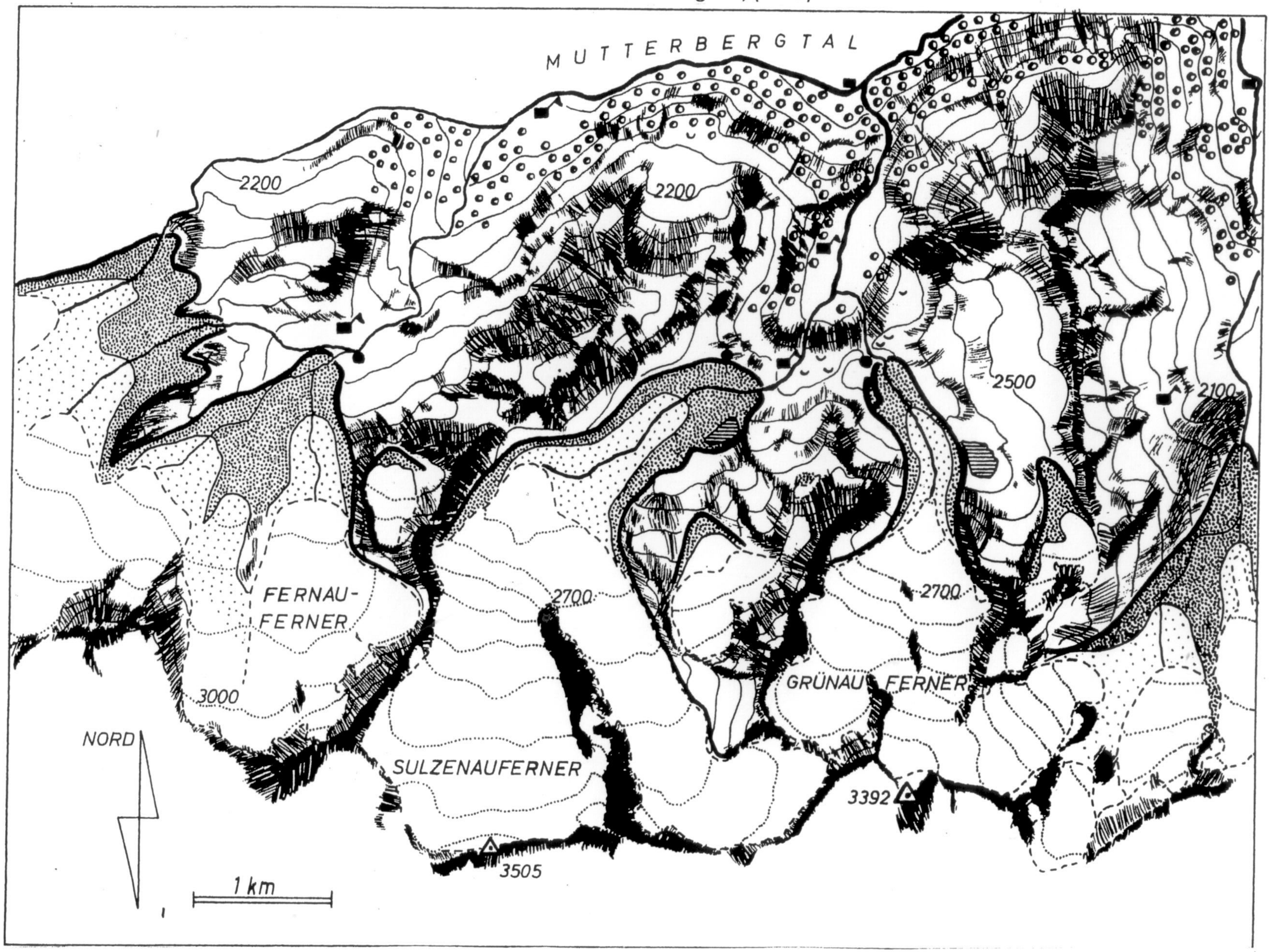
P.S. Progress in Science is slow. The paramagnetic properties of oxygen are known since 1851, the Hall effect was discovered in 1879, and the concept of a 'Fine Structure Constant of Matter' is almost as old as the concept of 'General Relativity'. But the 'quantized Hall effect' was only discovered in 1980, after my own discovery that a modified version of the 'Fine Structure Constant' was the link to a whole world of magnetic waves at cosmic scales. Theoretical Physicists are now beginning to see the 'quantized Hall effect' in a cosmic context. Applications to Atmospheric Physics will follow.

WURM STRATIGRAPHY OF THE TYPE AREA, EASTERN ALPS.

Mayr, Franz C., Département de Géologie, Université de Montréal, P.Q., Canada



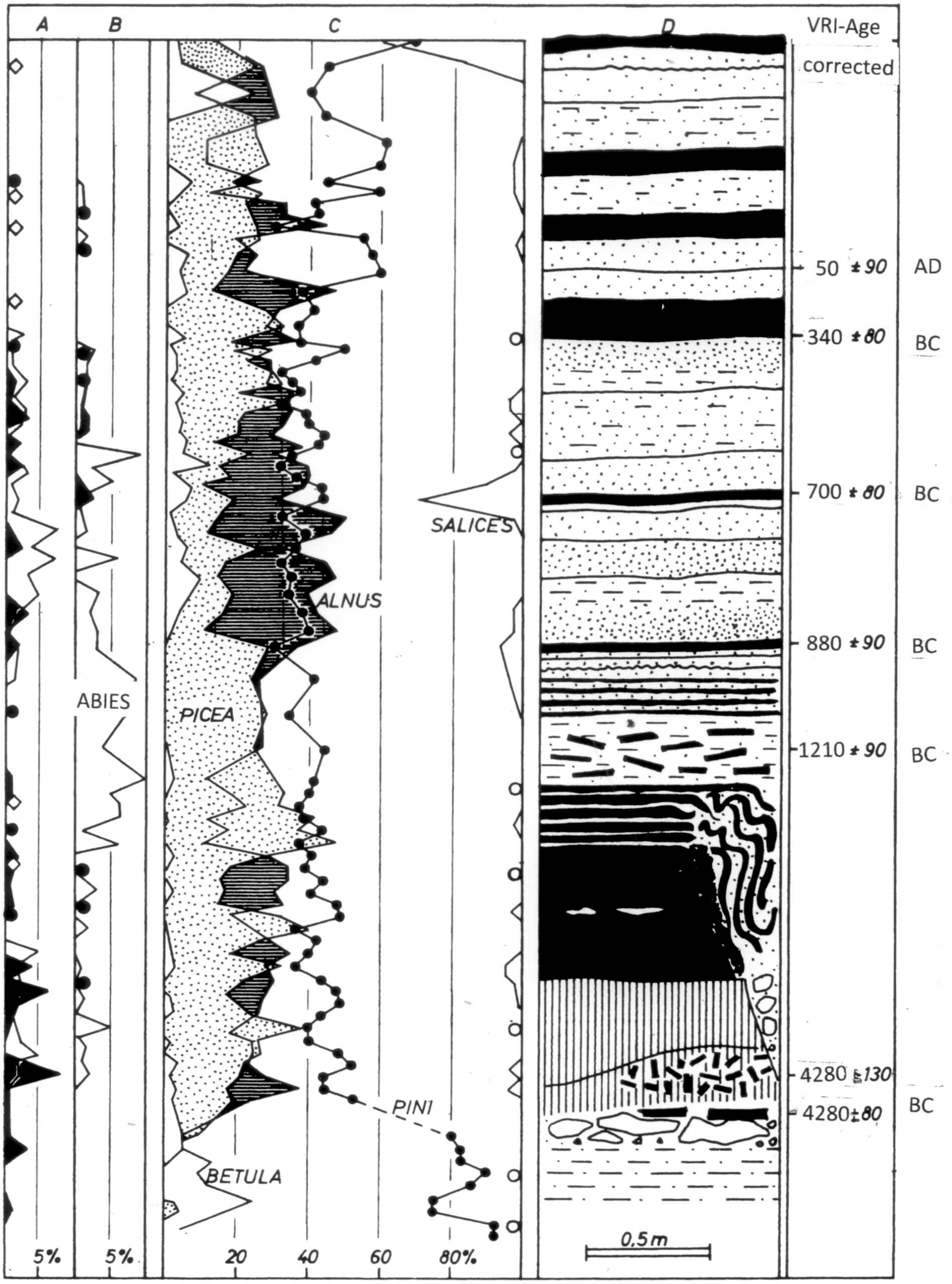
= G.M.Richmond, ed., Glaciation of the Alps, =
UNIVERSITY OF COLORADO STUDIES
Series in Earth Sciences 7(1968),
vol.14, Proc. VII INQUA Congress, (1965).



Type Area of "postglacial" FERNAU moraines near Innsbruck, Austria.

F.C.MAYR(1968):

Series in Earth Sciences 7, 167-177

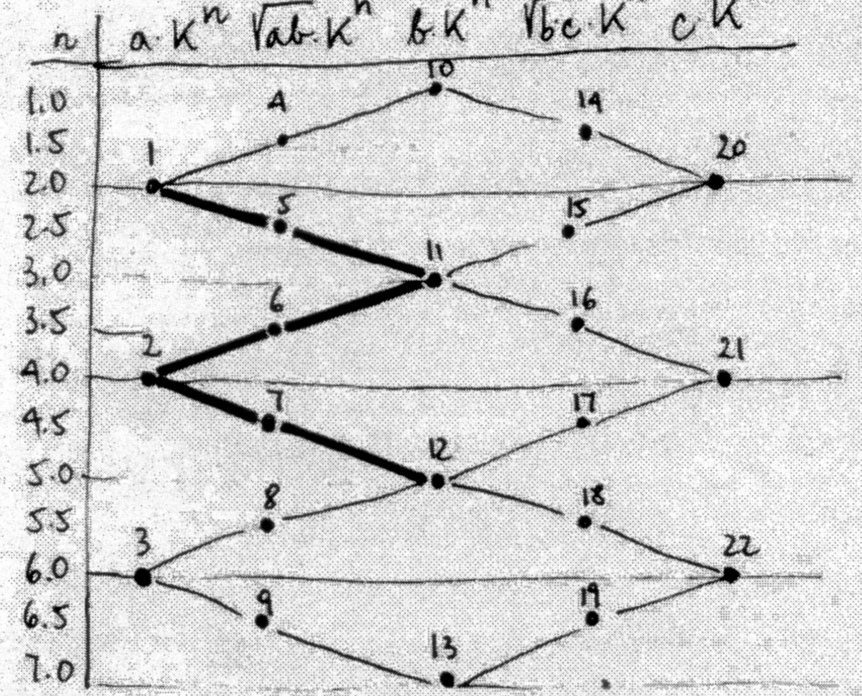


L.Aario's profile in the bog in front of Fernauferner, enlarged and radiocarbon-dated cross-section (see Mayr, 1964, Tafel 4). (Z.f.Geomorphologie,N.F. 8, 257-285)

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 und 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: <u>Überprüfen</u>: Verstärkung der galaktischen Signale entlang der Achse c der Heliosphäre nicht, 2π sondern f·h ?? = 6.2620755

1

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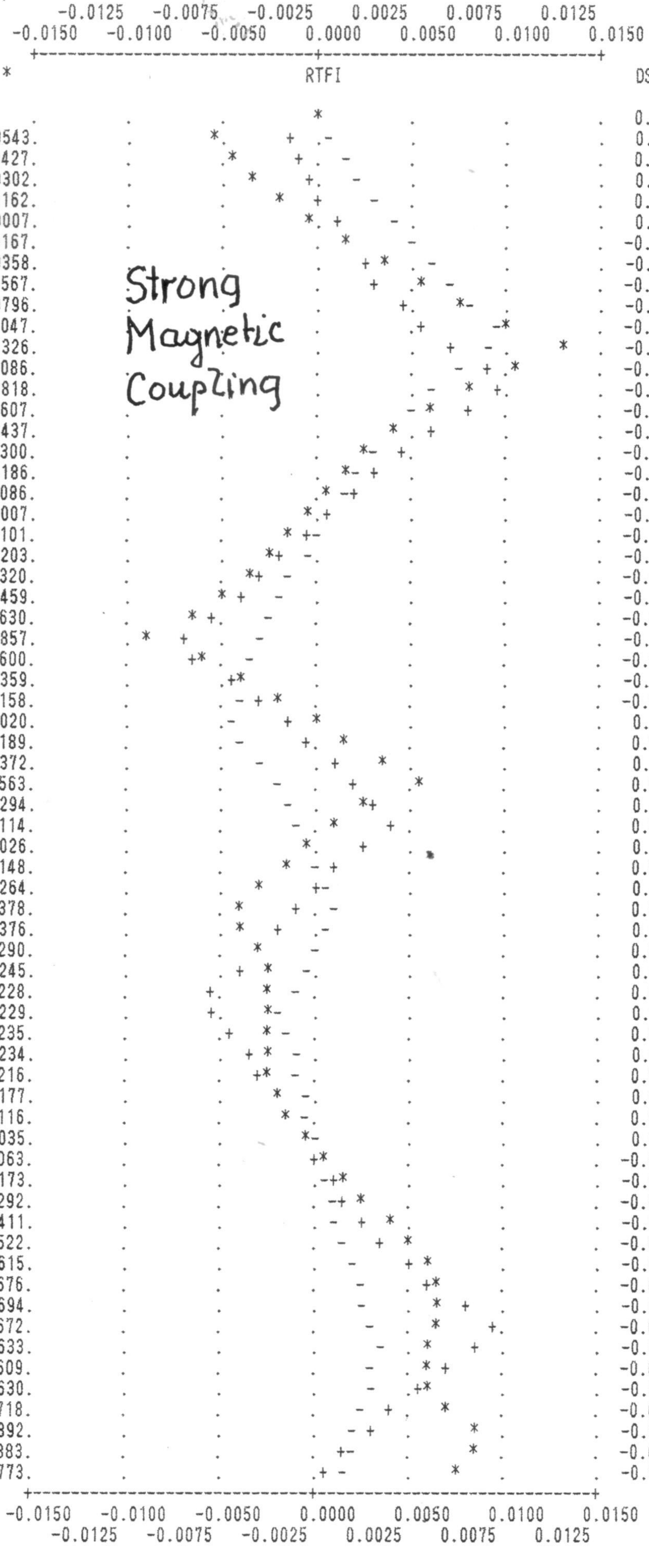

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4	0.00240	-0.00016	-0.00302.	0.00293	-0.01216
5	0.00324	0.00038	-0.00162.	0.00161	-0.01292
6	0.00414	0.00101	-0.00007.	0.00007	-0.01348
7	0.00509	0.00173	0.00167.	-0.00165	-0.01376
8	0.00610	0.00255	0.00358.	-0.00347	-0.01368
9	0.00720	0.00349	0.00567.	-0.00527	-0.01323
10	0.00840	0.00458	0.00796.	-0.00694	-0.01242
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12	0.00918	0.00731	0.01326.	-0.00955	-0.00992
13	0.00775	0.00906	0.01086.	-0.01038	-0.00843
14	0.00648	0.00989	0.00818.	-0.01087	-0.00691
15	0.00533	0.00806	0.00607.	-0.01108	-0.00544
16	0.00429	0.00640	0.00437.	-0.01106	-0.00410
17	0.00333	0.00489	0.00300.	-0.01090	-0.00290
18	0.00245	0.00347	0.00186.	-0.01066	-0.00183
19	0.00164	0.00214	0.00086.	-0.01039	-0.00086
20	0.00090	0.00088	-0.00007.	-0.01011	0.00007
21	0.00020	-0.00034	-0.00101.	-0.00981	0.00101
22	-0.00045	-0.00153	-0.00203.	-0.00946	0.00199
23	-0.00105	-0.00272	-0.00320.	-0.00899	0.00303
24	-0.00160	-0.00393	-0.00459.	-0.00834	0.00411
25	-0.00213	-0.00524	-0.00630.	-0.00745	0.00518
26	-0.00261	-0.00672	-0.00857.	-0.00630	0.00614
27	-0.00308	-0.00628	-0.00600.	-0.00489	0.00690
28	-0.00352	-0.00419	-0.00359.	-0.00328	0.00737
29	-0.00396	-0.00256	-0.00158.	-0.00155	0.00747
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35	-0.00056	0.00414	0.00114.	0.00515	0.00111
36	-0.00012	0.00254	-0.00026.	0.00504	-0.00026
37	0.00026	0.00137	-0.00148.	0.00463	-0.00141
38	0.00062	0.00038	-0.00264.	0.00406	-0.00229
39	0.00108	-0.00056	-0.00378.	0.00342	-0.00289
40	0.00060	-0.00154	-0.00376.	0.00283	-0.00323
41	0.00008	-0.00263	-0.00290.	0.00237	-0.00339
42	-0.00038	-0.00390	-0.00245.	0.00210	-0.00346
43	-0.00095	-0.00544	-0.00228.	0.00199	-0.00355
44	-0.00157	-0.00513	-0.00229.	0.00202	-0.00374
45	-0.00123	-0.00418	-0.00235.	0.00209	-0.00409
46	-0.00096	-0.00336	-0.00234.	0.00212	-0.00462
47	-0.00071	-0.00262	-0.00216.	0.00202	-0.00529
48	-0.00045	-0.00191	-0.00177.	0.00170	-0.00605
49	-0.00018	-0.00121	-0.00116.	0.00115	-0.00679
50	0.00010	-0.00050	-0.00035.	0.00035	-0.00741
51	0.00040	0.00025	0.00063.	-0.00063	-0.00783
52	0.00072	0.00104	0.00173.	-0.00170	-0.00797
53	0.00105	0.00190	0.00292.	-0.00275	-0.00783
54	0.00140	0.00285	0.00411.	-0.00368	-0.00742
55	0.00176	0.00391	0.00522.	-0.00439	-0.00681
56	0.00214	0.00510	0.00615.	-0.00483	-0.00613
57	0.00253	0.00646	0.00676.	-0.00500	-0.00549
58	0.00293	0.00805	0.00694.	-0.00494	-0.00500
59	0.00334	0.00993	0.00672.	-0.00476	-0.00475
60	0.00376	0.00863	0.00633.	-0.00458	-0.00479
61	0.00343	0.00708	0.00609.	-0.00454	-0.00509
62	0.00304	0.00567	0.00630.	-0.00478	-0.00558
63	0.00270	0.00437	0.00718.	-0.00539	-0.00612
64	0.00240	0.00314	0.00892.	-0.00638	-0.00654
65	0.00214	0.00199	0.00883.	-0.00774	-0.00668
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1

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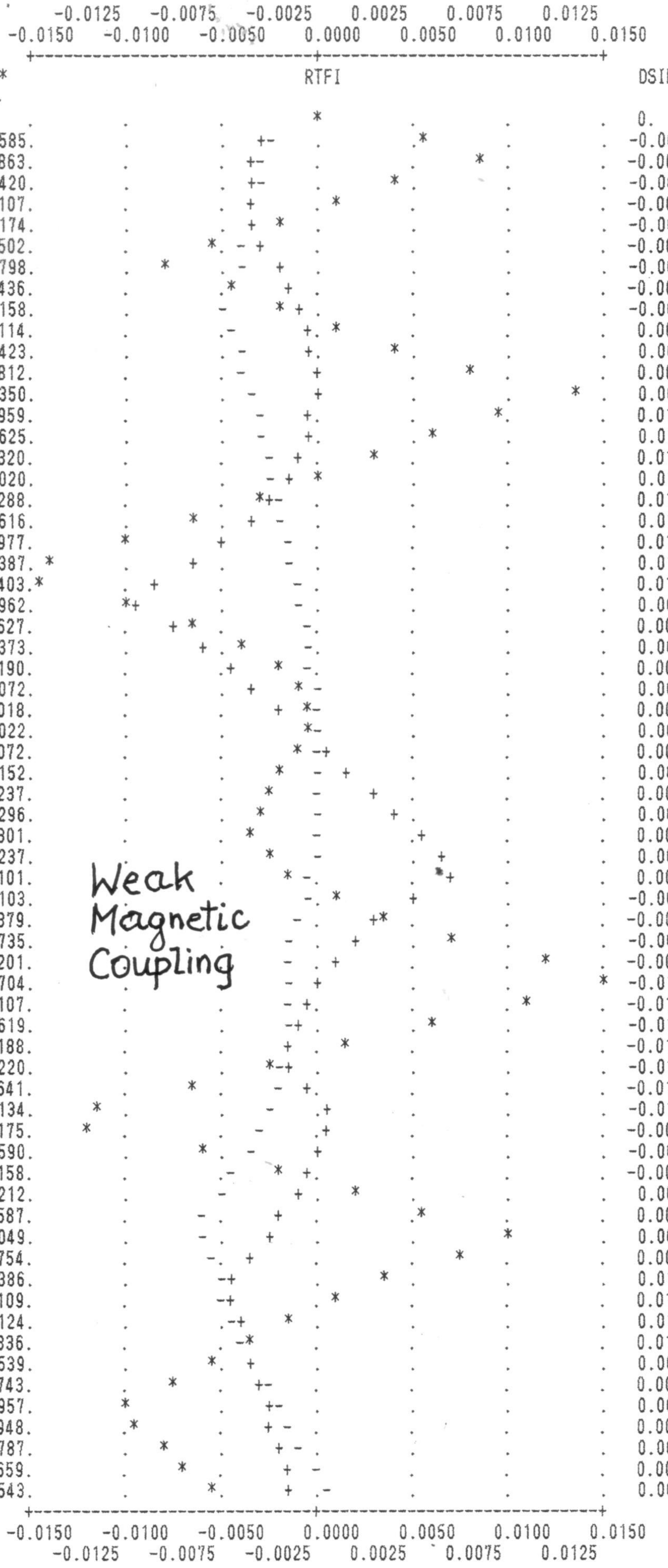

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7	-0.00359	-0.00263	-0.00502.	-0.00744	0.00433
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14	-0.00327	0.00007	0.01350.	0.00959	0.00966
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16	-0.00267	-0.00033	0.00625.	0.01409	0.00578
17	-0.00239	-0.00080	0.00320.	0.01559	0.00313
18	-0.00211	-0.00145	0.00020.	0.01643	0.00020
19	-0.00183	-0.00230	-0.00288.	0.01656	-0.00284
20	-0.00157	-0.00337	-0.00616.	0.01597	-0.00579
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30	0.00028	-0.00047	-0.00022.	0.00022	-0.00834
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32	0.00036	0.00199	-0.00152.	0.00149	-0.00735
33	0.00034	0.00318	-0.00237.	0.00227	-0.00773
34	0.00028	0.00437	-0.00296.	0.00282	-0.00868
35	0.00018	0.00556	-0.00301.	0.00290	-0.01008
36	0.00004	0.00679	-0.00237.	0.00232	-0.01173
37	-0.00014	0.00724	-0.00101.	0.00101	-0.01335
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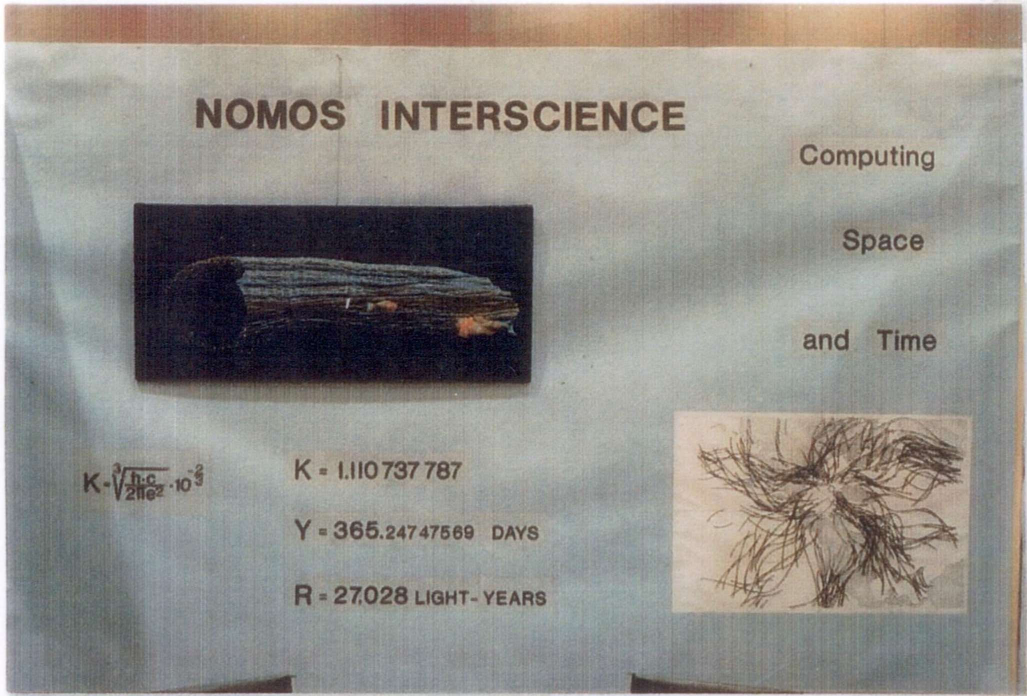
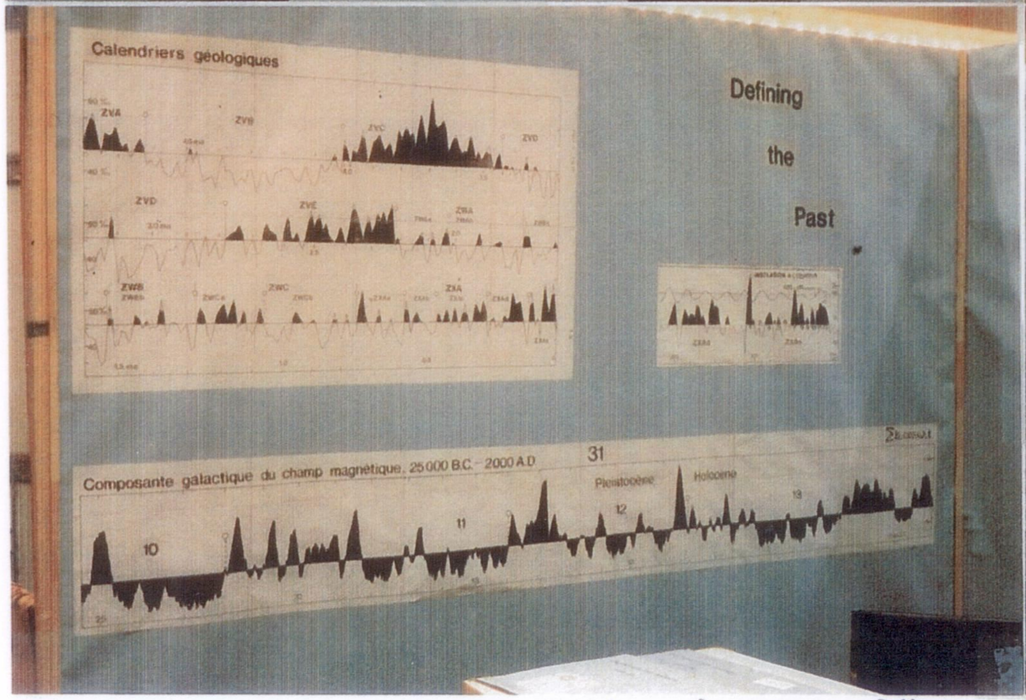
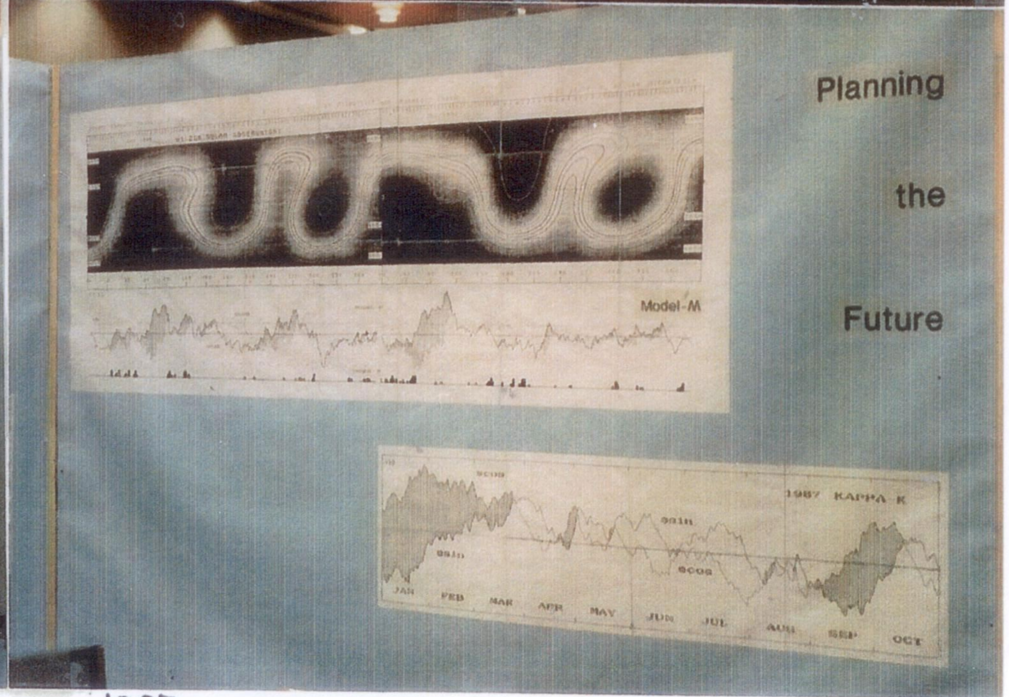
52	-0.00485	-0.00094	0.00212.	0.00209	0.01250
53	-0.00583	-0.00164	0.00587.	0.00529	0.01098
54	-0.00579	-0.00246	0.01049.	0.00784	0.00884
55	-0.00541	-0.00339	0.00754.	0.00965	0.00631
56	-0.00499	-0.00446	0.00386.	0.01071	0.00365
57	-0.00455	-0.00431	0.00109.	0.01109	0.00108
58	-0.00407	-0.00388	-0.00124.	0.01091	-0.00124
59	-0.00356	-0.00349	-0.00336.	0.01035	-0.00321
60	-0.00302	-0.00313	-0.00539.	0.00957	-0.00481
61	-0.00245	-0.00279	-0.00743.	0.00870	-0.00609
62	-0.00186	-0.00246	-0.00957.	0.00786	-0.00710
63	-0.00123	-0.00213	-0.00948.	0.00708	-0.00796
64	-0.00057	-0.00180	-0.00787.	0.00637	-0.00876
65	0.00012	-0.00144	-0.00659.	0.00567	-0.00957
66	0.00084	-0.00106	-0.00543.	0.00491	-0.01042







12th INQUA-Congress, Ottawa 1987