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A Catalogue of Jovian decametric radio observations from January 1982 to December 1984

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Summary. — The catalogue lists all Jupiter decameter emissions recorded with the Nancay radio spectrograph, over 3 years (1982-1984). Jupiter was tracked 8 hours daily throughout the year, in the frequency range 10-40 MHz. For each observing day are listed the characteristics of the observations, and of the emissions (starting and ending times, central meridian longitude and Io phase, frequency range). The diagrams of the observation tracks and of the emission tracks are also given.

Key words : planets and satellites : Jupiter — Io — magnetospheres — radio sources.

1. Introduction.

Since the discovery of decameter wave Jovian emission (Burke and Franklin, 1955), many monitoring programs have been performed in several sites (Bozyan *et al.*, 1972; Thieman, 1979; Warwick *et al.*, 1975; Oya and Morioka, 1985). All of them consist of fixed frequency observations, except at Boulder where a radio spectrograph was operating from 10 to 40 MHz. Unhappily that instrumentation is no longer operative. In France, at the Nançay station, a radio spectrograph has been monitoring Jupiter since January 1978. Two catalogues covering the period 1978-1979 and 1980-1981 (Leblanc *et al.*, 1981; Leblanc *et al.*, 1983) were already published. This catalogue covers the period 1982-1984; the next catalogue covering the period 1985-1987 is in progress.

The extensive survey carried out by the Decameter Radio Astronomy Group has been especially important for comparative studies of Jovian events observed simultaneously from Nançay station and from Voyager spacecraft with the Planetary Radio Astronomy experiment (Leblanc and Genova, 1981; Barrow *et al.*, 1982). Many studies on the beaming (Poquérousse and Lecacheux, 1978; Barrow *et al.*, 1982; Zarka, 1988), source locations (Boischoit *et al.*, 1987; Genova and Calvert, 1988; Genova and Aubier, 1985) and solar wind control (Barrow *et al.*, 1986; Genova *et al.*, 1987; Zarka and Genova, 1983) have been performed by using the data set of Nançay observations. On the other hand, it is now established that the Jovian system is highly vari-

able (Lecacheux, 1974; Genova *et al.*, 1987), and monitoring the Jovian decameter radiation will provide a large homogeneous data set giving information on the long - term stability of the Jovian magnetosphere. Moreover this program, in relationship with the Galileo Mission, would increase the scientific understanding of the Jovian system.

In the first section the equipment and the observations are briefly described; in the second section, the catalogue is listed, followed by the occurrence diagrams of the observations and emissions.

2. Equipment and observations.

The instrumentation consists of a large collecting array of 144 "Tee-Pee" antennas providing a gain of 24 db in both left-hand and right-hand polarization of the incoming waves. The sensitivity with a time constant of 1 sec and an elementary bandwidth of 250 kHz is $8 \times 10^{-22} \text{ Wm}^{-2} \text{ Hz}^{-1}$. The array is electronically fully steerable and the tracking is about 4 hours on each side of the source meridian transit at Nançay. It allows to observe in the frequency range 10-110 MHz with a nearly constant gain (Boischoit *et al.*, 1980). The array is connected to several swept-frequency spectrographs with different time and spectral resolutions.

Jupiter is tracked 8 hours daily throughout the year, in the frequency range 10-40 MHz during nighttime observations, and 20-40 MHz during daytime observations. An example of a Jovian decametric emission displayed in the frequency - time plane is shown in figure 1.

3. The catalogue.

The data are divided into two parts : on the left they correspond to the observations, and on the right to the emissions. For each observing day the catalogue lists the date (Year, Month, Day), the day of year, the beginning and the end of the observing times (hours, minutes), the calculated central meridian longitude (CML) (System III in degrees), the Io phase (in degrees) and the bandwidth within which the observations are carried out (in MHz).

When an emission is observed, we give the starting

and ending times (hours, minutes,) the calculated CML and Io phase (degrees) and the frequency range in which this emission occurred (the lowest frequency is generally not intrinsic to the Jovian emission during daytime observations, due to interferences). When an emission or an observation spans 24.00 UT, the two corresponding days are indicated with a cut at 24.00 UT. When several emissions are observed during the same day, they are listed separately and the characteristics of the observations are not repeated. Figures 2 and 3 show the observation tracks and occurrence diagrams plotted for the data set 1982-1984.

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CATALOGUE (continued).

DATE YY/MM/DD	DOY JJJ	TIME HHMM	UT - HHMM	OBSERVATIONS				EMISSIONS					
				CML III (1965.0)	IO	PHASE	WIDTH MHZ	CML III (1965.0)	IO	PHASE	WIDTH MHZ		
82/ 3/26	85	00	- 620	207	- 76	247	- 301	13	- 40				
82/ 3/26	85	22	- 240	285	- 357	74	- 91	13	- 40				
82/ 3/27	86	01	- 410	3	- 148	92	- 126	13	- 40				
82/ 3/28	87	01	- 410	154	- 299	296	- 330	13	- 40				
82/ 3/29	88	22	- 240	41	- 89	330	- 342	13	- 40				
82/ 3/30	89	00	- 60	89	- 307	342	- 32	13	- 40				
82/ 3/30	89	22	- 240	192	- 240	174	- 185	13	- 40				
82/ 3/31	90	00	- 550	240	- 92	185	- 235	13	- 40				
82/ 3/31	90	21	- 240	309	- 31	10	- 29	13	- 40				
82/ 4/ 1	91	01	- 50	31	- 212	29	- 71	13	- 40				
82/ 4/ 1	91	21	- 240	97	- 181	213	- 232	13	- 40				
82/ 4/ 2	92	00	- 50	181	- 3	232	- 275	13	- 40				
82/ 4/ 2	92	21	- 240	244	- 332	55	- 76	13	- 40				
82/ 4/ 3	93	01	- 30	333	- 81	76	- 101	13	- 40				
82/ 4/ 4	94	01	- 30	123	- 231	280	- 305	13	- 40				
82/ 4/ 5	95	01	- 30	274	- 22	123	- 149	13	- 40				
82/ 4/ 5	95	21	- 240	324	- 64	303	- 327	13	- 40				
82/ 4/ 6	96	01	- 525	65	- 260	327	- 13	13	- 40				
82/ 4/ 6	96	21	- 240	115	- 215	147	- 170	13	- 40				
82/ 4/ 7	97	01	- 525	215	- 51	171	- 216	13	- 40				
82/ 4/ 7	97	21	- 240	266	- 5	351	- 14	13	- 40				
82/ 4/ 8	98	01	- 515	6	- 196	14	- 59	13	- 40				
82/ 4/ 8	98	21	- 240	47	- 156	192	- 218	13	- 40				
82/ 4/ 9	99	01	- 515	157	- 346	218	- 262	13	- 40				
82/ 4/ 9	99	21	- 240	198	- 307	36	- 61	13	- 40				
82/ 4/10	100	01	- 30	307	- 55	61	- 87	13	- 40				
82/ 4/10	100	23	- 240	61	- 97	256	- 265	13	- 40				
82/ 4/11	101	01	- 30	99	- 206	265	- 290	13	- 40				
82/ 4/11	101	23	- 240	212	- 248	100	- 100	13	- 40				
82/ 4/12	102	01	- 30	249	- 357	109	- 134	13	- 40				
82/ 4/12	102	23	- 240	2	- 39	304	- 312	13	- 40				
82/ 4/13	103	01	- 445	39	- 211	312	- 352	13	- 40				
82/ 4/13	103	20	- 240	71	- 189	128	- 156	13	- 40				
82/ 4/14	104	01	- 435	190	- 356	156	- 195	13	- 40				
82/ 4/14	104	20	- 240	222	- 340	332	- 359	13	- 40				
82/ 4/15	105	01	- 435	341	- 146	359	- 38	13	- 40				
82/ 4/15	105	20	- 240	13	- 131	175	- 203	13	- 40				
82/ 4/16	106	01	- 435	131	- 297	203	- 242	13	- 40				
82/ 4/16	106	20	- 240	163	- 281	19	- 47	13	- 40				
82/ 4/17	107	01	- 330	282	- 48	47	- 76	13	- 40				
82/ 4/17	107	21	- 240	323	- 72	225	- 250	13	- 40				
82/ 4/18	108	01	- 330	73	- 199	250	- 280	13	- 40				
82/ 4/18	108	21	- 240	114	- 223	68	- 94	13	- 40				
82/ 4/19	109	01	- 330	223	- 350	94	- 123	13	- 40				
82/ 4/19	109	21	- 240	265	- 13	272	- 297	13	- 40				
82/ 4/20	110	01	- 425	14	- 174	298	- 335	13	- 40				
82/ 4/20	110	20	- 240	19	- 164	107	- 141	13	- 40				
82/ 4/21	111	01	- 425	165	- 324	141	- 178	13	- 40				
82/ 4/21	111	20	- 240	170	- 315	311	- 345	13	- 40				
82/ 4/23	113	01	- 30	106	- 214	108	- 214	13	- 40				
82/ 4/23	113	22	- 240	202	- 256	19	- 32	13	- 40				
82/ 4/24	114	01	- 130	257	- 311	32	- 45	13	- 40				
82/ 4/24	114	22	- 240	352	- 47	223	- 235	13	- 40				
82/ 4/25	115	22	- 240	143	- 197	66	- 79	13	- 40				
82/ 4/26	116	01	- 40	198	- 343	79	- 113	13	- 40				
82/ 4/26	116	20	- 240	203	- 348	249	- 283	13	- 40				
82/ 4/27	117	01	- 40	349	- 133	283	- 317	13	- 40				
82/ 4/27	117	19	- 240	346	- 139	91	- 126	13	- 40				
82/ 4/28	118	01	- 40	139	- 284	126	- 160	13	- 40				
82/ 4/28	118	19	- 240	126	- 289	292	- 330	13	- 40				
82/ 4/29	119	01	- 330	290	- 56	330	- 0	13	- 40				
82/ 4/29	119	19	- 240	274	- 80	135	- 174	13	- 40				
82/ 4/30	120	21	- 240	140	- 231	356	- 17	13	- 40				
82/ 5/ 1	121	01	- 130	231	- 285	17	- 30	13	- 40				
82/ 5/ 1	121	21	- 240	291	- 21	200	- 221	13	- 40				
82/ 5/ 2	122	01	- 130	22	- 76	221	- 233	13	- 40				
82/ 5/ 2	122	21	- 240	81	- 172	43	- 64	13	- 40				
82/ 5/ 3	123	01	- 130	173	- 226	65	- 77	13	- 40				
82/ 5/ 3	123	20	- 240	202	- 323	240	- 268	13	- 40				
82/ 5/ 4	124	01	- 315	323	- 81	268	- 296	13	- 40				
82/ 5/ 4	124	19	- 240	299	- 113	71	- 112	13	- 40				
82/ 5/ 5	125	01	- 315	114	- 231	112	- 139	13	- 40				
82/ 5/ 5	125	01	- 315	114	- 231	112	- 139	13	- 40				
82/ 5/ 6	126	01	- 310	265	- 19	315	- 342	13	- 40				
82/ 5/ 6	126	19	- 240	233	- 55	116	- 159	13	- 40				
82/ 5/ 7	127	01	- 35	55	- 167	159	- 185	13	- 40				
82/ 5/ 7	127	19	- 240	24	- 205	320	- 2	13	- 40				
82/ 5/ 8	128	01	- 10	206	- 242	3	- 11	13	- 40				
82/ 5/ 8	128	21	- 240	247	- 356	181	- 206	13	- 40				
82/ 5/ 9	129	01	- 10	357	- 32	206	- 215	13	- 40				
82/ 5/ 9	129	21	- 240	38	- 147	24	- 50	13	- 40				
82/ 5/10	130	01	- 10	147	- 183	50	- 58	13	- 40				
82/ 5/10	130	21	- 240	180	- 297	228	- 253	13	- 40				
82/ 5/11	131	01	- 115	298	- 343	253	- 264	13	- 40				
82/ 5/11	131	20	- 240	303	- 88	63	- 97	13	- 40				
82/ 5/12	132	01	- 250	88	- 191	97	- 121	13	- 40				
82/ 5/12	132	18	- 240	39	- 239	254	- 300	13	- 40				
82/ 5/13	133	01	- 240	239	- 335	301	- 323	13	- 40				
82/ 5/13	133	18	- 240	190	- 29	97	- 144	13	- 40				
82/ 5/14	134	01	- 240	30	- 126	144	- 167	13	- 40				
82/ 5/17	137	20	- 240	127	- 272	205	- 238	13	- 40				
82/ 5/18	138	01	- 10	272	- 308	239	- 247	13	- 40				
82/ 5/18	138	18	- 240	205	- 62	31	- 82	13	- 40				
82/ 5/19	139	00	- 20	62	- 135	82	- 99	13	- 40				
82/ 5/19	139	18	- 240	355	- 213	235	- 286	13	- 40				
82/ 5/20	140	17	- 240	144	- 3	78	- 129	13	- 40				
82/ 5/20	140	00	- 20	213	- 285	286	- 303	13	- 40				
82/ 5/27	147	20	- 230	193	- 301	80	- 106	13	- 40				
82/ 5/28	148	20	- 230	343	- 92	284	- 309	20	- 40				
82/ 5/29	149	20	- 230	134	- 242	127	- 153	13	- 40				
82/ 5/30	150	20	- 230	284	- 33	331	- 356	13	- 40				
82/ 6/ 1	152	19	- 230	216	- 334	16	- 44	20	- 40				
82/ 6/ 2	153	19	- 230	340	- 125	213	- 247	13	- 40				
82/ 6/ 3	154	19	- 230	130	- 275	57	- 91	13	- 40				
82/ 6/ 4	155	19	- 230	281	- 66	260	- 294	20	- 40				
82/ 6/ 7	158	19	- 230	12	- 158	151	- 185	20	- 40				
82/ 6/ 8	159	18	- 220	154	- 272	352	- 20	13	- 40				
82/ 6/ 9	160	19	- 220	313	- 62	198	- 223	13	- 40				
82/ 6/10	161	19	- 220	104	- 213	41	- 67	13	- 40				
82/ 6/11	162	18	- 220	245	- 3	243	- 270	13	- 40				
82/ 6/12	163	18	- 220	36	- 154	86	- 114	13	- 40				
82/ 6/13	164	18	- 220	187	- 304	290	- 318	13	- 40				

CATALOGUE (continued).

Table with columns: DATE YY/MM/DD, DOY JJJ, TIME UT HHMM - HHMM, OBSERVATIONS CML III (1965.0), IO PHASE, WIDTH MHZ, TIME UT HHMM - HHMM, EMISSIONS CML III (1965.0), IO PHASE, WIDTH MHZ. Rows contain astronomical data for various dates from 82/10/19 to 83/2/25.

CATALOGUE (continued).

DATE YY/MM/DD	DOY JJJ	TIME UT HHMM - HHMM	OBSERVATIONS				EMISSIONS			
			CML III (1965.0)	IO	PHASE	WIDTH MHZ	CML III (1965.0)	IO	PHASE	WIDTH MHZ
83/ 5/17	137	00 - 445	313 - 125	114 - 154	15 - 40					
83/ 5/17	137	2030 - 24 0	336 - 103	288 - 317	15 - 40					
83/ 5/18	138	00 - 440	103 - 273	317 - 357	15 - 40					
83/ 5/18	138	2025 - 24 0	124 - 254	131 - 161	15 - 40					
83/ 5/19	139	00 - 435	254 - 50	161 - 200	15 - 40	2242 - 2340	207 - 242	150 - 158	20 - 28	
83/ 5/19	139	2020 - 24 0	272 - 45	334 - 5	15 - 40					
83/ 5/20	140	00 - 430	45 - 208	5 - 43	15 - 40					
83/ 5/20	140	22 0 - 24 0	123 - 195	191 - 208	15 - 40					
83/ 5/21	141	00 - 230	195 - 286	208 - 230	15 - 40	0 1 - 1 5	196 - 235	208 - 218	17 - 26	
83/ 5/21	141	22 0 - 24 0	273 - 346	35 - 52	15 - 40					
83/ 5/22	142	00 - 230	346 - 77	52 - 73	15 - 40	011 - 020	353 - 358	53 - 55	17 - 21	
83/ 5/22	142	22 0 - 24 0	64 - 137	239 - 256	15 - 40					
83/ 5/23	143	00 - 230	137 - 227	256 - 277	15 - 40					
83/ 5/23	143	22 0 - 24 0	215 - 287	82 - 99	15 - 40					
83/ 5/24	144	00 - 230	287 - 18	99 - 120	15 - 40					
83/ 5/24	144	20 0 - 24 0	293 - 78	269 - 303	15 - 40					
83/ 5/25	145	00 - 410	78 - 229	303 - 338	15 - 40					
83/ 5/25	145	20 0 - 24 0	84 - 229	112 - 146	15 - 40	2323 - 24 0	206 - 229	141 - 146	18 - 34	
83/ 5/26	146	00 - 410	229 - 20	146 - 182	15 - 40	00 - 053	229 - 261	146 - 154	18 - 34	
83/ 5/26	146	1950 - 24 0	228 - 19	315 - 350	15 - 40					
83/ 5/27	147	00 - 4 0	19 - 164	350 - 24	15 - 40					
83/ 5/27	147	2150 - 24 0	91 - 170	175 - 194	15 - 40					
83/ 5/28	148	00 - 2 0	170 - 243	194 - 211	15 - 40					
83/ 5/28	148	2150 - 24 0	242 - 321	19 - 37	15 - 40					
83/ 5/29	149	00 - 2 0	321 - 33	37 - 54	15 - 40					
83/ 5/29	149	2150 - 24 0	33 - 111	223 - 241	15 - 40					
83/ 5/30	150	00 - 2 0	111 - 184	241 - 258	15 - 40					
83/ 6/ 3	154	19 0 - 24 0	323 - 145	137 - 179	15 - 40					
83/ 6/ 4	155	00 - 3 0	145 - 254	179 - 204	15 - 40					
83/ 6/ 4	155	19 0 - 24 0	114 - 295	340 - 23	15 - 40	2353 - 2357	291 - 294	22 - 22	18 - 21	
83/ 6/ 5	156	00 - 3 0	295 - 44	23 - 48	15 - 40					
83/ 6/ 5	156	19 0 - 24 0	265 - 86	184 - 226	15 - 40					
83/ 6/ 6	157	00 - 3 0	86 - 195	226 - 252	15 - 40					
83/ 6/ 6	157	19 0 - 24 0	55 - 237	27 - 70	15 - 40					
83/ 6/ 7	158	00 - 310	237 - 352	70 - 97	15 - 40	027 - 030	253 - 255	74 - 74	19 - 22	
83/ 6/ 7	158	19 0 - 24 0	206 - 27	231 - 273	15 - 40					
83/ 6/ 8	159	00 - 3 5	27 - 139	273 - 300	15 - 40					
83/ 6/ 8	159	1850 - 24 0	350 - 178	73 - 117	15 - 40	2154 - 24 0	102 - 178	99 - 117	16 - 33	
83/ 6/ 9	160	00 - 3 0	178 - 287	117 - 142	15 - 40	00 - 120	178 - 226	117 - 128	16 - 33	
83/ 6/14	165	1820 - 24 0	156 - 2	211 - 259	15 - 40	2055 - 2155	250 - 286	232 - 241	21 - 25	
83/ 6/15	166	00 - 235	2 - 95	259 - 281	15 - 40					
83/ 6/16	167	1815 - 24 0	94 - 303	257 - 306	15 - 40					
83/ 6/17	168	00 - 225	303 - 31	306 - 326	15 - 40					
83/ 6/17	168	1815 - 24 0	245 - 94	101 - 149	15 - 40					
83/ 6/18	169	00 - 220	94 - 178	149 - 169	15 - 40					
83/ 6/18	169	1815 - 24 0	36 - 244	304 - 353	15 - 40					
83/ 6/19	170	00 - 220	244 - 329	353 - 13	15 - 40					
83/ 6/19	170	1815 - 2338	186 - 22	148 - 193	15 - 40					
83/ 6/20	171	18 0 - 24 0	328 - 185	349 - 40	15 - 40					
83/ 6/21	172	00 - 210	185 - 264	40 - 59	15 - 40					
83/ 6/22	173	1745 - 1931	260 - 324	34 - 49	15 - 40					
83/ 6/24	175	1740 - 24 0	198 - 68	81 - 135	15 - 40					
83/ 6/25	176	00 - 150	68 - 134	135 - 150	15 - 40					
83/ 6/25	176	1740 - 24 0	349 - 218	284 - 338	15 - 40					
83/ 6/26	177	00 - 150	218 - 285	338 - 354	15 - 40					
83/ 6/26	177	1740 - 24 0	139 - 9	128 - 182	15 - 40					
83/ 6/27	178	00 - 150	9 - 76	182 - 197	15 - 40					
83/ 6/27	178	1732 - 24 0	285 - 160	330 - 25	15 - 40					
83/ 6/28	179	00 - 140	160 - 220	25 - 39	15 - 40					
83/ 6/28	179	1727 - 24 0	73 - 310	173 - 229	15 - 40					
83/ 6/29	180	00 - 135	310 - 8	229 - 242	15 - 40					
83/ 6/29	180	1727 - 24 0	223 - 101	17 - 72	15 - 40					
83/ 6/30	181	00 - 135	101 - 158	72 - 86	15 - 40					
83/ 6/30	181	1715 - 24 0	7 - 251	219 - 276	15 - 40					
83/ 7/ 1	182	00 - 130	251 - 306	276 - 289	15 - 40					
83/ 7/ 1	182	1715 - 24 0	157 - 42	62 - 119	15 - 40					
83/ 7/ 2	183	00 - 130	42 - 96	119 - 132	15 - 40					
83/ 7/ 2	183	1715 - 1750	308 - 329	266 - 271	15 - 40					
83/ 7/ 4	185	17 0 - 24 0	240 - 134	311 - 10	15 - 40					
83/ 7/ 5	186	00 - 1 6	134 - 174	10 - 19	15 - 40					
83/ 7/ 5	186	1655 - 24 0	27 - 284	154 - 214	15 - 40					
83/ 7/ 6	187	00 - 1 5	284 - 323	214 - 223	15 - 40					
83/ 7/ 6	187	1650 - 24 0	175 - 75	356 - 57	15 - 40					
83/ 7/ 7	188	00 - 1 0	75 - 111	57 - 66	15 - 40					
83/ 7/ 7	188	1649 - 24 0	325 - 225	200 - 261	15 - 40					
83/ 7/ 8	189	00 - 1 0	225 - 262	261 - 269	15 - 40					
83/ 7/ 8	189	1645 - 24 0	113 - 16	43 - 104	15 - 40					
83/ 7/ 9	190	00 - 050	16 - 46	104 - 111	15 - 40					
83/ 7/10	191	19 0 - 24 0	136 - 317	109 - 151	10 - 40					
83/ 7/11	192	1630 - 24 0	195 - 107	291 - 355	15 - 40					
83/ 7/12	193	00 - 040	107 - 132	355 - 1	15 - 40					
83/ 7/12	193	1625 - 24 0	343 - 258	134 - 198	15 - 40					
83/ 7/13	194	00 - 035	258 - 279	198 - 203	15 - 40					
83/ 7/13	194	1730 - 24 0	173 - 49	347 - 46	20 - 40					
83/ 7/14	195	00 - 030	49 - 67	42 - 45	20 - 40					
83/ 7/14	195	1730 - 24 0	323 - 199	190 - 246	20 - 40					
83/ 7/15	196	00 - 030	199 - 217	246 - 250	20 - 40					
83/ 7/14	195	1730 - 24 0	323 - 199	190 - 246	20 - 40					
83/ 7/15	196	00 - 030	199 - 217	246 - 250	20 - 40					
83/ 7/15	196	1730 - 24 0	114 - 350	34 - 89	20 - 40					
83/ 7/16	197	00 - 030	350 - 8	89 - 93	20 - 40					
83/ 7/16	197	1730 - 24 0	264 - 140	237 - 293	20 - 40					
83/ 7/17	198	00 - 030	140 - 158	293 - 297	20 - 40					
83/ 7/17	198	1730 - 24 0	55 - 291	81 - 136	20 - 40	1842 - 2016	98 - 155	91 - 104	24 - 38	
83/ 7/18	199	00 - 030	291 - 309	136 - 140	20 - 40					
83/ 7/17	198	1730 - 24 0	55 - 291	81 - 136	20 - 40	22 3 - 22 6	220 - 222	120 - 120	24 - 39	
83/ 7/18	199	00 - 030	291 - 309	136 - 140	20 - 40					
83/ 7/18	199	1730 - 24 0	205 - 81	284 - 340	20 - 40					
83/ 7/19	200	00 - 030	81 - 99	340 - 344	20 - 40					
83/ 7/19	200	1630 - 2356	320 - 229	119 - 183	20 - 40					
83/ 7/20	201	1630 - 2356	110 - 20	323 - 26	20 - 40					
83/ 7/21	202	1630 - 2356	261 - 170	166 - 230	20 - 40					
83/ 7/22	203	1630 - 2356	51 - 321	10 - 73	20 - 40					
83/ 7/23	204	1630 - 2356	202 - 111	213 - 276	20 - 40					
83/ 7/24	205	1630 - 2356	352 - 262	57 - 120	20 - 40	1856 - 22 1	00 - 192	78 - 104	20 - 36	
83/ 7/25	206	1630 - 2356	143 - 52	260 - 323	20 - 40					
83/ 7/26	207	1630 - 2356	293 - 203	104 - 167	20 - 40					
83/ 7/27	208	1630 - 2356	83 - 353	307 - 10	20 - 40					
83/ 7/28	209	15 0 - 2120	180 - 49	138 - 192	20 - 40					
83/ 7/29	210	15 0 - 2120	330 - 200	342 - 35	20 - 40					
83/ 7/30	211	15 0 - 2120	121 - 350	185 - 239	20 - 40	2046 - 2121	330 - 351	234 - 239	20 - 27	
83/ 7/31	212	15 0 - 2120	271 - 141	29 - 82	20 - 40	20 5 - 2131	95 - 147	72 - 84	21 - 27	

CATALOGUE (continued).

DATE YY/MM/DD	DOY JJJ	TIME UT HHMM - HHMM	OBSERVATIONS			WIDTH MHZ	TIME UT HHMM - HHMM	EMISSIONS			WIDTH MHZ
			CML (1965.0)	IO	PHASE			CML (1965.0)	IO	PHASE	
84/12/ 1	335	1012 - 1810	220 - 149	89 - 157	20 - 40						
84/12/ 2	336	1012 - 1810	10 - 299	292 - 0	20 - 40						
84/12/ 3	337	1110 - 18 6	196 - 87	144 - 203	20 - 40	1225 - 1226	241 - 241	154 - 155	21 - 24		
84/12/ 4	338	11 3 - 18 3	342 - 235	346 - 45	20 - 40						
84/12/ 5	339	11 0 - 18 0	130 - 24	189 - 248	20 - 40	1322 - 1352	216 - 234	209 - 213	22 - 28		
84/12/ 6	340	1012 - 18 0	251 - 174	26 - 92	20 - 40	1426 - 1751	45 - 169	61 - 90	20 - 30		
84/12/ 7	341	10 9 - 1755	40 - 321	228 - 294	20 - 40						
84/12/ 8	342	1055 - 1755	218 - 112	78 - 137	20 - 40						
84/12/ 9	343	1055 - 1755	8 - 262	281 - 341	20 - 40						
84/12/10	344	1130 - 1745	180 - 46	130 - 183	20 - 40						
84/12/13	347	1437 - 1740	23 - 104	46 - 72	20 - 40						
84/12/14	348	1034 - 1730	27 - 278	215 - 273	20 - 40						
84/12/15	349	1030 - 1730	175 - 69	57 - 117	20 - 40						
84/12/16	350	1330 - 1730	74 - 219	286 - 320	20 - 40						
84/12/17	351	925 - 1725	76 - 6	95 - 162	20 - 40						
84/12/20	354	930 - 1715	170 - 91	345 - 51	20 - 40						
84/12/21	355	912 - 1710	309 - 238	186 - 253	20 - 40						
84/12/22	356	910 - 1710	98 - 28	29 - 97	20 - 40						
84/12/23	357	910 - 1710	249 - 179	232 - 300	20 - 40						
84/12/24	358	9 3 - 17 0	35 - 323	74 - 142	20 - 40	1050 - 1257	99 - 176	90 - 107	20 - 37		
84/12/25	359	10 0 - 17 0	219 - 113	286 - 345	20 - 40						
84/12/26	360	957 - 1657	8 - 262	129 - 188	20 - 40						
84/12/27	361	854 - 1530	120 - 359	323 - 19	20 - 40	1134 - 1224	217 - 247	346 - 353	20 - 26		
84/12/28	362	952 - 1552	305 - 163	174 - 225	20 - 40						
84/12/29	363	949 - 1550	94 - 312	17 - 68	20 - 40						
84/12/30	364	949 - 1550	244 - 102	220 - 271	20 - 40						
84/12/31	365	853 - 1540	1 - 247	56 - 113	20 - 40	1132 - 1318	97 - 161	78 - 93	20 - 32		

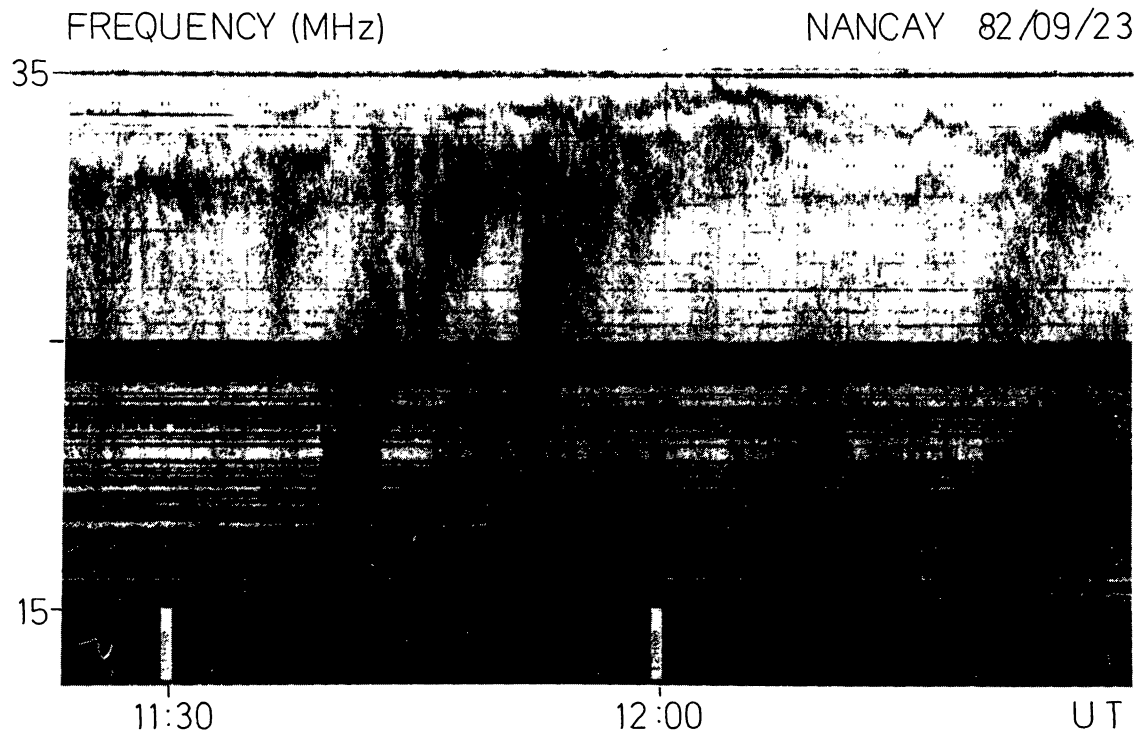


FIGURE 1. - Jovian radio emission observed at Nançay observatory. The observations are displayed in frequency - time plane, with increasing darkness proportional to increasing intensity.

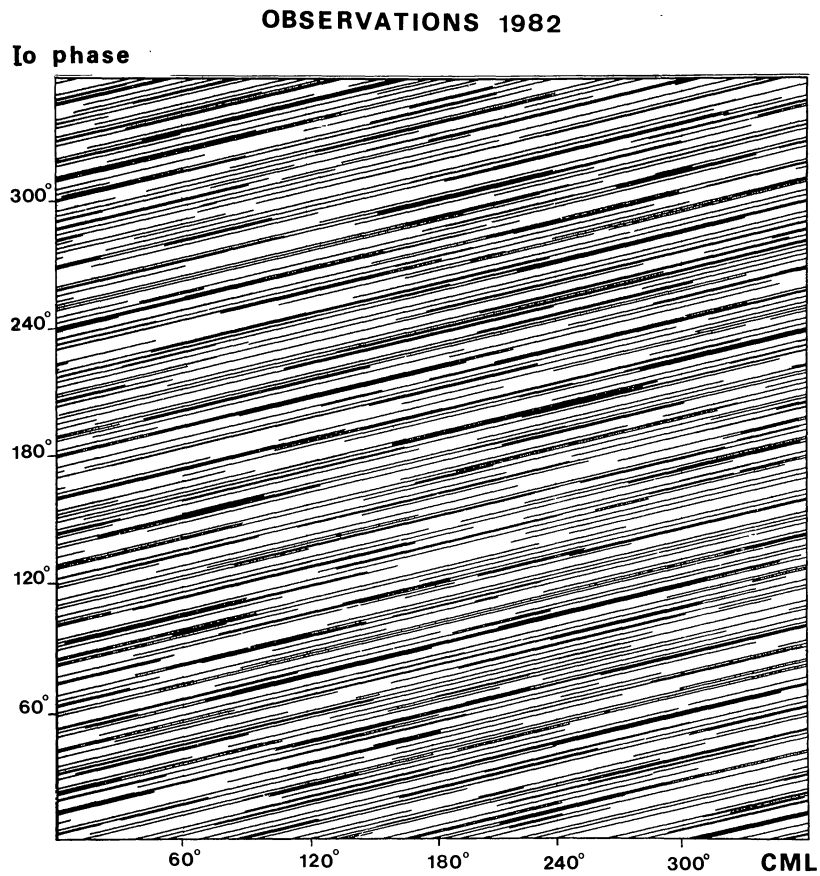


FIGURE 2. - The observation tracks in CML and Io phase diagram for one year observation.

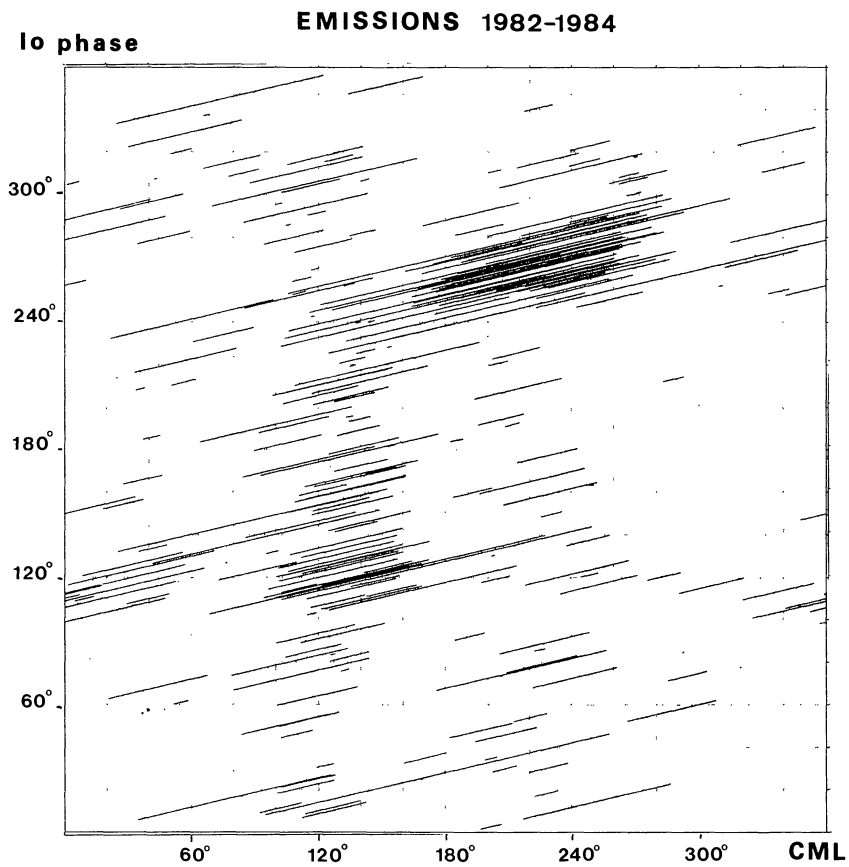


FIGURE 3. - The emission tracks for 3 years of observations.