

GEOMAGNETIC DATA

Hourly mean values of H, D, Z and F

Hourly means are derived from minute means corrected using absolute observations. The units of the elements are 0.1 nT, Declination is also scaled to 0.1 nT. Minute means of F are calculated from H and Z. F values are checked by comparing them with proton magnetometer readings taken at every 10 minutes.

Daily mean values of H, D, Z and F

Daily mean values are calculated from hourly mean values.

Geomagnetic activity indices: K-index

The K-index is determined from the amplitude ranges of H and D components for each three-hour Universal Time interval. Limit for K=9 is 350 nT in Nagycenk.

Special phenomena

List of special events is based on both magnetic and earth current records. Tables are given for SSC-s and sfe.

Annual mean values of geomagnetic elements

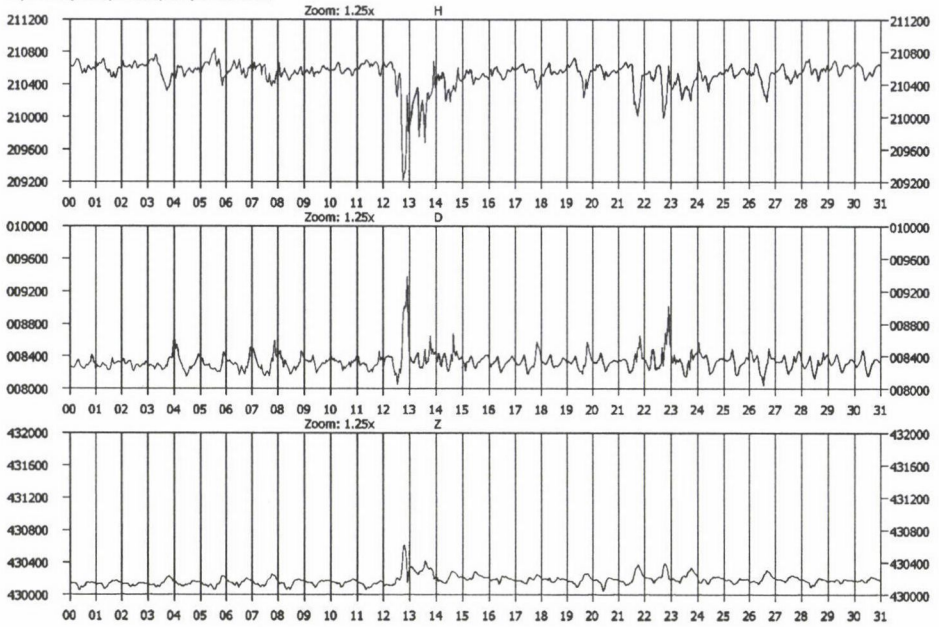
Table contains yearly means of the geomagnetic elements 1961 to 1993 in nT. These values are the results of a reevaluation of previously published data, including corrections eliminating disturbances caused by construction works in the observatory. Corrected values are noted by asterisk.

Times in this section are given in UT!

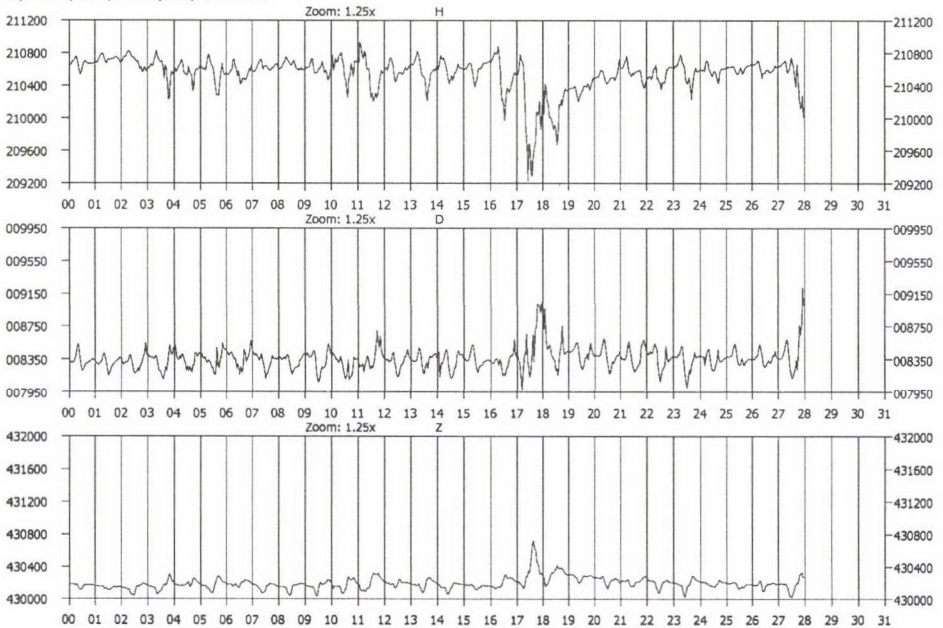
See CD (program Seenck.exe, menu item Magnetics).

Hourly mean values of H, D, Z
1999-2001

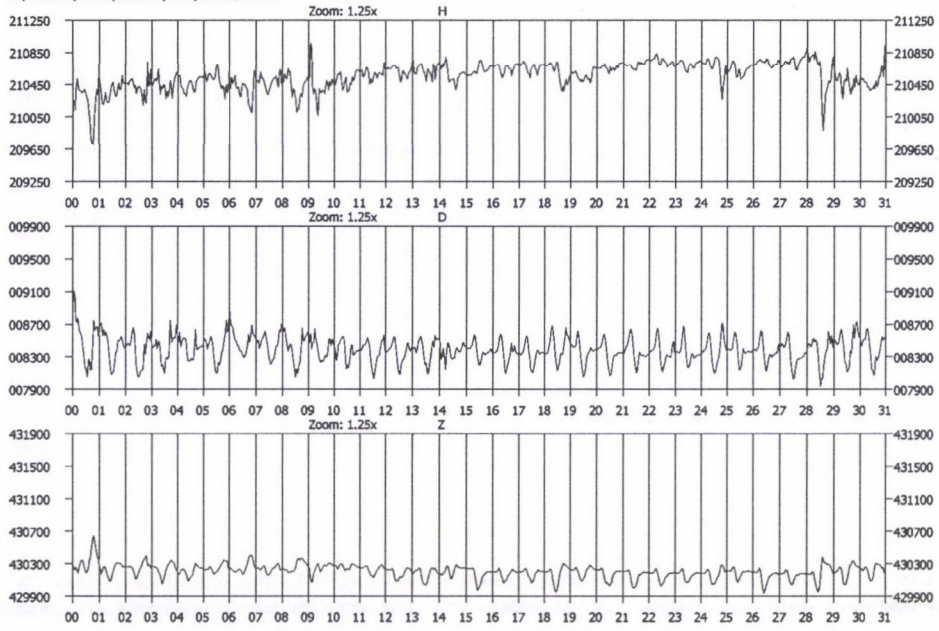
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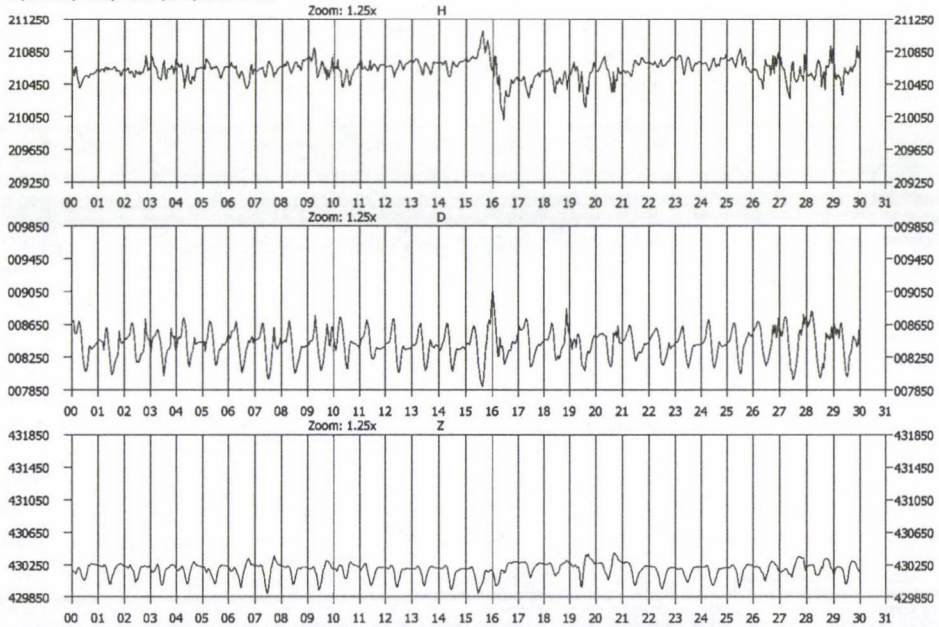
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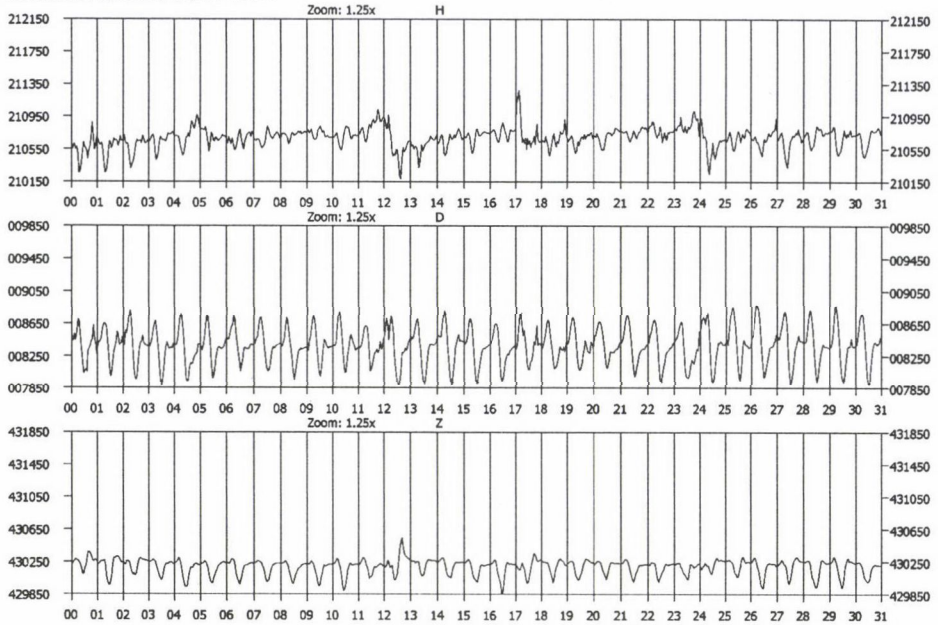
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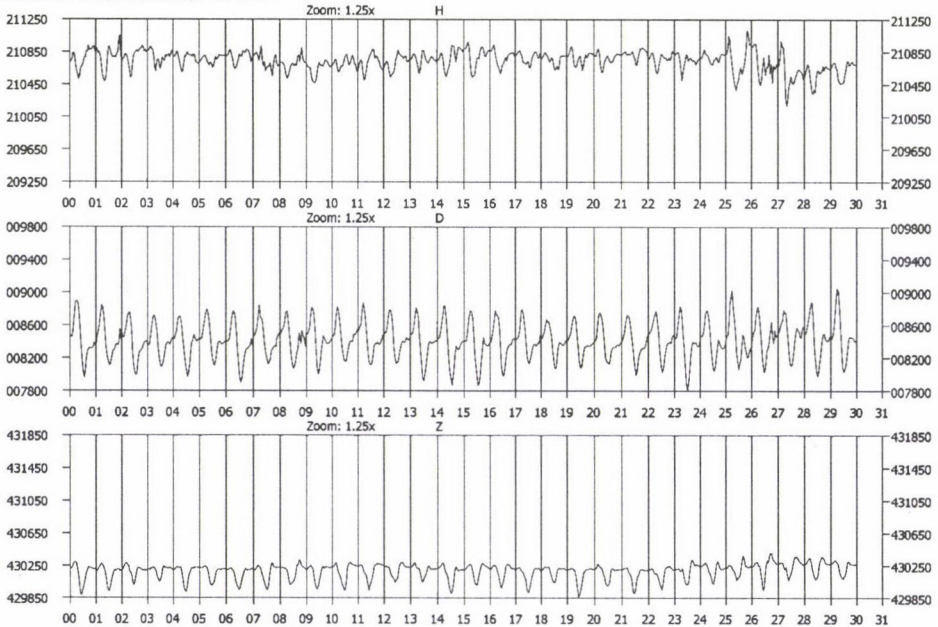
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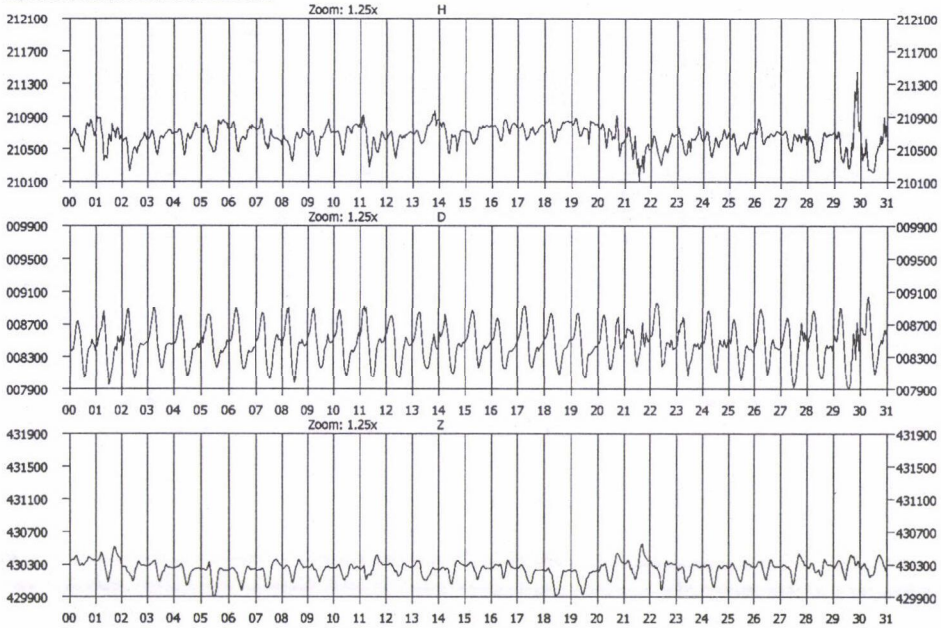
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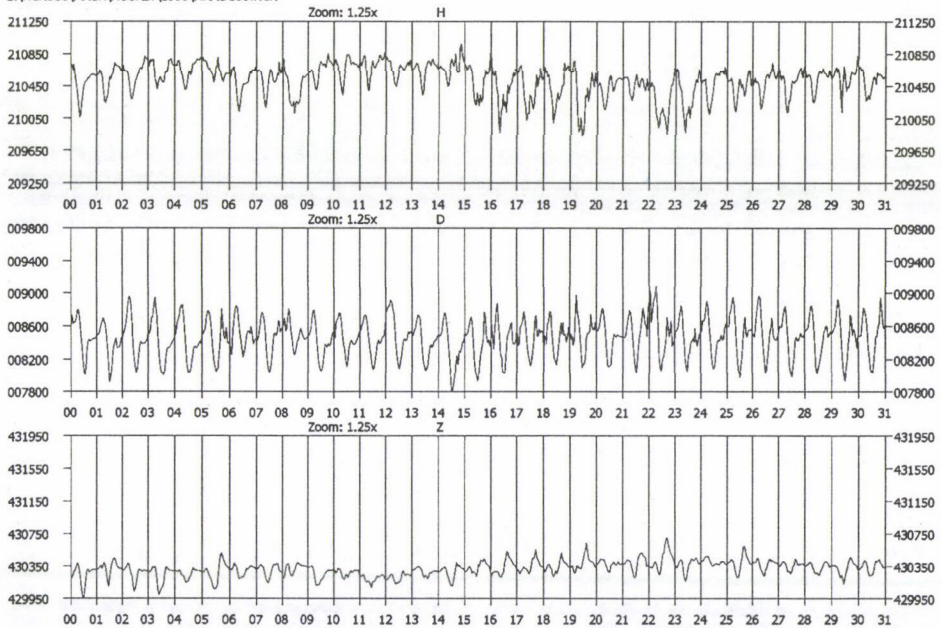
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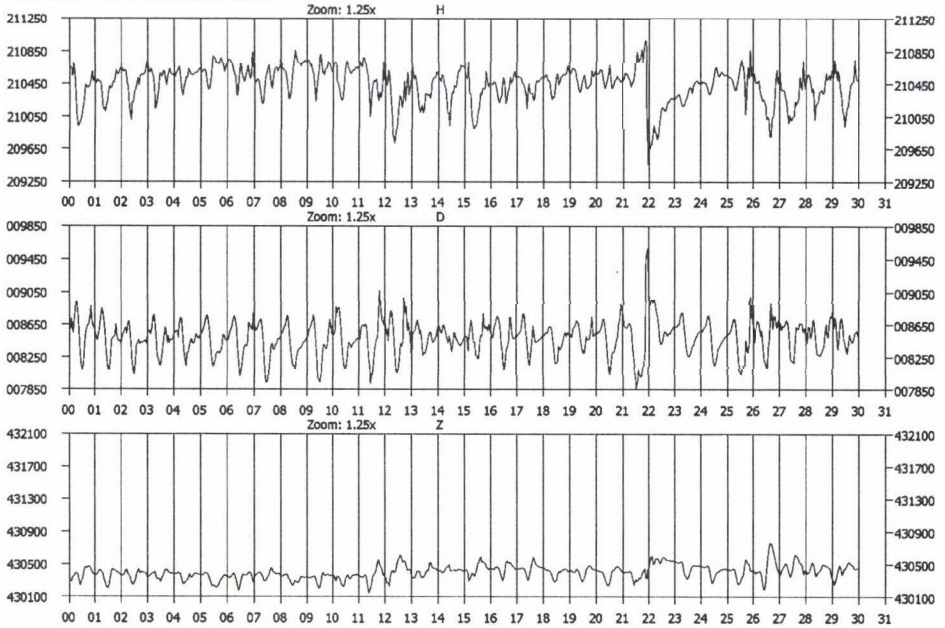
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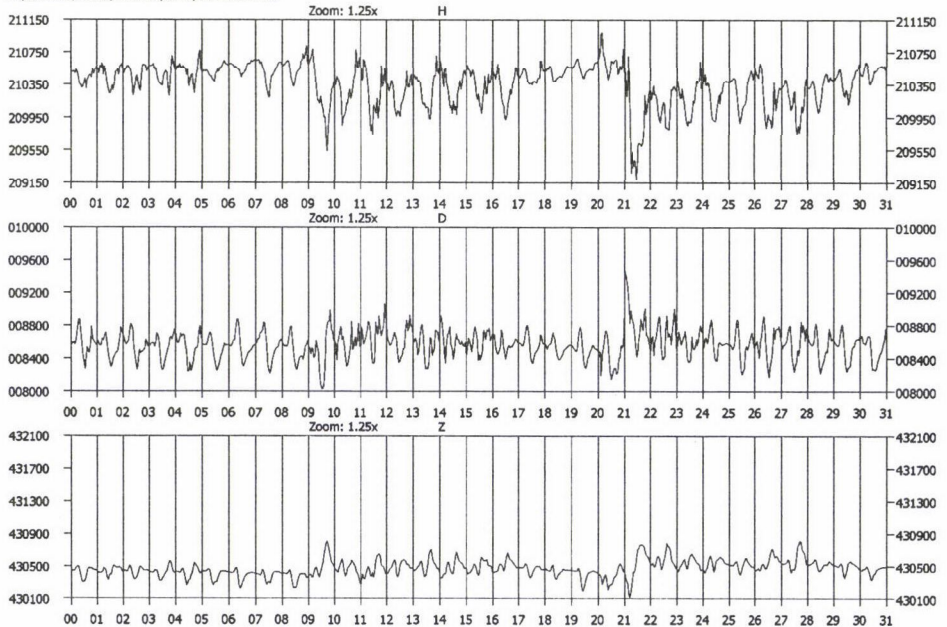
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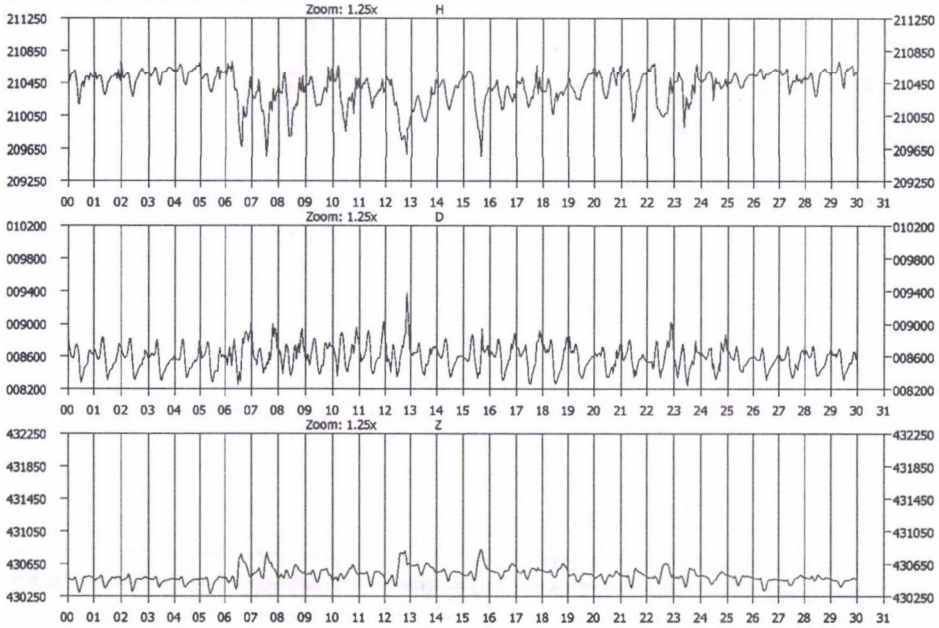
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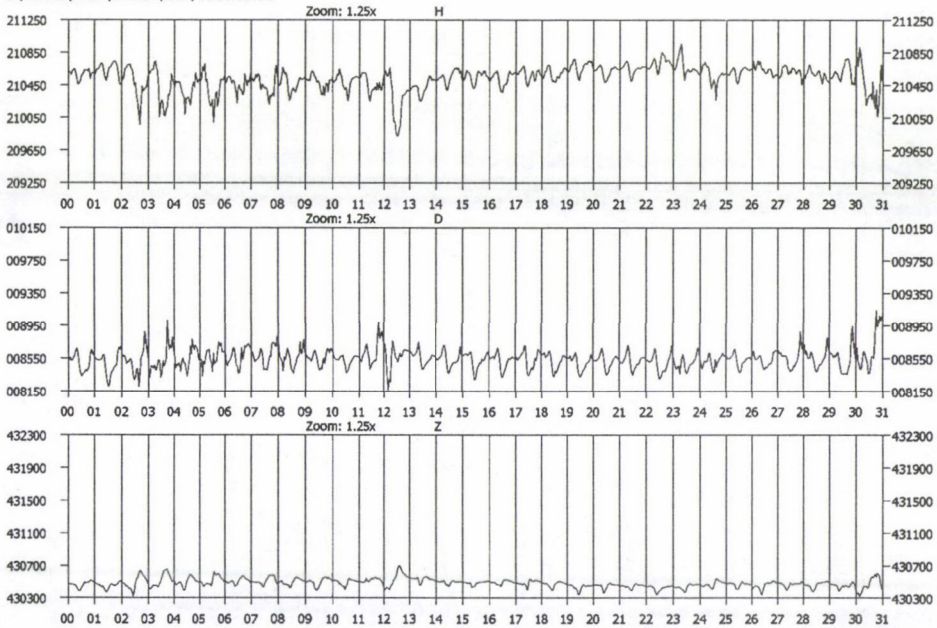
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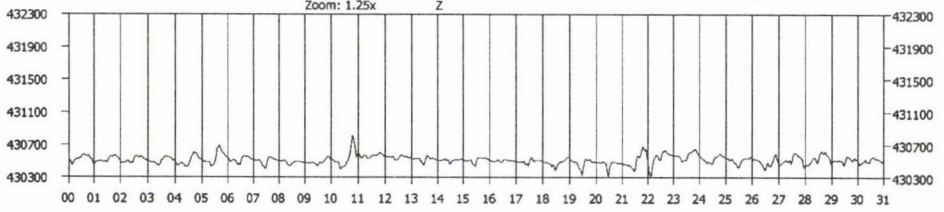
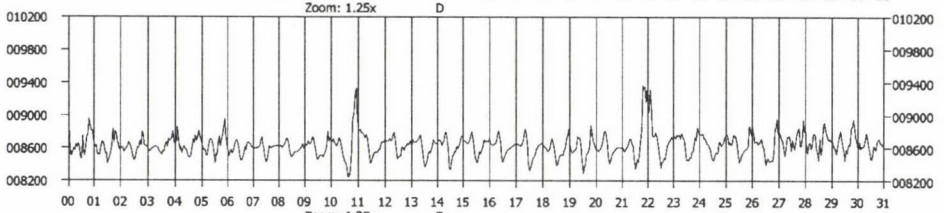
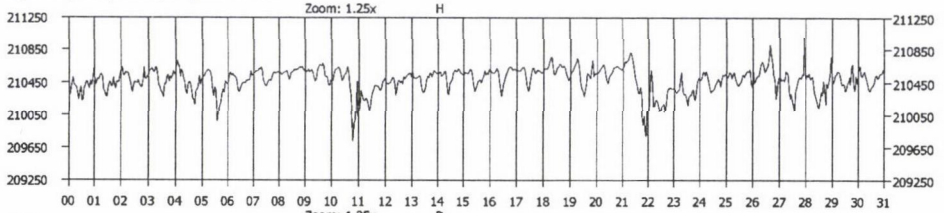
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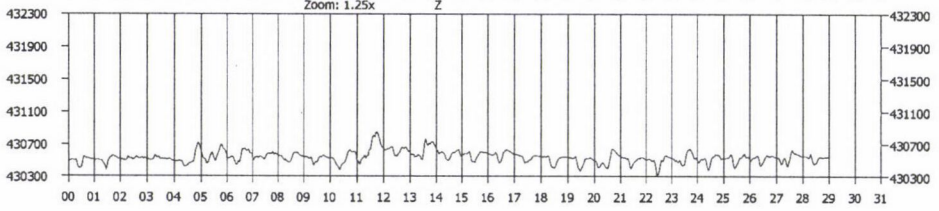
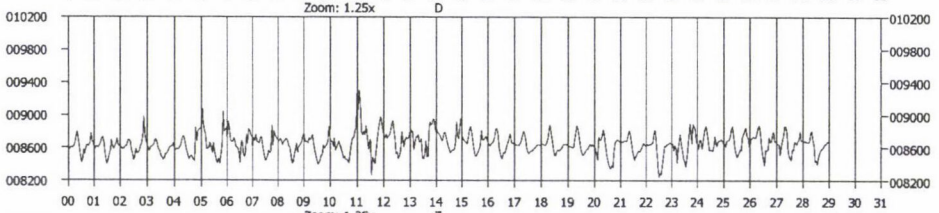
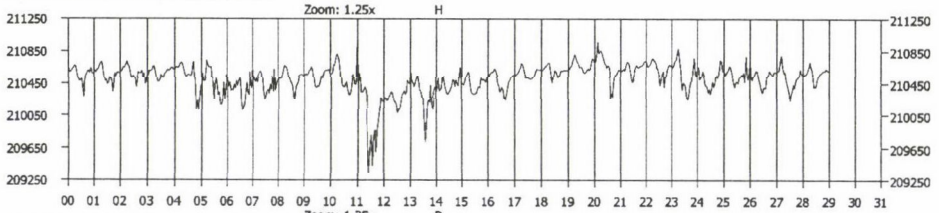
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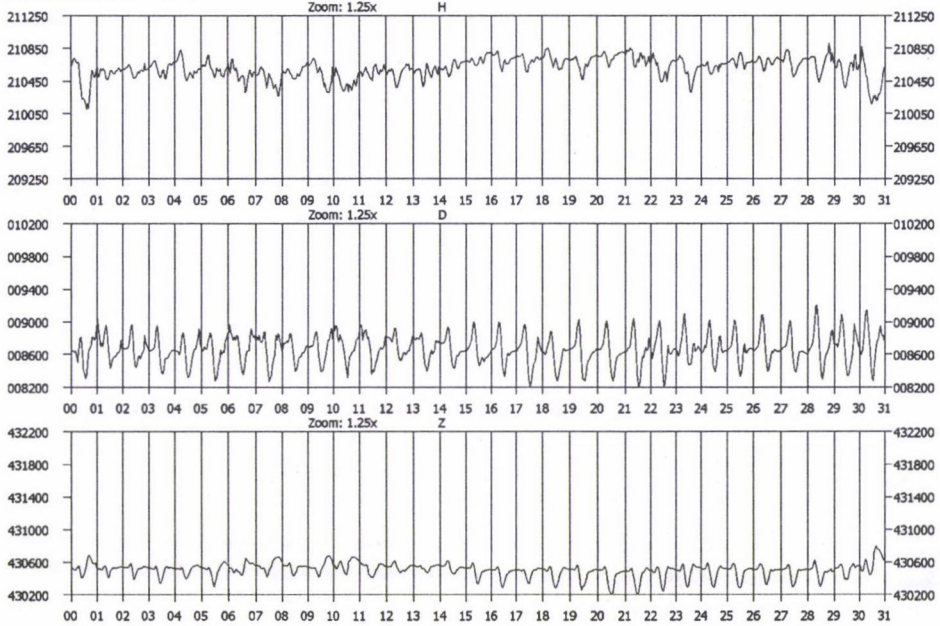
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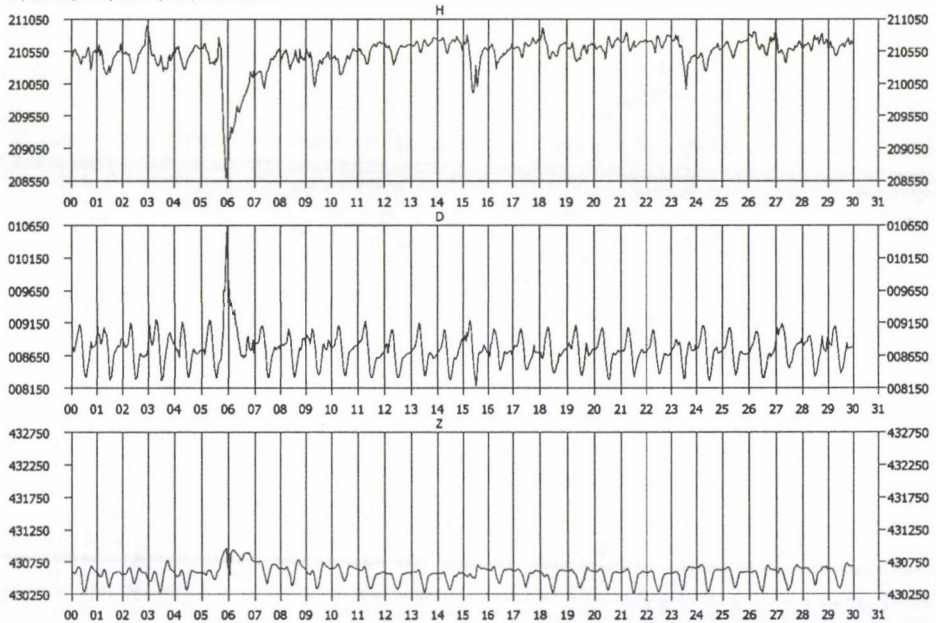
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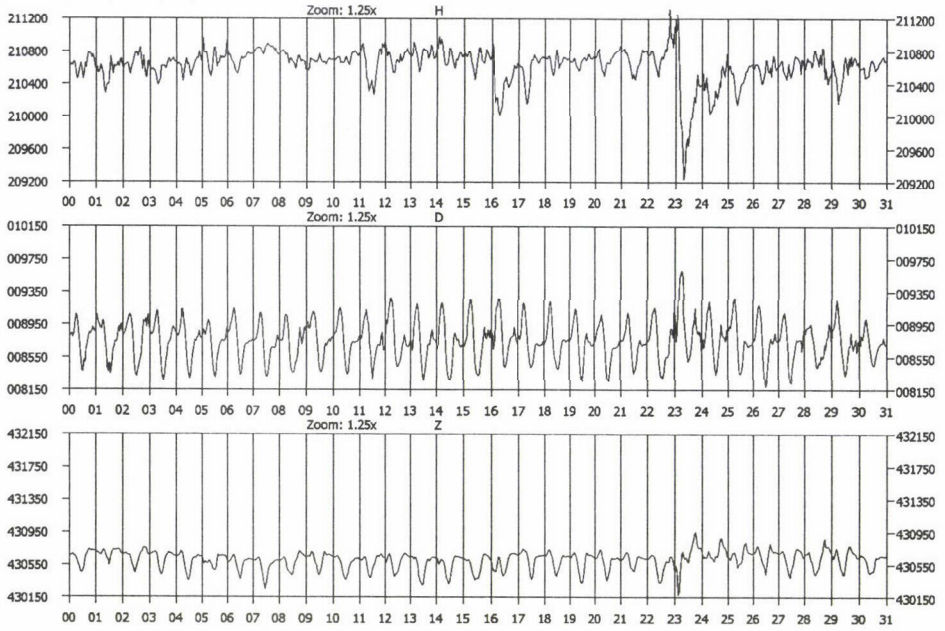
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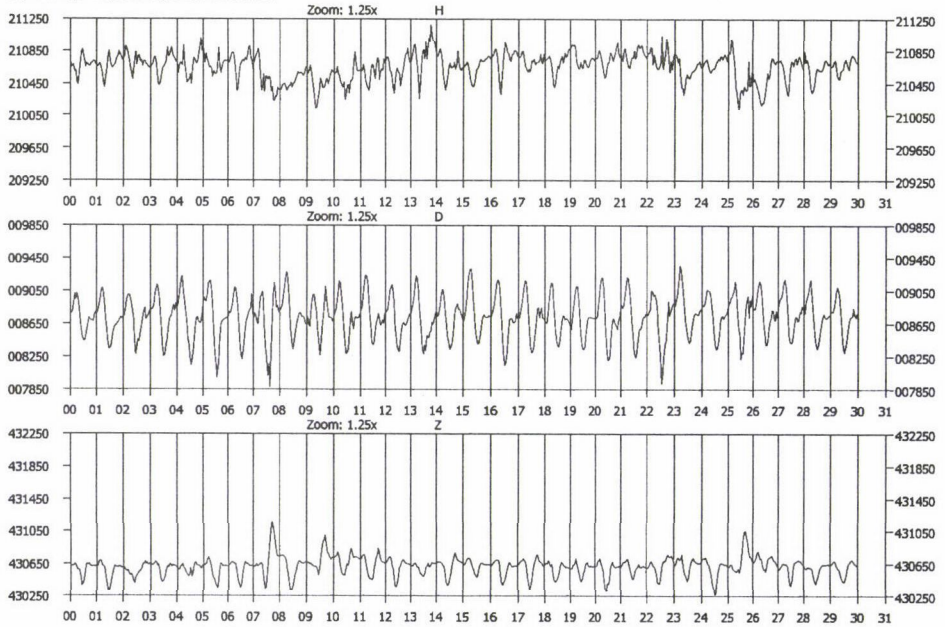
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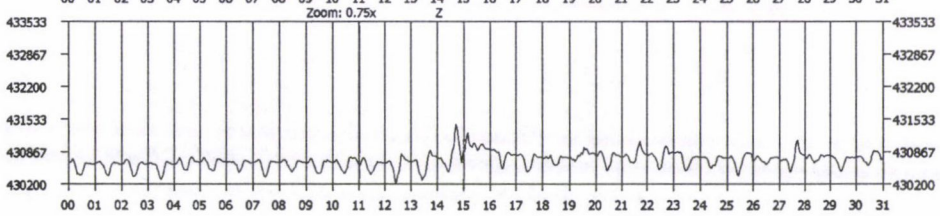
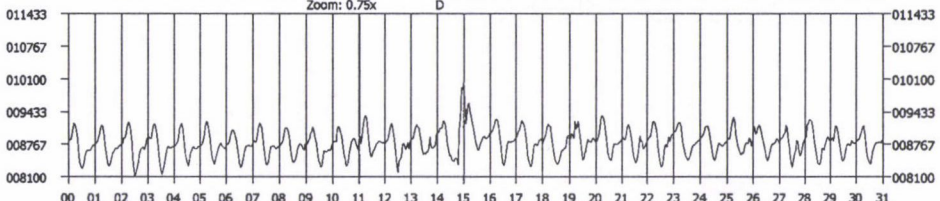
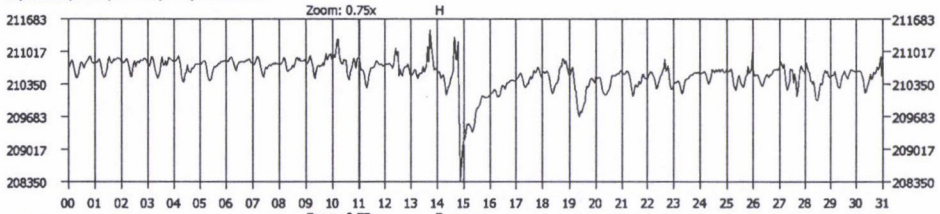
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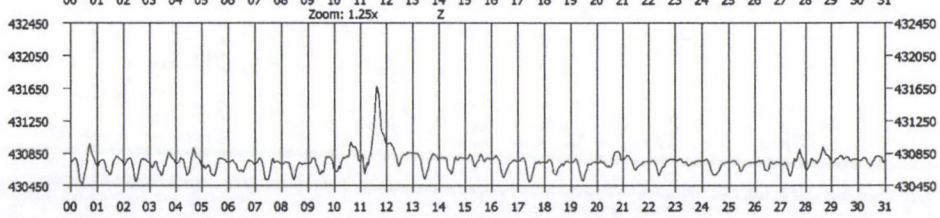
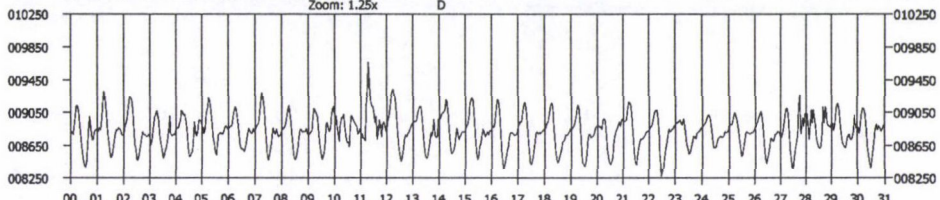
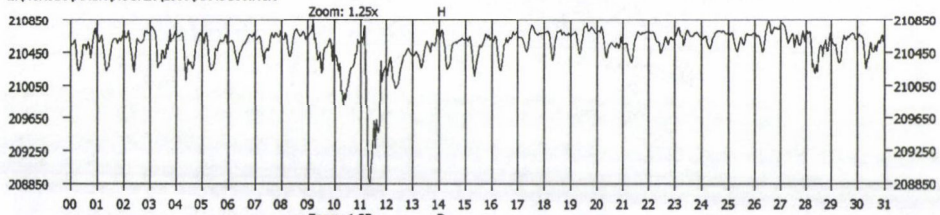
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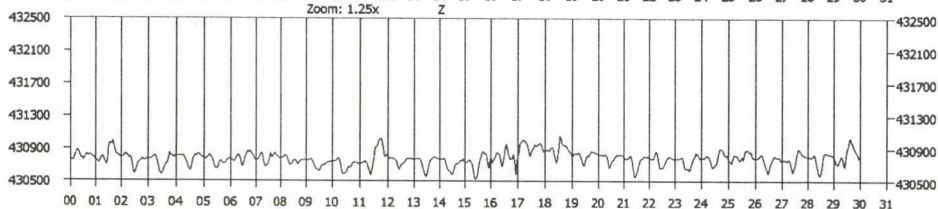
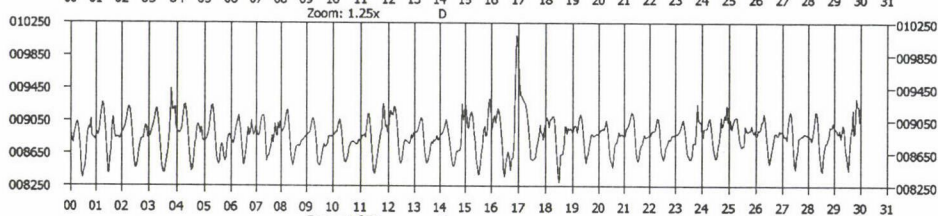
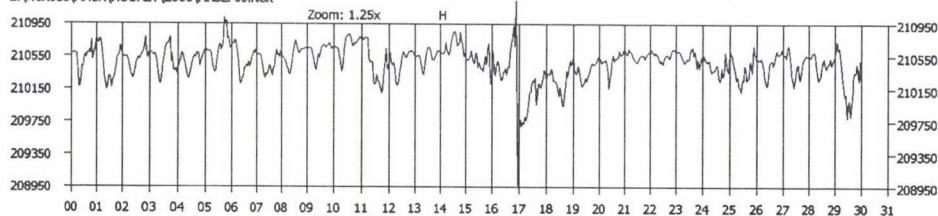
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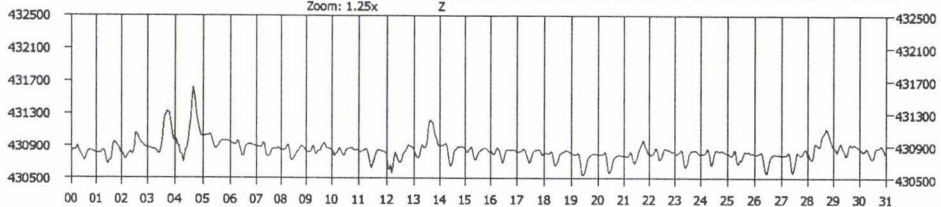
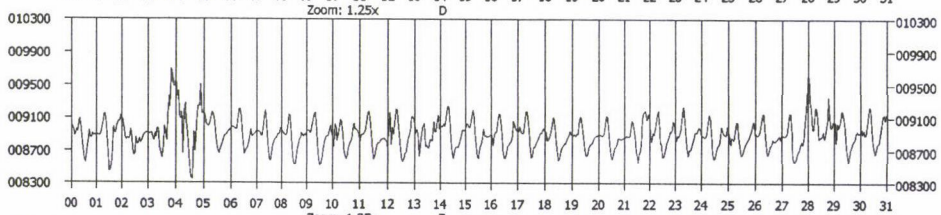
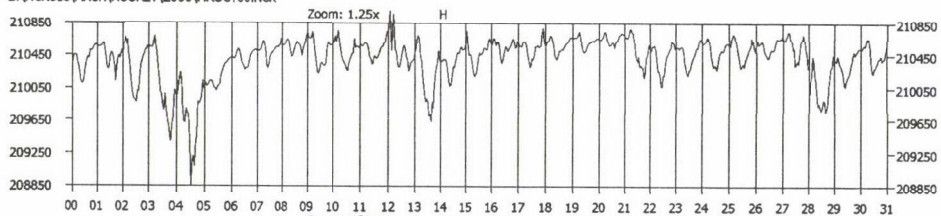
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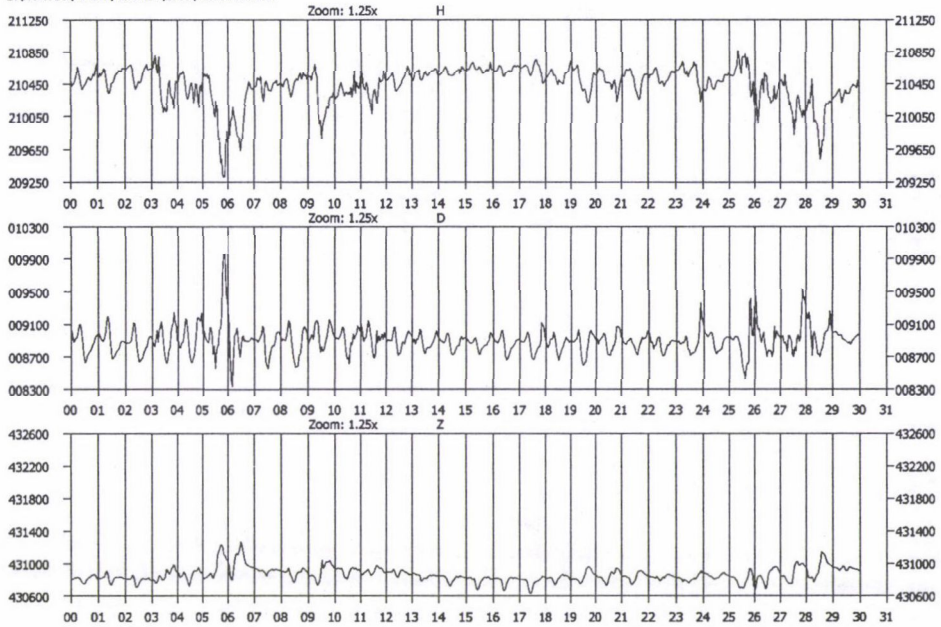
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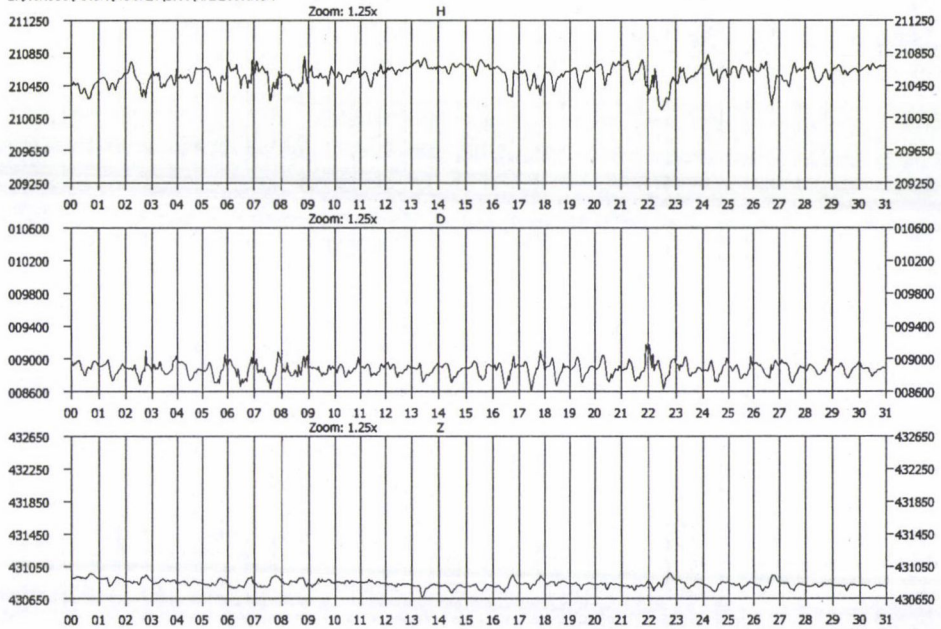
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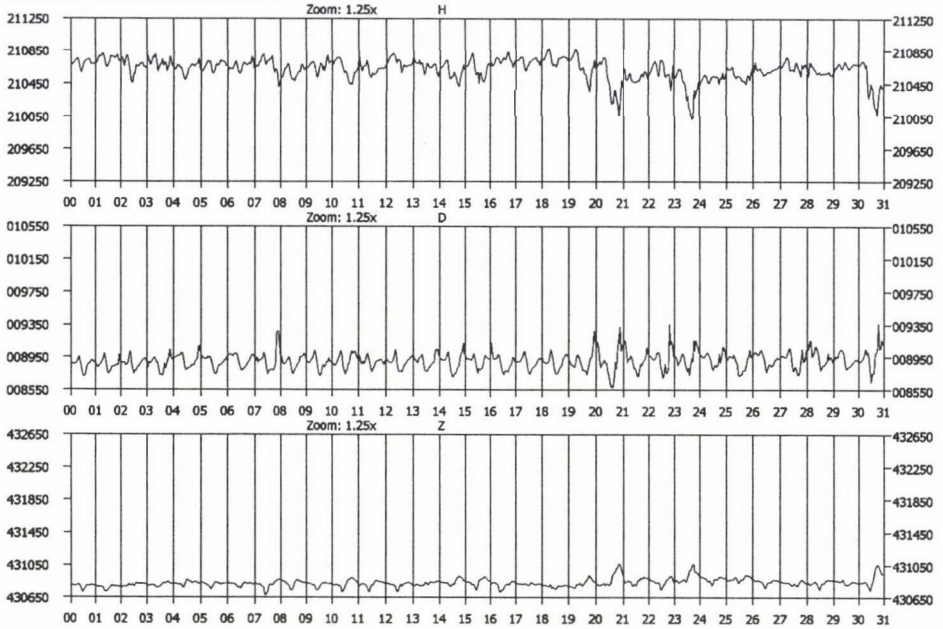
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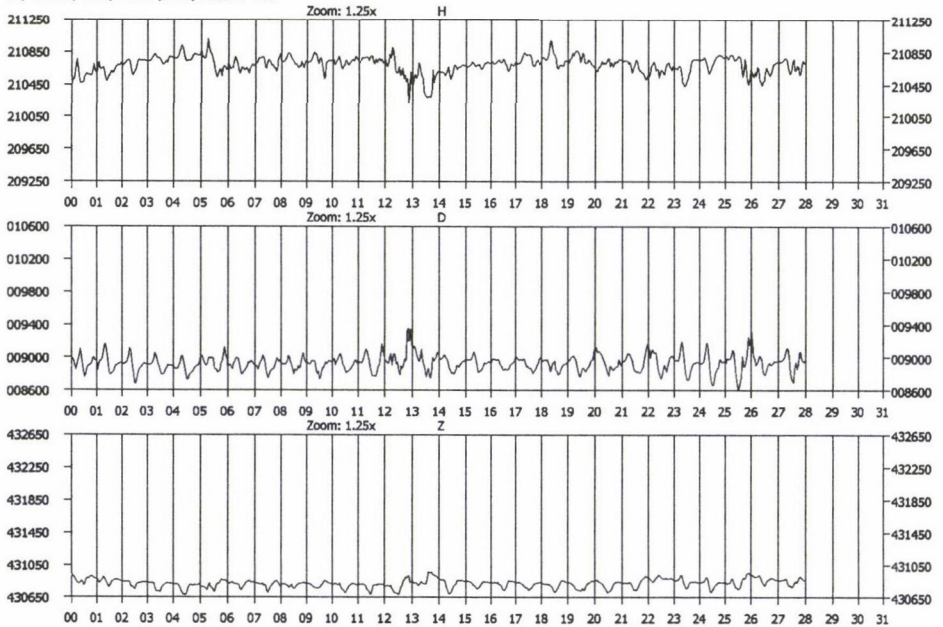
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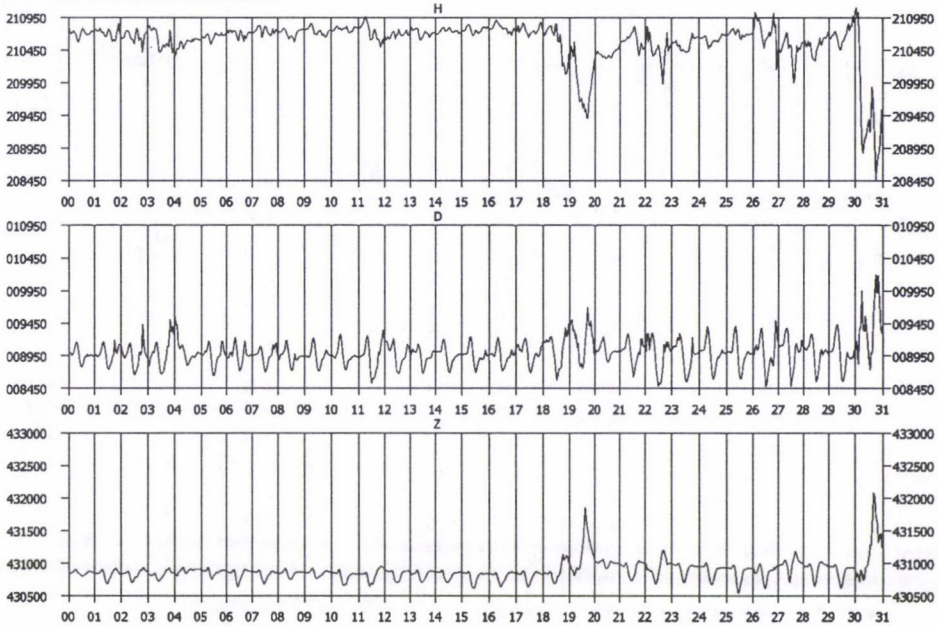
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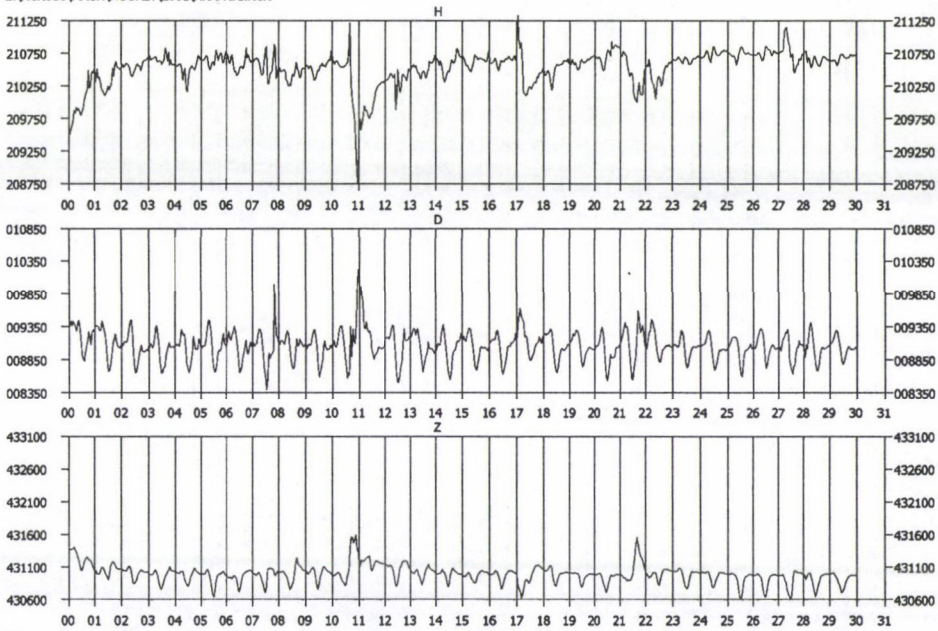
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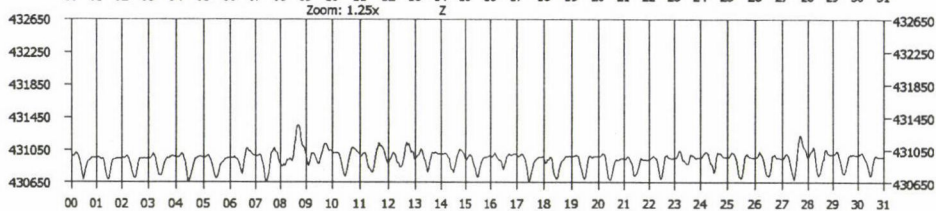
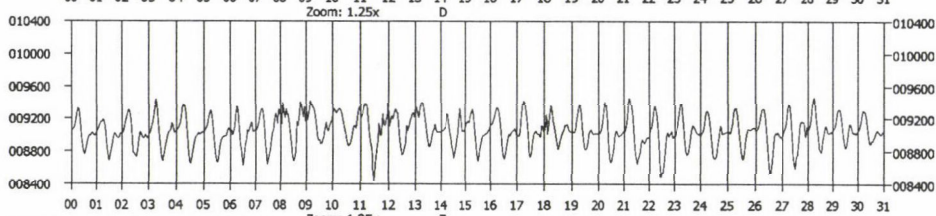
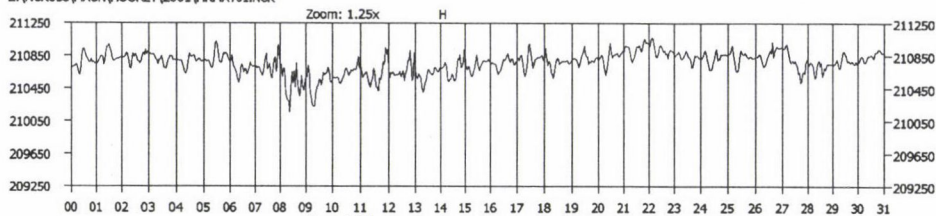
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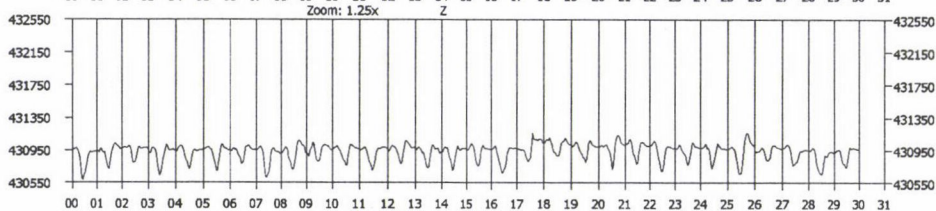
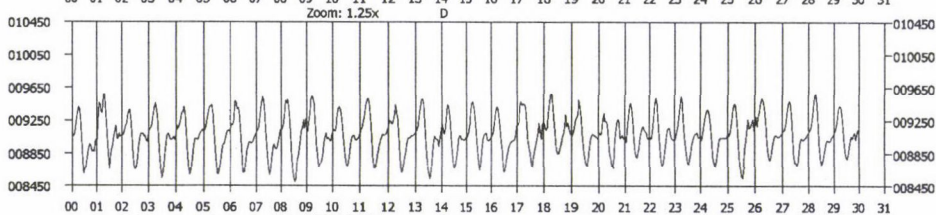
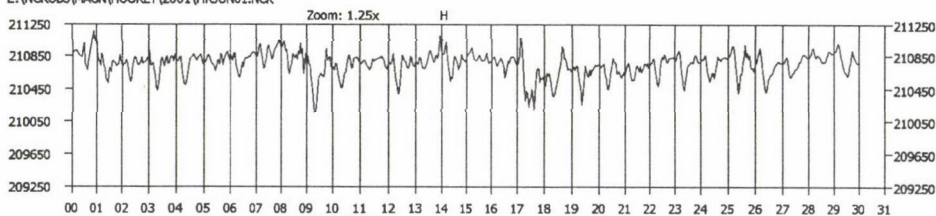
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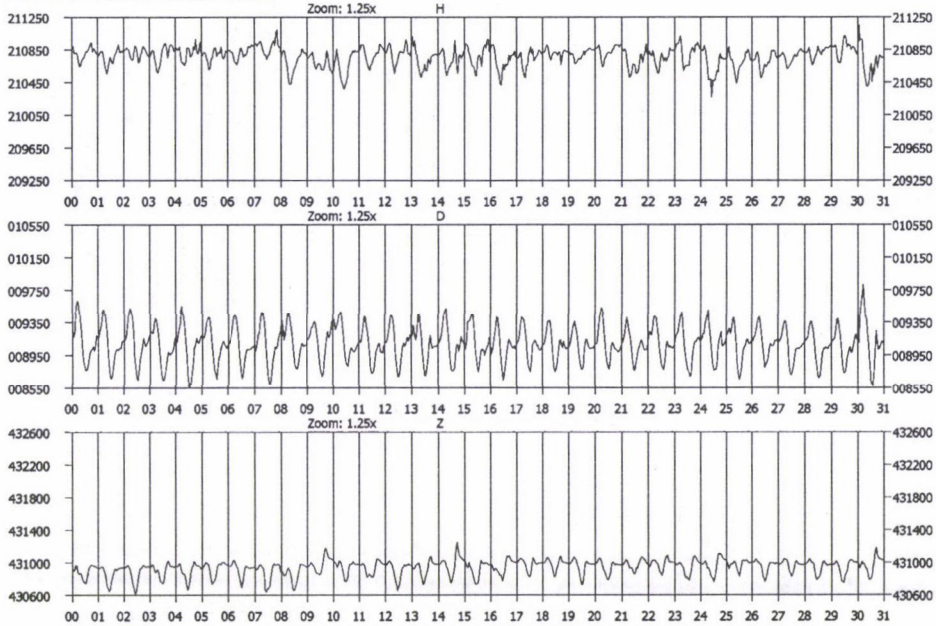
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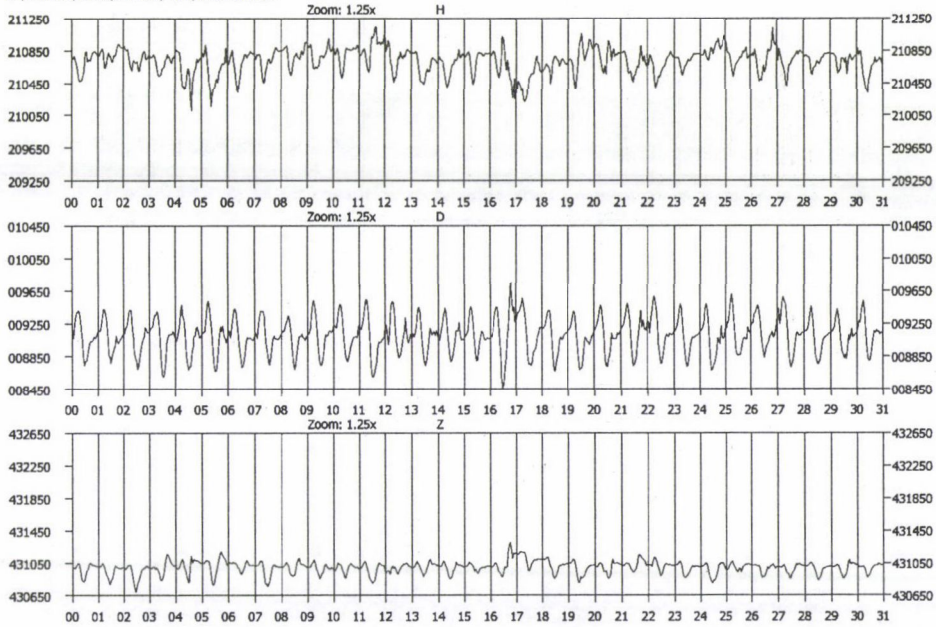
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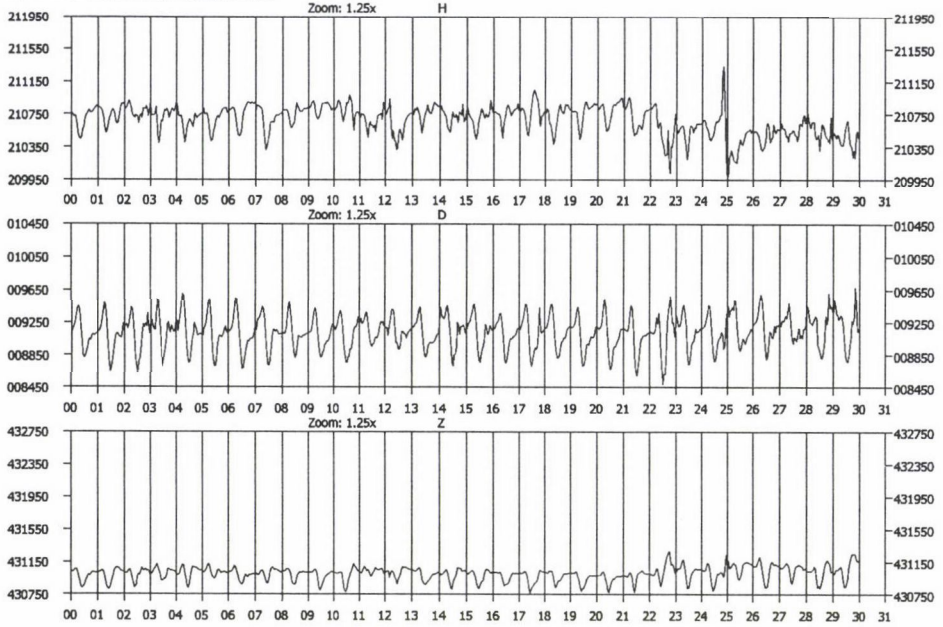
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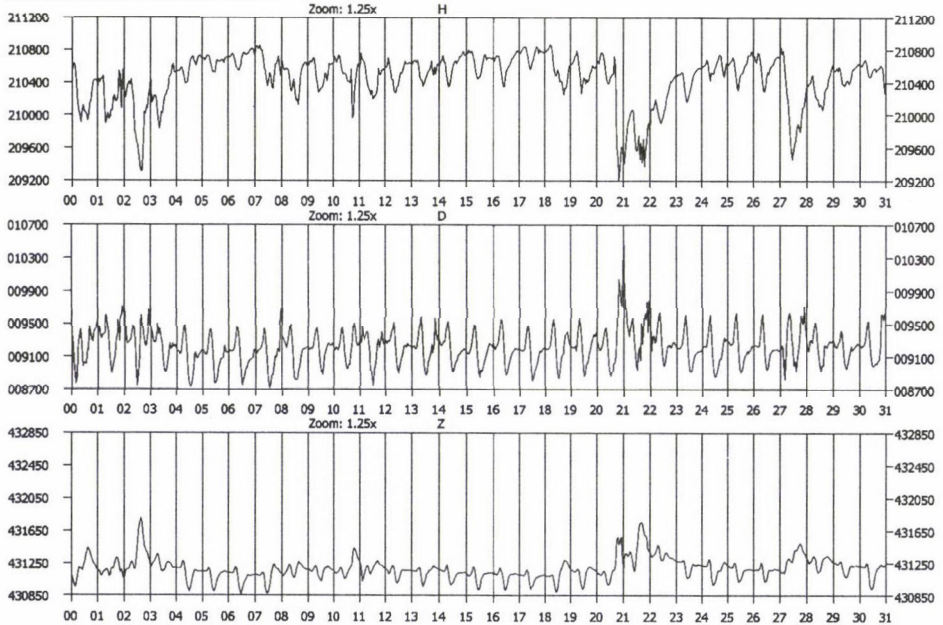
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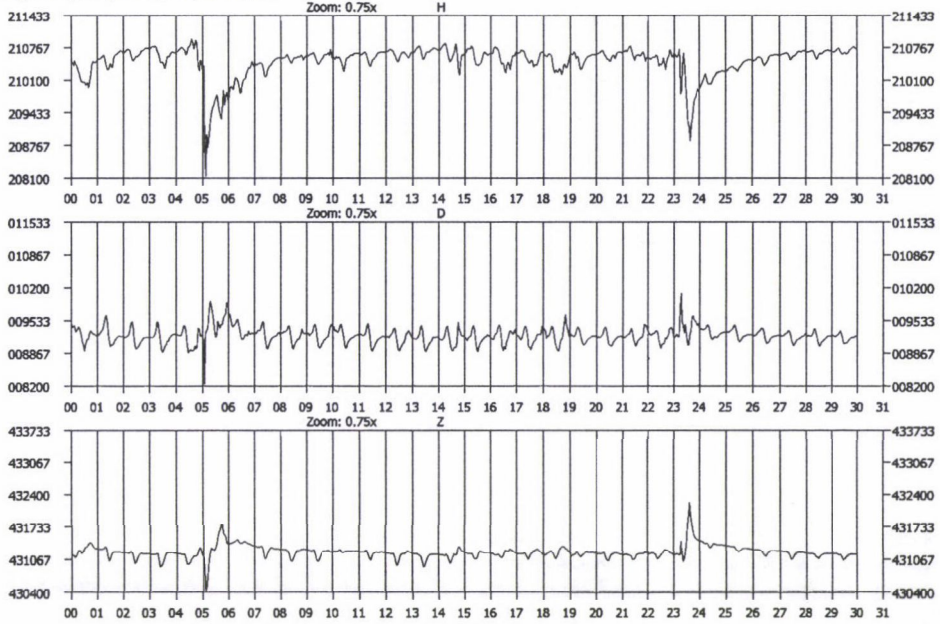
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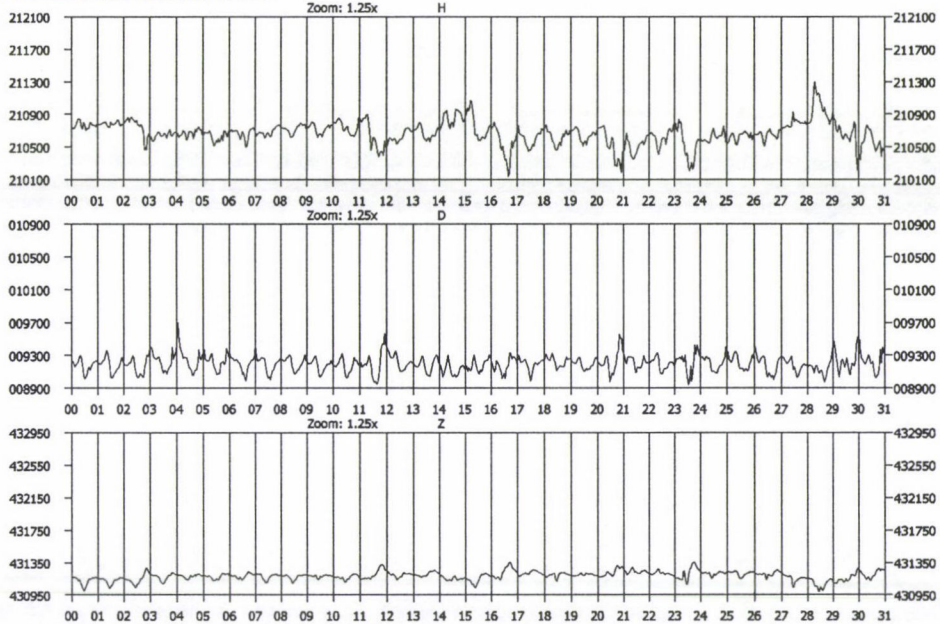
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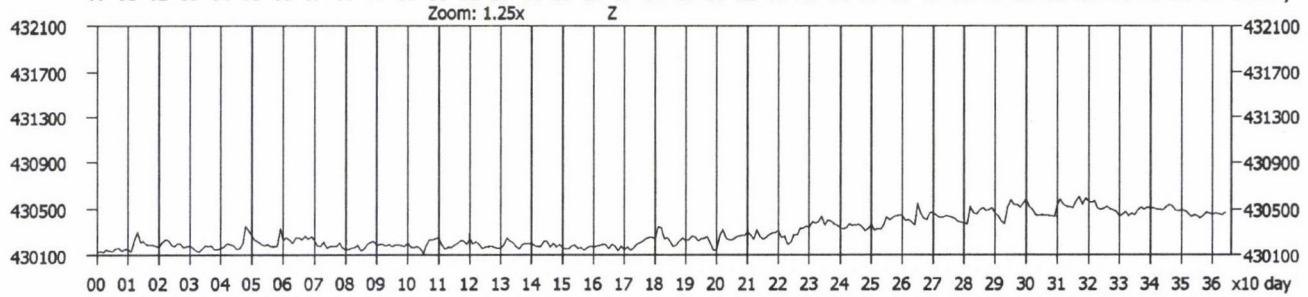
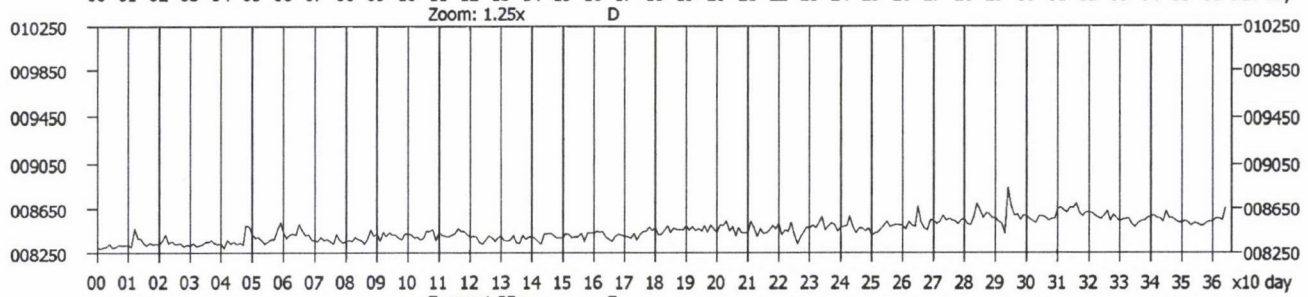
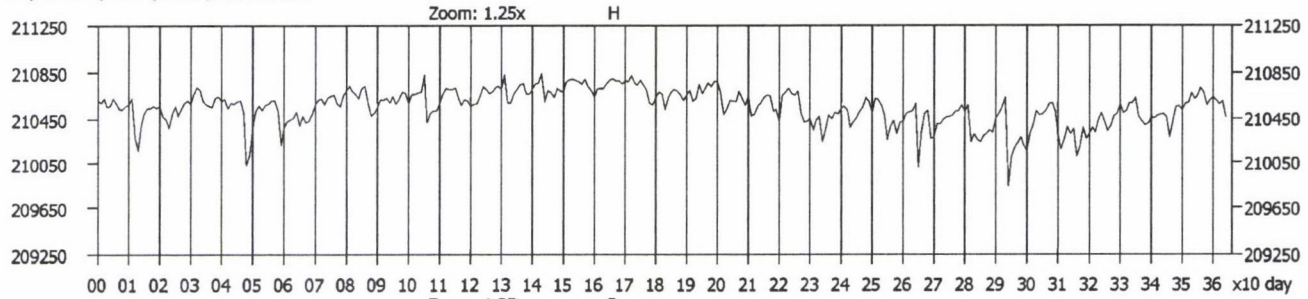


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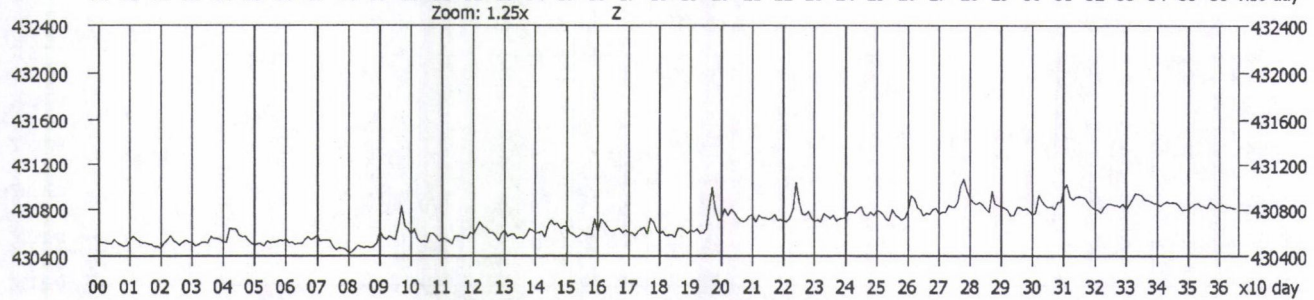
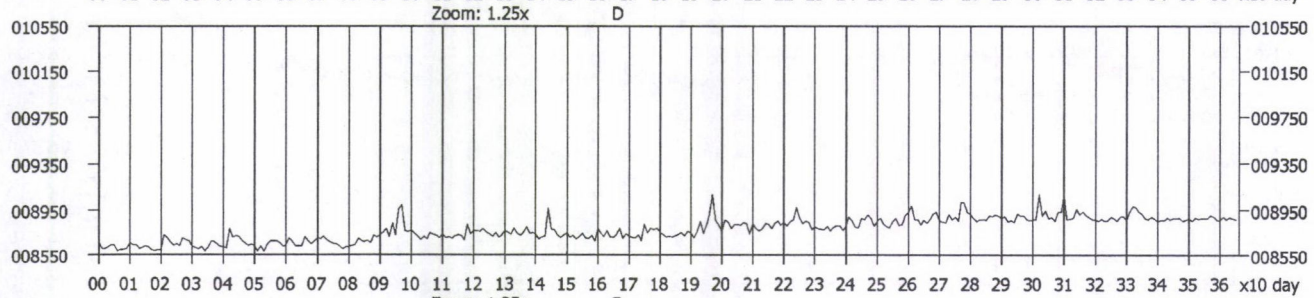
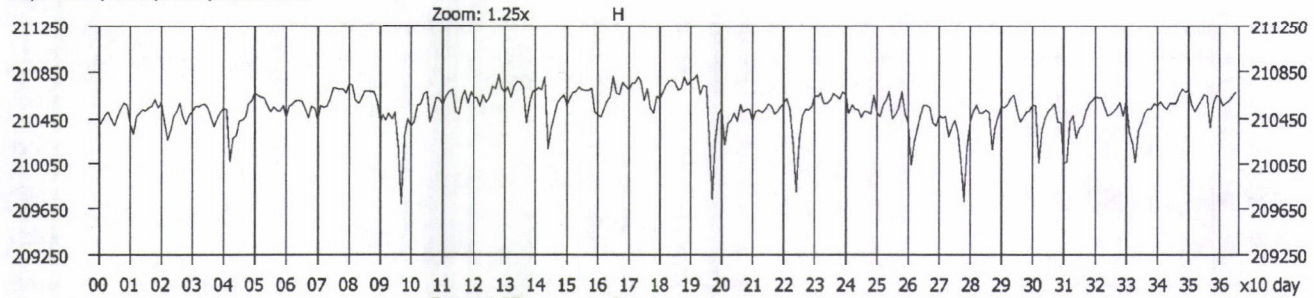
Daily mean values of H, D, Z
1999–2001

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Daily mean values 1999

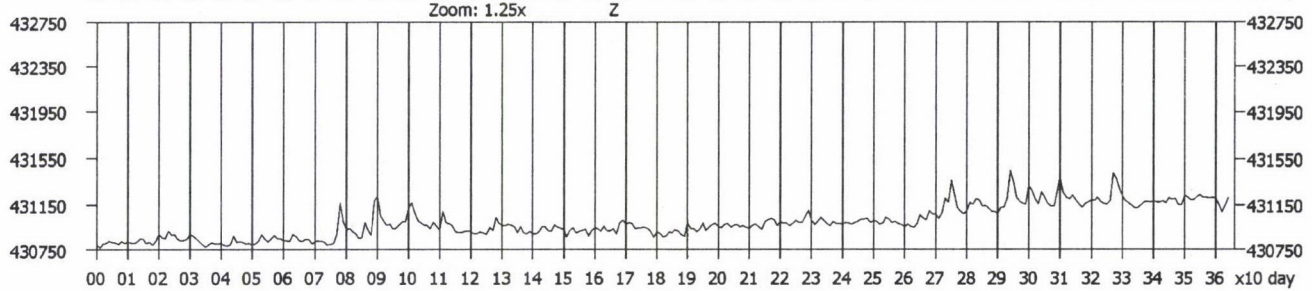
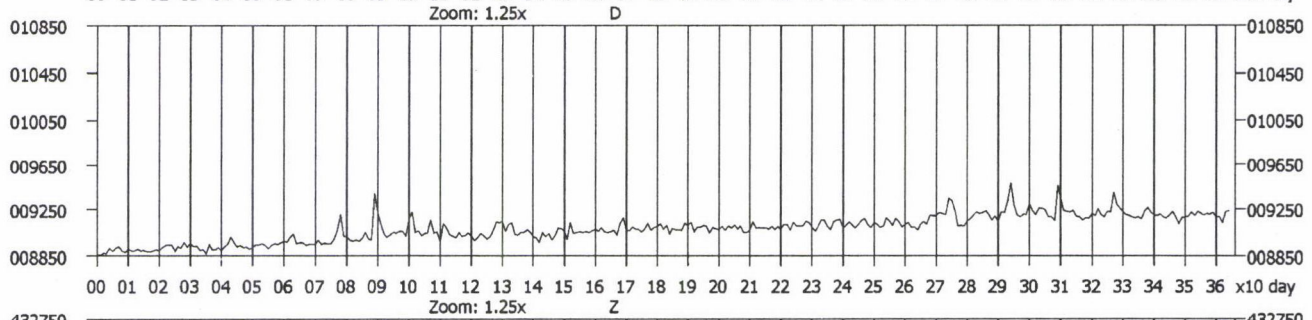
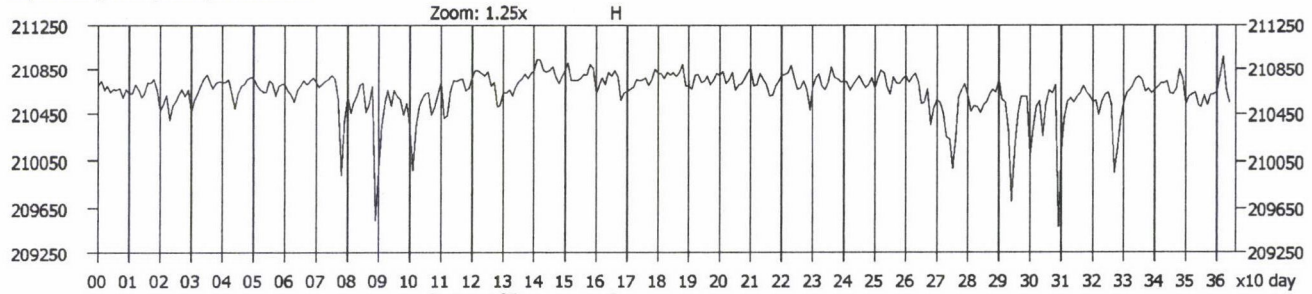
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Daily mean values 2000

DAI\MEAN VALUES 2000

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Daily mean values 2001

Geomagnetic K indices
1999-2001

Date	K	Sum	Date	K	Sum
990101	01122133	13	990212	43443552	30
990102	21123320	14	990213	22231021	13
990103	21101102	8	990214	10113322	13
990104	11111224	13	990215	53233232	23
990105	32211103	13	990216	11120001	6
990106	31214332	19	990217	01344224	20
990107	11223333	18	990218	55666675	46
990108	32333454	27	990219	63345542	32
990109	43221223	19	990220	00100221	6
990110	21131021	11	990221	00001123	7
990111	21121232	14	990222	21321032	14
990112	11112031	10	990223	12322410	15
990113	11044757	29	990224	10123431	15
990114	21455545	31	990225	03121320	12
990115	43245543	30	990226	00011000	2
990116	23211111	12	990227	10121111	8
990117	21110001	6	990228	00212555	20
990118	00000232	7	990301	55235555	35
990119	20010011	5	990302	53313433	25
990120	21011342	14	990303	12132554	23
990121	12131000	8	990304	23434654	31
990122	11115444	21	990305	43232420	20
990123	12232556	26	990306	23132344	22
990124	33221451	21	990307	33441444	27
990125	41121011	11	990308	23222335	22
990126	20121002	8	990309	33334352	26
990127	13123342	19	990310	66453344	35
990128	01122332	14	990311	43344432	27
990129	12122332	16	990312	12232344	21
990130	21110010	6	990313	10023122	11
990131	02111100	6	990314	30134344	22
990201	00000000	0	990315	34432212	21
990202	01000011	3	990316	00221202	9
990203	21112223	14	990317	20121331	13
990204	21133334	20	990318	10332320	14
990205	43223442	24	990319	10212342	15
990206	22222442	20	990320	10001120	5
990207	31333424	23	990321	10123120	10
990208	11122231	13	990322	00001222	7
990209	11000121	6	990323	11122223	14
990210	10100222	8	990324	10131101	8
990211	42234443	26	990325	00121343	14

Date	K	Sum	Date	K	Sum
990326	12332101	13	990507	22213222	16
990327	11001013	7	990508	12112122	12
990328	21212222	14	990509	21121122	12
990329	32444454	30	990510	32021210	11
990330	42434443	28	990511	00000000	0
990331	22223235	21	990512	02233432	19
990401	34111311	15	990513	35434433	29
990402	13123341	18	990514	31231212	15
990403	21032243	17	990515	22132221	15
990404	31223243	20	990516	11102200	7
990405	22343401	19	990517	01000120	4
990406	34222222	19	990518	55444452	33
990407	42312143	20	990519	32112334	19
990408	00113432	14	990520	22122223	16
990409	22011221	11	990521	31002212	11
990410	11433444	24	990522	01011101	5
990411	23333412	21	990523	21034231	16
990412	41131011	12	990524	13233334	22
990413	00010111	4	990525	43343332	25
990414	11232021	12	990526	21112322	14
990415	10230111	9	990527	21132213	15
990416	21134435	23	990528	11101232	11
990417	56542332	30	990529	12102200	8
990418	22022232	15	990530	00121331	11
990419	12132242	17	990531	11010002	5
990420	33444533	29	990601	00111212	8
990421	21222542	20	990602	31021114	13
990422	21111222	12	990603	31122223	16
990423	12222321	15	990604	23323223	20
990424	32121221	14	990605	30110121	9
990425	00012223	10	990606	02011310	8
990426	20133331	16	990607	12101323	13
990427	01233444	21	990608	23333432	23
990428	32243445	27	990609	33223443	24
990429	33244545	30	990610	22111100	8
990430	43444344	30	990611	00111023	8
990501	43433442	27	990612	21011211	9
990502	21234243	21	990613	11011022	8
990503	33233241	21	990614	11000001	3
990504	11110021	7	990615	00103421	11
990505	10011333	12	990616	11142112	13
990506	22333112	17	990617	23211213	15

Date	K	Sum	Date	K	Sum
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990622	00011202	6	990803	31001123	11
990623	13021213	13	990804	34333312	22
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990625	22000101	6	990806	12243534	24
990626	24433354	28	990807	42222133	19
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990628	36541122	24	990809	43343311	22
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990707	12100222	10	990818	44434544	32
990708	22123222	16	990819	54443433	30
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990710	01002230	8	990821	11223010	10
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990715	32222332	19	990826	34113534	24
990716	10111212	9	990827	22323342	21
990717	11012210	8	990828	32232432	21
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990720	11013322	13	990831	32232356	26
990721	10122542	17	990901	34333243	25
990722	33455443	31	990902	32213242	19
990723	32233332	21	990903	12333212	17
990724	43133233	22	990904	12221232	15
990725	32221133	17	990905	12221122	13
990726	11133322	16	990906	11111221	10
990727	22312110	12	990907	21333345	24
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990915	33453232	25	991027	24123653	26
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990918	12243311	17	991030	12232223	17
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990920	22212152	17	991101	22242131	17
990921	21223144	19	991102	22222123	16
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990927	44335664	35	991108	32445455	32
990928	43524445	31	991109	44435555	35
990929	53443435	31	991110	44233454	29
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991001	22124244	21	991112	22112233	16
991002	23322234	21	991113	54234476	35
991003	22222323	18	991114	32223444	24
991004	23333344	25	991115	20111012	8
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991006	12223221	15	991117	22233344	23
991007	11221021	10	991118	23333454	27
991008	22222013	14	991119	22113234	18
991009	11121234	15	991120	32231011	13
991010	24443543	29	991121	22321343	20
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991012	54346665	39	991123	23532335	26
991013	42323444	26	991124	32454453	30
991014	34344554	32	991125	22344354	27
991015	44344433	29	991126	11122000	7
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991217	22222321	16
991218	22111333	16
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991220	22210112	11
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000106	34256645	35	000217	01243241	17
000107	53132343	24	000218	00111000	3
000108	20122300	10	000219	00131121	9
000109	11000003	5	000220	10121015	11
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000401	33233455	28	000513	52334443	28
000402	54433135	28	000514	52122241	19
000403	22123324	19	000515	54322323	24
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000415	11122344	18	000527	32323423	22
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000621	10012224	12	000802	43222333	22
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000718	13224444	24	000829	66453765	42
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001012	31022204	14	001123	23121221	14
001013	77524442	35	001124	12242455	25
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001015	33223223	20	001126	12434576	32
001016	52233433	25	001127	66555363	39
001017	43332243	24	001128	34556664	39
001018	32234224	22	001129	76756535	44
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001212	12122232	15
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010108	22121254	19	010219	10222121	11
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010125	22110332	14	010308	21132234	18
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010208	02220124	13	010322	11223543	21
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010401	54413344	28	010513	53323454	29
010402	52233442	25	010514	33311221	16
010403	21211212	12	010515	11111343	15
010404	22115553	24	010516	12221213	14
010405	11443433	23	010517	11111223	12
010406	11222224	16	010518	33122123	17
010407	34221442	22	010519	34211120	14
010408	22346576	35	010520	11112111	9
010409	22332433	22	010521	10021111	7
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010412	65443201	25	010524	22010011	7
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010414	33233322	21	010526	12221101	10
010415	13215232	19	010527	01113522	15
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010505	01000011	3	010616	21200121	9
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010623	12102211	10	010804	11122322	14
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010625	12101211	9	010806	23233334	23
010626	11132343	18	010807	32222221	16
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010707	11011221	9	010818	22314434	23
010708	23221345	22	010819	02342221	16
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010715	01103342	14	010826	32231233	19
010716	32032424	20	010827	13122243	18
010717	43234322	23	010828	33212211	15
010718	22222311	15	010829	01121111	8
010719	11132321	14	010830	01122431	14
010720	11011200	6	010831	21132422	17
010721	11011012	7	010901	21101100	6
010722	21212133	15	010902	00012102	6
010723	32123232	18	010903	21223324	19
010724	31123332	18	010904	33231232	19
010725	13343432	23	010905	21012210	9
010726	33112121	14	010906	20010021	6
010727	01112222	11	010907	00001113	6
010728	01001000	2	010908	31011120	9
010729	01111211	8	010909	10121100	6

Date	K	Sum	Date	K	Sum
010910	11000111	5	011022	63264657	39
010911	01013343	15	011023	53411110	16
010912	22322234	20	011024	11000000	2
010913	24332121	18	011025	00421111	10
010914	31112113	13	011026	00111122	8
010915	42344442	27	011027	22012111	10
010916	31002332	14	011028	25335334	28
010917	01311113	11	011029	31133423	20
010918	21112452	18	011030	12121202	11
010919	33012121	13	011031	00103253	14
010920	00111002	5	011101	53323320	21
010921	10101112	7	011102	00213001	7
010922	20133210	12	011103	10001000	2
010923	01344654	27	011104	00112110	6
010924	42122221	16	011105	00133455	21
010925	00111157	16	011106	76324666	40
010926	52442222	23	011107	43121232	18
010927	12132343	19	011108	21111001	7
010928	31322332	19	011109	10111122	9
010929	23243455	28	011110	11111114	11
010930	41124566	29	011111	21120010	7
011001	55453434	33	011112	10011000	3
011002	33422356	28	011113	01010312	8
011003	52446545	35	011114	11211011	8
011004	41332431	21	011115	00012441	12
011005	00121332	12	011116	21111100	7
011006	11232021	12	011117	12223233	18
011007	00012002	5	011118	22122223	16
011008	22334425	25	011119	32233444	25
011009	42342311	20	011120	32310000	9
011010	11122231	13	011121	10011200	5
011011	32101653	21	011122	11121133	13
011012	55333443	30	011123	22223333	20
011013	32231210	14	011124	23655313	28
011014	11223353	20	011125	11232101	11
011015	32121212	14	011126	11210000	5
011016	21122121	12	011127	00010100	2
011017	10201001	5	011128	00000001	1
011018	10012121	8	011129	10011000	3
011019	01112331	12	011130	00000010	1
011020	02132221	13	011201	00133322	14
011021	22011676	25	011202	10222211	11

Date	K	Sum
011203	01123133	14
011204	32233242	21
011205	42121232	17
011206	32132333	20
011207	21113311	13
011208	31111211	11
011209	01020012	6
011210	00111012	6
011211	01211022	9
011212	11122344	18
011213	10001100	3
011214	00011222	8
011215	22233112	16
011216	23322112	16
011217	23122331	17
011218	41221202	14
011219	21021222	12
011220	00011012	5
011221	01211344	16
011222	23121020	11
011223	10131202	10
011224	13443443	26
011225	22231204	16
011226	10111022	8
011227	21012231	12
011228	00223202	11
011229	14332223	20
011230	33222345	24
011231	23211344	20

Special phenomena

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Date	CET (UT+1h)	Ampl. in H(nT)	Hx	Hy	Hz	Remark
990113	0900	11	+	-	-	-
990122	1409	6	+	-	-	-
990211	1217	12	+	-	-	-
990217	0805	14	+	-	-	-
990218	0341	31	+	-	+	-
990310	0228	15	+	-	+	-
990416	1225	22	+	-	+	-
990505	1643	24	+	-	+	-
990518	0156	35	+	-	+	-
990615	1408	16	+	-	+	-
990626	0419	18	+	-	+	-
990626	2116	54	+	-	-	-
990628	0611	73	+	-	+	in storm
990702	0156	24	+	-	+	-
990706	1608	33	+	-	+	-
990712	0316	10	+	-	+	-
990722	0347	6	+	-	+	-
990804	0319	21	+	-	+	-
990815	1143	25	+	-	+	-
990816	0741	8	+	-	+	-
990909	1356	31	+	-	+	-
990912	0458	15	+	-	+	-
990915	2117	28	+	-	-	-
990922	1322	36	+	-	+	-
991021	0327	9	+	-	-	-
991212	1651	9	+	+	-	sign in Hy unusual
000127	1552	22	+	-	-	-
000205	1643	9	+	-	+	-
000211	0358	15	+	-	+	-
000212	0050	75	+	-	-	-

Date	CET (UT+1h)	Ampl. in H(nT)	Hx	Hy	H _z	Remark
000220	2238	37	+	-	+	-
000323	2023	17	+	-	+	-
000406	1735	111	+	-	+	-
000523	1524	66	+	-	+	-
000523	1758	24	+	-	+	-
000604	1601	36	+	-	+	-
000605	2255	19	+	-	+	-
000608	1010	15	+	+	-	sign in Hy unusual
000623	1402	45	+	-	+	-
000710	1356	27	+	-	+	-
000713	1041	30	+	-	-	-
000714	1629	63	+	-	+	-
000715	1536	205	+	-	+	-
000719	1627	63	+	-	+	-
000726	1954	40	+	-	-	-
000810	0558	6	+	-	-	-
000814	2258	28	+	-	+	-
000904	1430	16	+	-	+	-
000906	1758	44	+	-	+	-
000915	2012	18	+	-	+	-
000917	1722	58	+	-	+	-
000918	1540	68	+	-	+	-
001003	0153	25	+	-	+	-
001012	2326	275	+	-	+	-
001028	1052	33	+	-	-	-
001104	0322	15	+	-	+	-
001108	0437	12	+	-	-	-
001126	1540	26	+	-	+	-
001128	0625	17	+	-	-	-
010117	1730	16	+	-	+	-
010118	2352	6	+	-	+	-

Date	CET (UT+1h)	Ampl. in H(nT)	Hx	Hy	H _z	Remark
010123	1147	31	+	-	+	-
010131	0902	24	+	-	+	-
010303	1219	15	+	-	+	-
010322	1438	26	+	-	+	-
010327	1840	30	+	-	+	-
010331	0148	214	+	-	-	-
010404	1549	65	+	-	+	-
010408	1201	19	+	-	+	-
010411	1616	46	+	-	+	-
010413	0836	10	+	-	+	-
010418	0143	67	+	-	+	-
010421	1700	32	+	-	+	-
010428	0600	51	+	-	+	-
010527	1557	46	+	-	+	-
010618	0359	19	+	-	+	-
010812	1234	53	+	-	+	-
010817	1203	32	+	-	+	-
010825	1158	10	+	-	+	-
010827	2049	46	+	-	-	-
010914	0305	27	+	-	+	-
010925	2117	90	+	-	-	-
010929	1039	13	+	-	-	-
011011	1758	45	+	-	+	-
011021	1748	73	+	-	-	-
011028	0417	10	+	-	+	-
011031	1447	19	+	-	+	-
011106	0253	107	+	-	+	-
011115	1608	19	+	-	-	-
011124	0655	61	+	-	+	-
011229	0636	38	+	-	-	-
011230	2108	42	+	-	+	-

Special phenomena
sfe 1999-2001

Date	Beginning	Maximum	End	Ampl. nT	Sign		
	GMT	GMT	GMT		Hx	Hy	Hz
990223	0745	0751	0756	21	-	+	-
990312	0258	0308	0314	18	-	+	-
990319	0741	0751	0853	9	-	+	-
990530	1046	1050	1058	10	-	+	-
990906	1610	1616	1623	8	-	+	-
991014	0855	0902	0908	21	-	+	-
991104	0108	0115	0124	14	-	+	-
991118	0948	0952	0957	17	-	+	-
991127	1209	1213	1220	14	-	-	+
991130	1226	1234	1245	25	-	+	-
000204	0745	0751	0755	12	-	+	-
000317	0116	0123	0133	11	-	+	-
000317	0648	0652	0656	9	-	+	-
000501	1508	1511	1516	23	-	+	-
000508	1427	1433	1440	7	-	+	-
000603	0947	0951	1005	9	-	+	+
000820	1526	1531	1539	10	-	+	+
001219	1207	1213	1218	5	-	+	-
010110	1014	1017	1022	7	-	+	-
010125	0412	0418	0423	11	-	+	-
010125	0506	0510	0515	10	-	+	-
010224	1014	1018	1027	6	-	+	0
010415	1344	1350	1359	70	-	-	+
010506	0643	0649	0655	8	-	+	-
010611	1402	1405	1408	12	-	-	-
011019	0938	0943	0950	8	-	+	-
011026	1026	1030	1036	11	-	+	-
011127	0856	0906	0911	7	-	+	-
011203	1023	1031	1041	12	-	+	-
011213	1424	1430	1438	8	-	-	+

Annual mean values of geomagnetic elements

Year	D	H nT	Z nT	I	X nT	Y nT	F nT
1961	-0° 23.6'	20816	42077	63° 40.7'	20816	-143	46944
1962	-0° 19.6'	20827	42093	63° 40.5'	20827	-119	46964
1963	-0° 14.3'	20839	42116	63° 40.4'	20839	-87	46990
1964	-0° 10.5'	20845	42126	63° 40.4'	20845	-64	47001
1965	-0° 08.1'	20877	42137	63° 38.6'	20877	-49	47025
1966	-0° 06.8'	20888	42156	63° 38.5'	20888	-41	47047
1967	-0° 06.0'	20903	42179	63° 38.3'	20903	-36	47074
1968	-0° 03.0'	20921	42196	63° 37.7'	20921	-18	47098
1969	0° 00.2'	20942	42214	63° 36.9'	20942	1	47123
1970	0° 02.8'	20964	42235	63° 36.1'	20964	17	47152
1971	0° 04.3'	20992	42262	63° 35.2'	20992	26	47188
1972	0° 06.5'	21011	42286	63° 34.7'	21011	40	47218
1973	0° 10.2'	21028	42317	63° 34.6'	21028	62	47254
1974	0° 13.6'	21046	42350	63° 34.5'	21046	83	47291
1975	0° 18.5'	21072	42380	63° 33.8'	21072	113	47330
1976	0° 23.8'	21084	42413	63° 34.0'	21084	146	47365
1977	0° 28.8'	21106	42443*	63° 33.6**	21105	177	47401*
1978	0° 34.6'	21108	42473*	63° 34.4**	21107	212	47429*
1979	0° 41.4'	21113*	42496*	63° 34.8**	21112*	254	47452*
1980	0° 46.3'	21107*	42512*	63° 35.8**	21105*	284	47463*
1981	0° 52.4'	21097*	42530*	63° 37.0**	21095*	322	47475*
1982	0° 57.5'	21078	42549	63° 38.8'	21075	353	47484
1983	1° 02.7'	21078	42581	63° 39.8'	21074	384	47512
1984	1° 08.1'	21075	42601	63° 40.7'	21071	417	47529
1985	1° 12.7'	21073	42625	63° 41.7'	21068	446	47550
1986	1° 17.8'	21065	42660	63° 43.1'	21060	477	47577
1987	1° 21.9'	21067	42689	63° 44.0'	21061	502	47604
1988	1° 26.6'	21052	42723	63° 46.0'	21045	530	47628
1989	1° 31.3'	21041	42761	63° 48.0'	21034	559	47657
1990	1° 35.5'	21044	42782	63° 48.3'	21036	584	47678
1991	1° 36.3'	21027	42816	63° 50.4'	21019	589	47701
1992	1° 38.1'	21037	42834	63° 50.4'	21028	600	47721
1993	1° 43.2'	21039	42853	63° 51.0'	21030	631	47739
1994	1° 48.4'	21037	42877	63° 52.0'	21026	663	47760
1995	1° 56.6'	21052	42898	63° 51.7'	21039	713	47785
1996	2° 02.0'	21062	42920	63° 51.7'	21048	747	47809
1997	2° 07.5'	21060	42955	63° 52.9'	21045	781	47839
1998	2° 13.7'	21053	42997	63° 54.7'	21037	819	47875
1999	2° 18.3'	21055	43030	63° 55.6'	21038	847	47905
2000	2° 23.7'	21054	43068	63° 56.9'	21035	880	47938
2001	2° 28.4'	21064	43099	63° 57.2'	21045	909	47972