Analysis of 28 MHz reports from the UK

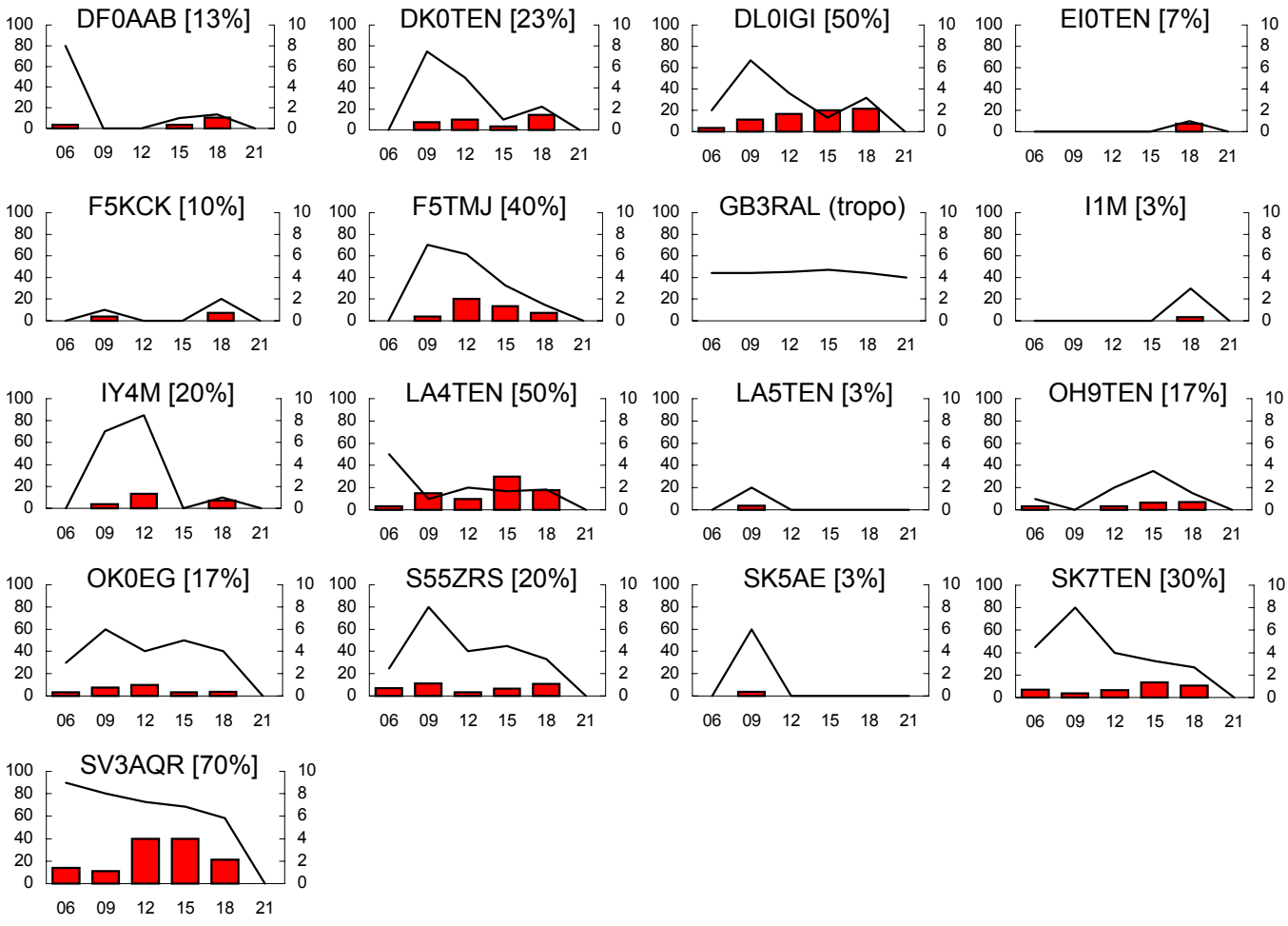
28 MHz reports and logs for April 2003 from G2AHU, G3IMW, G3USF, G4TMV, G4UPS, GM4WJA, G0AEV, G0IHF and from packet cluster reports. Compilation and commentary by G0AEV.

Solar activity decline a little further in April, seasonal changes reduced opportunities for working within the Northern Hemisphere, and magnetic storms continued for a second month running to significantly disrupt HF band conditions. Despite this somewhat gloomy backdrop, the 10m band continued to perform rather well on paths with a southerly component. Beacons in 4X, 5B, 5Z, CS, ZS and LU were heard on virtually all days of the month. Even on the most disturbed days there were short openings to these locations. On the "flip" side, openings to North America were very reduced in number: F2 to the USA and Canada had virtually disappeared by month-end. The usual compensation for poor summer season F layer propagation is sporadic E and this mode made quite a strong appearance on many days in the second half of April.

Beacon graphs legend

Legend for all beacon graphs: - graph bars (left Y-axis): beacon reliability as the percentage of days a beacon was heard by any UK observer within each time band. Graph lines (right Y-axis): signal strength as the average of the daily maximum signal reported by any observer in each time band. Time band codes (X-axis): 6=0600-0900, 9=0900-1200, 12=1200-1500, etc. Callsigns are followed by daily reliability figures, the percentage of days per month when the beacon was reported.

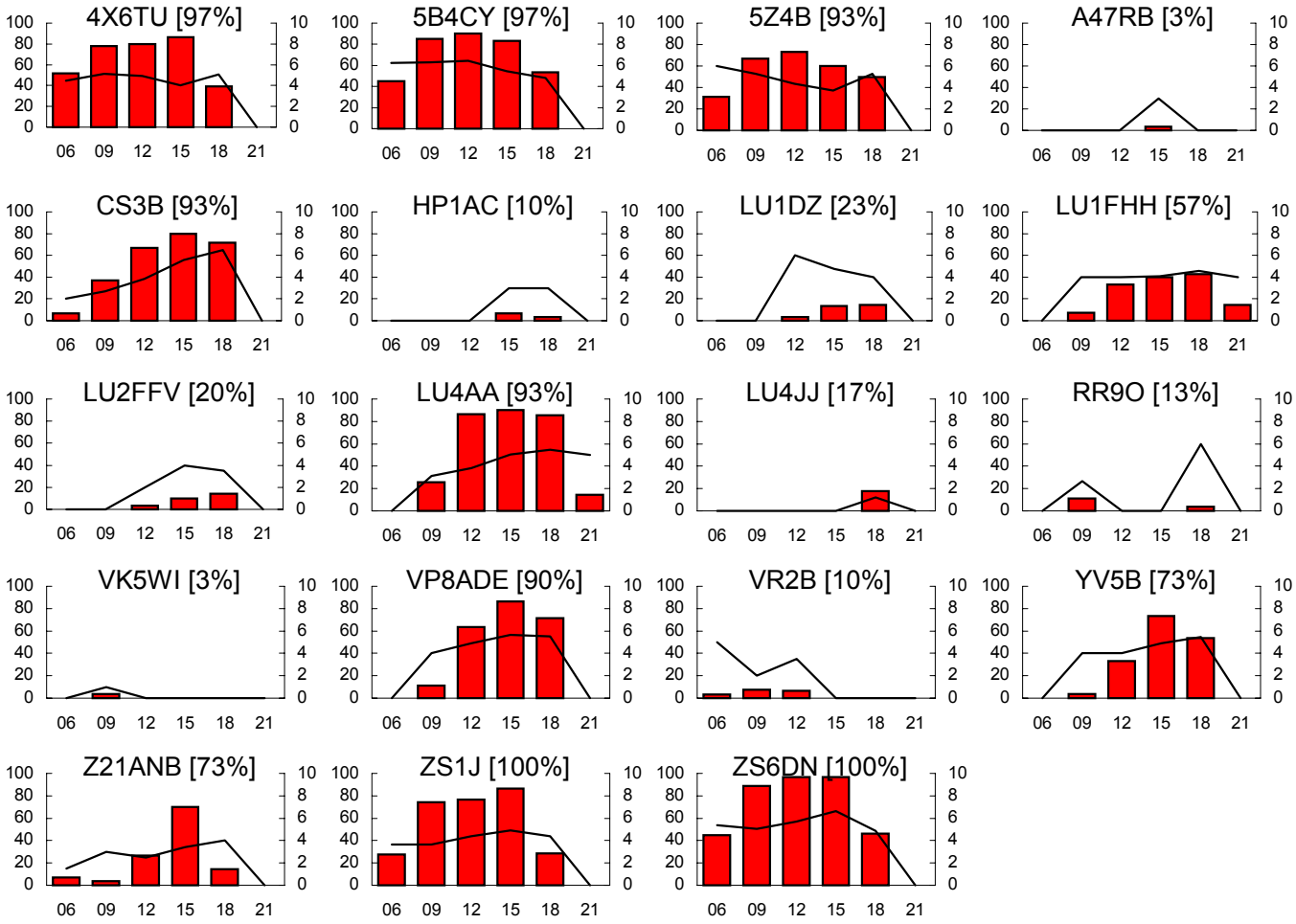
European Propagation / Beacons



Suggested propagation modes for European beacons: most beacons were reported by a mixture of sporadic E and F backscatter, the exceptions being SV3AQR (direct F-layer) and GB3RAL (tropo). The reliability of Es at this time of the year is low but increasing, while that of F-backscatter is low and decreasing. A combination of the two modes gives maximum daily reliabilities of up to 50% as indicated from monitoring of the two QRO beacons DL0IGI and LA4TEN. Contributions due to Sporadic E are indicated in the graphs by high peaks in signal strength.

Beacon Notes. OH2B remains QRT after the theft of the beacon transmitter. SK5AE appeared as a replacement for SK5TEN. SK0CT was not heard and may have been QRT – it appeared again in May.

Propagation to Asia, Africa, Oceania, South and Central America:



Suggested propagation modes. All the beacons were heard by normal F-layer propagation, with a possibility that some evening openings to southern Africa were by TEP. No long path propagation was identified from beacon monitoring. In the years around the solar maximum, long path to eastern VK and to ZL is better than short path at this time of the year, but in April 2003 there was very little (detected) propagation to these areas of any kind. VK5WI – not really eastern VK – was heard once on the short path by G0AEV while on the 25th GM4WJA heard VK4CQ via long path at 21.30z.

Beacon Notes. Operational status for the IARU/NCDXF beacons is unchanged from March - ZS6DN and 5Z4B were QRV all month while OA4B and OH2B were both QRT. The absence of any signals from 4S7B and VK6RBP suggests continued problems with these beacons.

The single report of A47RB may have been in error or was perhaps a test transmission – this beacon is not thought to be active. The LU beacons are, as usual, a mix of continuous, semi-continuous and intermittent operations: perhaps only LU4AA was operating for 100% in April. LU4JJ and LU2FFV were clearly intermittent by comparison. In April VK5WI (28.260) returned after an absence of several years.

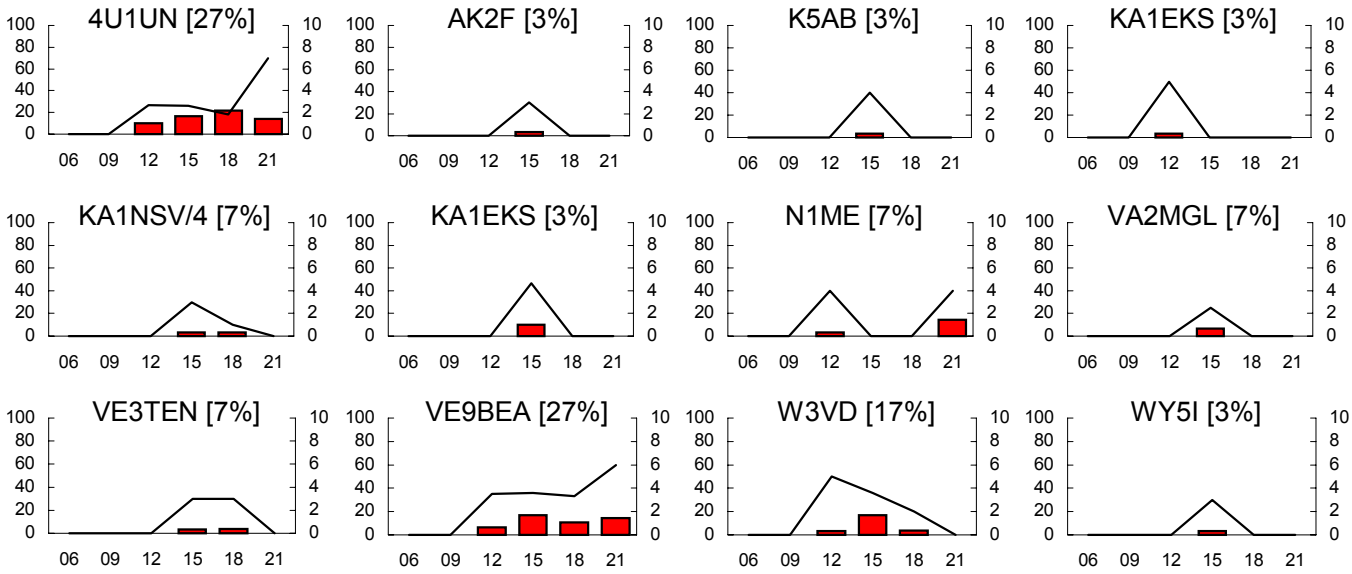
10m DX in April 2003.

The following list charts a further reduction in the number of different DX countries worked/heard in the UK on 10m this month, particularly in countries in the Northern Hemisphere. No UA9 was reported and there ere only a couple of reports of VE and W stations. Data for this list comes from DX packet cluster spots and from contributor logs.

3B8, 3B9, 3X, 4L 4S, 4X, 5B, 5N, 5X, 5Z, 6W, 7Q, 8Q, 9N, 9V, 9Y, A4, A7, BY, C5, C9, CE, CN, CP, CX, D2, E2, EA8, EA9, EZ, FG, FY, HK, HS, HZ, J3, J5, J6, JY, KP4, LU, OA, OD, P2, PY, PZ, S0, ST, SU, T8, TA, TI, TT, TU, UN, V2, V5, VE, VK, VK9X, VP5, VP8, VU, W, XE, YB, YS, YV, Z2, ZC, ZD7, ZD8, ZP, ZS, Antarctica

Propagation to North America:

The seasonal decline in propagation by F2 to North America is ably demonstrated by the daily reliability results from 4U1UN. From a daily reliability of 92% in February and 48% in March, 4U1UN had a daily reliability of only 27% in April. May's number will be close to zero. The beacons reported are largely restricted to the East Coast with exceptions being VA2MGL, VE3TEN and K5AB that have better than average signals and are therefore likely indicators of more marginal openings



All the beacons above were heard via normal F-layer propagation, a mode that will not be useful for 10m communications again until September. But in the coming months there will be opportunities to hear North American signals by multi-hop sporadic E. By the very sporadic nature of the mode, it is difficult to predict when openings might occur. The probability of openings at a particular time of day can be deduced by combining the well known probability of for each of the component single hops (as was illustrated by G3NAQ in *Six News* a few years ago), or by studying records of multi-hop events in past years. The evidence suggests that openings are possible in the mornings, are expected more often in afternoons, are most likely in the evenings, and can even occur well after local darkness.

Maximum daily reliabilities of beacon are only of the order of 5-10% (and these are only seen with the higher-powered beacons) so hearing a 10m beacon *via* Es can be quite a challenge. Beacons to look out for are 4U1UN, KA1NSV/4, VE9BEA and W3VD all of which I have heard by Es in previous years. 50 MHz openings are almost as common as those on 28 MHz, although how much of this is due to the dedicated listening by some 6m operators is unknown.

Analysis of 50 MHz reports from the UK

UK 50 MHz reports for April 2003 from G2ADR, G3HBR, G3IMW, G4UPS and via packet cluster spots. Compilation and commentary by G0AEV.

The 50 MHz band produced, in April, the mixture of conditions that has helped it earn the tag of "magic band". There were a sufficient number of "dead band" days in the first half of the month to make the openings that occurred later seem rather good! In the last two weeks of April UK amateurs had contacts with 13 different DX countries in Africa and South America coupled with a reasonable supply of sporadic E into Europe. Openings included a probable start-of-season double Es hop to 5B and 4X. There was also some aurora but radio events were all weak and only available to stations in northern districts.

Tabulations. 50 MHz compilations are presented in tables ordered alphabetically by country prefix. Percentages following the country name are the daily reliability values (the percentage of days when propagation was reported). The first row of each table labelled "D" is the day of the month, subsequent rows give the maximum signal strength reported from the UK in each of three hour time bands ("06" for the band 0600 - 0900 UTC, "09" for the band 0900 - 1200 UTC, etc.) A figure of "0" indicates that signal strength was not reported.

DX (F2 and TEP) Propagation

The first extensive DX opening was to 5B and 4X on 14th in the 15z period – this was described by those who participated in the opening as being double hop sporadic E. Signals were strong and there was single hop sporadic E to Italy and other areas at about the same time so double Es is a strong probability despite this event occurring at the very start of the summer Es season. There was also an almost contemporaneous opening to 5N (G3HBR didn't hear any accompanying Es), so the possibility of F-layer also being responsible for the 4X and 5B propagation can not be excluded. F2 critical frequencies at Chilton on the 14th were close to the monthly maximum (over 10 MHz) in the 15z hour.

There is little doubt, however, that most of the subsequent April DX openings were assisted by sporadic E hops – see the summary tables later in this section. Many of the openings were short-lived and local. G3HBR writes "the opening on 29th was frustrating in that for most of the time the African signals were fleeting here. FR1GZ built up to a very loud signal and I worked him but he then disappeared and I did not hear him again"

	5N (7%)	5T (10%)	7Q (13%)	9J (3%)	C9 (3%)	CX (3%)	D4 (3%)	FR (10%)	LU (3%)
D	14 20	4 8 29	19 23 28 29	19	29	23	29	16 17 29	23
06									
09									
12			3		5			5 9 9	
15	9 0		7 5 3	9		9			4
18		3 0 5					7		
21									

	PY (3%)	S0 (3%)	Z2 (3%)	ZS South Africa (10%)	
D	25	16	19	6 17 29	
06					
09					
12		0		2 3	
15			5	4	
18	1				
21					

Sporadic E

The summer sporadic E season started in mid-April –G2ADR describes this as "came in like a lamb: wobbly but hopeful!" A Sporadic E opening was recorded in March but this could be considered part of the tail of the winter season in which case the openings in the evening of 14th April constitute the start of the 2003 UK summer Es season on 6m. Propagation was noted on many of the following days, those on 17th, 267th and 27th being fairly extensive (10 or more countries worked in each case). G4UPS noted there was propagation (though not to his QTH in IO80) on 16th April from around 13 05 UTC to I, LZ, Z3, T9 and YU stations. Ted's first real opening took place on 17th April between 11.07 and 14.15 with 9A, I, S5, with all 3 Italian beacons and the S55ZRS beacon audible.

	4X (3%)	5B (3%)	9H (10%)	CT (7%)	DL (13%)	EA Spain (13%)	EA9 (3%)	ES (3%)
D	14	14	19 23 28	25 26	17 21 26 27	17 23 25 29	25	27
06					5			
09			0	7	9 7	9		9
12			5	9 6	9	0 0 7	0	
15	9	9	9 9			9		
18			5					
21								

	F France (17%)	HA (Rx > 7%)	HB (10%)	I/IS/IT Italy (37%)	LA (3%)
D	17 23 25 26 29	16 27	17 23 25	14 15 16 17 19 23 25 26 27 28 29	23
06	0 5			5 9 0	
09	0 9	9	9 9	9 9 9	
12	0	7		0 9 9 9 0	
15			9	9 9 9 9 0	
18			1	5 9	4
21					

	LX (3%)	LY (10%)	LZ (10%)	OD (3%)	OE (10%)	OH (3%)	OK/OM (7%)	OZ (7%)
D	26	21 26 27	16 19 26	16	17 26 27	27	17 27	26 27
06	9				0			9
09		0 9 9	9 9 9		9 9	5	3 0	5
12			9	9				5
15								
18								
21								

	SM (3%)	SP (3%)	SV (7%)	SV9 (3%)	YO (10%)	YU/9A/S5/T9/Z3 Ex-Yugoslavia (23%)
D	26	27	17 19	23	17 19 26	14 16 17 19 23 26 27
06	9					9
09		9	9 9		9 9 9	9 9 9 9
12						9 9
15				9		5
18				5		
21						

Backscatter signals, presumably from the E–layer, were reported as listed below. Some of these are, in my opinion, variably "suspect" (comments in brackets and italics are mine).

12th	0749	G4PCI > ON4ANT	nice b/s (*but no other propagation: suggests tropo or ms?)*
14th	1710	G4PCI > EI	b/s or tropo? (*guess depends on beam headings!)*
	1740	MW1MFY > SV1DH	heard b/s (*though the distance suggests a "forward" mode*)
	1741	F6FHP > GB3MCB	519 b/s
	1801	MW1MFY > DK3EE	scatter at 180 degrees to JO41,
	1808	G7RAU > IW5DHN	heard S5 b/s QTF 160 (IO90>JN53)
23rd	1809	MW1MFY > ON4GG`	"Fb b/s" at 56
25th	0957	DL6BF > GW3JXN	heard b/s QTF 210 (JO32 > IO72)

Summary and comparison of "DX" and Es

The tables below displays summary counts of country/areas heard/worked in the UK derived from the detailed data in the preceding sections. Daily totals are recorded in the solar data table presented later in this Report where these number can be compared with solar, ionospheric and geomagnetic indices.

DX (F2 and TEP) Summary

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
06																															
09																															
12						1										2	1												4		
15														1			1		3	1			3					1			
18	1							1																	1				2		
21																															

Es Summary

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
06																			1						1	8			1		
09																2	8		6		2				5	4	8				
12															1	5	2		1				3		2	1	3		2		
15														4					2				4					2	1		
18														1									4		1						
21																															

Except for a few local events in the first half of April, all the DX openings took place at (approximately) the same time as sporadic E events. This is strong circumstantial evidence that Es provided the northernmost link in the majority of the cases when DX was worked. This type of mixed mode is common, and is the only way apart from multi-hop sporadic E, to work DX during the summer months.

The relationship between E and F modes is not always obvious when investigating at the scale of individual openings. For example, Brian G3HBR heard Z22JE on the 19th well before signals from I and 9H indicated the presence of sporadic E. Probably, in this case, the sporadic E hop on the path to Z2 "touched down" in the Mediterranean and only as skip shortened did the footprint include areas with active 6m operations.

Tropospheric Propagation

A few reasonably long distant contacts made via the troposphere were reported this month although most of the reports are of a fairly ordinary distance.

8th	1645	PA0OOS > GB3BUX	519 JO33 > IO93 500km
16th	1601	F8DBF > G8BCG/P	in IN78
18th	1203	PA0OOS > G3WOS	519 into jo33hg
	1250	G7RAU > DL1EJA	559 tropo IO90 > JO31
20th	1114	F8DBF > GB3IOJ/B	539 in IN78 up on normal signal strength
22nd	1947	G4SWX > PE1EWR	59 in JO02 on dipole@5m
27th	1054	GW3LEW > EI5FK	IO53
	1111	ON1DNF > G3MEH	JO20 > IO91 55 (contest)
	1157	ON1DNF > G4DEZ	JO20>JO03
	1242	PA3GDY > GD0EMG	"readable"
28th	1252	GM8LFB > GB3LER	559 tropo
29th	2359	GM0TGE > OY6SMD	55 in IO87
30th	1721	GM8LFB > GB3LER	tropo

Aurora

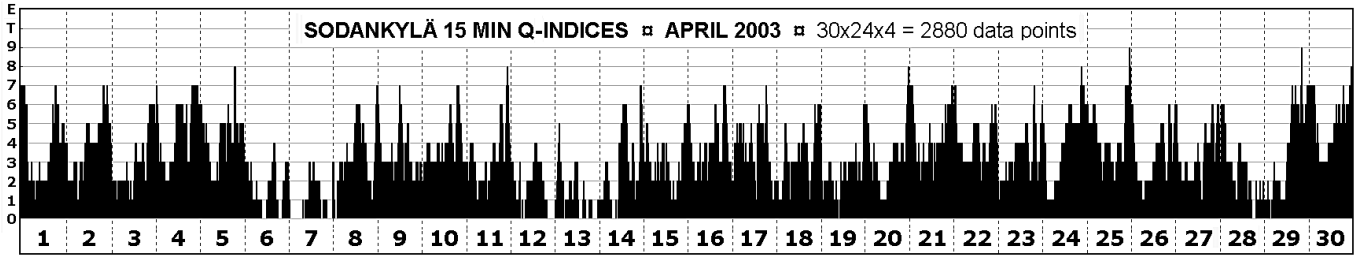
Using the definition of magnetic storms as producing K values of 5 or higher at one or more of the UK observatories there were 11 stormy days in April, or 20 days if the Kp index is included in the definition. This represents an increase in the number of disturbed days from March. Many of these disturbances were represented by a single observatory reporting a K of 5 fin only one 3 hour period: few approached severe storm levels. Radio aurora (as seen by UK amateurs) occurred on fewer days than in the pervious month, and all these auroras were rather weak affairs

1st	18z		Aurora in early to mid evening at GM4WJA (IO87)
4th	15z-21z		GM4WJA reports aurora in afternoon and all evening
5th	15z	17.40	MM5AHO heard GB3LER 55A
8th	12z	14.23	GM8LFB sent an “aurora alert from IO88kk Wick” to the DX packet cluster
	15z	15.46	MM5AJW reported GB3LER “was auroral, now back normal”
10th	15z	16.16	GM3WOJ hears GB3LER 55A in IO77. Aurora in early evening (GM4WJA)
11th	21z	23.12	EI7IX in IO53 spotted GB3LER at 51A
16th	15z	1611	GM3WOJ reports GB3LER/B with 54A signals in IO77
17th	12z	14.57	LA4CQ in JP20 hears GB3LER 43A
24th	15z	17.35	G6YIN spots GB3LER at 52A
	21z	21.31	EI7IX hears GB3LER 31A
25th	21z	22.31-22.41	GM8LFB > OY6SMC (52A) & > GB3LER/B (54A); EI7IX > GB3LER (51A)
29th	15z	1619-17.00	GM8LFB > GB3LER/RMK auroral, OY6SMC 51A; EI7IX > GB3LER 31A
		1740-17.45	EI7IX hears GB3RMK and GM4WJA (both 51A)
	18z	19.44	G7RAU notes 49.760 and other video signals auroral at QTF 030
		20.20-20.38	GM4PLM > GB3LER (53A QTF 0), LA2WKA >GB3LER 54A
30th	15z	15.35-16.00	GM8LFB > GB3LER 55A, > GB3RMK 55A; EI7IX >GB3LER 51A
	18z	18.58	EI7IX reports GB3RMK 51A but nothing from GB3LER
	21z	21.01	GM4PLM hears GB3LER (52A QTF 0)
		22.49	LY2BAW (KO25) spots GM0TGE (IO87) at 55A QTF 315

Auroral E

24th	20.43	G3HBR > LA	Strength 9 (*possibly auroral E)*
	20.57	G1XUU > LA1NG	55 (*ditto)*
	21.00	G2ADR > LA	Maximum strength = 6
25th	21.31	GM0TGE > JX7SIX	59 in IO87
	21.32	GM8LFB > JX7SIX	559 QSB auroral E in IO88
29th	20.13	GM8LFB > JW9SIX	559 auroral E

Q-Indices from Sodankylä, Finland (tnx Väinö, OH2LX)



The view of aurora from Finland suggests that April was a rather disturbed month with Sodankylä monthly Ak average = 36.2. The most disturbed day was 30th April. Many radio aurora days were reported by OH5IY. OH2LX also notes that there were more Es observations in Finland than normal in April. This matches the observations in the UK. I wonder what contribution the disturbed geomagnetic field had on the sporadic E?

Meteor Scatter

The following MS instances were reported (mostly from the DX cluster), the majority noted during a contest on 27th.

12th	13.29	G8LBS > Italians	Loud pings
14th	06.54	G4UPS > GM3LER	S3 (presumably ms)
21st	06.41	G3JHM > 4U1ITU	MS burst to s7 IO91
23rd	10.40	G3JHM > 4U1ITU	Good bursts in IO01
	11.08	G8BCG > 4U1ITU	429 in/out IO70 (*presumably ms*)
25th	20.31	G8BCG > OZ1DPR	Good pings IO70
27th	10.48	IW4BET > GD0EMG	Heard 59 ms, very short bursts
	11.00	DG5YIL > GD0EMG	Heard 51 ms 59 CQ contest
	11.25	DG1KJG > GD0EMG	"CQ test" - many pings in JO30
	12.54	DG5AAG > GD0EMG	Heard weak "mostly MS"
	15.28	2E1GOR > IK5RLP	Calling 4U1ITU - burst
	17.14	G1IOV > OK1DDO	RX "15"

The G4UPS – SM7AED morning skeds in April produced results showing an average strength of SM7AED at G4UPS of S4.8. The percentage of signals audible (within a set period) averaged 85% and ranged from a minimum of 50% (1st, 18th) to a maximum of 100% (4th, 14th, 26th). There was no sked on several days.

In response to Ted's plea last month for more people to try ms tests, Ray G2AHU notes some of the work already carried out by amateurs in this area. In an article reproduced in Section 6, Ray describes work done in the 1950s and 60s in Southern Africa.

Ray points out that as random meteors are swept up by the earth's passage through space most are collected in the early mornings, so the UPS-AED tests are being conducted during the best part of the day. Ray writes "as the meteors are very small, signals are very short and very high-speed transmissions are necessary if more than recognition of a signal is required. It would be a good idea to ensure we have beacon transmissions on a given frequency (say 25 wpm and quicker when those interested get used to it) beamed in the best direction, which can be checked in the course of time. Both sending and receiving beams should be pointing in the same direction for the best results. 50 MHz is our best band for this mode of propagation and is very useful when other modes of DX working are no longer available."

Recent advances in digital modes such as WSJT allow far more reliable communications *via* meteors than can be obtained with high speed CW. These modes will resolve signal levels that are below detection by "traditional" means, which has effectively increase the time that each meteor trail can propagate signals before it decays. Perhaps the advent of modes such as JT6M will facilitate a new interest in what meteor scatter can do.

Solar and Geomagnetic Data for April 2003

Data supplied by G0CAS (Sun Mag) and from Internet sources. Compilation by G0AEV.

Sunspot numbers (SEC)	Mean 114.3	Max 224 (29th)	Min 37 (17th)
Solar Flux (28 MHz)	Mean 126.5	Max 158 (2nd)	Min 99 (16th)

Solar data for April 2003 are presented in the table on the previous page. Numbers in the 28 and 50 MHz columns are the total daily "areas" worked/heard from the UK, a summary of the data presented in the first sections of this Report. On 28 MHz "areas" refer to the number of beacons reported via Es and F-layer, on 50 MHz the number of countries via Es, F-layer and Aurora. F2 critical frequencies are from Chilton in Oxfordshire, SIDC spots from SIDC, and other solar data from the joint USAF/NOAA daily summaries or directly from SEC.

Energetic Events. Flares of M and X class.

4th	1905-2040	M1.9	23rd	0039-0115	M5.1 1N	26th	0051-0100	M2.1 SF
	1905-2038	M2.1		1536-1611	M2.0 1F		0301-0312	M2.1 SN
9th	2323-2334	M2.5 1F	24th	1245-1303	M3.3 1N		0801-0809	M7.0
18th	1950-2002	M1.1	25th	0523-0558	M1.2 SF		2337-2342	M2.5
21st	1254-1314	M2.8 1N				27th	1527-1535	M1.7 SF
						29th	0432-0510	M1.1

K-indices. April K indices for Hartland are presented below (tnx British Geological Survey)

1	4	3	3	2	2	4	4	2	24	**11**	2	3	2	2	1	3	4	3	20	**21**	4	3	4	3	3	4	4	3	28
2	2	3	4	3	3	5	4	5	29	**12**	3	1	1	1	3	3	2	1	15	**22**	4	3	3	4	2	4	3	4	27
3	3	3	3	1	3	3	3	4	23	**13**	3	3	2	1	2	1	1	1	14	**23**	2	3	3	3	3	3	4	3	24
4	4	3	3	3	3	4	5	5	30	**14**	1	3	1	2	3	4	3	4	21	**24**	3	2	3	3	4	4	5	5	29
5	4	3	3	3	3	4	5	4	29	**15**	3	3	3	3	3	2	2	3	22	**25**	3	4	3	4	4	4	4	5	31
6	2	2	2	1	2	4	2	2	17	**16**	4	3	4	5	3	4	5	4	32	**26**	4	2	3	2	2	4	4	3	24
7	2	1	1	1	3	2	1	1	12	**17**	3	3	3	5	3	4	4	1	26	**27**	3	2	3	3	3	4	4	3	25
8	3	2	4	5	4	3	2	2	25	**18**	2	4	3	4	4	4	3	3	27	**28**	3	4	3	3	2	2	2	1	20
9	4	2	4	4	3	3	2	2	24	**19**	2	2	1	1	2	2	3	3	16	**29**	1	2	2	1	3	5	5	3	22
10	2	3	3	4	3	3	4	3	25	**20**	3	3	2	1	3	3	2	4	21	**30**	4	4	3	4	3	4	5	5	32

The UK or planetary K indices reach 5 or higher (i.e. at least minor storm) on xx days

	1st April									2nd April									3rd April								
Kp	**5**	4	1	3	2	3	3	3	24	2	4	4	4	4	3	3	4	28	3	2	3	3	3	3	3	4	24
Lerwick	**6**	4	2	1	2	4	4	2	25	2	3	3	2	2	4	4	4	24	3	2	2	1	3	3	3	**5**	22
Eskdale	4	3	2	2	3	4	4	2	24	2	3	3	3	3	4	4	4	26	3	2	3	1	3	3	3	3	21
Hartland	4	3	3	2	2	4	4	2	24	2	3	4	3	3	**5**	4	**5**	29	3	3	3	1	3	3	3	4	23

	4th April									5th April									8th April								
Kp	4	3	**5**	**5**	**5**	3	4	4	33	**5**	4	3	3	4	4	4	4	31	2	3	4	**5**	4	4	2	3	27
Lerwick	**5**	2	2	2	3	3	4	**6**	27	4	3	2	2	3	4	**5**	3	26	2	2	3	2	3	4	1	1	18
Eskdale	4	3	3	3	3	4	**5**	**5**	30	4	3	3	3	4	4	**5**	3	29	3	2	3	4	4	4	1	2	23
Hartland	4	3	3	3	3	4	**5**	**5**	30	4	3	3	3	3	4	**5**	4	29	3	2	4	**5**	4	3	2	2	25

	9th April									10th April									14th April								
Kp	4	3	**5**	4	**5**	3	3	2	29	3	**5**	**5**	**5**	3	3	4	3	31	2	3	1	2	**5**	4	3	3	23
Lerwick	3	2	3	3	3	4	2	1	21	2	3	3	2	3	3	4	3	23	1	2	1	2	3	3	3	4	19
Eskdale	4	2	3	4	3	3	2	2	23	2	3	3	4	3	3	4	3	25	2	3	1	2	3	3	3	4	21
Hartland	4	2	4	4	3	3	2	2	24	2	3	3	4	3	3	4	3	25	1	3	1	2	3	4	3	4	21

	15th April								
Kp	4	4	4	**5**	4	2	2	3	28
Lerwick	3	3	2	2	2	1	2	3	18
Eskdale	3	3	3	3	2	2	2	3	21
Hartland	3	3	3	3	3	2	2	3	22

	16th April								
Kp	4	3	4	**6**	3	3	**5**	4	32
Lerwick	4	2	3	3	3	3	4	4	26
Eskdale	3	3	3	4	3	4	**5**	4	29
Hartland	4	3	4	**5**	3	4	**5**	4	32

	17th April								
Kp	3	**5**	**5**	**5**	4	**5**	3	3	33
Lerwick	3	3	3	4	3	3	4	1	24
Eskdale	3	3	3	4	3	4	4	1	25
Hartland	3	3	3	5	3	4	4	1	26

	18th April								
Kp	2	**5**	4	4	4	3	3	3	28
Lerwick	1	3	2	3	4	3	2	3	21
Eskdale	2	3	3	4	4	4	2	3	25
Hartland	2	4	3	4	4	4	3	3	27

	21st April								
Kp	4	4	**5**	4	3	3	3	3	29
Lerwick	3	3	3	2	3	3	4	3	24
Eskdale	3	3	3	2	3	4	4	3	25
Hartland	4	3	4	3	3	4	4	3	28

	23rd April								
Kp	2	4	**5**	4	3	3	3	3	27
Lerwick	2	3	3	2	3	3	4	3	23
Eskdale	1	3	3	3	3	3	4	3	23
Hartland	2	3	3	3	3	3	4	3	24

	24th April								
Kp	3	3	4	**5**	4	4	4	4	31
Lerwick	2	1	3	2	4	4	4	**5**	25
Eskdale	3	1	3	2	4	4	4	**5**	26
Hartland	3	2	3	3	4	4	**5**	**5**	29

	25th April								
Kp	4	**5**	**5**	**5**	3	4	3	**5**	34
Lerwick	3	4	3	3	3	3	3	**5**	27
Eskdale	3	4	3	4	4	4	3	**5**	30
Hartland	3	4	3	4	4	4	4	**5**	31

	28th April								
Kp	3	**5**	4	**5**	3	3	2	2	27
Lerwick	3	3	3	2	2	2	1	1	17
Eskdale	3	3	3	3	2	2	2	1	19
Hartland	3	4	3	3	2	2	2	1	20

	29th April								
Kp	2	3	2	1	4	4	**5**	**5**	26
Lerwick	1	2	1	0	**5**	4	**5**	**6**	24
Eskdale	1	2	1	0	4	4	**5**	4	21
Hartland	1	2	2	1	3	**5**	**5**	3	22

	30th April								
Kp	**5**	**6**	**5**	**5**	4	4	4	**5**	38
Lerwick	**5**	**5**	3	3	3	**5**	**5**	**6**	35
Eskdale	4	4	3	4	3	**5**	**5**	**5**	33
Hartland	4	4	3	4	3	4	**5**	**5**	32

April	28 Areas		-- 50 Areas --			2800	- Spots -		Max			X-ray	Max foF2		Min foF2		-- Particle Fluences --		
2003	Es	F	Es	DX	A	Flux	SEC	SIDC	Kp	Ap	Aa	b.gnd	MHz	Hour	MHz	Hour	2MEV Elec	1MEV Prot	10MEV Prot
01-Apr	0	6	0	0	0	153	161	93	5	12	29	B4.0	6.2	13	2.6	05	0.0E+00	2.4E+05	1.1E+04
02-Apr	0	10	0	0	0	158	189	103	4	20	44	B5.1	8.3	15	2.5	05	1.6E+08	6.3E+05	1.2E+04
03-Apr	0	11	0	0	0	156	154	90	4	14	32	B6.5	8.3	11	3.7	04	1.1E+08	1.4E+05	1.1E+04
04-Apr	0	13	0	1	0	153	148	72	5	26	57	B8.5	8.9	12	3.4	04	6.1E+07	1.7E+06	1.2E+04
05-Apr	0	13	0	0	1	137	94	60	5	23	43	B5.1	9.6	12	3.0	04	4.1E+07	4.7E+05	1.1E+04
06-Apr	0	23	0	1	0	126	75	52	3	9	16	B3.3	8.3	19	3.6	05	5.6E+07	1.4E+05	0.0E+00
07-Apr	0	18	0	0	0	116	77	48	3	6	12	B2.6	8.7	18	3.8	05	9.0E+07	7.9E+05	2.3E+04
08-Apr	0	21	0	1	1	112	52	34	5	20	38	B1.9	10.3	10	4.1	04	1.4E+07	6.0E+06	2.2E+04
09-Apr	0	9	0	0	0	109	88	42	5	25	39	B2.0	8.9	16	3.2	05	2.4E+07	4.2E+06	1.3E+04
10-Apr	1	13	0	0	1	104	66	38	5	26	41	B1.3	10.4	12	3.5	04	1.2E+07	1.5E+06	1.1E+04
11-Apr	0	9	0	0	1	103	49	25	3	14	25	B1.3	7.8	14	3.5	05	7.8E+07	3.0E+06	9.8E+03
12-Apr	0	11	0	0	0	102	60	37	3	7	16	B1.2	6.9	17	3.9	05	3.1E+08	4.0E+06	9.7E+03
13-Apr	0	12	0	0	0	102	61	38	3	10	19	B1.2	8.0	19	3.7	04	2.9E+08	2.8E+06	1.0E+04
14-Apr	2	15	4	1	0	102	63	35	5	16	30	B1.1	10.2	15	3.5	05	9.7E+07	1.3E+06	1.0E+04
15-Apr	4	13	1	0	0	101	54	29	5	22	29	B1.0	7.3	12	3.5	04	3.3E+07	1.2E+06	1.1E+04
16-Apr	1	10	5	2	1	99	40	16	6	31	58	B1.2	8.4	13	3.5	04	1.0E+08	6.6E+06	1.0E+04
17-Apr	6	10	10	2	1	101	37	19	5	30	46	B1.5	7.1	17	3.2	05	3.7E+08	9.3E+06	1.1E+04
18-Apr	2	15	0	0	0	108	51	27	5	20	37	B2.0	8.7	19	3.9	04	3.8E+08	2.6E+06	1.1E+04
19-Apr	1	16	6	3	0	112	69	34	3	18	15	B2.0	8.9	16	3.6	04	3.1E+08	1.9E+06	1.0E+04
20-Apr	1	11	0	1	0	119	93	45	4	16	24	B2.2	7.9	17	3.7	04	1.4E+08	1.7E+06	1.1E+04
21-Apr	0	9	2	0	0	126	154	58	5	21	43	B2.9	8.0	13	3.5	02	1.3E+08	1.9E+06	1.3E+04
22-Apr	1	11	0	0	0	132	147	75	4	22	42	B4.7	9.0	18	2.4	04	3.3E+08	2.1E+06	1.6E+04
23-Apr	5	12	8	3	0	133	152	73	5	18	33	B4.9	9.3	18	4.1	05	1.9E+08	1.2E+06	2.5E+04
24-Apr	1	14	0	0	2	128	171	73	5	24	46	B4.1	9.5	12	4.5	04	9.7E+07	1.8E+06	2.2E+04
25-Apr	3	12	6	1	3	144	173	89	5	32	49	B6.4	10.7	13	3.2	04	2.2E+08	3.0E+06	1.3E+04
26-Apr	9	17	11	0	0	144	193	86	4	15	35	B5.3	9.6	13	3.6	04	3.5E+08	1.8E+06	2.5E+04
27-Apr	7	11	12	0	0	154	200	103	4	15	31	B7.2	9.0	18	4.2	05	3.9E+08	1.3E+06	4.0E+04
28-Apr	2	12	2	1	0	152	175	100	5	20	29	B5.7	9.4	12	4.1	04	1.8E+08	2.8E+06	1.5E+04
29-Apr	3	17	3	6	4	155	224	109	5	20	34	B5.8	8.9	17	4.5	23	1.7E+08	3.2E+06	1.2E+04
30-Apr	0	5	0	0	3	154	160	98	6	40	56	B4.2	6.7	17	3.2	04	7.6E+07	2.8E+06	1.2E+04
Sum	49	379	70	23	18														
Average	1.6	12.6	2.3	0.8	0.6	126.5	114.3	60.0	4.5	19.7	34.9	B3.5	8.6	15	3.6	04	1.6E+08	2.4E+06	1.4E+04
Maximum	9	23	12	6	4	158	224	109	6	40	58	B8.5	10.7	19	4.5	05	3.9E+08	9.3E+06	4.0E+04
Minimum	0	5	0	0	0	99	37	16	3	6	12	B1.0	6.2	10	2.4	23	0.0E+00	1.4E+05	0.0E+00

50 MHz Outside Britain

Compilation and Commentary by G3USF

Europe

Auroral-Related

As G0AEV has commented, OH2LX notes that April was a relatively disturbed month, with 21 days when OH5IY recorded radio aurora was recorded. Ak exceeded 50 on 6 days, with April 30th the most disturbed day at an Ak of 75. While the 30th also brought the month's highest Ap figure, that was a relatively modest 40 and there was only one other day, the 25th, when the Ap exceeded 30. So it was scarcely surprising that aurora was almost entirely confined to fairly high geomagnetic latitudes. The HF bands' propagation loss due to geomagnetic disturbance was not on this occasion the VHF operator's gain.

Ap 1 0000-40 Au>OH5IY 0050-0100 Au>OH5 0110-0240 Au>OH5 0300-30 Au>OH5 1900-10 Au>OH5
Ap 2 2050-2120 Au>OH5 2240-2400 Au>OH5
Ap 3 2250-2400 Au>OH5
Ap 4 0000-30 Au>OH5 0120-0200 Au>OH5 0210-20 Au>OH5 1220-1600 Au>OH5 1630-50 Au>OH5 2110-30 Au>OH5 2210-2400 Au>OH5 2240-2310 Au>OH5
Ap 5 0000-0220 Au>OH5 0000-10 AuFM>OH5 0140-50 AuFM>OH5 1430-40 Au>OH5 1600-1700 Au>OH5 1750-1820 Au>OH5 1930-2030 Au>OH5
Ap 8 1330-1540 Au>OH5 2330-40 Au>OH5
Au 9 0000-0130 Au>OH5 1250-1310 Au>OH5
Ap 10 1600-10 Au>OH5 1620-40 Au>OH5 1940-2000 Au>OH5 2050-2100 Au>OH5
Ap 11 2300-40 Au>OH5
Ap 14 1300-1600 Au>OH5 1506 OH9SIX>OH2(KP20 57a) 2320-2330 Au>OH5
Ap 16 1520-1600 Au>OH5
Ap 17 1450-1540 Au>OH5
Ap 18 1500-20 Au>OH5
Ap 20 2330-2400 Au>OH5
Ap 21 0000-0200 Au>OH5 2043 JW9SIX>LA(599) 2107 JX7SIX>LA(559) 2330-2400 Au>OH5
Ap 22 0000-10 Au>OH5 0058 OH9SIX>LA(59a) 0100-20 Au>OH5 0459 OH9SIX>LA(44a JP66) 1807 OH3(KP10)>LY(KO25 55a) 1952 JW9SIX>LA(579 JP50) 1955 OH9SIX>LA(JO59 55a)2004 OH8>OH6(57a)
Ap 24 1450-1530 Au>OH5 20-2100 LA>OZ(AE),SP2 LA7SIX>DL(JO62 599 AE) LA(JP66)>DL(JO31 59) OH9SIX>DL(JO31 539) JW9SIX>DL(JO71 519) LA7SIX>LA(JO59 559) JW9SIX>LA(JO59 539) 2030-40 Au>OH5 2100-2340 Au>OH5 21-2200 GB3LER>EI(IO53 31a) 49750>OZ(JO54 57) 2202 OH8SIX>DL(JO62 529)
Ap 25 2140-50 Au>OH5 2220-2340 Au>OH5 2241 GB3LER>EI(51a IO53)
Ap 27 2230-2310 Au>OH5
Ap 29 1430-1600 Au>OH5 1610-1820 Au>OH5 17-1800 49760(UA)>PA GM>EI(IO53 51a) 1940-2020 Au>OH5 2000-20 AuFM>OH5 2050-2100 Au>OH5 2018 Au>OZ(000) 2025 SM0(JO89)>OZ(JO54 55a) 2140-50 Au>OH5 2210-30 Au>OH5 2240-2300 Au>OH5 2310-2400 Au>OH5 2330-40 AuFM>OH5
Ap 30 0000-30 Au>OH5 0100-0300 Au>OH5 1440-1500 Au>OH5 1510-1710 Au>OH5 1545 GB3LER>EI(51a IO53) 16-1700 Au>LY(qtf 000) OH2(KP10)>LY(KO25 59a) ES2(KO29)>LY(KO25 59a) 1858 GB3RMK>EI(IO53 51a) 2053 LA7SIX>OZ(JO54 539AE) 2100-10 Au>OH5 21-2200 LY>YL OH2(KO19)>LY(KO25 55a) GM(IO87)>LY(KO25 55a 315) 2120-40 Au>OH5 2150-2400 Au>OH5 2230-40 Au>OH5 2300-10 AuFM>OH5

Other Modes

April saw the flux dip below 100 for the first time in several years, albeit briefly. So it was scarcely surprising that parts of Europe had a rather thin time, especially mid-month, when flux values were weakest and the geomagnetic field unsettled to active almost daily. Yet practically everywhere had some good openings and some enterprising or lucky operators managed DX contacts - even SV1DH managed to add two 'entities' to his impressive score. Indeed, Costas describes this as the best April this cycle. Certainly, his score of 60 on all continents outstrips his 23 on 3 continents on 2002.

Among the prizes were the Christmas Island expedition, VK9XK, worked from Europe on 8 days (11-14, 16, 17, 19, 27, 29), VQ9X/VQ9LA, into Europe on 12 days (12-14, 19, 23-30), VK4<>I7 on the 15th and YF on the 17th and 19th. Additionally, A7 appeared on the 26th and 27th. JA was worked from 5B/JY on the 3rd and 4th but apparently did not make into Europe this year, which it has done in April 2002. VK2 also worked into 5B, short path, on the 23rd.

As in March, the Mediterranean countries enjoyed almost daily propagation into southern Africa, with consistency only slightly down on 2002 - ZS dropped from 26 days to 24 and 7Q from 26 days to 23. ZS5 and ZS4 made fleeting appearances, down on last year. The real difference between 2002 and 2003 came further north, where lower flux and magnetic active resulted in a drop from 17 days to 11.

Europe<>Southern Africa

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Med	+	+	+	+	+	+	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
North				+		+							+				+		+				+	+	+	+		+	+	

Mediterranean	North
ZS 24 days 1-6 9 12 13 15 17-29	6 days 4(YO) 6(DL,G,HB,SP,YO) 17(G) 24 (OH,YO) 25(DL,OE,OK,OZ,PA) 29(DL,G.HB,ON,YO)
7Q 23 days 1-6 8 9 13-15 17-20 22-29	5 days 19(G) 23(DL,G,PA) 26(OE) 28(G)29(G)
Z2 11 days 4 6 13 17-19 21 22 24 25 29	4 days 13(OE) 19(G) 23(DL) 25(UR)
9J 12 days 7 11 15 17-24 29	3 days 19(G) 23(OZ) 24(OE)
V5 8 days 2 3 5 6 21-24 29	1 day 24(OH)

Western and equatorial Africa present a different, unexpected picture. As always, results are difficult to interpret due to the great variation in activity. Mediterranean countries reported reception on no fewer than 26 days (10 in 2002) and northern countries had openings on 6 days compared with one, solitary day in 2002. Gabon, where as far as is known, the beacon was in continuous operation, was into the Mediterranean on 19 days - better not only than 2002's 6 days - which may have been an aberration - but also better than the 10 days recorded in 2001.

Elsewhere in Africa the month brought contacts with S05X, into the Mediterranean on 16th-19th and further north on the 16th (DL,G,ON,PA) and 17th(EI,GW), FR stations working into the Mediterranean on April 17, 24, 25 and 29, with northerly contacts on the 16th(G,PA), 17(G), 24th (SM) and 29th (G,ON). 6W was worked from France on the 29th. SU was worked from the Mediterranean on April 14, 27 and 30.

Europe<>West/Equatorial Africa

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Med		+	+	+	+	+	+	+		+	+	+	+	+	+			+	+	+	+	+	+	+	+	+	+	+	+	+
North						+		+					+	+						+							+	+	+	

Mediterranean	North
TR 19 days 2-7 10 11 13 15 18 20-22 24 25 28-30	2 days 13(DL,HB) 14(ON)
5N 10 days 2 5 6 11 13 14 21 23 25 27	4 days 6(HB) 14(DL,EI,G,OE,ON) 20(G) 27(LZ,OE,ON,PA,4U)
5T 4 days 4 8 12 29	1 day 4(G) 8(G) 29(G)
5U 5 days 13 15 18 19 21	
D4 3 days 27-29	1 day 28(YO) 29(G)
C9 3 days 26 29 30	1 day 29(DL,G,PA)
TJ 1 day 30	

Propagation between Europe and the Americas is discussed in a later section.

The detailed record below demonstrates the volume of activity on the band. There appears to have been a notable amount of early sporadic-E. Even OH2LX's northerly report mentions Es on three days - the 17th at 1300 on R1(UA),,E2 and E3, with OH2s reporting 50MHz Es that afternoon; on the 24th Ukraine to OH2 was reported in OH2 around 1640 and on the 29th DLtv and fm were copied by Es in OH9 around 1010UT. SV1DH's report provides more evidence of Es openings and, especially from mid-month, many other contacts below were by this mode (or by Es scatter). As G0AEV has noted in respect of the UK, Es assistance in the final 'hop' was probably responsible for a significant proportion of the DX reported in northern Europe. There was also much WSJT activity via MS or ionoscatter over distances similar to those involving Es. 4U1ITU was particularly active with WSJT, especially in the early mornings, making a marked impact on activity levels. Speaking of WSJT - a useful tool, especially with our weakening propagation - but why do so many operators post thanks for WSJT QSOs, which would never be thought necessary with other techniques…? Just asking.

Ap 1 16-1700 ZS6AXT>EA7 9J2KC>5B

Ap 2 1256-8 V51/ZS4NS>EA5,F 1312-28 V51/ZS4NS>I1,I8 14-1500 PY1RO>5B 3Ctv>F 15-1600 3Ctv>9A TR0A>I5 16-1700 3Ctv>S5 CX1CCC,CX4CR>>EA6 FJ5DX(sc 230) 17-1800 CX4CR,KP4EIT(skew)>EA7 S5>I3 V51/ZS4NS>S5,IS0 I2>I3 18-1900 ON>LX 19-2000 OE3>S5 PY5CC>EA5 OE3>OH1 20-2100 ON>YU1 PY5CC>I7 ZD8VHF>I5 21-2200 ZD8VHF>SV1,EA5 TR0A,3Ctv,5Ntv,CEbc,PYs>SV1 22-2300 7Q7SIX,ZS6TWB(sc)>SV1

Ap 3 JA5AIE(sc),JG2BRI,JE1BMJ>5B 12-1300 ZS6TWB>I5 1553 PY1RO>SV1 16-1700 FR1GZ>5B V51E>CT ON>I8 17-1800 CX4CR>I9,CT PY1RO>SV1 CX3>CT 18-1900 PY5AQ,CX4CR>9H ON>LX PY1RO>SV1 LU1DMA>EA7 JY9NX>TR8CA CX3AN>EA7 1935 LU2DEK>9H 21-2200 ZD8VHF,TR0A,3Ctv,47.9(CE)>SV1 ZP6CW>I1 22-2300 PY7ZZ>9H

Ap 4 0943 5B>SV1 1151 ZS6NK>I1 12-1300 ZS6NK>9A,YO7 1555-1600 Z22JE>EA6,IS0 ON>I5 16-1700 ZS6NK>EA6,EA3 ZR6DXB>I1 I9>I1 Z22JE>9A,F ZR6DXB>F,I3 ZS6DTS>I1,I5 ZS6DN> 9A ZS6OB>F ZS6TWB>EA6 TR0A>S5 5B>SV1(bs),EA7 17-1800 I9>EA7 ZS6OB>EA7,S5 5T5SN>I2,F,EA5 EH3>TR8CA Z22JE>9A LZ2>YO7 18-1900 5T5SN>I9>I9 EH6>EA7

Ap 5 07-0800 I5>I2 I1>I5 08-0900 ON>I5 VK,9M,BYtv>ZS6 ON>9A DL>OH6 I1>I4 I1>I5 09-1000 FR1GZ>5B I8>OE5 I1>I4 10-1100 I1>I3,I4 I8>OE5 13-1400 TR8CA,TR0A>F ZS6TWB, ZS6AXT>F,EA7 7Q7RM>EA7 14-1500 SP4>I5,Z3 15-1600 I2>I0,I5 I1>I4,I5 16-1700 I2>S5 PY2XB,FR1GT>5B 5N6NDP,LU1DMA>EA7 17-1800 I5,EA7>F 7Q7RM>EA7 5T5SN>S5 F,EA,CT(bs)>I5 Z22JE>EA7 PY2XB>I8 PY1VOY>IS0,CT PY2BK>CT 19-1900 CE3SAD>EA7 5T5SN>I5 PY1VOY>I5 CE3SAD>CT 20-2100 ZD8VHF>F,IS0,SV3 PY2RO>IS0 PY2XB>CT,IS0 CE3SAD,PY5CC>EA7 ZD8VHF>CT 21-2200 ZD8DB>IS0,F

Ap 6 0648 I5>OE5 07-0800 DL>OH6 G>I5 0848 ON>9A OE3>OH6 10-1100 V51E>I1 ZS6TWB>I5 11-1200 ZR6CBK>I1 V51E>I0,F ZS6TWB>F ZS6WB>I1 12-1300 ZR6CBK>I1,9H ZS6OB>SV2,YO7,I1 ZS6DN>I1,F

ZS6WB>I0,YO7,G,DL ZR6DXB>I0 V51E>F,I1` ZS6AVP>I8 TR0A>I1 13-1400 ZS6WB>G,SP6 ZR6ZL>I8,9A,9H,IS0 ZS6AXT>F,IS0,G,EA1 ZS6DN>DL ZS6OB>HB ZR6DXB>IS0,I8,HB,EA1 ZR6CBK>I5 ZS5LEE>I5 ZS6AVP>I4 Z22JE>F,CT ZS6AUP>I9,CT ZS6BTE>F 14-1500 ZR6ZL>F ZR6DXB>I2,GW ZS6MAW>F ZS6OB>9A ZS6Y>I9 5Ubc>F ZS6WB>HB,F ZS6IJ>I9 ZS6GUD>I9 I9>I0 I0>S5 15-1600 5B>I7 F,I9>S5 5B>F 5N8NDP/9>HB,I1,9A,F,DL 3Ctv>I1 16-1700 7Q7RM>EA7,F I9,F(bs)>S5 ZS6TWB>S5 5N6NDP/9>F S5>9A 17-1800 7Q7RM>I8 ZS6WB>I5 LW1DZ>EA7 18-1900 PY2RO>I9 F>CT LU8MB>5B 19-2000 CX3AN>5B PY2XB>9H 21-2200 ZD8VHF>IS0,EA7

Ap 7 18-1900 YV4AB,FY7THF>ST5SN 19-2000 9J2KC>EA5,I9,I5 20-2100 9J2KC>I9,SV2 ZD8VHF,TR0A>SV1 22-2300 ZD8VHF,ZS6DN>CN

Ap 8 5Ztv>SV1 15-1600 3Ctv>F 16-1700 3Ctv>F 4X4SIX>SV1 GB3BUX>PA 17-1800 5Ubc>F 3Ctv>9A,ON S5>F(bs) ON>I5 5N6NDP/9>F F>I5,S5 I8>IS0 EA7>F(bs) KP4EIT>CT,EA7 7Q7SIX>IS0 PY1VOY>SV1 18-1900 5T5SN>F,EA5,I5,CT,G F>CT(bs) 19-2000 F>CT(bs) HC8>EH8 PY1RO>9H

Ap 9 data missing

Ap 10 morning data missing1528 TR0A>S5 1623 ON>I5 17-1800 ON>SP6 PY1RO>IS0,I9,SV1 PY1VOY>IS0 20-2100 TR0A>SV1 3Ctv>SV1 ZD8VHF>SV1

Ap 11 1021 FR1GZ>4X 13-1400 VK9XI>JY,5B,SV1 14-1500 VK9XI>SV1 F>SP6,S5 15-1600 ON>SQ8 OE5,ON>DL ON>9A 16-1700 OE5>9A ZD8VHF,TR0A>EA7 ZD8VHF>SV1 5N6NDP/9>EA7,I0 17-1800 I5>S5 ZD8VHF>I9 19-2000 LU>EA8 PP5>CT3 20-2100 9J2KC>IS0 21-2200 S9TX>CT3

Ap 12 0852 I3>OK1 I5>F 09-1000 ES2>SQ6 GM>ON 10-1100 ES2>I3 12-1300 J0>I8 13-1400 ES2>OH1 14-1500 G>OE5 I9>SV1(bs) 15-1600 OK1>DL(t) ON>F(t)16-1700 5N6NDP/9>5B FR1GZ>5B 1719 EH8(bs),I9(bs)>EA7 18-1900 5T5SN>9H FY5LS>CN 19-2000 XQ3SIX>EA7 PY3>EA8 20-2100 FM5WE>CT3 21-2200 EA8,PY5CC,PY1RO,ZP6CW>EA7 CN>EA8 PY5CC>EA8,CT3 LU2NI>CT3 2224 ZS6WB>I5

Ap 13 0659 OE3>SP6 07-0800 I9>DL I5>OE3 OE5>I2 F>I5 08-0900 OE3>SQ6 LA>OE3 CT3>EH8 EH8>EA7(t) 0949 JW7SIX>LA 10-1100 HB>9H 9H>I2 HB9SIX>DL 12-1300 I1>I5 VK9XI>5B 13-1400 LA>SQ8 SV1>Z3 VK9XI>4X,5B 7Q7RM>4X,I9 ZS6NK>I9 Z22JE>EA2,I9 14-1500 VK9XI>5B,SV,9H,I9 4X>YO7 S5>9A 15-1600 4X>YO2,YO5 VK9XI>5B,LZ2 JY>YU1,YO7, 9A,YO2 4X>9A VQ9LA>SV1,I4,5B,EA5,9A,I2,9H,IS0,I4,4X,EA8 SV9SIX>9A 5N6NDP/9>I4,I0,CT TR8KPJ>I4,4X,9A Z22JE>4X 16-1700 Z22JE>9A TR8KPJ>EA7,9A,EA6 5N6NDP/9>F,I9,CN 4X>I4,9A 7Q7SIX>SV1 VQ9LA>SV1,9H,9A,CN,EA6,I8,I5 OM5>9A 5B>I6 5U7JB>EA5,I5,9A, 9H,I4,S5 TR0A>SV1,S5,9A Z22JE>OE4,EA2 17-1800 4X>CN TR8KPJ>9H,DL,I9,I2 VQ9LA>9A, I8,EA7,JY 5N6NDP/9>I7 TR0A>HB,I1 JY>I4 SV9SIX>OE3,9A,I2 ZS6TWB>SV1 9H>YU1,YO5 9H>OM7,YO2,SP3 I9>S5 I9>EA7,YU1 EA7>CN 7Q7SIX>9A 18-1900 4X>CN I9>SV1,CT 05B>9H,I9 FY5LS>CT3 19-2000 LU2NI,LU8MB>CT EA7>9H

Ap 14 13-1400 JY>9H 14-1500 4X>I9,9H VK9XI>4X,I9,SV1 4X>I9,9H,I8,F SU1SK>I9,YU1 I9>9A JY>9H,I9 15-1600 4X>YO7,F,9A VK9XI>4X,9A,YU1 SU1SK>9H SV8>4X I9>F CT>I9 YO3KWJ>F EH5>DL 5B>9H 16-1700 JY>EA7 F,5B>9A LZ2>9H,F 9J2KC>4X 5B,I7>F SV9>I5 IS0>DL(Es) VQ9X>I9,EA7,9A 9H,I9>SQ6 4X>EH3 EH5>9H EH4,F,OD5>9A 3Ctv>G,PA,9A I1>I5 EH7>I9,9A EH4,F>9A SV1SIX>DL 5N6NDP/9>IS0,G,EI,DL 4X>EA7 I9>4X ON>I2(bs) TR0A>ON 17-1800 EH8>SV1 5N6NDP/9>9A,ON,OE6 LU7WW>9A,HB ON>F LU>ON I5,PA,GW,YU1,SV1>9A JY>CT,9H I5>F,9A EH7>F(bs) K4MM>EA7(sc) GB3MCB>F FM5WD>IS0 EA4>PA,ON YU7>ON 18-1900 4X>CT ON>F(bs) I5>DL,9A,IS0(bs) 7Q7SIX>I9

Ap 15 08-0900 VK4ABW>I7 SV1SIX>DL(Es) 5B>I7 09-1000 5B>I7,9A SV9SIX,SV1SIX>SQ6 LZ2CC,4X4SIX>I0 SV1>SP3 LZ1>I3 10-1100 SV1SIX>OK8 SV9SIX>I0,9A OD5SIX>I0 11-1200 SV5SIX>9A SV1SIX>I0,I1 12-1300 SV1SIX>I1 SV9SIX>I4 13-1400 SV1SIX>SP3 F>I4,9A S55ZRS,EI>EA7 I5>I1 TR0A,3Ctv>EA7 ZS6TWB>I5 IS0,ZS6AX>I9 14-1500 7Q7SIX>I9 15-1600 3Ctv>S5 TR0A>I1 16-1700 TR0A>S5 5U7JB>S5,I5 ZS6GVD>I7 4U1ITU>PA,F,OE3 3Ctv>S5 9J2BO>EA7 17-1800 TR0A,7Q7SIX,9J2BO,3Ctv>SV1 ZS6TWB>SV1,S5 4U1ITU>F,I2,I0 9J2BO>I1 I5>S5,ON 18-1900 4U1ITU>HB,I1 1945 CE0ZIS>CT 2054 TR8KPJ>I9 21-2200 ZD8DB>I9,EA5 CT3>EH8

Ap 16 08-0900 UT7>YO7 UR5>9A 09-1000 UR5>9A,OK2,SQ6,YO7 LZ1>SP9,YU1,OK2 UT8>I5,YO7 YO6>HB 10-1100 SV1SIX>SP9 LZ1JH>OZ,PA LZ3,Z3>PA LY>YO7 YO7>DL,OZ SV9SIX>SP9,OK2 SV1SIX>OK2,SP3 OE6,LZ1,LZ3>9A YU1>PA LY,DL,YU1>LZ2 LZ1,YU1,UU1>DL JY>PA I8>SP3 OD5SIX>9H DL>LZ2 LZ1,I0>SP9 Z3>OE8,9A YO3KWJ>OK2 SV9SIX>HA1 11-1200 I0,JY>LZ2 YO7,SV9SIX>DL SV8>OK2,9A

LZ1, LZ3>PA YO5>I9 SP3>I8 SV8,SV1>HA1 ON>LZ2 Z3>DL,9A,SM6 SV1SIX,LZ1JH,LZ2CC>SP6 YO5,YO6,LZ2>F YU1>OZ,SP3 LZ1>I4 G>LZ2 12-1300 LY>9A S05X>CT,G 9A>F G>I8,LZ3 T7,I5>YO7 9A>ON YU1>SP3,SM7 LY>HA1 SP3>9H EH6>SP2 I8>SP3 LZ2>I2 I9>OZ 9H1SIX>DL LZ2>F GB3IOJ>HA1 FR1GZ>PA 13-1400 SP4>SP3 I7>PA F>OK2,YO7 T9>DL I0JX>OZ OE6>F FR1GZ>PA VK9XI>LZ3,F(pirate?) EI>I5 14-1500 EH8>CT3 I8,OZ,I0>DL YT1>F I0JX>SM6 S05X>DL 15-1600 S05X>ON,I7,DL,EA4,CT,HA8 EH8>EH5 16-1700 G,EH8>F EA4>EA8 LU1DMA,LW3EX,CX3AN>EA7 9J2BO>EA8 LU7WW>S5 LW3EX>I4 17-1800 LU9AEA,LW3EX>S5 S05X>S5 CX3AN>F PY1RO>9H 18-1900 PY1VOY>I9 19-2000 LU1DMA,LU7ESX>EA7 20-2100 LU8MB>EA8 PY1RO>EA7,CT 21-2200 PY1RO>EA7,EA8

Ap 17 07-0800 SV1SIX>DL SV9SIX>SQ6 UY5>SP2 LZ1>I2,DL 08-0900 OZ>LZ5 LZ1>OK2,PA, SP9 SV1SIX>OK2,DL LZ1JH>DL,SP9,I1 LZ2CC>I1,DL YO3KWJ,LZ3>DL SV8>DL:,SQ6 SP6>SP9 09-1000 OZ>LZ5 SV8>DL,PA I9>OK2 G>YO7 10-1100 OZ>I2,I1 EI>OE6,9A G>I4 F>DL F>OK2 11-1200 EH5,EH6,EA1,OZ,GB3IOJ>DL GW>YU4 EH6,GB3RMK>OK2 YU1>F EH6>LA 4U1ITU>I2,DL GU>9A,I2 SM7>LZ5 I0>PA OM8>9A F>S5,OZ PA>F 12-1300 LA>LZ5 YU1>OK2 OZ,F>YO7 SM5>9A ES2>I4,HB I0>EI,ON F>DL,S5 OH3>I0 I1>OH5,SV3 YU1>LA DL>EA1 VK9XI>LZ5 13-1400 VK9XI>SV1,LZ1,I9,LZ3,I2,YU1,9H F>DL EA5>PA S5>OH6 EH5>EI,OZ,DL ES0SIX>HB,DL DL>OH5 FR1GZ>GW,SV1,F,I9 OH5>HB HB>EI,F 4X4SIX>F F>HA1,DL,9A OH6>9A YB0CBI>4X YF1OO>I9 F>I2 14-1500 F>HA1,DL,9A OE3>EA1 S55ZRS>F VK9XI>I7,9A,YU7 LU7WW>I9 CEbc>I9,SV1 5B4CY>I9 ZS6WB>I7 PY1RO,LU5VV,SV1(sc)>I9 ZS6WB>I0 3Ctv>I1 OH2,G>DL FR1GZ>EI OD5SIX>I9 15-1600 I9,IS0>CT SV1>4X I9>IS0(sc) S50X>5B EH5,Z22JE>I9 US5>I2 F>EA5 EM1U>CT ZS6AXT>I9 16-1700 4U1ITU>I2,F,DL,HB,CT SV1>JY EM1U>CT VQ9LA>JY ZS6WB>JY,OD 4X>I7 LX0SIX>PA UT7>LZ2 17-1800 9J2BO>SV1 OD5SIX,YU1>YO2 SV9SDIX>I1,I3 SV1SIX>I5 LY>YO7,LZ5 LZ1>PA UR5>DL,I6,I9 4U1ITU>F YU1>CT 18-1900 UT5>DL,SP3,9A,OK1,YU1 ES2>LZ2 OD5SIX>SP3,SM7 YO4,LZ1JH>DL ON>LX SV9SIX>I3 S05X>CT 19-2000 ON>F 4U1ITU>OZ I5>LX 4U1ITU>OE3 YU1>EH5 21-2200 S5>EA5 4U1ITU>PA,9A S05X>CT,EA4 EH5>PA(Es)

Ap 18 06-0700 UY5>OZ 07-0800 OH3>YO7 UY5>SM7 09-1000 4X>9H 3Ctv>S5 10-1100 EH1>EH8 CT3>CT 11-1200 S05X>EH7 G>PA 13-1400 5Ztv,3Ctv>SV1 14-1500 Z22JE>9H PY2XB>5B JY>EA3 7X2ZS>I8 15-1600 3Ctv>9A S05X>EA3 TR8CA>9A,5B,JY YU1>9A,YO7 4X>TR8 ZS6NK>EA5 SV1SIX,OD5SIX>ZS6 Z22JE>EH5 ZS6DX>I9,CT ZS6AVP>EA7,I9 LU7WW>JY ZR6DMG>EA5 ZS6WB>CT 16-1700 ZS6DN,ZS6DX,ZS6WB,ZS6TWB>EA5,I9 I0JX,SV9SIX>ZS6 ZS6WGH>I5 5U7JB>SV1,5B,I9,EA7,CT3,EH8 ZS6AX,ZS6NX>I9 9J2BO>CT3 7Q7SIX>SV1 CT3>CT TR8CA>CT3 17-1800 Z22JE>CT3,4X 5U7JB>EA7,9A,EA1,EA4,S5 CX1CCC>CT PY1VOY,PY2XB,PY5CC>SV1 SV1>YO7 PP5JR>EA6 S05X>5B,EA5,JY EH3>I5 I5>ON LW1DZ,CX2LI>EH8 18-1900 I9>I7 5U7JK>I9 21-2200 ZD8VHF,TR0A,3Ctv>SV1

Ap 19 06-0700 4U1ITU>SP6,ON 07-0800 OE5,I5>9A 4U1ITU>OE3,9A SP8>DL(t) 9A>UT5 SV9SIX>SP6 SV1SIX>SP6,SP9 IW3FZQ>UT5 08-0900 UT5>I2,9A EPtv>9A SV8>9A,DL,OE3,F, LX G>I0 SV9SIX>SP9,I3,OE5 SV1SIX>DL,I3 SV1>SP9 LZ2CM>F 09-1000 SV1,4X4SIX>9A LZ1>I2,9A SV2>DL LZ1JH>F SV1SIX>DL SP9>I8 SV2,9H,LZ1,I9>DL OE3>I0 SV1>SP9 YO7>ON 3A,ON,EH5,G,I9,I1,LZ1,5B>9A SV8>I0 UR7>I5 VK4ABW>5B I6>OE3 I7,YO5>F 10-1100 I7,LZ1,4U1ITU>DL I5,LZ1,SV9SIX>OE3 9A,HB>PA YU1,OM5,OE5>EA3 DL>I8 UY5>I7 I7>LX LZ1,EH5>OM7 G,EA5,EA3>9A I0>4X ON,9A>F PA>I9 G>LZ2 EH5>OK2 YU1>EA1 EH3>SP9 11-1200 G>9H EH5,F>HA1 EH3>YO5,DL,SQ6 OK1,SP3,SP9>EA3 YU1>EA!,F GU>I0 DL>IS0 F>OE3,9A,S5 ZS6NK>PA I3,OE6>EA1 OK1>EH5 IS0>DL,PA 3Ctv,EH5>OK1 I0JX>PA HB>DL 12-1300 F>9A 4U1ITU>F,9A,I4,CT,ON,I7 3Ctv>OK1 13-1400 I2>DL(t) I8>I0 4U1ITU>F 14-1500 LZ2>EA7 EPtv,VK9XI>SV1 9H>F(bs) YB0CBI>YO7 15-1600 9H>F,OK1,DL PY5CC>I0, CN,9A UU2>JY 9J2BO,9J2KC>G,DL,OK1,PA,4X EH3>YO7 PY1RO>YO5,9A PY1VOY>9A,OK1 16-1700 5U7JB>SV1 I5>IS0 PY1RO>9A,YO2 9H>F,PA I9>DL EH5>LZ5 VQ9X>SV1 JY,4X>SV1 SV9>9A EH9>OK1 EH5>LZ2 7Q7SIX>G,F OM8,I3,CT>9A PY1VOY>LZ1,9A Z22JE>G,DL,9A,F, LX,OK1,4X 5B>9A YU1>EA5 ZD8Z>F 9H>PA EH9>DL JY>I9 17-1800 7Q7SIX>DL,GW 7Q7RM> DL EA5>HA1,I8,S5 LU7WW>5B EH7,EH4>9A S5,SP6,T9,I0>EA5 SV9SIX>I5,SP6 PA>LX EH9>OK1,OE5 3A>I1 4X>YO7 EH6>LZ2 EH7>OE1,DL I5>EH8 EH3>I5 4X>SP5 Z22JE>EH8 SV1SIX>SP6 LX0SIX,ON>F G>9H 18-1900 CT,F,SP6,DL,9H>EA5 EH9>I0 EH4,EH5,CX4CR, EH3>CT CX4CR>CN,I5 CX4AAJ>I5 LU8MB>I0 I8>CN PY1RO>I5,I7,LZ2 EH7,I3>9A LU7WW> LZ1 LU9EHF>YU1 EH7>I2,I4 LZ1>4X I9>CN 19-2000 PY2XB>IS0,I8,9A PY1VOY>LZ2,I3,I1,F, EA3,DL 9H>CN S05X>F PY5>EA8 PY1RO>9A,OK1,F,I2 PU2WDX>I5,9A PY2VA>9A PY2XAT> DL,I5,S5 PY2XB>OE5,EA3,I4 ZP6CW>4X 20-2100 PY2XB>DL,HB,I1,LZ2,I4 EH9>I5 CX4CR>CT PY1VOY>CT PY2VA>I4 EH8>CT LU8MB>CT PY1RO>YO4,I7 ZD8VHF>I0 S05X>CT,EA5 21-2200 S05X>CT,EA3,I9,EA8,I1,EA7 EH5>EH8 S9TX>CT3 PY2RO.PY2BU>I2 EH8>CT 22-2300 EH8>EA7

Ap 20 06-0700 SP5,SP7,I5>LY 07-0800 OH1>SQ8 DL,SP6,OK2>I5 OZ>OH1 SP6,LY>LA I2>F LA>ON SQ8>LY 08-0900 OK2>F SP6,I5>F LY>YO2 I3>SP6 I5>LY 09-1000 ON>I5,CN,PA YO2>SP6 LY>YO2 OZ>LY I2>I5 I2>ON 10-1100 LY>DL S5>LY 11-1200 GB3IOJ>F 12-1300 OE3>LX ON>9A 13-1400 I5>ON VK9XI>5B YU1>LY SP6>LY 14-1500 3A>I5 FR1GZ>5B VK9XI>5B 15-1600 VK9XI>JY 9H>SQ6 9J2BO>CN,9A ZS6NK>9A 5N6NDP/9>GW,G 3C>S5 SV1SIX>F LY>S5 5U7JK>CT 16-1700 5U7JK>5B 7Q7RM>JY Z22JE,F>CT SV9SIX>F TR0A>I5 I5>IS0 17-1800 9H,S5>9A I5>S5 7Q7RM>CN,SV2 LU2DEK>EA7 LU7YS>EH8 IK5ZUL>EA5 KP4EIT,FG5GP>EH8 I3>I4,9A FJ5DX>EA8 LU7WW>EA7 18-1900 EH7>I5 I3>9A LU7DMG>9A LU1DZK>9A,S5,I2,IS0 LW1DZ>CT,9A,F EH6>IS0 S5>CN 19-2000 LU9EHF,LU7JTW>I5 20-2100 ZD8VHF>I0

Ap 21 05-0600 G>I3 OH7>9A OE6>LY 06-0700 OZ>OH7 4U1ITU>I0(ms),SP3 SP6>LA OH5>OH2 SQ8>9A I5>SP6 ON>9A 07-0800 I5>LY ON>9A 4U1ITU>OE3,I7,9A OZ>9A IS0>F OH1>OE3 T7>S5 OE3>LA DL>I5 08-0900 4U1ITU>PA(t),DL(t) LX0SIX,ON>DL I1>ON ON>SP6 S5>I2 09-1000 S5>I4,I1,I2 4U1ITU>DL,9A,F I5>F I2>I9 F>ON 10-1100 F>ON 11-1200 4U1ITU>DL,F,ON 12-1300 4U1ITU>DL,OK1,YT1 13-1400 I0>I7 4U1ITU>CT,PA,F 14-1500 4U1ITU>PA,EA7,S5 CEbc>I9 3Ctv>9A Z22JE,9J2BO>I9 TR0A>F,I5 15-1600 5U7JB>SV1,I8 I9>SV1 16-1700 ZS6NK>I9 5N6NDP/9>I8,S5,EA6 PY5CC>5B 9H>I5 LU7WW>EA7 V51/ZS6JON>F 17-1800 5N6NDP/9>S5,I4,EA6,9A CX3AN>EA7 9H>I5 5N6NDP/9>I0,9A,I7 PY1RO>EA7 5N0EVR>I0,F,9A PY2XB>IS0 18-1900 PY5CC>5B EA6>I5(bs) PY2XB>I0,I5 PY1RO>I5 49.2(CE)>SV1 LU8MB>EA6 2032 ZD8VHF>SV1 2141 ZD8VHF>CN

Ap 22 13-1400 TR8CA>I8 ZS6TWB>I9 ZS6WB>9H 14-1500 I8>TR8CA 3Ctv>G TR8CA>EA7 15-1600 S5,T9>9A 3Ctv>9A 9H>TR8CA 16-1700 Z21FO>EA7,EA5 ZS6GVD>IS0,I0 V51E>SV1 ZS6WB>OE3,PA LU8MB>EA7 ZS6TWB>YO3 I2>LX ZP6CW,LU1DMA,LW3EX,CX4CR>EA7 V51/ZS6JON>IS0 9J2KC>I0,IS0 TR8CA>EA5 ZS6NK>IS0 17-1800 OZ,G>PA V51E>9A,S5 OX>OH5 PP5JD>EA7 OH2>OH5 OZ>ON,DL OH0>SK7 PY5CC>I2 YL3>LY ES4>LY OH6>OH5 18-1900 OH3>LY OZ>ON,F CT0SIX,IS0 PY5CC>I8 CE0ZIS>JY PP5JD>F,I2,HB OH6,OH7,OH0, OH3>OH5 47.9(CE)>I1 YL>LY PP5OW>F OH8>OH6 T7>CT LW1DZ,PY1RO>I2 19-2000 PP5OW>F PY1RO>I1,DL SM0>SM3 G>PA 20-2100 OZ>EA3 G>YZ1 SM6,OH9>OZ 2244 EH6>DL

Ap 23 07-0800 IS0>I0 G>I2 08-0900 LZ2CC>DL 09-1000- I5>SM6 T7>DL I5>OE5 I0JX>PA 10-1100 I9>YO7,YO3 LZ2CC,LZ1JH>IS0 PA>F 4U1ITU>I2 SV1SIX>I1 I0>UT7 T7>PA,OE6 LZ1>SP9 11-1200 4U1ITU(bs) EI>OE6 S5,T7>EI EI>OE5,9A 12-1300 EI>I2,I1 G>9A 13-1400 T7>9A 14-1500 I9>PA 9J2KC>EA7 4N1ZNI>F 15-1600 4X,5B4CY,SV9>I9 I9>PA LZ1,T9>F CX4CR>F,GW, EI,PA CX3AN>F,GW 47.9(CE>GW LW3EX>G,GW,DL,F A71AW>5B SV9>EA3,I6 LU1JOG, LU1DMA>F ZS6NK>PA SV1SIX,LZ2,OK1,SQ8,OK2>EA3 EH5>OK1 9H>DL YU1>EA3 F>9A 16-1700 SV9,9A>F YU1>9A SV>HB SP7>OH3 CX3AN>DL,G,9A LU6WBH>F 7Q7RM>F,DL SV8,LZ1>EA3 I9>DL,OE3,PA 9H>PA,SQ6 LZ2>EA3 4U1ITU>I9 CX4CR>G,9A LW6DC>F LU7WW>G,9A,4X VQ9X>I5 F>SQ6 LX>I9,I0 EH6>PA LU8MB>9A PP5JD>9A I8>4X LU9DFN>F SQ6>9A 9H>OE3 IS0>DL I8>I2 17-1800 I9>DL LU7WW>EA7,9A EH6>OZ LU9AEA>9A LU1DZK>F,9A PY5CC>9A,YU4,OK2,OM7 LU8MB>EA7 LZ1,4U1ITU,I9>9A LW3EX>9A I9>OE3, PA,DL PP5LD>9A,F VQ9X,SV9>I5 OM3>SP3 YU4>OE3 PY1RO>9A I9>I1,F CX3AN>EA7 5N6NDP/9>EA3,F I7>I1 LZ2CC>OZ 9J2KC>DL,9A TA,SV9>I5 7Q7SIX>F 18-1900 LU7WW>CT SV8>I5 S5>I9 Z22JE>DL PY1RO>EA7,9A EH6,I8,SV9,S5,DL,I9,SV1>9A I9>DL I7>4X CX3AN> CT Z3>EA3,F 7Q7SIX>PA DL>OE4(bs) S55ZRS.9A1CAL,4N1ZNI,LZ2CC,I8,LZ2CC,SV2, 4N0SIX,SV9>F PY1RO>9A 9J2KC>OZ LU8MB>CT LY>PA 9H>DL PP5JD>CT 19-2000 9H>DL,SP2,4X,F,PA,OE3 F>9A T9,SV8,SV9SIX,I9>F I9>4X EH5>HA5 SV9SIX>I2 SV1>I1,F HB>SV1 SQ2>PA EH5>9A 7Q7SIX,I8>DL I9>LY SV9>LX 20-2100 I8>DL PY2PA>9A I8>PA F>OK2 SV9>I4 OE3>IS0 9H>ON,DL I8,I9>DL ON>PA YT1>EA5 ZP5AA>YU1 21-2200 I9>ON

Ap 24 08-0900 YU1>YO7 09-1000 SP2>I5 I5>PA 10-1100 UT7>OK2 UR5>SP2 11-1200 4U1ITU>HB 11-1200 4U1ITU>CT FR1GZ>5B 14-1500 F,HB FR1GZ>SM5,9H,I8 V51/ZS6JON>I9 CT0SIX>EI 9J2KC>EA7 7Q7SIX>SV115-1600 7Q7RM>I9 4U1ITU>I2 VQ9X>SV1,SV8 7Q7SIX>SV1 Z22JE,4X4SIX>I9 ZS6WB>OH2 ZS6NK>OH1,YO7,EA6 4X,LU8MB>I9 16-1700 FR1GZ>SV8 Z21FO>I9 V51/ZS6JON>EA6,OH5 T99YVZ>OH5 9J2BO>S5,I9,F ZS6NK>PA SM5>YO7,LZ5 OH2>LZ2,LZ5 UR5>PA,SP3 Z22JE>I1,OE6,9A,S5 LZ1>LA 7Q7SIX>SV117-1800 Z22JE>9A S5>9A 7Q7RM>I1,EA3 V51E>I9,S5,EA3,I8,EA5 7Q7SIX>SV1 ZS6GVD>S5,I3 UT8>PA ZS6OB>I2 SM0>LZ5 ZS6DX>EA3 ZS6WB>I2,EA3 UR5>DL LZ2>YO7 3Ctv>F 18-1900 7Q7RM>IS0 YO7>LZ2 7Q7SIX>SV1 19-2100 7Q7SIX>SV14 21-2200 ZD8VHF, 3Ctv,5Ntv,TR0A,7Q7SIX>SV1

Ap 25 06-0700 4U1ITU>9A 07-0800 SV1SIX>SP6,DL YO7,LZ1>I1 SV9SIX>SP6,OE5 US5>DL 08-0900 I8,SP2>I5 S5>I1,F I5>I0 SV1>DL,OM3 SV8>OE5 I9>DL YT1>I1,F OZ>I8 I8>DL I0>PA IK5ZUL>OK2 LZ2>SM6 DL>F

09-1000 GW,I8>DL GB3MCB>I2 YU1,I3,4N1ZNI,S55ZRS.SP6>F I7>ON SP4>EA3 F>OE6,I2 I7,I8,I9,I0,IS0>DL I5>EI S5>I3 I0>PA F>9A IS0,EH2>OZ 10-1100 EI>I5 F>DL,OE1,OE2,ON,OE3 I0,EH6>ON S5>F 4U1ITU>EI G>HB,I2 EH2>PA CT>ON ,OZ LX0SIX,G>F 11-1200 CT>OZ F>ON GW,GB3MCB>F GM>EA5 12-1300 Z22JE>I3,I5,9A,UT5 7Q7SIX>I113-1400 I9>9H ZS6NK>F,S5 ZS6AXT>I1,F,DL,OE3,YU4 ZS4PH>9A,F ZS6TWB>F,S5,OE3 ZS6WB>I1,CT,OK2,I2,F TR8CA>F,I1,I4 FR1GZ>EA7,9H ZS4MB>OE3 TR0A>F 7Q7RM>EA7 CT0SIX>F Z22JE>CT 14-1500 ZS6WB>CT,OZ,I0 LU1DMA>4X ZS6TWB>YO7,I0 ZS5SIX>I9 7Q7RM>4X ZS6DN>YO2 ZS6DX>YO2,EA3,I5 ZS4PH>EA3 ZS6WB>PA OM3>I5(bs),F TR0A>F,I0 I8>I2 ZS6RAD>EA3,EA5 ZR6ZL>EA3,I0 ZR6AFJ>EA3 15-1600 ZR6AFJ>EA3 ZR6ZL>SV1,EA3,I0 ZS6WB>YO2,9A,.F ZS6RAD>IS0,OE3,EA3 ZR6CBK>EA3 GW>F ZS6TWB,ZS6DN>4X ZS6UT>EA3 7Q7RM>I1,EA3 ZR6CBK>I7 16-1700 YU1>EA3,I1 VQ9X>SV1 3Ctv>F Z22JE>I8 ZS6DN,ZS6TWB,7Q7SIX>S5 I3>OE3,IS0 17-1800 5N6NDP/9>S5,I1,F,9A 19-2000 ZS6ZL>I5 LU2NI>F I3>9A PY1RO>G 20-2100 PA>ON HB>OZ CN,PY1RO>EA7 aurora

Ap 26 0416 LY>I5 05-0600 F>9A LZ2>F F>YO7 06-0700 4U1ITU>F,OE5 LZ1JH>F 07-0800 4U1ITU>HB,I1,DL I9>LY SV1SIX,GB3LER>DL LA>F SV9SIX,GM>9A F>SM6 YO3KWJ>I9 08-0900 LA>F SV1SIX>9A,OE6 SV9SIX>OE6 4U1ITU,HB,GB3LER,SM3,SM5,LA,OZ6VHF>F GB3MCB>OZ F>SM7 OY6SMC>I3 OZ,GM3RMK>DL 4U1ITU>I1 SP8>EA5 GM>OE5 I9>LZ2 GB3LER>I1 EI>OK1 09-1000 LA>F ON>LX,DL LZ1>F,I1,EA3,I4 DL>PA SV9SIX>DL,I3 SV8>I3 SV1SIX>DL YO3KWJ,YO5>F UR7>EA3,I1,I9 4U1ITU>LZ3 F>LZ2 10-1100 YU1>EA3,I1,LX 4U1ITU>SV,LZ,F,DL,YU7,9A,PA LZ1>EA3,I4 LZ2>F SV8>HB,I3 SV1SIX,7Q7SIX,I9>OE5 LZ3>I3 YU7>I1,I2 YO5,LY>EA3 I0JX>SP6 I0JX,IZ1EPM>LY 11-1200 YO3KWJ,LZ1,LZ2,YU1,YU7,SP8>F LY2>I1 SM5>T7 SP2>I2 YT1,YO2>DL I9>OZ YU1>4X,DL PA>LZ2 YT4>OZ T7>I4

Ap 27 09-1000 I5>CN YT1>I4 LZ2>YO7 4U1ITU>SP2 DL>OZ F>CN CN.I5 DL>F OE3>SM5 EI>LY 4U1ITU>OK1,9A GD>SP4 LX0SIX,F>LA 10-1100 GM>9A GB3LER>HA1 GM>OK1,OE3,9A GD>I0,9A,OE5,I4 GW>LY EI>GW 11-1200 GD>DL(ms) 4U1ITU>I2 EI,GW>DL G>ON GW>OZ 12-1300 GD,EI>DL GD>PA,I1 OM3>SP9 13-1400 OH2>SM5 4U1ITU>OH2 I2>I4 5N6NDP/9>9A 14-1500 5N6NDP/9>LZ5,HA5,OE8,S5,ON,F,I1,DL,9A,EA3,I3,4U VK9XY>9H LU7FA,LU7YA>EA7 5Ubc>OK1 LU7WW>CT I8>9A 4X>SV2 15-1600 4U>F VQ9X>SV1 I9>A71EM A71EM>9H 4X>LZ5 D44TD>I9,9H,5B FM5WD>CT,EA7(sc 225) 4X>SV8 I4>S5 CN>9A 16-1700 6W/F5VHQ>5B SU1SK>9H VQ9X>SV1 CN,CX4CR,FM5WD>EA7 7Q7SIX,ZS6TWB>SV1 17-1800 OK1>PA D44TD>4X OK1>DL CX4ACH,PP5LD>EA7 YU1>YO7 PA>DL S5>I3,9A XQ3SIX>CT3 PY1RO>SV1 18-1900 I1,LX>PA CE4WJK>EA7 PY1RO>CT 19-2000 PY2XB>EA6 PY1RO>EA6,EA7 EH6>I5 ZD8VHF>SV1 20-2100 3Ctv>SV1 21-2200 ZD8VHF,3Ctv>SV1

Ap 28 09-1000 I5>F 12-1300 VK9XY>5B 13-1400 7Q7SIX,ZS6TWB>I9 4X>9H VK9XY>9H 14-1500 VK9XY>9H 3Ctv,5Ubc>PA LU8MB>9H EH2,EH4>I9(Es) EH7>9A 15-1600 LU8MB>EA7 7Q7SIX,9H(sc)>SV1 CT>9A 5B4CY,OD5SIX>9A I9>CT EH7>I3,I7 9H1SIX>F EH6>OE6 4X4SIX>SV8 EH6>I3,HA1,OE3 T9>EA7 I9>F 16-1700 3Ctv>DL 9H,CT,4X>F I5>S5 JY>I9 EH6>SQ6,9A,I3 LU7WW>I1,9A EH4,S5,EH7,I1>9A 17-1800 OD5SIX,4X4SIX>SV1 IS0>PA,DL,I2 F,EH3,EH6,EH5>9A S5>EA3 9A1CAL>PA EH5>SQ6 I9>DL,PA I0>I8 9H>ON 18-1900 I9,9H>ON PY1RO>DL,9A,S5 LU7FA>I2,9A EH6>TR8CA PY5CC>F,9A,I4,YO5,CN,DL LU8MB>S5 EH6>YO2 S5>9A EH6>YO2 9H>CT PY1VOY>S5,9A,I2 LU9AEA>EA7 CT>I5 EH7>EA6 I9>DL 9H>HB,DL PY2VA>S5,YO5 EH5>YO5 19-2000 LU7WW>I2 D44TD>S5,YO5 PY2VA>I5,I4,F,I1 PY2BU>I2 PY2XB>I1 ZP6CW>I2 PY1VOY>I2,9A PY1RO>I5 LU2NI>EA7,I5,9A PY3ISO>EA7 PU2PVT>9A 7Q7RM>I1 LU7FA>F F>CN 20-2100 ZP6CW>I5,9A,S5,I1 TR0A,3Ctv>SV1 21-2200 ZD8VHF>I1,IS0 PP1CZ>IS0

Ap 29 0626 GB3LER>F 0956 SV1SIX>I2 10-1100 3Ctv>OK1 LZ1JH>F ZS6TWB,5Ztv>SV1 S5>9A 11-1200 ZS6WB>OK1,OK2 ZS6DN>SV1 LZ1,LZ2>EA3 4N0SIX,4N1ZNI>F 12-1300 T99YVZ>F I9>PA F>YO5,9A ZS6TWB>I9,I0,F ZS6DN>F ZS6OB>IS0 9H1SIX>F 13-1400 EH4>PA ZS6MAW>9H FR1GZ>F,CT3,I9 ZS6WB>I0,I4,ON,I8 EH6>I8 GB3RMK>EA3 ZS6WB>9A C93FF>I4,I5,I8,F,EA3,PA,I0,CT VK9XY>EA7 ZS6AXT>HB S55ZRS>F 14-1500 ZS6WB>I3,9A,F ZR6ZL>I0,I8,I2,DL C93FF>PA,F,G,9A,DL,I1,I3 I9>I1 ZS6AXT>YO2 VQ9X>I9 EH5>I3 ZS6NK>9A ZS6DX>DL EH6>OK2 FR1GZ>G,I0,GW,ON SV1>I2 G>I0 ZS6TWB>I2 CX4CR>SV1 15-1600 7Q7RM>EA3 C93FF>PA G>I0 9H>9A T99YVZ>F ZS6TWB>I3 Z22JE,Z21FO>EA6,CT GD>SP6 3Ctv>F 16-1700 VQ9X>SV1 ZS6GVD>9A 9J2BO>EA6,IS0,I4 I)>I5 CX4CR,CX3AN>EA7 EH8>F ZS6WB>ON ZS6MAW>I5 UU2>I9 YU1>YO7 17-1800 7Q7SIX>I3 Z22JE>I3 LU7WW>EA7 UY>I9 C93FF>I5 ZS6DX>YO7 9H>IS0 CX3AN>CT V51KC>I9,YO7 I9>ZC4 FM5WD>EA7(skew) 5B4CY>I9 18-1900 V51KC>F,I4,SV1 5T5SN>SV1,F,I5,EA2,EA3,CT,9A,JY D44TD>CT,EA7,F, EA1,EA3 KP4EIT>EA7(skew),CT FM5WD>CT,F(qtf 230) F>SV1(bs) 6W/F5VHQ>F 19-2000 FM5WD>F,CT XQ3SIX>JY 6W/F5VHQ>CT,9A,S5,EA1,EH3 I9>DL EH8>JY EA5>I7 5T5SN>EA5 I9>ON

D44TD>S5,9A,I5,GW,F 47.9(CE)>SV1 20-2100 XQ3SIX>SV1 ZD8VHF>SV1,F TR0A,LU1DBM>SV1 21-2200 I0>CT(qtf 200) LU5VV>CT ZD8VHF>I5,IS0,DL S55ZRS>EA7 CT0SIX>IS0 EA1>I8 aurora EH5>I4

Ap 30 0558 4U1ITU>OZ 06-0700 F>9A 07-0800 SP2,S5,OK2>F 08-0900 SP4>SP6,OK1 YT1>DL(bs/ms) 09-1000 OK2>F 12-1300 I0JX>EA7(Es) 13-1400 C93CM>I0,EA5 VK9XY>EA5 14-1500 LA>PA I9>EA5 CT3>CT 3Ctv>SV1 16-1700 9H>TR8CA 3Ctv>S5 17-1800 TJ1GD>I8 19-2000 ZD8VHF>IS0 2034 ZD8VHF>I8 aurora

50MHz PROPAGATION REPORT FOR APRIL 2003 BY SV1DH

1. Data for all days (30)
2. Relatively good days on: 2,6,7,10,11,13,14(+),17,18,19(+),23,26,29(+)
3. 48 MHz AF video (3C+5Z)on: 1-30 (R=100%)
4. 55 MHz AF video (5N) on: 2,10,11,12,18,24 (R=20%)
5. Opening to ZS6 on: 1-6,9,13,15,17,18,20-29 (R=70%)
6 " to 7Q on: 1-6,9,13-15,17-20,22-29 (R=73%)
7 " to Z2 on: 4,6,17,18,19,22,24,25,29
8. " to V5 on: 5,21-24
9. " to 5N on: 2,6,11,13,14,21,23
10. " to C9 on: 26,29
11. " to D4 on: 29
12. " to 9J on: 7,11,15,17,18,19,22,23,24,26
13. " to 5T on: 29
14. " to ZD8 on: 1,2,3,5,7,10,11,12,16,18,20-24,26-30 (R=67%)
15. " to TR on: 2,3,5,7,10,11,13,15,18,20-22,24,28,29 (R=50%)
16. " to 5U on: 13,15,18,19,21
17. " to FR on: 17,20,24,29
18. " to VQ9on: 12(1600-1630),13(1500-1740),14(1610-30), 19(1630-45),23(1600-1630), 24(1515-1700), 25(1615),26(1500-1715),27(1500-1715), 29(1600-1615) (R=33%)
19. " to EH8 on: 14,29(E)
20. " to CT3 on: 14(E)
21. " to SU on: 14(E)
22. " to PY on: 2(16-21z in-out),3(16-22z),4,5,6,8,10,16,18,19,22, 27,28 (R=43%)
23. " to LU on: 17(FE77),23,29
24. " to ZP on: 2,3,18
25. " to CX on: 29
26. " to CE on: 29
27. " to EM1U on:17(he heard SV1DH at 1520z- CE Antarctica)
28. " to W4on: 14(Sc)
29. " to VK9Xon: 11(1345-55),13(1445-55),14(1415-1500+1530-50) 17(1300-1405),19(1420-25) F2+TEP? 221st DXCC entity wkd (R=36%)
30. " to 5B on: 4,6 (B),14,28(E)
31. " to 4X on: 8,13,14,17,18,19,23,26,27,28(E)
32. " to JY on: 13,14,17,19(E)
33. " to OD on: 17,18,19,28(E)
34. " to A7 on: 26 222nd DXCC entity wkd
35. " to F on: 6(B),19,20,23,26,28,29(E)
36. " to 3A on: 19(E)
37. " to I on: 4,6,12,18,20,21(B)+13,14,15,19,22,23,26,29(E)
38. " to IS on: 14,23(E)
39. " to EH on: 21(B)+14,23,29(E)
40. " to EH6 on: 23(E)
41. " to 9H on: 22,28,29(B)+14,23(E)
42. " to DL on: 14,15,16,19,23,25,26(E)
43. " to HB on: 23(E)
44. " to SP on: 15,19,25(E)
45. " to OK on: 15,16,19,23(E)
46. " to OM on: 13,16,25(E)
47. " to HA on: 16(E)
48. " to Z3 on: 13(B)

49. " to YO on: 15,18(B)+29(E)
50. " to YU on: 16,18(B)
51. " to 9A on: 19,23,26(E)
52. " to S5 on: 23(E)
53. " to OE on: 19,23,26(E)
54. " to 4U on: 19,23(E)
55. " to LX on: 19(E)
56. " to ON on: 19,23(E)
57. " to PA on: 16,19,26(E)
58. " to OZ on: 16(E)
59. " to G on: 19(E)
60. " to GW on: 14(B)
61. " to GM on: 26(2E)
62. " to UY on: 17,18,19(E)
63. " to ER on: 17(E)
64.Special events on:
1 (1430 VR2 to VQ9)
2 (1645-1730 EH7 to FS+KP4 sc+2100 CEMuzak S1)
3 (0900-0945 5B to JA sc+1630 5B to FR+2100 CEM S1)
4 (0930-1015 5B+JY to JA sc+1245 MUF to HZ>43Mhz)
5 (0900 5B to FR)
6 (0700 VR2 to VU+0900 MUF to HZ>43Mhz+1300 VR2 to VQ9)
7 (1230-1315 MUF to HZ>43Mhz+1600 VR2 to VU+VQ9)
8 (1000-1145 foF2>12,MUF>40Mhz+1100-1200 MUF to HZ>43Mhz+1745 EH7 to KP4 sc)
9 (2329 M2.5 flare)
10 (1200-1400 MUF to HZ>43Mhz)
11 (1015 4X to FR+1320-1445 5B+4X+JY to VK9X+1700 CEM S5!)
12 (1300-1400 MUF to HZ>43Mhz)
13 (1250-1510 VK9X to MEast+1400-1500 to SV1,2,8+1455 to 9H+IT+I0+ 1525-1535 to LZ+1400 first strong Es to MEast)
14 (1415-1610 VK9X to ME+1730-45 9H+EH to FM+ZF sc)
15 (0830 I7 to VK4 short)
16 (1300 PA to FR Es+TEP)
17 (1345-1400 IT+4X to YB+1415 EI to FR+1430 CEM S5+1545 CT+SV1 to EM1U FC74)
18 (0830 VR to VU+1030 5B to VK2 short+1958 M1.1 flare)
19 (0915-25 5B to VK4,8+1015 VR to FR+1100-1600 MUF to HZ>43Mhz by F2 or Es +1445 YO to YB)
20 (0915-1500 MUF to HZ>43Mhz+ 1330-1515 5B+JY to VK9X)
21 (1000-1430 MUF to HZ>43Mhz+1307 M2.8 flare + 1800-1900 CEM S9 47.9+49.2Mhz)
22 (1815 JY to CE0Z)
23 (0106 M5.1+1556 M2.0 flares+?-1430 MUF to HZ>43M+ 1515 5B to A7 Es+1615 CEM)
24 (1000-1445 MUF to HZ>43M+1115 9J to JR6+1200 5B to FR+1230 foF2>12,MUF>36M KM18+1253 M3.3 flare)
26 (1130 JA to VU+1400 5B to YB+A7+1445 5B to YA Es)
27 (1415 9H to VK9XY+1500-1600 MUF to HZ>43M)
28 (1215 5B to VK9XY)
29 (0459 M1.1 flare+1340 EH7 to VK9XY+1800 EH7+CT+F to FM scatter+1830-2100! CEM S9+ 47.6+47.9+48.3M+ EH8 video 55275 2Es)
30 (1130 VR2 to VU)
65. DXCC entities heard/worked during APRIL 2003 : 60 on all (7) cont !
66. DXCC entities heard/worked on 29th APRIL 2003 : 16 on 3 cont.
67. April 2003 was the best of this cycle.

73 COSTAS

The Americas

Auroral-related

Ap 1 0030 K0KP>W8(EN84 57a) 01-0200 W9(EN34)>W8(EN84) 51a W9(EN51)>W8(EN84 55a) VE8BY>W8(EN84 56AE) 02-0300 VE4ARM>W8(EN84 57AE) 03-0400 VE8BY>W8(EN84 55) VE6EMU>VE6(mode?)
Ap 2 0443 K0KP>W8(EN84 53a)
Ap 3 23-2400 K0KP>W9(55a) W9(EN51)>W9(55a)
Ap 7 10-1100 K0KP>W8(EN84 52a) VE4ARM>W8(EN84 52a)
Ap 9 00-0100 K0KP>W8(EN84 52a) W2(FN24)>VE3(FN04 57a) W9>VE3(55a FN04) 0622 KL7NO>VE7(557)
Ap 21 0112 VE4ARM>W9(52a EN44) 0200 W0(EN37)>W9(EN44 55a)2331 K0KP>W8
Ap 22 0335 VE4ARM>W9(EN54 51a) 0956 VE4ARM>W8(53a EN84)
Ap 23 1005 K0KP>W8(EN84 55a)
Ap 24 0011 K0KP>W8(EN84 54a) 0828 KL7/KG0VL>VE7(54a) 21-2200 VE3UBL>W1(FN44) K0KP>W1(FN44) 2256 W0(EN33)>W8(EN84 55a)
Ap 25 2145 K0KP>W8(55a EN84) 22-2300 K0GUV>W9(51a EN44) VE4ARM>W9(54a EN44) W1(FN43)>W1(FN43) W1(FN43)>W8(EN84 57a) VE3(FN04)>W8(56a) W9(ENN53)>W8(EN84 55a) W3(FM18)>W8(EN84 53a) W2(FM19)>W8(EN84 54a) VE4VHF>W1(FN44 AE) 23-2400 W9(EN43)>W8(EN84 57a) W0>W9 N0UD>W0(DN70 52a) VA2WW>W1(FN43 57a)
Ap 28 0337 VE8BY>VE6(559a) 0517 KL7NO>VE7(53fl) VE7FG(52a,fl)
Ap 30 2234 W1>W1

Other Modes

Mainland South America<>Europe

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Med		+	+	+	+	+		+		+				+		+	+	+	+	+	+	+	+	+		+		+	+	+
Iberia		+	+		+	+						+	+		+	+	+	+	+	+	+		+		+		+	+		
North														+		+			+			+	+		+			+		

Mediterranean	Iberia	North
LU 7 days 3 14 16 17 20 22-24	11 days 3 5 6 13 16 20 21 23 27-29	3 days 14(HB) 19(LZ) 23(DL,G)
PY 16 days 2-6 8 10 16-19 22-24 26 28	9 days 2 3 5 12 16 21 25 27 28	6 days 16(LZ) 19(DL,HB, LZ,SP,YO) 22(DL,HB) 23(OM), 25(G) 28(DL,YO)
ZP 6 days 2 3 18 23 28 30	1 day 12	1 day 19(LZ)
CX 4 days 3 19 23 29	6 days 2 3 16 18 19 21	2 days 23(G,PA)
CE	3 days 5 12 27	
EM1U 1 day 17	1 day 17	
ZD8 22 days 1-3 5-7 10-12 15 16 18-24 27-30	4 days 5 6 11 15	1 day 29(DL)
CE0Z	1 day 15	

There was a smallish drop in propagation between South America and both Iberia and the other Mediterranean countries - in the former from 22 days to 17, and the latter from 24 to 21 days. However, mirroring what happened in West Africa, northern Europe had openings on 7 days, compared with 2 in 2002, 4 in 2001 and 5 in 2000. It is tempting to suggest that this was Es-assisted, particularly since these openings followed on the widespread arrival of Es. There was a notable contact between CT and the Chilean Antarctic base, EM1U - which also heard SV1DH. And, in addition to a reported contact between CT and CE0ZIS, JY9NX worked the same station on the 22nd.

North America and the Caribbean can scarcely be expected to figure prominently in an April report. However, EA7KW reported W4MM on the 14th, when SV1DH also mentions (the same?) W4, FJ5DX worked into Spain on the 2nd, and KP4EIT also contacted Iberia on April 2, 8 and 29, with FM5WD and ZF1DC into 9H and EA on the 14th and FM5WD also into EA on the 27th and 29th. Almost all these reports indicate skewed paths, presumably side-scatter off the South Atlantic.

Propagation between North and South America was also a shade better than in 2002, with openings on 22 days compared with 17 in 2002. Most individual countries made a better showing, notably LU with 18 days compared with 9 in 2002. However, signals from the northern swathe of South America were as always sparse. In the north, W4 and W5, unsurprisingly, contributed the bulk of reports but the mid-West was rather more prominent and VE9 made a single appearance.

North<>South America

```
      1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
         +  +  +  +  +     +     +     +  +  +  +  +  +     +  +  +  +     +  +  +     +     +
```

PY<>W2 12
PY<>W4 5 6 14 30
PY<>W5 2 14 21 30
LU<>W1 12
LU<>W2 5
LU<>W3 12 14
LU<>W4 2 3 5 6 8 10 12 13 15 20-22 30
LU<>W5 2 6 12 16 17 20 21 24
LU<>W6 4 19 22
LU<>W8 22 25 26
LU<>W0 19 26 28
HC<>W4 17
HC<>W5 17
HK<>W2 12

ZP<>W1 15
ZP<>W4 3 5 8 14 15 20
ZP<>W5 3 4 5 16
ZP<>W9 3 8
CE<>W2 12
CE<>W3 12 21
CE<>W4 12 14
CE<>W5 12 13 16 26
CE<>W6 21 26
CE<>W7 21 26
CE<>W8 26
CE<>W0 26
CE<>VE9 12
HP<>W4 30
HP<>W5 30

CX<>W2 5
CX<>W4 5 10 20
CX<>W5 16 17 26
CX<>W6 4
YV<>W1 14
YV<>W3 14
YV<>W4 14
FY<>W3 12
FY<>W4 12 14
FY<>W5 15
HC8<>W1 12
HC8<>W4 6
HC8<>W5 17
HC8<>W6 19
HC8<>W0 3

There were no reports of contacts between North America and the African mainland. However, though never easy, paths from South America produced reports of TR on 11 days (5 in 2002) - and several complaints of 'no activity' when the beacons were heard. It seems the few stations active in West Africa rarely turn their antennas westwards, or are asleep by the time the band opens.

Africa<>South America

TR 2(ZP) 4(PY) 5(PY) 11(PY) 14(PY) 16(PY,ZP) 21(PY) 23(PY) 26(ZP) 27(PY) 28(ZP)
S05X 16(LU) 18(PY) 19(PY) S9 2(PY) 5T 4(LU) 7(FY,YV)

Ap 1 02-0300 AsiaTV>PY1
Ap 2 01-0200 A35WE,5W1SA>PY5 YS2MRL>CE3 02-0300 PY1>PY5 PY5>PY2 1543 3Ctv>PY1 ZD8VHF>ZP6 16-1700 SV1SIX>PY5 ZP6>PY5 17-1800 ZD8VHF>PY5 19-2000 SV1DH,SV3KH>PY5 PY5,9H5LE,9H5SA,TR0A>ZP6 20-2100 ZP6>PY5 NH7RO,KH6SX,PY5,TR0A>ZP6 S9TX>PY5 21-2200 KH6SX,SV1DH>PY5 W5OZI(sc S.Pac),N5AW(sc),PY2,ZP6>PY5 SV1DH,KT9RZR,HP3XUG>ZP6 LU5EGN>W5(qtf 190) 22-2300 ZL2TPY>W6 23-2400 ZLtv>W4 XE1KK>CE3
Ap 3 18-1900 LU2NI>ZF 20-2100 HC8GR>W0 W6,ZF2BI>W5(bs) LU1DMA,LU5EDP>W5 21-2200 LU5EDP>W4 5W1SA>ZP6 ZF1DC>W5,W9 SV1DH>ZP6 HC8GR>W0 ZP6CW>W9 CT3DL>ZP6 SV1DH>PY7 22-2300 ZP6CW>W5 5W1SA>W5,ZP6 W4SO>ZP6 XE2>W5 W7>W5(bs) 23-2400 ZL3JT,ZL3TC>W6 EH5CPU,PY7>PP5 ZL3TY,ZL3TPY>W5
Ap 4 00-0100 XE2>W6 03-0400 NH7RO>PP5 1724 5B4AGY>PY1 1851 5T5SN>LU 20-2100 LU1DMA,CX1CCC>W6 21-2200 TR0A>PY7 W6JKV/5>ZP6 22-2300 ZL3NW>W5 TR0A>PY5 W6,W7>W5

Ap 5 00-0100 TR0A>PY7 ZLtv,VKtv>W0 NH7RO>W6 01-0200 ZL4AAA>W6 XE2>W0 0545 VE8>VE6 17-1800 9H5SD,IS0GQX>PY1 48.0(CE)>W5 18-1900 EA7KW,EH7HZ>PY5 LU1DMA>W5 19-2000 9H1BT>PY2 LU7WW,LU2DEK>W4 LU1DMA,CX1CCC>W2 9H5LE,IE9/I2AND,K4RX>W2 20-2100 ZP6CW>W4,W5 PY2SFY>CE3 47.9(CE)>W1 LU2DEK,LU8DIO,CX2AAL,CX5BW>W4 21-2200 W4VQ>PY5 LU7ESX,ZP6CW>W4 CE3>PY2 22-2300 ZF2BI>W4 ZF1DC>W5 TI5BX>ZL(bs) ZL2TPY>ZF LW5DX>KP4 PY1,ZP6>PY2 W6>W4(bs) 23-2400 FO5RH>ZP6 KH6SX>W5 W5>W6 NH7RO,KH6SX,K9FD>KH6>HP2 TI5RVV>K9FD/KH6 KH6/K6MIO>HP2 ZP6>PY2

Ap 6 00-0100 KH6SX>HP2 5W1SA>W7 01-0200 5W1SA>W6 0449 W5>W3 0535 W9>W3 17-1800 EUtv,I5MXX>PY1 W5GPM>W0 W7>W5 IT9XDJ,SV1DH>PY2 18-1900 LU1WBM>W4 CX3AN>HI8ROX 1938 PY1>CE3 21-2200 PP5>PY5 PY2XB,LW3DX>PY1 K2RTH/4>PY2 HC8GR>W4 FM5WD>PY1 XE1KK>ZF ZF1DC,K4RX>PY5 LU7ESX>W5 22-2300 W1RA>W2 W5VAS>ZF ZF1DC,K4RX,NW5E,ZP5>LU LU>PT2

Ap 7 1922 JY9NX>LU PY7>ZP6 22-2300 PY7>ZP6

Ap 8 0312 HC8GR>YV1 19-2000 K2RTH/4,KE4WBO,ZF1DC,XE1KK,W2GFF/4,K9HUY,N4DA?ZP6 CP6RR>ZF LU1DMA>W4 ZP6CW>W4 23-2400 XE1KK,TG9AFX>CE3
Ap 9 0252 HC8GR>HP2 2216 ZLtv>W4
Ap 10 1726 9H1PA>PY1 20-2100 LW1DZ>W5 LU3HR>W4 21-2200 LU6DRV>W5 KD4HLG>ZF ZF1DX(Es),ZF1DC,49.2(CE)>W4 22-2300 CX7LY,ZF1DC,LU7DZ,>W4 XE1KK,W5VAS>ZF 23-2400 CO8LY,LU8MB,ZF1DC>W4 KE4SIX,KQ4E>ZF

Ap 11 00-0100 W7>W4 W5>W2 01-0200 W5HN,K0ETC>W8(Es) K0KP>W4 W5>VE3,W0 02-0300 C6AFP>W5 W8>W4,W5,W3 W0>W4 W5>W8(Es) 0300 W5VAS>W9(Es) 0430 W7GZ>ZF 20-2100 TI2NA>FY 21-2200 FM5WE,FG5GP,J79K>PP5 TR0A,LU9EHF>PT2 ZF1DC>PP5 TI5XP>PP5 23-2400 LU9EHF,KP4>W4 W5VAS>ZF
Ap 12 00-0100 ZLtv>W4 W4>KP4 01-0200 ZF1DC>W4 1507 W5>W8 1855-7 C6AFP,CO8LY>FY5LS 19-2000 EH7KW>PY5 YV4>CE3 FM5WD,FM5WE,FJ5DX>W4 20-2100 CT3DL>PY5 FY5LS>W3,W4 49.2(CE)>W3 FM5WE>CE3 CT3DL,HP3XUG>PP5 LW3DX>W4,W3 LU8MB>W5 CE3SAD>W3,VE9 21-2200 LU8DIO,LW1DZ,LW3EX>W1 LU7DW>W5 LU1DMA>W1,W4 CE3RY>W5 LW3EX>W4 LU6DLB>W3 PY3DU>W2 CE3SAD>W2,W3,W4 LU7DW>W3,W5 CN8KD>PY2 PP5OW>W2,W3 LU5EGN>W5 EH7KW>PY5 22-2300 CE3SAD>VE9,W1,W4 LU8DIO>W3 HK3JRL>W2 HC8GR>W1 EH8>ZP6
Ap 13 12-1300 KP2,TI5KD>W4 18-1900 CT3DL>FY5LS 2058 XQ3SIX>FY5LS 2232 NW5E,ZF1DC>CE3 23-2400 49.2(CE),XEbc,LU8DIO>W4

Ap 14 00-0100 CE3RY>W4 N4RFN,K4RX,P49MR,N4IS,KC4PX,LU8MB,KP4>PY5 TI2NA, P49MR,ZP6CW>W4 01-0200 ZP6CW>W4 NW5E>PY5 TG9AFX>W5,LU PJ2BVU>LU K4RX>PY5,LU P49MR>LU PP5LD,LU3HY,PY5KD>W4 02-0300 LU>YV1 PY5CC>W4 YS1MAE>PY5,LU ZP6CW>YV1,W4 LU1FCO>W4,YV1 LU>YV1 20-2100 W4>KP4 TR0A>PT2 21-2200 V44KAI>FY YV4YC>W3 22-2300 PJ2MI>W3 N3DB>YV1 YV1DIG,FY5LS,KP4,HI8ROX>W4 YV4YC>W1,W3 PJ2MI>W3 LU8MB>W3 23-2400 CE3>ZP6 LU8MB>W3 HI8ROX>W4
Ap 15 00-0100 HI8ROX>W4 W4>KP4 P49MR,ZP6CW>W4 01-0200 ZP6CW,LU1DMA,LW3EX,PY5IP>W4 W1NG>ZP6 02-0300 P40MR,PJ2BR>W4 K4RX>PY5 LU1DMA,PY5CC>W4 18-1900 LU7WW>W4 W4>W5(bs) 20-2100 HK4,9Z4BM>PP5 XEbc>W4 TI5KD,HC8GR>W4 21-2200 ZD8DB>YV4 22-2300 HC8GR>W4 LU4FBH,LU7DZ>W5 ZLtv,VKtv>W4 23-2400 VKtv,XE1KK>W4 W4>W5(bs)

Ap 16 00-0100 W5OZI>CE3 9Z4BM>ZP6 V31JP>W0,W4,W5 XQ3SIX>9Z4BM ZP6>YV1 01-0200 XQ3SIX>W5,YV1 P49MR,TI5KD>PY2 YV4>ZP6 02-0300 ZP6CW,PY5CC,PY2XB>W5 W3XO/5>ZP6 XQ3SIX,ZF1DC>W5 1423 EAtv>W4 1729 S05X>LU LZ2LT>PY1 LU7WW>W5 20-2100 TR0A>ZP6 LU8DDQ,CX4CR>W5 21-2200 EH8,TR0A,4X6HI>ZP6 22-2300 TR0A>PT2 KP4>W4 PY7>ZP6 W4>HI8 2317 XE1KK>ZP6

Ap 17 17-18 48.3(CE>W4 18-1900 LU5VV,LU8DIO,LU7DR,CX3AN>W5 19-2000 HC8GR>W5 20-2100 W4>W5(bs) HC3AP>W4,W5 FY5LS>W5 XE1KK>W4 21-2200 LU8DIO,CX4CR,LU6QI>W5
Ap 18 01-0200 VK2ZXC,VK2ANZ>W7 02-0300 VK2ZXC>W6 0354 VK2ZXC>W6 14-1500 EUtv>PY1 1547 W3CCX>W4 17-1800 YV1>YV5 S05X>PY5,PP5,KP4 EH8>PP5 18-1900 CT3>CE3 ZD8VHF>PY5,PY1 19-2000 CT3>PY5 2048 CO8LY>PY5 22-2300 LW3EX>W5 2344 W3>W1
Ap 19 15-1600 4N7ZZ,SP6MLK>PY5 16-1700 W6,W7>W5 48.3(CE)>W0 17-1800 W7,W8>W5 W0>W7,W5 18-1900 N0LL>W6 W6>W5 1851 YU1EXY>PY5 19-2000 LU7YS>W0 LZ1RB,LZ1KXX>ZP6 IK1JKG>PY2 20-2100 S53EH>PY2 W5>W6 IW2JMC>PY2 PP5LD>KP4 21-2200 EH5DX>PY2 S05X>PY1,PY2 22-2300 EH8JC>W9 LU2NI,LU8ADX,LU7DZ,LW1DZ>W6 2251 HC8GR,XE3>W6

Ap 20 01-0200 W6,W7,W9>W5 W6>W0 W5RP>W0 W7>W9,W0 02-0300 W5VAS>W0 W6,W7,W0>W5 W5RP,W4>W0 03-0400 W7>W0,W9 W6,W7>W5 W0>W6 W5SIX>W0 0405 W7>W6 13-1400 W3>W8 W4>W5 14-1500 W4>W5 1754 EH8BPX>LU 18-1900 ZD8VHF>ZP6 LU2WW>W4 19-2000 KD4ESV,HC8GR>ZP6 HP3>FY5 LU7YS,LW3EX,CX3AN>W4 LU7WW,LW3EX>W5 ZP6>YV4 20-2100 HI8ROX>LU 21-2200 CE4,LU>PY2 LU1DMA>HC2 22-2300 LU7JTW>XE1 2346 W4>W5 XE1JP>CE3
Ap 21 00-0100 CE3SAD,CE4WJK>W7 K6ODY>CE3 01-0200 XQ3SIX>W3 LU,CE3,YV4AB>ZP6 02-0300 XE1KK,PP2SIX>ZP6 XE1>W5 KH2D>VE1 0345 KH6SX>HC2 17-1800 TR0A>PY1 W6,W7>W5 49.2(CE),LW6DC,LU7YS>W4 18-1900 LU2DEK>W4,W5 LU7WW,LU1WBM,LU8EHQ>W4 47.9(CE)>W7 19-2000 KG4WRO>LU PY2XB,PY2WB>W5 FJ5DX>HC2FG XE2>W6 20-2100 LU8EHQ,LU7YS>W4 W1FC/4>PY2 21-2200 LU1EBG>W5 ZLtv>W4 W4>W5 22-2300 LU8EHQ,ZLtv>W4

Ap 22 00-0100 W6>W5 VK4AFL,VK3PA>W6 01-0200 KH6KX>W6 NH7RO>W6,W7 W5GPM>W1 02-0300 W0>W1,W8 W5>W2,W8 aurora W5>W8 W2>W1 W2, W7>W7 W4>W0 W5>VE3,W4 W4>W9(Es) VK4CXQ>W6 V44KAI>HC2 03-0400 VE3,W9,W0>W5 W5>W3,W8 W6,W7,W0,W9>W7 VE6>W6 04-0500 VE6>W6 W6>W7 16-1700 9H1AW>PY5 17-1800 CTtv,EAtv>W4(qtf 140) LU7WW>W5 XE1KK>W6 18-1900 LU2DEK,LU2NI,LW6DC>W5 W1FC/4>ZP6 LU7YS>W4 19-2000 LU6DRV,LU5EGN>W5 20-2100 XE1KK,PY5,V31MD,WA5KBH>ZP6 LU5EGN>W4 PP5LD,LW3DX,CX4AAJ>W5 LU7YS>W4 21-2200 CX4AAJ>W5 KD4ESV>ZP6 LU2DEK>W5 ZLtv,49.2(CE)>W4 22-2300 W4>W8 LU7YS>W8 2356 KE4SIX>W5

Ap 23 00-0100 W4>W5 0131 W5>W4 0320 W7GZ>W5 1645 OM1BM>PY5 2049 CE3>ZP6 2140 TR0A,ZD8VHF>PT2 22-2300 XE1KK>PY5
Ap 24 00-0100 W0>W5,W4 0154 V31MAE>ZP6 0207 TF9AFX>ZP6 1538 9H1AW>PY1 18-1900 LU7WW>W5 XEbc,48.3(CE)>W4 21-2200 W4,W5>W4 W4>W0 22-2300 W5>W4(Es) 23-2400 W4>W5 au
Ap 25 0024 FJ5DX>PY5 0119 W2>W5 0516 VK4ABW>W4(?) 1620 W5SIX>W4(Es) 20-2100 LU1DMA,LU9EHF>W8 47.9(CE)>W2 23-2400 W5RP>W9 aurora

Ap 26 00-0100 W4>W5 TR0A>ZP6 W9>W4 PY2>ZP6 47.9(CE)>W8 W5VAS>W0(Es) W4>W8(Es) K5HN>W9(Es) LW1DZ>W8 01-0200 W4,W5,KP4>W8 W7>W9 W4>W5,W7 XE1KK>W0 LU9EHF,C6AFP,LW3EX>W8 CE4WJK,LU1DMA,LW3DX>W0 W2>W4 CE3SAD>W7,W8 W4>W3 02-0300 CE4WJK>W5 LU9EHF>W0 CX4CR>W5 W9>W7 W4>W3 03-0400 W7>W0,W8
Ap 27 17-1800 EH6VQ>PP5 1841 ZD8VHF>PY1 19-2000 CN8LI>PY2 TR0A>PY1 2200 XQ3>ZP6
Ap 28 17-1800 W8,W9>W4 W3>W2 18-1900 W0>W2 W8>W4 YU7OW>PY2 19-2000 YU1BW>LU YT4AY,I2SG,IK1RLI,YT1ET,I5IAR,YU1DG>PY2 T77GO>PY1 20-2100 IK1XPK,PY2,TR0A>ZP6 2154 9Z4BM>W3 2352 W1>W9

Ap 29 00-0100 VE3>W2 W1,VE9>W9 XE1KK>W7 VE2>W3 W4>VE2 01-0200 W9,W0>W3 XE2,XE1>W7 XQ6SIX>W7,W6 W2>W3 K0KP>W1(Es) 02-0300 XE1KK>W7 W0>W2 W1>W0 XE2,XQ3SIX>W6 W0>W3,W2 W5,W0>W3 LU6QI>W6 03-0400 W5>W3 W4>W0 XE1KK>VE6 W1,W2>W0 0423 WB0RMO>W3 18-1900 W5>W4 W7>W7 LU>ZP6 19-2000 ZD8VHF>ZP6 W4>W0 EH7HZ>PY4 20-2100 XQ3SIX>ZP6
Ap 30 15-1600 HP3XUG>W4,W5 PJ2,HP3>ZF V31MD>W4 16-1700 TI2NA,HP3XUG>W5 V31MD>W4 17-1800 V31MD,HP3XUG>W5 V31MD>W4 ZF1DC>W5 18-1900 TI2NA>W0 W5RP>W4 19-2000 W5>W4 LU7WW>W4 9H1BT>ZP6 LW3DX>W0 20-2100 W0>W4 Aftv>ZF K4TQR>W7 N0LL,K0ETC>W4 W5>W8 21-2200 ZF1DC>W4 22-2300 CO8LY,W4,PP5LD>W5 23-2400 KB4UF>PP5 ZF1DC>W4,W5,W0 V44KAI,LU1DMA,49.2(CE)>W4 XE1KK>W5

Asia and the Pacific

There were apparently no contacts between Asia and either North or South America during the month and although Oceania proved more rewarding in both North and South openings were well down on 2002.

Americas<>Pacific

South America	North America
KH6 2(PY) 4(PY) 6(HP) 21(HC)	5(W5,W6,HP,TI) 22(W5,W6)
ZL	2(W6) 3(W5,W6) 4(W5) 5(W6,TI,ZF)
VK	18(W6,W7) 22(W6) 25(W4)
5W 2(PY) 3(ZP)	3(W5) 6(W6,W7)
FO 5(ZP)	
KH2	21(VE1)
A35 2(PY)	

Indeed, while JA1VOK's report contains its usual crop of, to us, rare prefixes there are few from outside the Asia-Pacific region. These include 5B and JY on the 3rd and 4th and an isolated contact with 9J on the 24th. The relatively easy path to VQ9X/VQ9LA was reported on 8 days. Paths to VK and ZL held up well, with openings to VK4 every day, VK6 missing only on the 4th and VK8 lacking only the 6th, 10th, 12th and 27th for no very obvious reason. ZL was workable on 13 days, compared with 8 in 2002 and 12 in 2001.

JA<>VK,ZL

VK1 2 days 14 23	VK6 29 days 1-3 5-30
VK2 9 days 2 5 6 14 18 19 22-24	VK7 4 days 2 5 6 23
VK4 30 days 1-30	VK8 26 days1-5 7-9 11 13-26 28-30
VK5 4 days 11 16 22 23	ZL 13days 1-3 5 6 9 11 14 15 18 20 26 30

6m DX results in JA during April

DATE	TIME(UTC)	STATIONS
4/ 1	0200-1000	5W1SA, A35WE, DU1/GM4COK, FK8CA/b, 8SIX/b, V73GT, VK2,4,6,8 XV9DT, ZL2AAA,3JT,3SIX/B 0705-0730 S21YY (JA6/JR6)
	1355-1800	9M2TO/B,9M2/JI1ETU/b,VQ9LA,VQ9X/b (JR6)
	1649-1700	VU2MKP (JR6)
2	0155-1400	5W1SA, A35WE, DU1/GM4COK,DU1EV/B,N7ET/DU7, FK8CA/b, FK8SIX/b, VK2-4,6,7RAE/b,7RST/b,8RAS/b, ZL3TY
3	0200-1230	C21SIX/b, DU1EV/B,N7ET/DU7, FK8SIX/b, VK2DN,VK4,6,8, ZL3NE/1,2AGI
	0900-0920	5B4FL (JA2-6)
4	0200-0600	C21SIX/b, FK8SIX/b, VK4,6RSX/b
	0500-0800	S21YY (JA6/JR6)
	0830-1000	5B4AGM, 5W1SA, FK8SIX/b, JY9NX, VK4CXQ,8RAS/b
5	0035-1000	FK8SIX/b, KG6DX, VK2-4,6,7RAE/b,8RAS/b, ZL1ADP,3NE/1, ZL1VHF/b,2AGI,3TY
	0410-0520	KH6SX (JA6/JR6) 0900-1000 5W1SA, FR1GZ (JA6/JR6)
	1450-1600	9M2/JI1ETU/b
6	0205-1300	9M2TO/B, A35WE, DU1EV,N7ET/DU7, FK8SIX/b, KG6DX, KH6SX, VK3DUT,VK4, 6RSX/b,7AN, VR2XMT,ZXC, ZL1VHF/b,3NW
	1550-1630	VQ9X/b (JA6/JR6)
7	0305-1600	9M2TO/B,9M2/JI1ETU/b, DU1EV, FK8SIX/b, P29KM, V63CP,CV, VK4,6,8RAS/b, VK9XI, YB0CBI,YC1MH
	0500-0600	KH6SX,KH6HME/B (JA6/JR6)
	1440-1500	VQ9X/b (JA6/JR6)
8	0300-1330	C21SIX/b, DU1/GM4COK,DU1EV/B,DU3NXE, FK8SIX/b, WH2DX, V63CP,CV, VK4,6,8RAS/b, VK9XI

	1630-1700	DU1EV/B (JA6/JR6)
9	0230-1730	9M2TO/B, DU1EV,N7ET/DU7, FK8SIX/b, V63CP,CV, VK4,6,8, VK9XI, YC1MH, ZL1VHF/b
10	0200-0300	VK4RTL/b
	0750-1200	C21SIX/b, V63CP,VK4,6RSX/b
11	0340-1330	9M2TO/B, C21SIX/b, DU1/GM4COK,DU1EV/B, KG6DX, P29KM, V63CP, VK4,5VF/b,6RSX/b, VK8, VK9XI, VR2XMC, XMT, SIX/b, ZL1VHF/b, 3SIX/b
	1420-1630	VQ9X/b (JA6/JR6)
	1600-1730	DU1EV/B (JA6/JR6)
12	0328-1630	9M2TO/B, BG9BA, BV2DP,2NT, C21SIX/b, N7ET/DU7, FK8SIX/b, VK2QF,VK4,6, VK9XI
	1445-1630	VQ9X/b (JA2-6/JR6)
13	0115-0200	VR2XMT,SIX/b (JA4-6)
	0330-1530	9M2/JI1ETU/b, A35WE, C21SIX/b, DU1BP,DU1/GM4COK, FK8SIX/b, 6K2BJX, K1HP/KH2, V63CV, VK2,4,6,8RAS/b, VK9XI, VR2DXA,XMT,SIX/b
	1340-1400	VQ9LA
14	0300-1800	9M2TO/B,9M2/JI1ETU/b, A35WE, C21SIX/b, DU1BP,DU1EV/B, DU1/GM4COK,N7ET/DU7, FK8SIX/b, VK1-4,6,8, VK9XI, YC1MH, ZL3NE/1,1VHF/b,3TY
	0530-0600	S21YY (JA6/JR6)
	1340-1700	VQ9LA,VQ9X/b (JA6/JR6)
15	0347-0400	ZL3TY
	0540-1030	DU1/GM4COK,DU1EV/B, FK8SIX/b,KG6DX,VK4,6,8, VK9XI
	2250-2300	DU1BP
16	0515-1030	DU1/GM4COK,DU1EV/B,N7ET/DU7, VK4,5VF/b,6RSx/b,8RAS/b
	1054-1200	BG4AGR, 6K2BTX
17	0015-0100	VK4
	0445-1230	C21SIX/b,FK8SIX/b,KG6DX,VK2,4,6,8,VK9XI, YC1MH
	0930-1000	VU2RM
	1535-1600	9M2/JI1ETU/b
	2359-0000	VK4BLK
18	0430-1500	9M2/JI1ETU/b, BG9BA, DU1EV,DU1/GM4COK,N7ET/DU7, FK8BG,8SIX/b, V73GOD, VK2-4,6,8, VK9XI, XV3AA, ZL1VHF/b
19	0540-1600	BG9BA, DU1EV, N7ET/DU7, FK8SIX/b, KG6DX, 6K2BTX,DS4DBF, VK2-4,6,8, VK9XI, VR2XMT, YB0AR,YB0CBI
20	0345-1100	9M2/JI1ETU/b, BG9BA, N7ET/DU7, FK8SIX/b, 6K2BTX,HL1KTX, V73GOD, VK4,6,8, VR2XMT, XV3AA, ZL3TY,3SIX/b
21	0430-1030	VK2QF,VK4,6,8RAS/b
22	0230-1500	9M2/JI1ETU/b, 9M6CT, C21SIX/b, FK8BG,8SIX/b, VK2-6,VK8
23	0345-1600	9M2/JI1ETU/b, C21SIX/b, FK8SIX/b, 6K2BTX, VK1-8
24	0320-1030	BG9BA, C21SIX/b, N7ET/DU7, FK8SIX/b, VK2-4,6-8
	0545-0600	KH6SX (JA6/JR6)
	1123-1200	9J2KC (JA6/JR6)
25	0320-1000	C21SIX/b, FK8SIX/b, VK2FHN,VK4,6
26	0230-1100	DU1/GM4COK, FK8BG,8SIX/b, KG6DX, KH6SX, VK4,6,8, VR2XMT, ZL3NE/1,1VHF/b,2AAA,2TPY,3NW,3TIC,3SIX/b
	0916-0922	9J2KC, VU2RM (JR6)
	1120-1200	VU2RM (JR6)
	1520-1530	VQ9X/b (JR6)
27	0400-0900	9M2TO/B,9M2/JI1ETU/b, BV2DP, FK1TK,8CA,8SIX/b, VK4,6,VK9XY, VR2XMT,SIX/b
	0934-0950	4S7EA (JR6)
	1415-1500	VQ9X/b (JR6)
28	0540-1300	9M2TO/B, FK8SIX/b, VK4,6,8, VK9XY, VR2SIX/b
	0752-0755	FR1GZ (JR6)
	0945-1100	YA4F (JA2-6)
	1525-1600	VQ9X/b (JR6)
29	0400-1500	9M2TO/B, C21SIX/b, T88KL, VK4,6,8, VK9XY, YB0AR,YB0AJR,YB0CBI,YC1EHR
	1423-1430	VQ9LA (JR6)
	1506-1530	VR2XMT (JR6)
30	0400-1400	C21SIX/b, DU1/GM4COK, T88KL, VK4,6,8, VK9XY, ZL3NE/1,1VHF/b,2TPY
	0606-0800	4S7YSG (JR6)

JA1VOK ja1vok@jarl.com DATE: May 26, 2003

Elsewhere

Ap 1 01-0200 VK2tv,C3SIX,VK3>KH6 JA7>VK4 02-0300 KH6,JA8>VK2 05-0600 JA4,JA6>ZL3 A35WE>KH6 07-0800 JA1>V7 JA2>VK4 1046 JA2>HL1 1439 VQ9LA>VR2 1659 JA6>VU2
Ap 2 06-0700 VK6>HL1 JA2>VK6 07-0800 JE7YNQ>VK6 1533 VQ9X>VR2 23-2400 XE1KK,PY1RO>KH6
Ap 3 2349 C21SIX>VK2
Ap 4 00-0100 K6QXY,XE1KK>KH6 0103 PY1RO>KH6 0250-9 PP1CZ,PP5JD>KH6 0830 5W1SA>KH6 21-2200 PY2SFY,XE1KK,XE2HWB>KH6 2250 XE2HWB>KH6 23-2400 W5OZI,TI5KD/3>KH6
Ap 5 00-0100 KG6DX>VK4 NR5O,W7RV>KH6 0141 C21SIX>KH6 05-0600 JA1>VK4 0644 VK8RAS>VK3 VK2>HL1 07-0800 VK2>KH6 VK2>VK4(sc) 08-0900 KH6>VK2 JA1,JA4>VK3 VK2>KH6 09-1000 VK2>KH6 JA0>VK4 1128 VK6RSX>HL1 1403 9M2TO>VR2 22-2300 TI5BX>KH6 23-2400 W5UWB>VK4 HP3XUG>KH6 C21SIX,N6XQ,XE2ED>VK2
Ap 6 00-0100 FK8SIX>VK2 01-0200 VK4(bs),VK5>VK2 0257 JA8>VK3 03-0400 C21SIX>VK3 0653-4 VK4,AH8LG>KH6 07-0800 VU2VVP>VR2 FK8CA>KH6 0806 JA>VK6 1309 VQ9X>VR2
Ap 7 02-0300 HC8GR>KH6 0459 VK6RSX>HL1 05-0600 JA8,HL1>KH6 06-0700 V63CP>HL1 UAtv>VK2 9M2>VK6 0727 VK6>HL1 09-1000 VK8RAS,VK6>HL1 JA2,JA7>VK4 10-1100 VK4>HL1 12-1300 VK9XI>HL1,VR2 1422 VK9XI>BV2 15-1600 VK9XI>VR2 VU3MKP>VR2
Ap 8 0042 C21SIX>VK2 0454 FK8CA>KH6 0533 VK4tv>KH6 0951 C21SIX>KH6 1055 VK9XI>DS1
Ap 9 0653 JE7YNQ>VK6 1248 VK9XI>HL1
Ap 11 23-2400 C21SIX>VK2
Ap 12 9350 Fk8SIX>HL1 0436 VK4>KH6 0921 K1HP/KH2>VR2 13-1400 VR2>VK4 9M2TO,VK9XI>VR2 JA6>HL1 14-1500 JA6,YB2DX>HL1 16-1700 DX1HB,DU1/GM4COK>VK9XI
Ap 13 0146 FK8HA>VK2 03-0400 C21SIX,VK4>KH6 0741 V63CP>VR2 0839 JA2>VR2 JA6YBR>HL1 09-1000 VK6>HL1 BG7IOC>VR2 DU1BP>HL1 11-1200 VK4RGG>VK3 VK2,VK8>VR2 DU1>VK2 12-1300 VR2XMT>VK9XI YB0CBI>VR2 13-1400 VK9XI>BV2,VR2 14-1500 VQ9X,9M2TO,VQ9LA>VR2 UN7QX>VK9XI
Ap 14 0046 VK4>VK1 0353 VK1>HL1 0501 R1tv>VK9XI 0930 VK9XI>HL1 1150 VK7RAE>VK4 12-1300 VK7>VK4 2241 ZL1VHF>VK2
Ap 15 0526 EUtv>VK9XI 07-0800 VQ9LA>VK9XI VK6RSX>HL1 08-0900 VK9XI>HL4 JA6YBR>HL1 09-1000 EH7KW>VK9XI 0940 VK4>HL1
Ap 16 0949 DU1/GM4COK>HL2
Ap 17 0158 ZL4AAA>KH6 0652-59 KG6DX,DS1,VK8RAS>HL1 0703 HL3>HL1 0946 VK9XI>HL3,VK3
Ap 18 01-0200 N6XQ,XE1BEF>VK2 02-0300 KC6NBI,N6HY,N6CA,V73GOD,VK4RTL>VK2 V73GOD>VK3 VK4>KH6 03-0400 VK4RGG>VK3 KC6NBI,WA7JRA,W6EGZ,KG6GGV>VK2 VK2>VK3 04-0500 VK4>VK2 VK4RTL>VK3 0546 VK2>VK4 06-0700 JA1,JA7,JA2>VK3 BG9BA>VR2 07-0800 VK3,JE7YNQ>HL1 JA1>VK6 KG6DX,DU1EV>VR2 08-0900 BD4ABC>VK2 DU1EV>DS4 VK2|>HL1 VU2RM,VK4>VR2 BG9BA>VK2,HL1 0950 VK3>HL1 10-1100 JA2,JA3>VK3 1159 VK2>VR2 12-1300 VR2>VK3,VK4,VK2 1303 VK5>VR2 2222 XE1KK>VK2
Ap 19 0119-20 VK2tv,VK4tv>VK9XI 06-0700 JA7,VK4>VK3 BG6RAV>VK2 07-0800 VK2>HL1 0925 KG6DX>VR2 1157 VK4>VR2 12-1300 VK9XI,YB0CBI>VR2 JD1,9A3TN>VK9XI
Ap 20 22-23300 ZL3SIX,ZL1VHF>VK2 0755 ZL>VK3 0931 N7ET/DU7>HL1 1030-1330 VQ9X>VK9XI 1409 5B4CY>VK9XI
Ap 21 1026 VK4>HL1
Ap 22 0145 C21SIX>VK3 0254 HC2FG>KH6 04-0500 VK4>VK3 06-0700 JE7YNQ,JA1ZYK>VK6 VK4>VK1 07-0800 JA7>VK2 BG9BA>VK6 09-1000 VK8RAS,JA6YBR>VK5 10-1100 VK2,VK4,VK6>HL1 VK7RAE>VK3 DS1>VK2 JA2,DS1,VK5,VK3>VK4 JA5>VK5 11-1200 JA4,JA6YBR>VK3 2231 VK7RAE>VK3
Ap 23 0356 VK3>HL1 04-0500 VK3>HL1 JA1ZYK,VK4RGG,HL1,JA7OQ JA7>VK4 HL1>VK5 05-0600 HL3,BG9BA>VK3 G3IAS>EZ8CQ(?) VK5>DS1 BG9BA>VK5 06-0700 VK2>HL1 BYtv,E2tv>VK3 08-0900 BG9BA>VK2 VK6>HL1 09-1000 VK2>VK6 BG9BA>VK5 JA1ZYK,VK8RAS(sc)>VK3 10-1100 VK6>HL1,VK3 VK4>HL1 6K2BTX>VK3 BYtv>VK3 11-1200 JR0YEE,JG1ZGW,JA9>VK3 JA9>VK7 6K2BTX>VK3
Ap 24 050600 JA6>KH6 06-0700 JE7YNQ,JA0>VK6 VK4>HL1,JA1 07-0800 VK6>HL1 08-0900 VK6>HL1 09-1000 JA2,JA5,JE7YNQ>HL1 2209 ZL1VHF>VK2 23-2400 ZL2,C21SIX>VK2
Ap 25 03-0400 BYtv>VK3 04-0500 FK8SIX,VK4>DS1
Ap 26 02-0300 HC3FG>KH6 0529 JA2>KH6 06-0700 JA2>HL1 07-0800 KG6DX,JA0,VK8RAS>HL1 0754 JA6YBR,JE7YNQ>HL1 08-0900 DU1/GM4COK>HL3 09-1000 VK6RSX>HL1 1043 JA2IGY>HL1
Ap 28 0549 VK6RSX>HL1 0750 JA0>HL1 0814 JA0>HL1
Ap 29 1245 YB0CBI>VR2 1344 T88KL>VR2 1421 VQ9LA>VR2
Ap 30 0433 VK6RSX>HL1 0856 T8*KL>HL1 1123 VU2RM>VR2

28 MHz Worldwide

Compilation and Commentary by G3USF

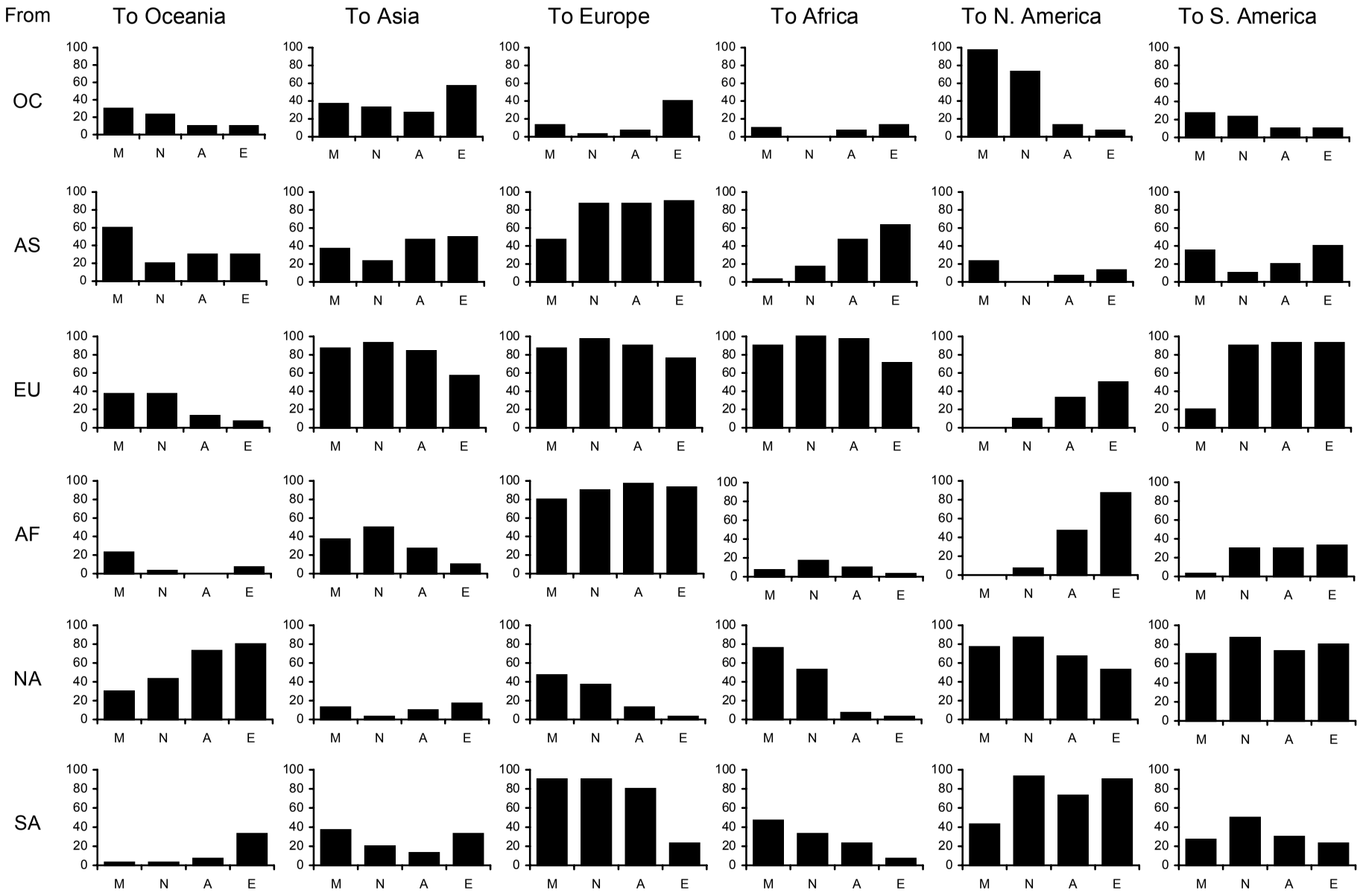
Ten was manifestly not at its best, with the combination of falling solar flux, geomagnetic activity levels and seasonal factors resulting in east-west circuits being markedly down on 2002. Propagation between North America and Asia was particularly badly affected, with even low-latitude stations having few openings. Signals between the two continents were reported on only 10 days. Europe-North America was open on 18 days. North-south paths were, as was to be expected, in better shape. Europe worked into Africa on every day and into South America on at least 29 days (with data incomplete for the remaining day). Europe also worked into Asia every day but the 30th (which was disturbed) and contacts were made within Europe, whether by F2, Es or scatter every day. North America had intracontinental propagation and openings to South America every day. Rather more surprisingly, perhaps, there were openings to Oceania on every day but one - the 15th. Africa was worked on 27 days.

In such a month only two out-of-the-ordinary reports come to mind: UA4LU reported working K1HP/KH2 at the early hour of 0315 on the 12th, while a contact between W1MCP and G3GPA was reported at the no less early time of 0309 on the 21st. Can this really be correct?

Beacon News

28229 ZL2MHF RE78NU near Wellington new beacon (various)
28273 N4HLF apparently change of callsign for KA2GKA (WJ5O)
28295 SK2TEN temporarily QRT. Will move to fresh location (SM0JXA)
28299 SK3TEN QRT (SM0JXA)
28326 ER1BEACON returned on new frequency (various) but status unclear
50026 SR9FHA new beacon in KN09BW Chorlgwica k./Wieliczki (SP9SVH)
50027 CN8MC change of call for the beacon.
50055 ZL3MHB QRT and unlikely to return
50057 K3DEL reappeared here from FM28 but outside US unattended beacon band. Status? (WB2TQE)
50058 LZ2TU reported here. Status unclear (F6IRF)
50065 HK3BZO new beacon HK3SGP seeks reports
50068 JD1YAB reported by JH8XTZ. No further information.
50084.5 K5NZ EM 20 10watts - outside US sub-band so assumed temporary.
50090 OZ1DPR/b reported by GM3WOJ. Temporary?
50203 F6IKY JN35 (G4IFX) No further details.
52275 ZL2SIX new beacon near Wellington RE78NU with fsk transmission 24/7 runs 10 watts to 1/2 vertical dipole

28 MHz Worldwide - April 2003



Time bands: M=Morning, N=Noon, A=Afternoon, E=Evening - used for the "To" continent

Meteor Tests in Southern Africa

By Ray G2AHU

The late Dr Fred Anderson, ZSILA from Worcester, Cape Province, invited me as ZE2JV to join in meteor scatter tests from the first 90 MHz FM Broadcast station in Southern Africa. It was located near Johannesburg. Fred was approximately 1000 km west of south and I was approximately 1000 km east of North from the transmitter, which was about to be tested. The transmitter had about 25 kW power output into a tall array of vertical dipoles. Receiving equipment at ZE2JV was an ex-RAF converter into the station receiver, fed by a horizontal dipole about 10 ft above ground. A tape recorder and a mechanical timer were used to switch on the equipment 0600-0700 daily for three months and similar equipment was used at ZSILA.

Results.

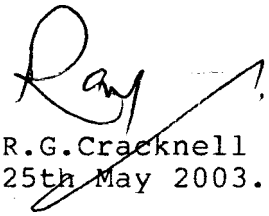
Results were calculated as the number of pulses per hour (pph) received at each station.

1. Reliability: 100% - no days' test was without reception.
2. Best day reception: 168 pph
3. Worst day reception: 71 pph
4. Interference: Nil

Results at ZSILA were similar but by no means identical.

Further Tests.

It would not be possible to use a VHF FM TX in Europe today due to QRM. If a similar test was planned we should have to use a high power 50 MHz transmitter and long yagi antenna for sending and receiving. Directive beams should of course not be pointed at the transmitter and both should be directed at the source of the meteor. These test results were quoted from memory and took place about 45 years ago, strict accuracy cannot be guaranteed. Very high power is not necessary for QSO's. Remarkably low power can be used for meteor scatter. High power might be necessary for similar results to those quoted above however.



R.G.Cracknell
25th May 2003.