THE SIX AND TEN REPORT

December 2004

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Analysis of 28 MHz reports from the UK

28 MHz reports and logs for December 2004 from G2AHU, G3HBR, G3IMW, G3USF, G3YBT, G4UPS, G0AEV, G0DVY, G0IHF, GM4WJA and packet cluster reports. Compilation and commentary by G0AEV.

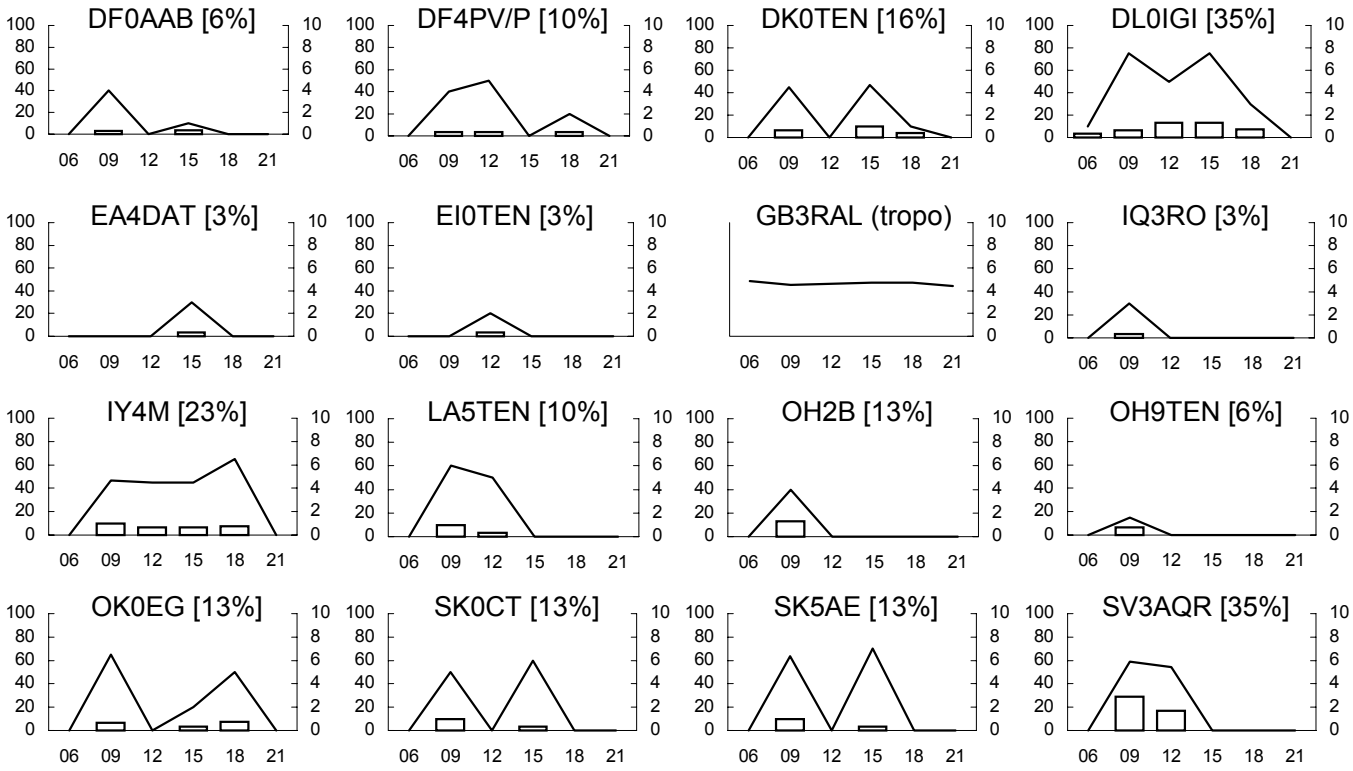
The first week of December brought reasonably good propagation (especially noticeable on paths to N America), but solar and amateur activity both dropped off somewhat as the month progressed. Conditions for the ARRL 10m contest during the second weekend of the month were modest - some might say “poor”. However the contest propagation included restricted band openings to Australia and to North America (with late evening transpolar propagation into GM - described later in this section) as well as more usual DX openings on north-south paths and on single hop paths to the east. Backscatter and a little early morning meteor provided contacts within Europe to add to the contest mix.

A similar pattern of patchy propagation continued into the holiday period. DX propagation remained weak but the days between Christmas and New Year were enlivened with sporadic E, openings appearing on every day from the 25th to the 31st. The best Es of the month, however, was on the 1st.

Beacon graphs legend

Legend for all beacon graphs in this section: - 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



Propagation modes for European beacons.

Of the European beacons only SV3AQR was logged via direct F2. ER1AAZ was not heard at all. EI0TEN was presumably heard by backscatter, and GB3RAL was by tropo at G0AEV. The remainder of the beacons shown in the graphs on the previous page were heard by sporadic E. There may have been a little backscatter on some of these latter beacons but backscatter is no longer contributing significantly to the reception of beacons because signals are now mostly too weak to be heard using typical monitoring set-ups.

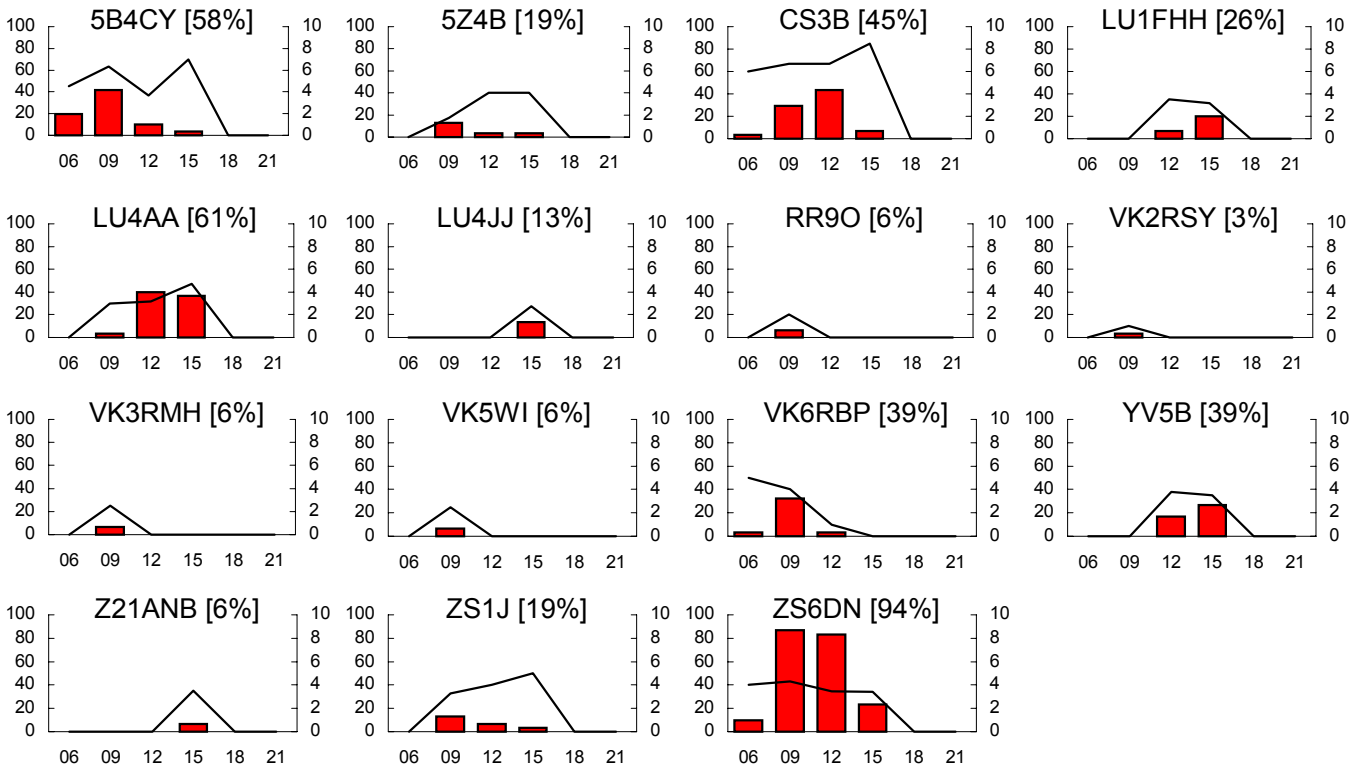
Sporadic E was reported on 50% of days in December – IY4M was the best indicator being reported on a quarter of days. Some of the Es events were brief or localised but a good number were respectable openings that were logged by several different observers and over periods of several hours or more. The situation with Es on 10m was quite different from that experienced on 6m where sporadic E appeared to be very poor this December.

European Beacon Notes.

DL0IGI was QRV all month but LA4TEN is still QRT. Once again OH5RAC proved elusive despite propagation to other parts of Scandinavia - the beacon is working (according to reports from elsewhere). G0AEV heard IQ3RO/b (28.223) on 31st via sporadic E: no other reports have been received for this beacon so perhaps it was a one-off? GB3RAL was off the air for a short period on 28th December, the precursor of a series of outages and periods of reduced signal output that blighted the beacon in January.

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

Beacon Graphs.



Suggested propagation modes.

The solar activity peak at the end of October and start of November repeated 28 days later, though at lower levels, and helped provide reasonable propagation in the first week of December. Most of the east-west propagation occurred during this period. However for most of the month propagation was generally restricted to the usual north-south paths (ZS6DN heard on 94% of days, LU4AA on 61%) and to single F2 hops to 5B4CY (58%) and similar locations. Apart from the relatively easily heard VK6RBP, beacon signals from Australia were very infrequent, as was propagation to the east generally. RR9O was heard on only 2 days and no reports from the Far East or Southeast Asia. This view is re-reinforced by the list of DX heard/worked

Beacon Notes.

4X6TU was off the air for repairs, but made a welcome return to service in late January. OA4B remains on the QRT list. Other NCDXF beacons within the expected 10m range of the UK are working.

10m DX in December 2004

The following list of DX countries worked or heard in the UK comes from packet cluster spots (DX Summit: http://oh2aq.kolumbus.com/dxs/) and from the logs of Six and Ten reporters, including G0AEV's ARRL 10m contest log. The list of DX is much reduced from that shown for November, and very considerably less than that for October. This represents poorer solar conditions: seasonal variations are insufficient to explain the scope of the decline.

DX in December: 4X, 5T, 5U, 8P, 9G, A9, CN, CT3, CE, CX, EA8, EK, FR, HI, KP2, KP4, LU, PJ2, PY, SU, TA, UA9/0, V5, VE, VK, VP8, VR, VU, W, XE, Z2, ZC4, ZF, ZL, ZP, ZS.

DX in November for comparison: 3B8, 3DA0, 4J, 4L, 4S, 5B, 5N, 5U, 7X, 9K, 9M2, 9M6, 9N, 9Y, A4, A6, A7, A9, BY, C5, C9, CE, CN, CP, CT3, CX, EA8, EL, EP, EY, FH, FR, FY, HC8, HI, HP, HS, J7, JT, JY, KP2, KP4, LU, OD, P4, PY, PZ, ST, SU, T5, TA, TY, UA9/0, UK, UN, V2, V4, V5, VE, VK, VK9C, VP2M, VP5, VP8, VP9, VR, VU, W, XE, YI, YN, Z2, ZC4, ZF, ZP, ZS.

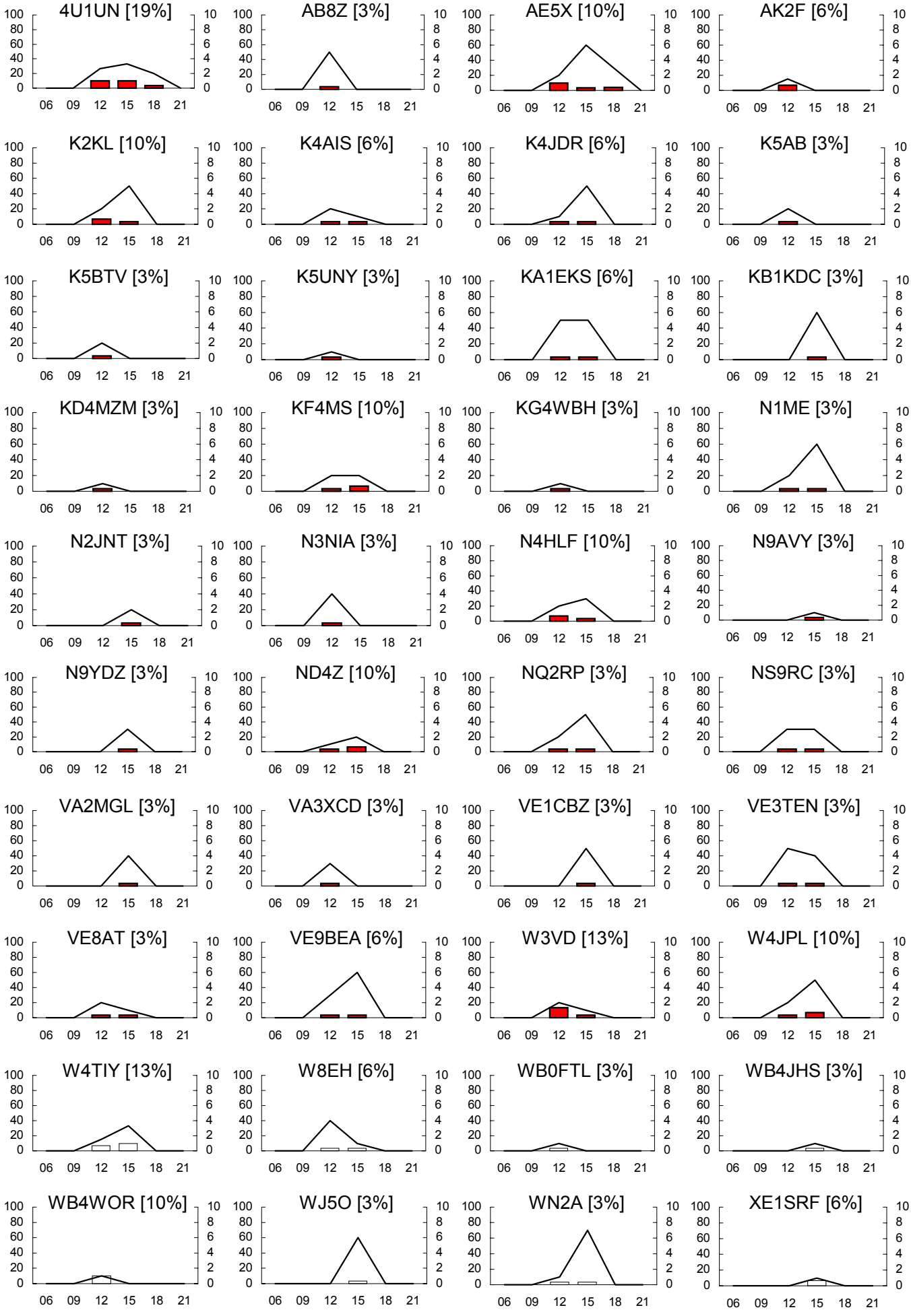
Propagation to North America

There was reasonable transatlantic propagation at the start of the month, most especially on the 5th, and occasional openings during the rest of December. In none of these openings were beacons from the western half of the continent heard. The most reliable beacon - 4U1UN – was only heard on 19% of days. A total of 40 beacons were reported in December compared with 49 in November and 63 in October. All the beacons were heard by normal F2 propagation.

GM4WJA found a good trans-Polar event on 11th December. He worked a number of stations mostly in the W5 area, with W6 and 7 heard, all over the North Pole all with flutter. During the opening he also worked TF3YH via auroral E - interesting as it adds to the body of evidence that Auroral E contributes to this style of propagation. John writes "a nice opening to North America on the 11th on 10m, lots of W6 and 7s heard but many will only work you if you are a good signal with them. Comments from Ws received at GM4WJA include "you are only S5 so I can't work you", "there is something wrong with your audio" (*the auroral flutter?*), "we don't get propagation to GM at this time of day"! John's log follows:

11th	21:32	W5PR		59	11th	22:01	W6YX	CM87WK	59
	21:36	TF3YH	HP94BC	57		22:04	K5TR	EMØØST	59
	21:37	NX5M	EM1ØTD	59		22:12	W5WMU	EM3ØXE	59

G0AEV in southern G was monitoring the band at the time and actively looking for this type of propagation in the ARRL 10m contest, but I heard nothing! Too far south?


4U1UN [19%]
AB8Z [3%]
AE5X [10%]
AK2F [6%]
K2KL [10%]
K4AIS [6%]
K4JDR [6%]
K5AB [3%]
K5BTV [3%]
K5UNY [3%]
KA1EKS [6%]
KB1KDC [3%]
KD4MZM [3%]
KF4MS [10%]
KG4WBH [3%]
N1ME [3%]
N2JNT [3%]
N3NIA [3%]
N4HLF [10%]
N9AVY [3%]
N9YDZ [3%]
ND4Z [10%]
NQ2RP [3%]
NS9RC [3%]
VA2MGL [3%]
VA3XCD [3%]
VE1CBZ [3%]
VE3TEN [3%]
VE8AT [3%]
VE9BEA [6%]
W3VD [13%]
W4JPL [10%]
W4TIY [13%]
W8EH [6%]
WB0FTL [3%]
WB4JHS [3%]
WB4WOR [10%]
WJ5O [3%]
WN2A [3%]
XE1SRF [6%]
100 80 60 40 20 0
10 8 6 4 2 0
06 09 12 15 18 21

Analysis of 50 MHz reports from the UK

UK 50 MHz reports for December 2004 from G2ADR, G2AHU, G3HBR, G4UPS and via packet cluster spots. Compilation and commentary by G0AEV.

Conditions have not been good! None of the regular Six and Ten contributors (bar one) had anything to report at all for the month. So it may surprise readers that I had more than 250 UK 6m "QSO reports" to work with for this December compilation. The great majority – more than 200 – of these were reports of JT6M (i.e digital mode meteor scatter) contacts, contact confirmations or reception reports. JT6M is clearly where most of the activity on six lies these days. Anyone persevering with "traditional" modes would have been hard pressed to make non-local contacts but there were opportunities – mainly during a few sporadic E openings, and the Geminids meteor shower.

What is unclear is whether more non-JT6M activity would have brought to light additional usable propagation. Certainly a lot more sporadic E was detected on 10m but it may well be that the Es MUFs just didn't make it as high as 50 MHz. The ratio of 6m to 10m openings is rather low though – even in the Winter Es season, most 10m Es events also reach 6m. I am sure more SSB/CW contacts could have been made during the Geminids, but JT6M is a more reliable mechanism for such work.

For the record, here are the comments for December from Ted ('UPS), Brian ('HBR) and Eric ('ADR):

G4UPS: "At least there was one opening on 6m!" (*a reference to an Es openings on the 1st*)
G3HBR: "Not much "Six" in this report i.e. nothing at all."
G2ADR: "Regrettably, another nil return"

Sporadic E

Sporadic E results below are in tables grouped by country area and ordered alphabetically by country prefix. Percentages following the country name are the daily reliability values (the number of days when propagation was reported). The first row of each table, "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, "09" for the band 0900 - 1200, etc.). A figure of "0" indicates that signal strength was not reported.

	DL (3%)	HB (3%)	I Italy (10%)	LA (3%)	OE (3%)	SP (3%)	YO (3%)	YU/9A/S5/T9/Z3 (10%)
D	26	1	1 26 29	12	27	26	29	1 26 29
06								
09		6	9		0			9
12				0				
15			6				9	9
18	0		9			9		0
21								

As the table above shows, there was 6m sporadic E in December 2004. The "best" openings were on 1st, 26th and 29th December. What isn't clear from the table is how very localised these openings appear to have been. Data for the opening on 1st comes mainly from the log of G4UPS. Although there were reports from elsewhere in the far west of Britain, these were few in number and it seems that Ted in IO80 had the best of it. On the 26th propagation was best into GM and, if the lack of reports is any guide, southern Gs had no look in. The other main opening (on 29th) was missed by all Six and Ten reporters but packet cluster spots indicate reasonable propagation was experienced in IO91/IO90. Reports on the other dates in the table relate to single cluster spots.

Es Propagation Summary.

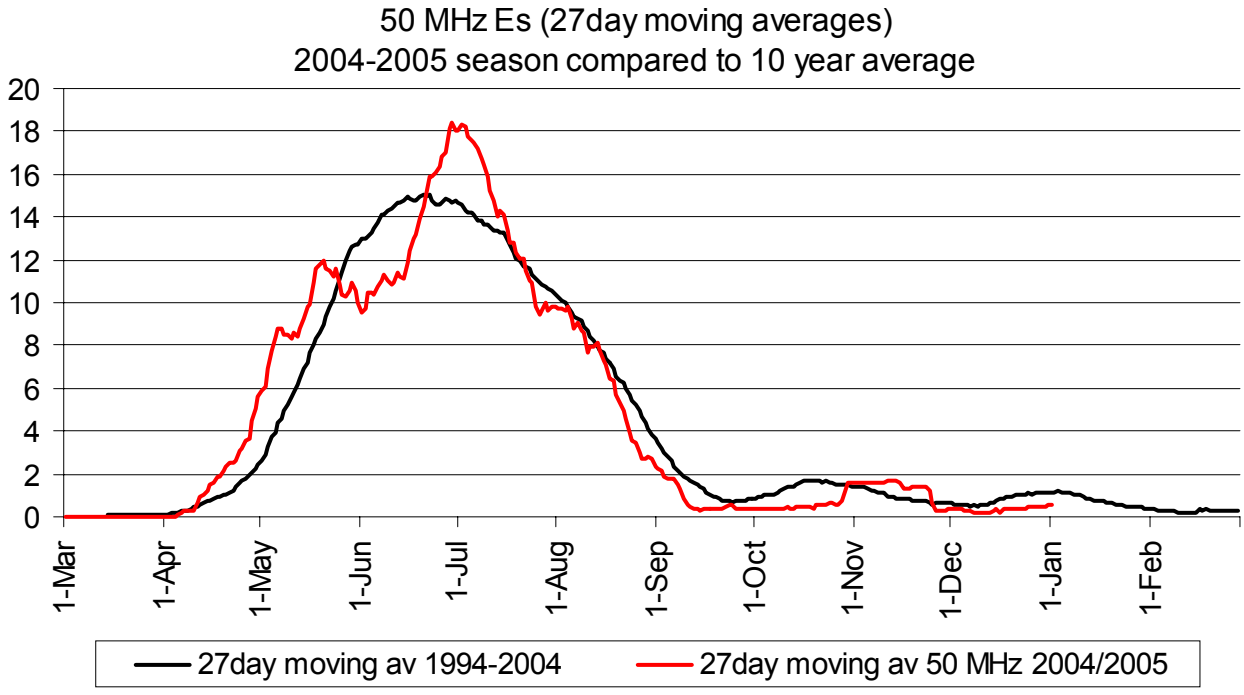
The table below displays total counts of country/areas heard/worked via sporadic E by UK amateurs as described above. Not many!

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																															
09	3																										1				
12												1																			
15																													3		
18																										4					
21																															

The sparse December data have been added to the graph below that shows the progress of sporadic E in 2004 compared with mean activity over the preceding 10 years. This graph displays 27-day moving averages of the daily 6m country/area scores against a 10-year average of the same measure. Details of how this graph is derived were given in the May 2004 Six and Ten 2004 Report.

At this stage of the year interest lies in the distribution of winter sporadic E. The November data included some "aurora-related" Es, which, together with an unusually low level of Es in mid-October, had the effect of shifting the "peak" of activity often seen in late October to mid-November. What wasn't clear until the inclusion of the December data was if the November "peak" was actually the start of the Winter season. It wasn't! The moving average line (although without the benefit of January results) shows a discrete, if very low level, peak at the end of December independent of that in November, and more or less in line with the winter peak seen in the 10-year average.



Tropospheric propagation

Little of interest was reported via the troposphere this month – however the following show some reasonable conditions were available

9th 1239 PA4PA (JO22) > GB3BAA 559
26th 1502 G4PCI > GM4NFC 51
27th 1121 PA0O > GB3BUX "good copy in tropo >500km"

Aurora and Auroral E

Aurora with propagation at 6m were few and generally of the weak "Scottish" type. The event on the 28th seems to have been the best (if number of reports is a valid guide) but even in this instance the propagation was restricted to GM, northern G and OY.

6th	12z	1414-1418	GM8LFB (IO88) > GB3LER 52A, OY6SMC "weak aurora"
	15z	1540	MM0BSM > GB3LER "weak aurora"
	15-21z		Aurora in mid afternoon to late evening at GM4WJA.
10th	18z		Aurora in early to mid evening at GM4WJA.
11th	21z		GM4WJA reports aurora in mid to late evening. On 10m John worked TF via Auroral E, and also worked W5 and W6 (and heard W7) over the North Pole, all with flutter.
12th	15-18z		Aurora in mid afternoon to mid evening (GM4WJA).
15th	21z		GM4WJA > Aurora in late evening.
28th	15z	1756	MM0CWJ > GB3LER 53A
	18z	1945	MM0BSM (IO86) > GB3LER "just went auroral"
		1954	MM0AMW (IO75) > OY6SMC 54A
		2009	MM5AJW (IO88) > G4DEZ 55A
30	15z	1601	MM0CWJ > GB3LER 53A. GM4WJA has aurora into the mid evening.

Meteor Scatter

As mentioned in the introduction to this section on UK 6m propagation, meteor scatter via JT6M was the largest source of reports. I have compiled a list of the number of QSOs per hour period summed for the entire month as I did last month. Once again this analysis shows that most activity was in mid morning (0900-1100) and in the evening (1700-2300z – but especially in the 2000 and 2100 hours), which I think are peaks of human activity not peaks in propagation efficiency.

Table of MS QSOs (mostly via JT6M) in December 2004 by hour

Hour	QSOs	Countries	Hour	QSOs	Countries
00z	1	S5	16z	2	SM
09z	3	I, OE	17z	4	HB, I
10z	8	I, OE	18z	5	G<>GM, I, OZ, SM, 9A
11z	4	I, OE	19z	4	G<>GM, I
12z	1	I	20z	9	G<>GM, I, LA, OE, OZ, SM, SP
13z	1	I	21z	11	G<>GM, I, LA, OE, OK, OZ, PA
14z	3	EI, I	22z	5	I, OE, OH, OZ
15z	0		23z	2	G<>GM, I

The table at the bottom of the page lists the number of MS QSOs by day and includes all JT6M QSOs where MS was explicitly or implicitly determined as the propagation mechanism. Rather sadly there were no reports of MS contacts via CW or SSB. The peak days of the Geminids meteor shower peak are highlighted and, unsurprisingly, these two days show the most QSOs. But random contacts continue to be made at other times – perhaps these are possible at any time?

Table of MS QSOs (mostly via JT6M) in December by day – the Geminids shower peak is highlighted

Date	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
MS QSOs	1	1	2	4	3	0	0	2	1	1	5	10	12	1	0	1	2	3	0	1	1	0	0	0	1	5	1	2	1	1	2

Solar and Geomagnetic Data for December 2004

Data supplied by G0CAS (Sun Mag[1]) and from Internet sources. Compilation by G0AEV.

Sunspot numbers (SEC)	Mean 34.7	Max 62 (2nd)	Min 11 (27th)
Solar Flux (28 MHz)	Mean 94.6	Max 111 (1st)	Min 81 (8th)

Solar data for December 2004 are presented in the table at the end of this section. Numbers in the 28 and 50 MHz columns of this table are the total daily "areas" worked/heard from the UK for each of several propagation modes and are 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, Aurora and Auroral E. F2 critical frequencies from Chilton in Oxfordshire. SIDC spots are from SIDC, and other solar data from the joint USAF/NOAA daily summaries or directly from SEC.

Energetic Events. Energetic solar events (M or X class) are listed below.

1st	0700-0741	M1.1 Sn	29th	1557-1638	M2.3	30th	1034-1057	M2.2 Sf
2nd	2344-0035	M1.5		1910-1925	M1.4		2202-2228	M4.2 2n
						31st	1438-1448	M1.2

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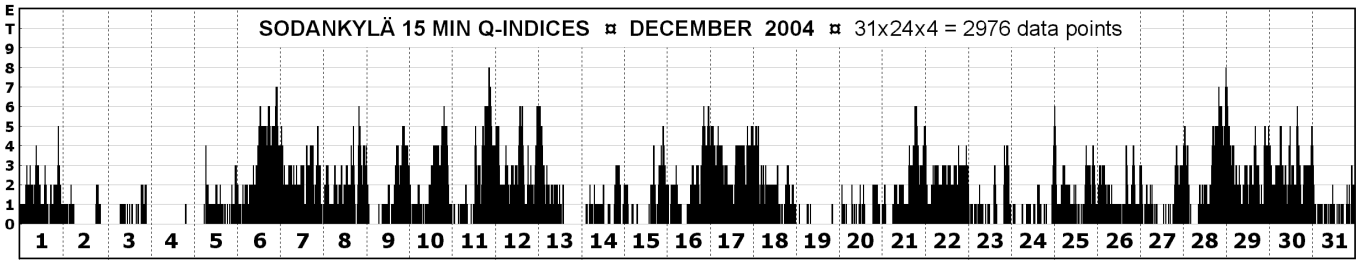
Q-indices from Sodankylä, Finland (Thanks to Vaïno, OH2LX)



The geomagnetic storm events of 7th to 10th November repeated 28 days later (5th-8th December) but at much reduced intensity. The Q index graph above shows that December was a rather quiet month. Geomagnetic data from the Finnish observatories for December 2004 are:

Monthly averages

Sodankylä: monthly Ak average = 16.6 (33.7 in Nov)
Nurmijärvi: monthly Ak average = 10.3 (29.9 in Nov)

Most disturbed December days:

Sodankylä: 28th, Ak = 47 (Nov 9th Ak = 179)
Nurmijärvi: 12th, Ak = 25 (Nov 8th Ak = 191)

10,000 years of solar activity – evidence for future solar activity levels.

Costas SV1DH kindly sent a copy of *Aviation Week & Space Technology* for November 8, 2004, which reported on a paper in *Nature* on the use of the carbon isotope C-14 in ancient tree trunks to indicate past solar activity. A group led by the Max Planck Institute analysed C-14 in buried tree trunks dating back to some 11,400 years and compared the results for the period since 1610 with observed sunspot activity. C-14 in wood is dependent on the flux of cosmic rays in the atmosphere. As cosmic rays are reduced during magnetic storms that occur mainly during periods of high solar activity the authors were able to correlate C-14 with solar activity. Their study suggests the Sun has been more active during the past 60 years than in the preceding 8,000. They predict that the current high level of activity will continue for only a few more decades. So - work your 6m DX now while you can!

[1] Sun Mag: Sunspot and Magnetic data compiled by Neil Clarke G0CAS. Email neil@g0cas.demon.co.uk

K-indices.

The following four tables present the Kp index (from SEC) and the Lerwick ("KL"), Eskdalemuir ("KE"), and Hartland ("KH") K-indices (from the British Geological Survey). Each table is set out with the day of the month in the top row followed by rows containing the K-values or each 3-hour period. The bottom row of each table is the sum of the K-values for the day. Pale (yellow) shading indicates K = 5. There were 5 days in December when the planetary Kp index was 5, but only 2 days (12th and 28th) when UK observatories did so. There were no days with K > 5 (darker grey shading) in December 2004.

Planetary K (Kp)

KP	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
00	1	1	0	0	0	1	2	3	2	1	1	5	4	0	1	1	3	4	1	2	2	3	1	0	3	3	1	3	4	2	3
03	3	1	1	0	1	3	5	2	1	2	1	4	3	1	1	3	4	4	0	0	1	4	2	0	4	3	1	2	4	3	1
06	5	2	1	0	4	4	2	3	1	2	3	5	3	2	2	2	4	2	1	1	3	4	1	0	4	2	3	2	3	4	3
09	2	0	0	0	2	4	3	2	4	3	2	5	1	3	1	1	3	2	1	1	5	5	1	1	2	2	1	3	4	3	2
12	1	1	1	0	1	4	3	2	2	3	4	4	1	2	1	2	2	3	1	1	2	3	1	1	1	2	1	2	4	3	3
15	2	2	1	1	2	4	3	2	2	2	3	5	2	1	2	2	3	2	2	1	3	3	2	2	1	3	1	3	2	4	2
18	1	1	1	0	2	4	3	3	2	3	4	3	1	2	2	4	2	1	1	1	2	2	2	1	2	2	3	4	2	2	1
21	2	1	1	0	1	3	2	2	1	3	4	3	1	2	2	3	3	1	1	1	2	2	2	1	2	2	2	4	2	3	1
Σ	17	9	6	1	13	27	23	19	15	19	22	34	16	13	12	18	24	19	8	8	20	26	12	6	19	19	13	23	25	24	16

Lerwick K (Shetlands)

KL	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
00	1	1	0	0	0	2	3	2	2	2	0	4	4	0	2	2	2	3	0	2	2	3	2	0	3	1	2	2	4	2	2
03	2	0	0	0	0	2	2	2	0	1	1	4	3	0	1	2	2	2	0	0	0	3	0	0	3	1	1	2	2	3	1
06	2	0	0	0	3	2	2	1	0	1	1	3	1	1	1	2	2	1	0	0	2	3	1	0	3	1	1	0	2	3	0
09	2	0	0	0	1	2	1	1	1	1	0	2	1	1	0	0	2	1	0	1	3	3	1	0	1	1	1	1	2	2	1
12	1	0	0	0	1	4	2	2	1	2	3	2	0	1	1	2	2	2	0	1	1	2	1	1	1	1	1	1	2	3	1
15	1	0	0	0	1	3	2	2	1	3	2	4	1	0	2	2	3	1	0	0	2	2	2	1	1	2	0	2	2	3	1
18	1	1	1	0	1	3	3	2	2	2	3	2	0	2	1	4	2	2	0	1	3	2	2	0	2	3	2	5	0	1	0
21	3	0	1	0	1	4	3	3	3	3	4	2	0	2	2	3	3	1	0	2	2	3	3	0	2	2	3	4	3	2	3
Σ	13	2	2	0	8	22	18	15	10	15	14	23	10	7	10	17	18	13	0	7	15	21	12	2	16	12	11	17	17	19	9

Eskdalemuir K (southern Scotland)

KE	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
00	1	1	1	0	0	2	2	2	3	3	0	4	4	0	2	2	3	4	1	2	2	3	3	0	3	2	2	2	4	2	3
03	2	1	0	0	0	2	2	2	0	2	1	3	3	1	2	2	3	3	0	0	0	3	1	0	3	2	1	2	2	3	1
06	3	0	0	0	3	4	2	2	0	1	2	3	2	1	1	2	2	2	0	1	3	3	1	0	3	1	2	1	2	4	1
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12	1	0	1	0	2	4	3	2	1	2	4	2	1	2	1	2	2	3	0	1	1	3	2	0	1	1	1	2	3	3	2
15	1	1	0	0	2	3	3	2	2	3	3	5	1	1	2	2	3	1	0	0	3	2	2	1	1	3	1	3	3	3	1
18	1	1	1	0	1	4	4	2	3	2	3	3	0	3	2	4	2	2	0	1	3	2	2	1	3	3	3	5	1	2	0
21	3	0	1	0	1	4	3	3	3	3	4	3	0	2	2	3	3	1	0	2	3	3	3	1	2	3	3	4	3	3	3
Σ	14	4	4	0	11	25	21	16	14	17	17	26	12	12	12	17	21	18	1	8	19	22	15	3	18	16	14	20	20	22	13

Hartland K (SW England)

KH	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
00	2	1	1	0	0	3	3	3	3	3	1	4	4	1	2	2	3	4	1	2	2	4	3	0	4	2	2	2	4	3	3
03	3	1	0	0	1	3	2	3	1	2	1	3	3	1	2	3	3	3	1	1	1	4	1	0	3	2	2	2	2	3	2
06	3	1	0	0	4	4	2	2	0	1	2	3	2	2	2	2	3	2	1	1	3	4	1	0	3	2	2	1	3	4	1
09	3	0	0	0	2	2	2	1	2	1	0	4	1	2	0	0	3	2	0	1	4	3	1	0	2	3	1	3	2	2	2
12	1	1	1	0	2	4	3	2	2	2	4	3	1	2	1	2	2	3	1	1	2	3	2	1	1	2	2	2	3	3	2
15	2	1	1	0	2	3	3	2	2	4	4	5	1	2	2	2	4	1	0	0	3	2	2	2	2	3	1	3	2	4	1
18	1	1	1	0	1	4	4	3	3	2	4	3	1	3	2	4	2	2	1	1	3	2	2	1	3	4	3	5	1	2	1
21	3	0	1	0	1	4	4	3	3	4	4	3	0	2	2	4	3	1	0	2	3	3	3	1	2	3	3	5	4	3	3
Σ	18	6	5	0	13	27	23	19	16	19	20	28	13	15	13	19	23	18	5	9	21	25	15	5	20	21	16	23	21	24	15

December	28 Areas		-- 50 Areas --				2800	- Spots -		Max			X-ray	Max foF2		Min foF2		-- Particle Fluences --		
2004	Es	F	Es	DX	A	AE	Flux	SEC	SIDC	Kp	Ap	Aa	b.gnd	MHz	Hour	MHz	Hour	2MEV Elec	1MEV Prot	10MEV Prot
01-Dec	8	9	3	0	0	0	111	52	32	5	13	19	B2.3	8.6	12	2.1	05	7.8E+07	1.3E+06	1.3E+04
02-Dec	6	7	0	0	0	0	106	62	29	2	4	7	B1.9	7.9	12	2.3	05	7.5E+07	1.3E+06	1.3E+04
03-Dec	0	13	0	0	0	0	101	58	30	1	3	7	B1.7	7.2	12	2.3	04	8.4E+07	3.1E+06	6.7E+04
04-Dec	2	12	0	0	0	0	97	43	26	1	1	3	B1.4	7.8	12	2.5	20	8.7E+07	3.8E+06	6.3E+04
05-Dec	0	33	0	0	0	0	96	46	29	4	8	28	B1.4	7.8	13	2.9	05	1.0E+08	1.8E+07	2.6E+04
06-Dec	1	16	0	0	2	0	93	47	22	4	19	40	B1.3	9.5	12	3.5	06	7.5E+06	2.0E+07	1.8E+04
07-Dec	1	9	0	0	0	0	90	26	9	5	15	29	B1.2	8.4	12	2.1	07	9.3E+07	1.8E+06	1.3E+04
08-Dec	1	21	0	0	0	0	81	40	15	3	10	19	A9.2	7.5	12	2.1	06	2.3E+08	1.1E+06	1.3E+04
09-Dec	0	6	0	0	0	0	87	39	13	4	8	16	A6.8	7.0	12	2.0	00	2.0E+08	6.5E+05	1.3E+04
10-Dec	0	7	0	0	0	0	85	39	15	3	10	25	A5.2	7.9	13	2.2	06	1.0E+08	5.4E+05	1.4E+04
11-Dec	0	5	0	0	0	0	90	16	13	4	15	32	A5.8	7.3	13	2.1	06	7.6E+07	2.1E+06	1.3E+04
12-Dec	1	2	1	0	0	0	91	26	22	5	36	45	A8.5	7.2	15	1.9	06	3.2E+07	4.2E+06	1.3E+04
13-Dec	0	5	0	0	0	0	90	22	16	4	11	18	A9.5	6.7	11	2.1	05	2.4E+06	3.4E+05	1.3E+04
14-Dec	0	6	0	0	0	0	89	18	12	3	7	19	A8.7	7.2	12	2.1	20	2.2E+06	2.6E+05	1.4E+04
15-Dec	0	1	0	0	0	0	89	28	8	2	6	14	B1.0	7.6	11	2.1	04	5.2E+06	2.1E+05	1.4E+04
16-Dec	0	7	0	0	0	0	90	14	10	4	10	27	B1.5	8.2	10	2.1	21	3.8E+06	4.1E+05	1.4E+04
17-Dec	0	4	0	0	0	0	90	40	24	4	15	30	B1.1	8.4	12	2.0	05	9.5E+06	9.8E+05	1.4E+04
18-Dec	1	7	0	0	0	0	91	40	21	4	12	22	B1.1	7.1	13	n.a.	n.a.	5.7E+07	1.2E+06	1.5E+04
19-Dec	0	2	0	0	0	0	94	29	17	2	4	7	B1.2	7.0	14	2.0	20	7.8E+07	9.8E+05	1.4E+04
20-Dec	0	3	0	0	0	0	94	30	11	2	4	8	B1.3	7.1	13	2.0	04	8.2E+07	1.4E+06	1.5E+04
21-Dec	0	5	0	0	0	0	101	25	15	5	12	29	B1.5	8.3	14	2.1	05	1.6E+07	1.4E+06	1.5E+04
22-Dec	3	3	0	0	0	0	99	47	26	5	19	38	B1.3	6.6	15	2.1	06	3.2E+06	1.0E+06	1.6E+04
23-Dec	0	4	0	0	0	0	96	47	14	2	6	14	B1.1	7.2	13	2.3	04	2.4E+06	3.8E+05	1.5E+04
24-Dec	0	5	0	0	0	0	97	42	22	2	4	10	B1.3	7.2	10	2.1	20	3.6E+06	5.4E+05	1.5E+04
25-Dec	2	6	0	0	0	0	93	26	12	4	12	27	B1.0	7.3	12	1.8	02	1.4E+06	1.0E+06	1.5E+04
26-Dec	4	6	4	0	0	0	92	16	10	3	10	25	A9.2	7.8	14	n.a	n.a	2.7E+06	3.6E+05	1.5E+04
27-Dec	2	4	1	0	0	0	97	11	10	3	7	18	B1.2	6.9	15	2.3	07	7.6E+06	5.8E+05	1.4E+04
28-Dec	5	4	0	0	3	0	105	27	17	4	16	34	B2.4	n.a	n.a	n.a	n.a	6.6E+06	9.2E+05	1.4E+04
29-Dec	6	5	3	0	0	0	99	27	12	4	18	29	B2.8	n.a	n.a	n.a	n.a	2.1E+07	9.2E+05	1.3E+04
30-Dec	3	1	0	0	1	0	100	34	20	4	15	48	B1.8	n.a	n.a	n.a	n.a	1.9E+07	8.2E+05	1.4E+04
31-Dec	4	3	0	0	0	0	99	60	24	3	8	13	B1.5	n.a	n.a	n.a	n.a	3.0E+07	4.0E+05	1.3E+04
Sum	50	221	12	0	6	0														
Average	1.6	7.1	0.4	0.0	0.2	0.0	94.6	34.7	17.9	3.4	10.9	22.6	B1.3	7.6	13	2.2	03	4.9E+07	2.3E+06	1.8E+04
Maximum	8	33	4	0	3	0	111	62	32	5	36	48	B2.8	9.5	15	3.5	07	2.3E+08	2.0E+07	6.7E+04
Minimum	0	1	0	0	0	0	81	11	8	1	1	3	A5.2	6.6	10	1.8	20	1.4E+06	2.1E+05	1.3E+04

50 MHz Outside Britain

Compilation and Commentary by G3USF

Europe, Africa and the Middle East

Auroral-Related Propagation

A scanty month: a possible eighteen auroral days (one or two remained a bit speculative) but none that ventured south of the Baltic-GM divide - indeed none that produced any substantial number of reports. Thanks as always to OH5IY and OH2LX for the data from Finland.

Dec 1 2148 JW7SIX>LA(JO49 559 mode?)

Dec 2 1939-41 JW5SIX>OH6(mode?) JW7SIX>SM2(599 mode?)

Dec 6 1341 49750(UA)>OH6(KP02 56a) 1350-1410 Au>OH5IY 15-1600 JW5SIX>OH7(58) 16-1700 OZ(JO49)>LA(55a) SM7(JO59)>LA(57a) OH5>LA(53a) 17-1800 JW7SIX>SM2(599 AE) JW7SIX>SM0(JO99 AE?) 18-1900 JW5SIX>SM0(539 MS/AE?) JW7SIX>LA(JO49 549) JW9SIX>LA(JO49 559) LA(JO59)>OZ(JO54 52a)

Dec 7 1300 49750>OH6(KP02 52a)

Dec 8 1732 JW5SIX>SM2(579 AE)

Dec 9 1716 49750(UA1)>OH6(KP02 52a) 1819 LAtv>SM0(58a) 2152 -3 LA7SIX>LA(JO49 559) GB3LER>LA(JP99 529) 22-2300 LA(KQ10)>LA(JO59 599) LA7SIX>SM0(539) JW9SIX>SM0(529)

Dec 10 1459 49750>SM5(56a)

Dec 11 2140 JW9SIX>SM5(JO89 559 AE)

Dec 12 1430-1630 Au>OH5 15-1600 OH3(KO25)>LY(KP20)(mode?) OZ>SM0(59a) OH2>SM0(59a) OH6>OZ(57a) LA>SM0(JO99 55a) 16-1700 LA(JP53)>LA(JO49) OZ>SM0(JO99 mode?) LA>SM0(JO99 LY>OZ(mode?) 2120-30 Au>OH5

Dec 15 2110 TF3SIX>LA(JP99 529 mode?)

Dec 16 1430-40 Au>OH5 1900-10 Au>OH5 2030-40 Au>OH5 2106 OH9SIX>SM3(55a)

Dec 17 1632 JW5SIX>LA(JP99 559 mode?) 18-1900 49750(UA)>SM0(58a) JW7SIX>SM3(559 AE) 21-2200 JW9SIX>SM3(589 JP82 AE) JW5SIX>SM0(519 AE)

Dec 18 2222 OH9SIX>SM2(55a)

Dec 21 1840-50 Au>OH5 2000-10 Au>OH5

Dec 25 1856 49750>OH6(KP02 53a)

Dec 26 2038 OH9SIX>SM2(KP15 55a)

Dec 28 1700-60 Au>OH5 17-1800 JW5SIX>OH8(569 mode?) JW5SIX>SM3(599 mode?) 1710-30 AuFM>OH5 19-2000 SM2>OH8(mode?) 20-2100 OH3>SM0(JO89 55a) 2109 OH0>SP2(55a/t) 2120-2300 AE(UA)>OH2 2300-20 Au>OH5

Dec 30 1530-1610 Au>OH5 2109-30 AE(UA)?>OH2

Other Modes

We can do no better than echo SV1DH's remark: 'a very poor month' - though Costas did at least capture African video on four days. Right across Europe not one contact was reported that could be labeled 'dx' and on no day were more than a handful of contacts reported. What reports there were predominantly employed JT6M. For the most part the mode would appear to have been MS, especially during the Geminids on the 11th to 13th. Where the reporter suggested this as the mode that is indicated. Otherwise the listing flags (jt). To pick up an earlier comment by G0AEV, the wider continental catchment here suggests that random ms QSOs were possible on most days; possibly many opportunities were missed due to low activity, especially in the morning period.

Occasional reports appeared to be attributable to Es - as on the 1st and 29th - though they were not always identified as much. A few were credited to tropo, though none were over exceptional distances.

As usual, beacon callsigns are given in full.

Dec 1 1043 F>OZ 11-1200 G>I2 GB3BUX>I5 1653 SM7>SM0(jt) 2304 G>I5(jt)

Dec 2 1135 UT5G>OZ 1449 HB9SIX>DL

Dec 3 1503 F>I5 21-2200 GM>PA(ms) DL>SM(ms) OZ>SP6(ms) 22-2300 OZ>OE5(jt) OZ>I5(ms)

Dec 4 0904 OZ>I3(jt) 1207 HB9SIX>DL(t) 17-1800 G>SM0(jt) OZ>SM0(JT)

Dec 5 1348 PA>SM0 14-1500 PA>I4(jt) 15-1600 I8>I0 OK1>PA(jt) I0>I5 GM>OZ(jt) 2118 OZ>I3(jt)

Dec 6 1336 9Ltv>SV1

Dec 7 0949 G>I2(jt) 15-1600 SV1IX>I5 HB9SIX>DL 1733 I5>I2 2032 I5>PA(ms)

Dec 8 1442 9A0BHH>S5(t) 1548 I5>S5 2157 OZ>SM5(jt) 2213 G>SM5(jt)

Dec 9 1239 GB3BAA>PA

Dec 10 1108 OE5>OZ(t) 1422 OZ6VHF>LA(t)

Dec 11 0924 HB9SIX>DL 11-1200 PA>I2(jt) G>I4(jt) 1213 9Ltv>SV1 1850 SM0>PA(jt) 2058 G>SM5(jt) 2148 G> SM5(jt) 2221 SM4>SM5(jt)

Dec 12 08-0900 IS0,I3>9H 0959 SM0>I3(ms) 1035 OZ>I2(jt)13-1400 OZ>I4(jt) SM7>I4(jt) 14-1500 I5>SP6(ms) 1857 SV1>I3(ms) 19-2000 I0>I3(jt) I0>OZ(jt) 20-2100 SM0>EI(jt) 9A>SM0(jt) 21-2200 SQ7>I3(jt) OH6>I3(jt) 2302 SO5>I3(jt)

Dec 13 0717 I0>9H 1530 OH6>SM5(jt) 18-1900 PA>I5(jt) SM7>I5(jt) I3>IS0(jt) G>IS0(jt) 19-2000 G>I5(jt) G>SP6(ms) LA>SM5(jt) I3>SM5(jt) OZ>SM5(jt) OZ>I3(ms) 20-2100 I0>PA(jt) SM7>SP6(jt) 21-2200 I2>SP6(jt) OK1>PA(jt) 22-2300 OZ>I2(jt) 23-2400 OE5>PA(jt) OZ>PA(jt)

Dec 14 21-2200 SM4>OK1(jt) G>OK1 PA>I1,I5

Dec 15 no reports

Dec 16 1742-52 UT5G>OK1,I5(Es)

Dec 17 2144 GM>SP6

Dec 18 1150 I0>PA(jt) 1526 G>LA(jt) 1656 HB>ON(jt) 2105 VE6JW>IW5DHN(eme) 2245-2325 56MHz(UR>OH2(Es?)

Dec 19 08-0900 S5>I5,I2 1136 I0>ON(jt) S5>DL(t) G>PA(jt) I3>PA(jt) 12-1300 OE5>I3(jt) S5>I1 2134 OZ>I5(jt)

Dec 20 10-1100 G>OE5(jt) I0>OE5(jt)

Dec 21-23 no reports

Dec 24 1105 HB9SIX>DL

Dec 25 10-1100 I5>I0(jt) PA>I3(jt) 11-1200 I0>PA(jt) G>I3(jt) OE5>PA(jt)

Dec 26 10-1100 I0>I5(jt) I0>F(jt) I0>I2(jt) 11-1200 49750>EI 12-1300 I3>PA(jt) OZ>I3(jt) 1348 G>I4(jt) 1454 GM>EI(ms) 19-2000 EI>S5 GM>DL 20-2100 I3>EI(jt) GW>S5 OE3XLB>S5

Dec 27 1121 GB3BUX>PA(t) 1923 I3>OM5(jt)

Dec 28 0928 G>OE5(jt) 10-1100 G>SP6(jt) 1120 I5>ON(jt) 1755 I5MXX>S5(t) 18-1900 I0>I5 19-2000 OH0>SP2(t) OH0>S5 G>OZ(jt) OZ>S5 20-2100 OH0>SP6 21-2200 SM7>S5(ms) OH4>OH8

Dec 29 15-1600 49750>EI G>S5 UU5SIX>OZ G>I5(jt) YO7>SM5 1503-1610 UA>OH2(Es) 16-1700 G,I0,S5>PA PA>I5 GB3BUX>I0 SV1SIX,I0>ON 17-1800 OZ>I7 YO7>PA ON>OM5(jt)

Dec 30 1500-15 UR>OH2(Es)

Dec 31 09-1000 OE5>OM5(jt) 11-1200 OH9SIX>OZ ON>I3(jt) 15-1600 I0>PA(jt)

50MHz PROPAGATION REPORT FOR DECEMBER 2004 BY SV1DH

1. Data for all days (31), except 4-5th
2. Relatively good days on: -
3. 48 MHz AF video (9L+3C) on: 2,6,11,13 (R=14%)
4. 55 MHz AF video (5N) on: NIL

5. Opening to I on: 7(E)

6. Special events on:
   1 (0720 M1.1 flare+2145 ZL2 to XE1/B 1-2Es+TEP >10000Km, by ZL2TPY)
   2 (0006 M1.5 flare+1900 ZL2 to XE1/B)
   6 (0800-1030 VK2,4,5,6 on 10m)
  11 (0900-1000 VK2,3+ZL on 10m)
  14 (2200 ZL2 to XE1/B)

19 (0030 ZL2 to XE1/B)
24 (1400-1530 W1 to 48Mhz EU video+2230 CN to PY1)
25 (1115 W1 to 48Mhz EU video)
29 (1625 M2.3+1920 M1.4 flares)
31 (1445 M1.2 flare)

A very poor month!!

7. DXCC entities heard/worked during Dec 2004 : 1 on 1 cont
8. DXCC entities heard/worked on 7th Dec 2004 : 1 on 1 cont.

73 COSTAS

The Americas

Auroral-Related Propagation

Dec 11 1742 VE6EMU>W7(52a)

Dec 12 1100 VE4ARM>W9(EN44 51a)

Dec 13 0048 VE4ARM>W9(EN44 52a) 01-0200 N8PUM>W9(EN44 52a)

Dec 17 0240 VE6EMU>W7(53 AE) 0324-54 VE7FG>W7(51a) VE6ARC>W7(55a)

Dec 28 2046 VE4ARM>W9(EN55 51a) 2358 N8PUM>W9(EN44 54a)

Dec 29 00-0100 W8>W9(EN44 57a) 01-0200 VE4ARM>W9(EN44 54a) 02-0300 KL7/KG0VL>VE6(51a) VE4VHF>W9(EN44 54a) 04-0500 W9>W9(EN54 58a) W1(FN44)>W9(EN44 55a)

Other Modes

The Americas had a more eventful month than Europe. The XE1KK beacon was reported in ZL2 on the 1st, 2nd, 9th and 19th, following the openings over this path discussed in our November Report. On top of that was PY1RO's contact with ZS6BTE on the 1st - all the more remarkable because such contacts are rare even at solar maximum. This rather puts in the shade the other better-than-routine reports of TR<>FM on the 2nd and CN<>PY on the 24th.

There were only two reported openings between the US and South America on the 10th (HK<>W5) and 15th (FY<>W4). The Caribbean was more favoured, with openings on 13 days -but this was well down on November's results. In addition, the ZD8 beacon was reported into the Caribbean on the 2nd, 5th, 20th and 21st, with PY0S (St Peter and St Paul Rocks) a rare one, also on the 5th.

Unlike Europe, North America enjoyed a seasonal sub-peak in Es, with openings lasting several hours and at times reaching coast to coast. These were most marked between the 26th and 30th; there were also several openings between Alaska and western states or provinces, which appear to have been attributable to Es. So, too, were contacts between C6, KP4, PJ2 and VP9 and the north-eastern or central US. ZL tv was reported on the 9th and 28th.

Caribbean<>South American Mainland

	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
		+	+	+	+		+		+					+	+					+				+	+	+				+	

Dec 1 1637 ZS6BTE>PY1RO(jt)

Dec 2 21-2200 TR0A,ZD8VHF>FM5JC 2247 FJ5DX>PP1CZ 2348 9Z4BM>PP1CZ

Dec 3 0013 P49MR>PP1CZ 1420 W1>W4 1552 WB5LLI>W0(Es) 2029-30 VP2MQQ>K8LEE

Dec 4 0016 FJ5DX>FM5JC 01-0200 9Y4AT>PU2OCZ W1>W2 14-1500 W1,W8>W4 1536 W4>W9 1705 VP2MQQ>FM5JC 1842 W8>W8 2359 PJ2BVU>PY2VA

Dec 5 14-1500 W1>W4(sc) W4>W4 2154-8 K5AB>W0(Es) ZD8VHF>FM5JC 22-2300 PY0S/PS7JN,PY3KN>FM5JC 2304 PY2SFY>FM5JC

Dec 6 0052 KD4ESV>W2 01-0200 K4KWK>W3(skew) W4,W5>W1 W1>VE3 W4>W2 K0UO>W3 0217 W1>W4 0326 W1>W3 21-2200 W4>W9 W4>W5 22-2300 W4>W9 TI2NA>WD0M 4A1AC>AB5K

Dec 7 00-0100 FJ5DX,9Y4AT>PP5JD 0134 W5>W7 02-0300 W8>W8 XE2>W5,W0,W4 KD4ESV,W7>W5 W5,W7>W4 03-0400 W6,W7>W5 XE2>W0 XE2HWB>W0(Es) W5>W0(Es) 04-0500 XE2,W7>W5 W9>W3(jt) XE2,W5>W6 1901-3 K0UO,W0IJR>W7 20-2100 W7>W7(Es) W7>W6 2106 W7>W6 2234 VE7>W7

Dec 8 0446 W6>W7 0505 W6>W6 12-1300 W3>W4 VE2>W4 1341-7 KD4ESV>W5 W9>W4 1453 W5>W4 15-1600 W0>W4 W9>W2 16-1700 W4>W4 22-2300 N0LL>W8,W4 W5,K0UO>W2,W3 W8>W4 W1>W0 W9>W3 23-2400 W4>W3,W4 W8,W9,K0UO>W4 W4,W5>W9 W9VW>W4,W0 W7>W4,W0 W5>VE3

Dec 9 00-0100 W4>W3 W9>W0 W8>W9 N0LL>W7 9Y4AT,V44KAI>PU2OCZ K8PLF>W0 01-0200 W5>W3 W2,W4>W5 W4>W0 W6>W7 WB5LLI>W0(Es) 02-0300 W5,W0,W7>W4 W7>W8 1650 W7>KL7(Es) 1732 WA7X>W7 2258 ZLtv>W4 23-2400 W2,W8,W0,W4>W4 W7>W4,W5 W4>W3,VE3 VP9GE>K3KO FJ5DX>PU2OCZ,PY2DSC VE3>W5 C6AFP>W1JJ,K1DAT LW3EX>FM5JC W8,W9>W7

Dec 10 00-0100 VP9GE>AD4IE HK1XX>K5TY W8,W5>W4 W4>W0 C6AFP>N0PB W3>W9 W4>W2 W2>W2 N0UD>W0 XE1KK>XE2 01-0200 W5,W7,K4AHO>W0 XE2>XE1 W9>W9 W4>W5 C6AFP>K0GU W0IJR>W4 02-0300 XE1,W5>W7 XE2>XE1 W7>W0 14-1500 W4>W1 W9VW>W4 2144 W7>W7

Dec 11 12-1300 W0>W1 K0UO>W4 W4CHA>W1 13-1400 K0UO>W4 W4>W9 W5>W5 2215 W4>W4

Dec 12 01-0200 W0>W2,W4 W5>W2 W3>W4 W4>W0 C6AFP>K8MD W8>W4 02-0300 W1>W4 S3,W4>W0 16-1700 W8>W4 W4>W1 17-1800 W6>W7 19-2000 W0>W9

Dec 13 0115 W4>W3 02-0300 VE2>W2 W4>W8(ms) 0338 W2>W8(ms)

Dec 14 0057 VE2>W3 01-0200 VE2>W2 W8>W1 W4,W3>W3 02-0300 W9>W2(ms) VE2>W8(ms) W5>W3 W4>W9 W5>W2 0342 W5>W9 04-0500 W2>W4 W4>W4(sc) W6>W7(ms) 0700 W7>W7 2340 PY4HGM>FM5JC

Dec 15 00-0100 YV4AB>PY2DA W0>W3(ms) 0151 K5AB>W4 02-0300 W5SIX>W4 W6>W0 03-0400 K5AB,K0UO>W6 21-2200 49.2(CE)>W5 23-2400 FM5JC>PY4OY

Dec 16 17-1800 K0KP>W1 18-1900 W9,VE3>VE1 19-2000 W0IJR,K0ETC>W0(Es)

Dec 17 0819 KL7GLK/W3>W3 1238 W3>W4 1638 PJ2/WB9Z>W4 19-2000 W8>VE1 W9>W0 20-2100 W4,W5>W1 21-2200 VE2,W1>W3 W4>W1 VE2>W4 W9>W9 22-2300 W4>W1,VE1 VE2,W4,W2,W1>W4 W3>W9 W1,VE2,W4>W3 23-2400 W1>W2

Dec 18 0055 W0>W5 0110 W0>W5 1352 W4>W4 14-1500 W0>VE6 W9VW>W1 W8>W4 15-1600 W8,W3>W4 16-1700 W4>W4 W1>W4(ms) 1708 W0>VE6

Dec 19 0010 W4>W4 1424 W4>W8(sc) 1931 PJ2BVU,V44KAI>KE4WBO 22-2300 KP4EIT,FY7THF>KE4WBO W1>W2 VE4VHF,VE5,W9>VE3 23-2400 VE3,VE4>W2 W0>W2(jt)

Dec 20 15-1600 VE3>W1 W9JN>W2 VE3>VY2 W9>VE1 16-1700 W9>VE1 VY2>W2,W8 K0KP>W2 17-1800 VE2,VO1>W1 VO1ZA,VY2>VE3 K8UK>VY2 18-1900 VE1>W9 W8>VE2 VE1SMU>VE3 21-2200 VE1>W9,W8 W9,W4CBX>VY2 22-2300 VE2MGL,VE1>W4 W4,W1>VY2 W4,W0>VE1 W9>W2 ZD8VHF>FM5JC 2322 PY4HGM>FM5JC

Dec 21 0042 XE1>W71918 W1>W4(sc) 21-2200 K0KP,K0GUV>>W2 W0>W2 22-2300 K0KP>W2 23-2400 W9>W4 W4>W2 ZD8VHF>FM5JC W2>W5 W3>W0 VE4>W4

Dec 22 00-0100 W9>W4 VE4VHF,W8,VE5>W0 01-0200 N0UD>W4 W0,VE5>W0 0233 W4>W3 0313 W4>W4 1428 W1>VE2 15-1600 W1>VE2 1716 W4>W2 2335 W5>W5

Dec 23 00-0100 W4>W4 01-0200 W7>W6,W5 W0,W7>W7 0203 W0>SW5 0351 W7>W7 04-0500 W7>W6 W3>W2 20-2100 W1>W9 21-2200 W1>W1 VE9BEA>W9 W0,W9,W8>VE9 22-2300 W1,VE2>W9 23-2400 W9,W1,W2,W0,W7>W1 VE2>W9 VE4VHF,W7>W3,W0 W1>W7 W0>VE3

Dec 24 00-0100 K1QVR>W9 W0>W4 W7>W3 W7,VE7FG,W3>W0 VE2>W0 K0UO>VE3 01-0200 W0>W2,W3 VE5>W6,W7 9Y4AT>PU2OCZ 0347 W1>W9 0454 W1>VE2 0627 VE4VHF>W8 14-1500 W1>W8,VE9 15-1600 W8>W9(sc) W1>W9 48242,48250>W2 16-1700 VO1>VE3,W2 W3,W7>W9 17-1800 VO1ZA>W2 VE4VHF>W0 W7,VE6EMU>W9 VO1>W2,W1 W0>W7 VE5>W0 18-1900 W7,W0>W9 19-2000 W0,W7>W9 W7>VE4 W0>W7 20-2100 W8>W4 VE7>W0 21-2200 W2>W1 VE7>W7 22-2300 CN8MC>PY1RO

Dec 25 00-0100 LU1DMA,PY2SFY,PY3KN>FM5JC 1604 W8>W0 23-2400 N0LL>W2 PY3DU>FM5JC W0>W5

Dec 26 00-0100 W8,K0KP>W2 W0>W3 PY3KN>FM5JC 0120 PY1LB>FM5JC 0249 VE7FG>KL7 15-1600 W7,W8>W0 W4>W4 VE1>VY2 17-1800 VE2,W9>W9 W8>VE2 W1>W0 19-2000 W1,W2>W0 20-2100 VE9,W1>W9 21-2200 K0KP>W1 W9VW>VE9 WB0RMO,WB5LII,W4>W0 W8>VE2 W1>W8 W8,W9>VE1 W9>W1 22-2300 W4,W5,W9>W0 W0>W1 W5,W4,W8>W2 VE2>W4,W8,W5,W9 W4>W4,W7 N8PUM,W0>W3 VE3,W1>W9 W1,VE9>W8 23-2400 W1,W8,W0>W0 W9>W1,W2,VE2,VE3 VE2>W4,W8 W2>W8 N8PUM,K0KP>W3 W0,W8>VE1 W8>VE3

Dec 27 00-0100 W5>W3 W1>W7 W8>W0,W2 W3>W0(2x) 01-0200 W0,W5,W6,W7>W5 W1,W4CBX,K0ETC,W7>W0 W0,W3,W5>W3,W7 W1,W0>W6 02-0300 W7,W0>W5 W6>W9,W0 W7>W4 WA7X,N0UD>W5 W9>W7 03-0400 W7,W6>W0 KL7/KG6VL>VE6 1620 W1>W1 1857 VO1>W1 19-2000 VE1>VE3,VE1,W8 W2>W1 VA2MGL>VE3 W8>VE9 21-2200 VE6EMU>W9 22-2300 VE4VHF>W1 VE6,W1,VE2>W9 W8>W7 23-2400 W0>W8,W9 W6,W7>W9 W0,W8>W7 VE5,VE6,W7>W0

Dec 28 00-0100 VE6>W0 W9>W7 W3>W2 01-0200 VE6>W0 W0>W7 0238 W7>W0 1058 KL7/KG0VL>VE6 1612 W9>W7 19-2000 W6,W7>W7 20-2100 W4,W5>W9 K0KP,W0IJR>W8 21-2200 W9>W5(Es) N8PUM,K0KP,W9VW>W5 22-2300 W9.W5>W9 N0LL>W4 W8>W5 XE2HWB>W0 VE4VHF>W5 ZLtv>W4 23-2400 W5>W7 W9>W5 W0>W5,W9 VE4>W0

Dec 29 00-0100 K5AB>W9 aurora 02-0300 W0>W3(ms) W9>W9 1504 W9>W1 1516 W4>VE2 16-1700 VE2>W4 W9>W4 17-1800 W4>VE2,W9 W5,W4,W1>W1 K0UO>W3 W0>VE3,W8 18-1900 W0>W8,W7 W1>W2 W4>VE2 W0>W3 K0KP,N8PUM,W9>W4 VE3>W4 W6>W3 19-2000 W5>W3 W1,W5>W1 W2>W4,W1 W0>W4,W2 KD4HLG>W9 KP4EIT>W3,W9 W1>W4 20-2100 W5>W3,W2 W4>W3,W4 W0>W3,W0 VE3>W4 21-2200 W0,W3>W3 W5>W1 W2,W3>W9 W2,W3,VE3,W9>W4 W4>W8 W0>W5 22-2300 C6AFP,W2,W3,VE3>W4 W1>W5,W8 W5>W0,W3 W4>W9,W8,W5,W1 C6AGN>W8 23-2400 W0>W0,W2 C6AGN>W3,W9 W4>W8,W3 W9>W9,W8,W2 W3>W9 W5>W2

Dec 30 00-0100 W5,W9>W3 W0>W2 VE2>W4 W9>W1 W4,W0>W8 W8>W9,W4 W1>W8 W3,W1>W0 W4>VE3 W3>W9 01-0200 W0>W1,W2,W3 W4,W9>W8 PP5BJ>FM5JC W9>W9 W3>W5 02-0300 W2,W3,W1,W0>W0 16-1700 W4,W8>W5 18-1900 W4>W5 2215 W2>W1

Dec 31 01-0200 W3>W3,W4 W0>W9 1244 W8>W5 1540 W8>W8 W5>W0(Es) 1649 W4>W5 17-1800 W6>W9(ms) W7>W9(bs) 1804 W0>W8(sc) 2055 VE9>W4

Asia/Pacific

Japan

JA1VOK's report is the briefest for years. ZL was reported on three days (2,14,19) - ZL3 in every case. VK was reported on four days: VK2 and VK3 on the 24th only, VK8 on the 19th, VK7 on the 19th and 24th, with VK4 on the 2nd, 14th and 19th.

6m DX results in JA during December from JA1VOK

DATE: January 2, 2005

DATE	TIME(UTC)	STATIONS
12/ 1	0405-0430	FK8SIX/B
2	0315-0430	VK4RGG/b, ZL3JT,3TY,3AAU,3SIX/b
10	0725-0735	ZL3NW,3SIX/b (JA2)
14	0520-0540	VK4RGG/b
19	0430-0600	N7ET/DU7, VK4DC,4RGG/b,7AB,7RST/b,8RAS/b, ZL3GS,3JT, ZL3NW,3SIX/b
24	0640-0730	VK2XQ,2BHO,2BPL,3BQS,3DUT,7XQ,7RST/b
31	0805-0920	DU1EV/B

Elsewhere

After several months when VL/ZL contributed little, December reports were more prolific. While propagation modes were rarely mentioned, apart from one opening between ZL3 to KH6 on the 5th, most reports are of propagation within VK or between VK and ZL. As this was the height of the southern hemisphere summer the mode was most likely sporadic-E.

Dec 2 0342-5 JH1HWS,JA1RJU>ZL3JT

Dec 5 0410 KH6SX>ZL3JT 0654 VK2>ZL3 2309 VK2>ZL3

Dec 7 0030 VK5>ZL3 0126 VK8RAS>ZL3 02-0300 VK8RAS>ZL3 VK3>ZL2 0303 ZL2>'VK36'

Dec 10 1902 VK2>ZL2 2151 VK5>ZL2 2258-9 VK5,VK2>ZL2 23-2400 VK2>ZL2

Dec 13 0748 VK6>'VK36' 0828 ZL3>VK7

Dec 18 0234 ZL3>ZL2 0419 ZL2>ZL2 0941 VK2>VK2 2132 VK2>ZL2 22-2300 FK8SIX,VK4RTL>'VK36' FK8SIX,VK4RGG>VE3 VK8RAS>ZL3,VK3

Dec 19 0000 VK9NS>ZL2AJ 0350 VK2>ZL2 04-0500 JR2HCB>ZL2

Dec 21 01-0200 VK8RAS,VK6RPH,VK4RGG,VK6RBU>VK3 FK8SIX>VK2

Dec 22 0651-8 VK45RGG>VK3 0717 C21SIX>VK3

Dec 23 06-0700 VK4>ZL2 07-0800 VK8RAS>VK3 ZL3,VK2>ZL2 08-0900 ZL2>ZL3 1041 VK8RAS>ZL3 1103 VK6RPH>ZL3 1237 VK6RPH>VK3

Dec 24 0238 VK3>ZL2 06-0700 VK4,ZL3,VK5>ZL2 08-0900 VK2>ZL2 VK7>VK3(Es) ZL3SIX,VK4RGG>VK3 VK2>VK3(bs)

Dec 25 07-0800 VK4,VK5>ZL2 08-0900 VK3RMV,VK7RST,VK2>ZL2 ZL3SIX>VK3

Dec 26 01-0200 VK4RGG,VK8RAS,FK8SIX,ZL1>VK3 0256-7 FK8SIX,VK4RGG>ZL3 03-0400 VK2,VK4,ZL3>ZL2

Dec 27 2355-6 VK2,VK4RGG>VK3

Dec 28 08-0900 VK1,VK2,VK3,VK7>ZL2 21-2200 VK4>ZL2,ZL3 VK2>ZL3 2232 VK4>ZL2 VK5>ZL3

Dec 29 0921 VK2>ZL3 2157 VK2>ZL3

Dec 31 0715 FK8SIX>ZL2 2241 VK2>ZL2 2323-7 VK2>ZL2

Beacon News and 28 MHz Worldwide

Compilation and Commentary by G3USF

Beacon News

3.5	IZ3FZQ is building 80m beacon. Details when advised.
3530	DK2CF Olsberg (JO41GG) is experimental with 500mw to dipole at 20m operating only at night (DK2CF)
10140.6	DL5KZ Numbrecht JO30SU running about 100mw to dipole (DL5KZ Feb.)
10141.8	IK3NWK Near Monteselice PD (JN55VF) runs 5 watts to dipole E-W 24/7 (revised details from IW3FZQ Jan)
21145.7	IZ3DVW is also in JN55VF. (IZ3FZQ).
14100-28200	4X6TU returned to service in January after repairs.
28120	F5KIS JN23UH with 1 watt bpsk31 (4Z5AO Feb.)
28201.5	SK3GK Gdvle (JN80NP) 4 watts to 1/4 GP at 50m asl became operative Feb 12 2005.
28212.0	PY2SBA San Bernado do Campo SP new beacon from GG66RE but has been sending GG6RE and was initially on 28190. (various, Dec.)
28225	HA5BHA JN97PL with 5 watts to omni reported by HA5TS (Jan)
28228	IQ3RO reported last month was test transmission only. Delete from lists. (IZ3FZQ)
28228.5	N3CJM new beacon in FM29GU with 5w to 5/8 vertical (NE3J, Jan.)
28230	IQ8CZ is located at Germaneto (JM88HV) and runs 10 watts to GP
28234.5	W1FVB new callsign for KB1KDC now operational (KW1KDC Feb.)
28257.2	KC8COM new beacon in Beckley WV (EM87) (Jan.)
28261	KP3FT Ponce PR 4 watts to vertical new beacon initially on 28190 but moved here (KP3FT, Jan.)
28264	VK6RWA has been refurbished and currently is run from a temporary location in Perth. Power is now 5 watts (VK6APK/G4TMV)
28274.4	W4NTI new beacon running 5 watts. Other details unknown (HP1AC March)
28278	AC3A Leawood KS returned to service (Feb.) (Some say it had not been out of service!)
28285	VP8ADE reported to have resumed transmissions. (VP8CMH, Jan.)
28322.5	F1VJT new beacon with 100mw from FN18 (F1VJT, Jan.)
50007	ZD7VC beacon has been shipped. Will run 45 watts to M2 loop at 40 feet in IH74 (K3TKJ Feb.)
50014	V73SIX resumed transmissions. Now runs 25 watts (WB8E Feb.)
50028	IQ4FA Ferrara 5 watts new beacon. No further information (IQ4FA Jan)
50036	LW2ETU in GF05TH with one watt new beacon. No further details (LW3EX Jan.)
50040 and 52.275.1	are said to be the only ZL 50MHz beacons in current service (VK3RMH)
50050	6Y5RC Kingston Jamaica new beacon built and donated by G3PYB 15w to 5-el (Feb.)
50057.0	IT9X Messina (JM78SG) with 10 watts A1 to horizontal loop with 4.2dBd gain operational shortly 24/7. (IW9CER Feb.)
50072	K3TKJ was test only. W3DOG now operational with 25 watts to stacked halos at 275 feet 24/7 from FM28EI (K3TKJ Feb.)
50095	VK3RMH should return to service soon (VK3RMH)
50098	LW3EWZ ssb beacon transmitting every 3 minutes. (LW3EWZ Jan.)

28 MHz Worldwide

Despite the welcome injection of additional activity that came with the ARRL 10m contest the signs of seasonal and cyclical decline were only too apparent. Relatively easy paths held up fairly well - Europe<>Africa was reported every day except the 19th and Europe<>South America on all days except the 4th, 15th, 23rd and 31st. Even Oceania was worked from Europe - though much more from central and southern Europe than northern and western - every day except the 18th, 19th and 27th. However, Asia was reported into Europe on only 20 days and North America on 18, principally in the first half of the month. Propagation within Europe on 30 days - the 27th, a poor day generally being the exception. This was a mixture of F2, some F-layer backscatter, occasional sporadic-E and even more occasional aurora.

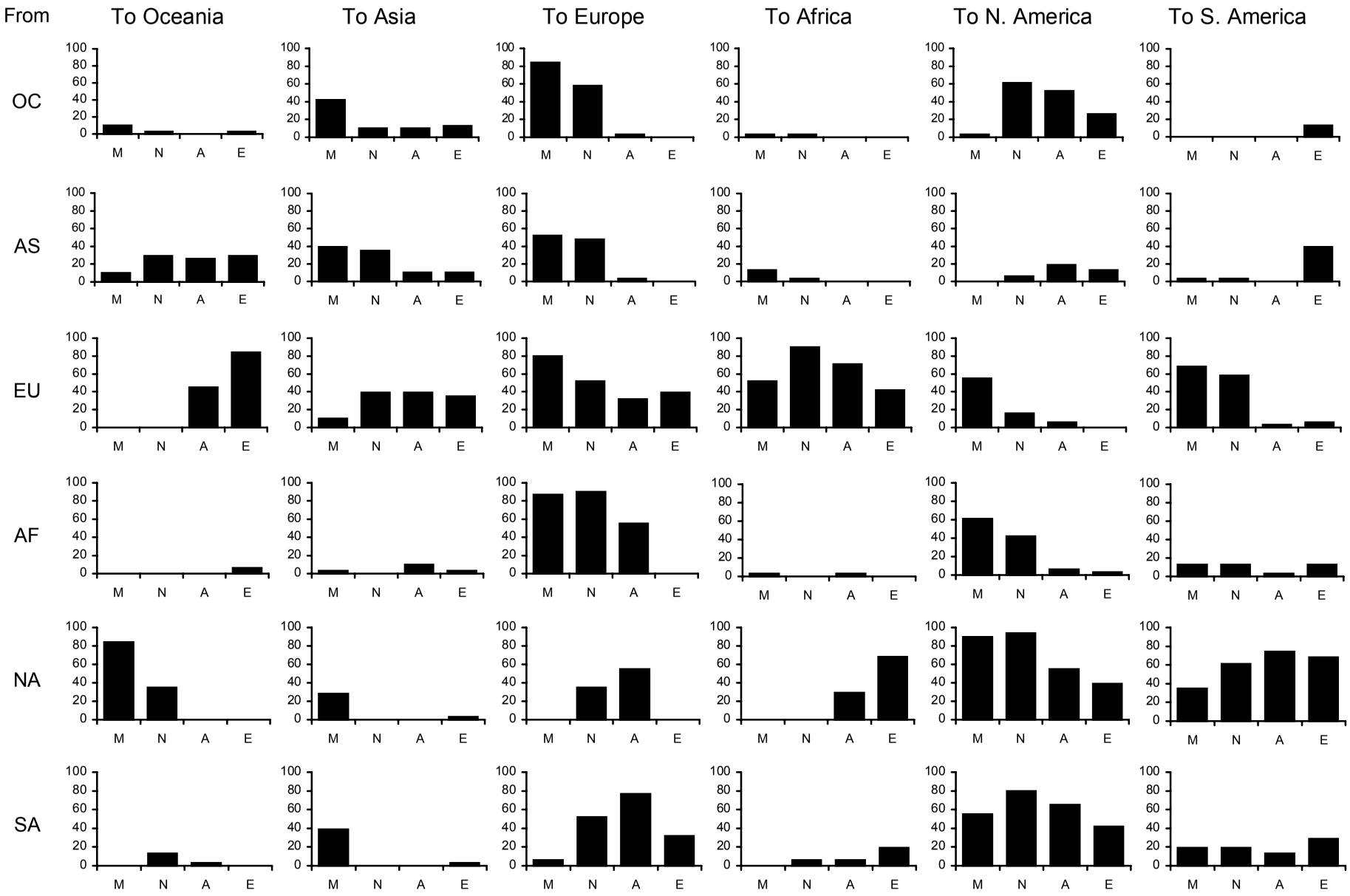
So daily reliabilities were reasonable over major paths on a continental basis. Where the weaknesses were most pronounced was, inevitably, at higher-latitudes and at the more difficult times of day. There were no reported evening openings between Europe and Africa and no morning openings between Europe and North America. By the same token, Europe<>North America opened only twice during the North American afternoon, Oceania was reported into the US on only one day and Africa was worked in the North American evening only once. However, Oceania was worked at some stage from North America on 25 days and Africa on 23 days. We have reports of propagation within North and Central America on all days except the 19th. Interestingly enough, while the US was enjoying strong 50MHz sporadic-E on the evening of the 26th there were no comparable reports for 28MHz.

South America was worked from North America every day except the 23rd. Asia remained difficult, worked on only nine days from North America. This compares with the much easier Oceania path, which was workable at some time or other on no fewer than 26 days. Perhaps a trifle surprisingly Oceania was reported in Asia on only 16 days. South America was received in Asia on 13 days, all but one time during the Asian morning.

Among the less-than-routine reports, K0HA continued to hear Scandinavian beacons late into the European evening. On the 1st he reported the SM0NCL/3 beacon at 2055 and SK0CT 2106, the 2nd brought OH9TEN at 2000. On the 26th OH9TEN and SM0NCL/3 was heard at 2004-6. While actual QSOs remained rare SM2CEW reported G4LMI at 2018 on the 10th. During the contest, on the 11th, SM2M worked WC4E at 2132. Intriguingly, his next contact was OH4MDY at 2133 57a. OH1XX also worked into North America around this time. These reports match up with GM4WJA's findings, which G0AEV discussed earlier. Earlier that evening there had been considerable intra-European working during the contest, apparently by Es. And, a little later, N4GN was working Nevada and California up to 0530 on the 12th (0030LT). To continue with the contest for a moment, there was more intra-European working by Es on the afternoon of the 12th with G0ARE reporting IT9RBW at 2040. On the American side it was interesting to note that, while contacts were reported late into the local evening of the 11th, if web spots were to be taken as the whole story, the band closed worldwide at precisely 2359UTC! A good illustration of the way contests can raise the apparent state of propagation - and their ending deflates it.

Other contacts to mention include VK4CQ<>CT1ILT at 1137 on the 4th, long path, while 5T5SN reported a long-path QSO at 0007 on the 19th, both contacts being reminders of better days when such contacts were relatively commonplace. ZP0R worked IZ5DKJ at 0015 on the 11th, HC2SL worked I0VIR at 2226 on the 28th. During the contest, KR6NA worked KB2PCP at 0846 on the 11th, followed by WB2BTJ into K4EA at 1045 on the 11th - remarkably early in both cases. On the 6th G0VUH reported EI9JF at 1201 by 'short skip', presumably Es. And JG2TKH copied the W6WX beacon at 0004 over a skewed path. None of the events we have noted in this summary was really remarkable, but they underlined the fact that 28MHz can be interesting and challenging in terms of propagation mechanisms even as well down the cycle as this.

28 MHz Worldwide - December 2004



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

Analysis of 28 MHz beacon reports from the UK for 2004

These pages present a review of the 28 MHz propagation experienced in 2004 based upon monitoring of 10m beacons by UK listeners. Colour-coded tables are used to summarise a large body of beacon monitoring data in a format allowing the display of both numerical and graphical information. Colour coding of the tables (which I hope will also work if printed in black and white) is used to highlight trends and patterns in the data. The data comprise 15,932 reports of beacons heard (or periods of listening when no beacons were heard) from G2AHU, G3HBR, G3IMW, G3USF, G3YBT, G4TMV, G0AEV, G0DVY and G0IHF, plus a small number of beacon spots from the UK packet cluster network.

Summary tables – an explanation

The following tables show the relative performance of beacons from each continent by time of day and for each month in 2004. The quantities in the "cells" in each table are the number of beacons heard presented as a proportion of the total number of beacon reports for each time period. A beacon report comprises a log from an observer covering a one-hour period. Any number of beacons (including zero) may be logged in a single beacon report. The number of beacons is the sum of the number of beacons from a single continental area reported in all the beacon reports for the period. For example, in May 2004 there were 42 beacon logs for the 13z hour (13.00-13.59 UTC) period and these logs contained 84 references to European beacons. The value of the May 13z cell for the European beacons is (84/42) = 2. The values in the tables are multiplied by 100 to avoid the need to display decimals.

The reason for this approach is to take into account variable numbers of reports and reporters at different times – for example, there are more reports from more observers during the middle of the day than late in the evening. In the tables each cell value has approximately equal weighting regardless of how many reporters were active.

The colour coding in the tables is designed to show the relative importance of each cell as a proportion of all the data for the continent. The darkest shading (red) indicates a cell that is 1% or more of the sum of all the cells in the table, medium (orange) shading is for 0 5 – 1%, pale (yellow) shading for 0.2 – 0.5% and no shading for less than 0.2%. The distribution of shaded cells gives a visual guide to the relative numbers of beacons and, by inference, the number and geographical spread of openings to each continent. Each continental table has the same proportion of different shades – so dark (red) shading identifies the best times for propagation to a continental area independent of the total number of beacon reports. So – what do these data show?

European Beacons

2004 Relative Number of European Beacons

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6				50	114	136	143	143	18	25		
7		25			91	72	133	109	8	10	15	25
8	12	40	6	2	126	118	210	163	23	29	22	
9	43	36	4	13	151	142	225	129	15	53	48	22
10	86	68	4	3	171	136	175	155	9	82	42	45
11	69	52	17	17	188	133	132	158		95	54	28
12	59	38	13	26	135	138	185	139	20	84	30	29
13	33	18		20	200	91	200	79	3	42	37	
14	16	18		47	85	107	244	79		40	32	13
15	6	29	3	10	90	95	203	58		34	36	2
16	10	5	2	18	73	141	218	50	20	9	22	29
17	18	13	7	7	138	171	120	112	9	15	32	11
18	17		3	9	146	242	195	111	7	8	26	
19				6	129	230	309	138	8	6	30	18
20	33		9		78	124	150	38	4		56	43
21	75			29	108	131	213	68				
22				100	129	44	250	35			33	
23					114	75	157	267			50	

The most obvious feature in the table of European beacons is the strong (red) shading in the months of May, June, July and August. There is little difficulty in interpretation here: the pattern reflects the dominance of summer time sporadic E. Highest cell numbers are between 09 and 12z and between 17 and 19z – the peak times of day for Es - but summer month openings occurred throughout the day.

The winter months of October through to February include a little sporadic E but most of the propagation here is via backscatter or is direct F2 to SV3AQR, etc.. The evening data in November is due to "aurora-related" E-layer propagation.

African Beacons

2004 Relative Number of African Beacons

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6					7	14	10	14	9	13		
7		38	38		6	4	3	16		19	38	25
8	3	71	13	15	18	13	19	22	9	67	19	5
9	63	52	49	28	25	23	38	40	6	88	63	21
10	97	65	107	69	41	25	14	61	59	113	79	50
11	117	96	124	43	33		20	55	43	116	102	87
12	96	72	61	50	32	6	22	7	12	100	88	76
13	70	43	47	76	40	17	31	30	24	123	84	35
14	45	33	85	88	82	10	13	21	42	71	80	49
15	47	68	129	102	66	21	36	21	50	82	49	32
16	33	70	71	67	27	24	14	24	64	96	35	9
17	3	51	67	41	13	8	20	12	68	26	9	
18		11	20	34	31	9	18	28	48	14		
19	33		5	3	54	24	29	33	33	3		
20					15	12	14	22	4			
21					23	12	13	18				
22					29							
23					14		43	33				

Only 5 beacons contribute to the view of propagation from Africa: 5Z4B, CS3B, Z21ANB, ZS1J and ZS6DN. However as the paths to Africa are generally reliable there were more than enough reports (~3,000) to provide a good representation of the propagation.

African DX was available at all times of year but winter, spring and autumn were superior to the summer. However, the longer summer days extended the number of hours per day when propagation is possible –note the 23z events. Some of these openings may have been via TEP.

Asian Beacons

2004 Relative Number of Asian Beacons

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6						14	14	14	9	25		
7	100	75	38	2	2	4	5	3	4	28	54	
8	21	43	21	11	5	9	8	8	9	67	48	11
9	28	33	49	10	6	13	4	5	3	43	63	20
10	41	32	59	31		8	11	4	12	50	47	17
11	61	52	69	17	8		4	5	4	37	46	13
12	26	55	61	24	2	2	4	2	2	18	23	5
13	27	28	42	20	2	6	4		5	21	30	2
14	16	39	18	15	3	3	13		8	17	11	
15		21	29	8		8	9		10	16	8	
16			6	11		6	7	2	13	2	2	2
17			7	7	8	4	10	8	3		2	
18				5	12	9	7	13	7			
19					5	17	14	5				
20						8						
21						8	7					
22						6	13					
23												

Asia includes both “easy” single F-layer hops to 4X and 5B, and considerably more difficult DX paths to JA, VR, etc. Peaks in propagation are on the winter side of the equinoxes.

Spring propagation appears to have been better than autumn – in particular January looks much better than December, but this is probably a refection of a difference in levels of solar activity.

During the summer only single hop F2 paths are open but are supplemented by 2 x Es paths – and it is probably the latter that is responsible for the events seen in the evenings in June and July

Oceania Beacons

2004 Relative Number of Oceania Beacons

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6										25		
7		13								2	31	
8			4	2	2					24	8	2
9		3	10	10						18	27	14
10			30	6						31	12	5
11		7	21	3						12	32	17
12										4	5	2
13											3	
14											2	
15												
16												
17												
18												
19												
20												
21												
22												
23												

The table for Oceania (VK and ZL) beacons shows that propagation is concentrated around the equinoxes and that openings are apparently absent during the summer. However this view is dominated by one just beacon: VK6RBP.

Unfortunately VK6RBP was not operating at full capability until the autumn of 2004, and it this that best explains the skewed pattern of spring activity apparently lower than autumn activity. Data from previous years suggests that there should be some propagation from VK6 throughout the year including a few openings during the summer, even at current low levels of solar activity.

North America Beacons

2004 Relative Number of North American Beacons

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6												
7												
8	2											
9												
10	3						4					
11	8	4				4						
12	26	3			2	2				55	25	
13	33	17			2		4			103	39	26
14	95	70	6		3					220	184	57
15	132	41	11	2	2					473	111	77
16	85	65	4							116	45	18
17	21	62	11							79	27	3
18		5	3	5						24		8
19						7				9		
20			9			40					11	
21						19	7					
22							88					
23						50						

Propagation to North America has been much weaker this year than last with openings restricted to a few days per month. However when the band opens to North America a large number of beacons can be heard, providing a wealth of data for the representation opposite.

Two styles of propagation are apparent. Openings via F2 are almost entirely limited to periods between the hours of 12 and 18z in January-March and October-December.

During the summer months, paths to North America opened via multi-hop sporadic E and these openings occurred most frequently in the late evenings. A few beacons were also heard via Es in the mornings.

South America Beacons

2004 Relative Number of South American Beacons

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6								7				
7			31									
8		6								1	3	
9			3							2	10	
10	5		15	3					3	9	9	
11	36	15	48						11	47	23	2
12	56	38	48	17	3	2	2	2	2	78	50	17
13	46	65	56	49	5		8		11	127	89	23
14	61	64	100	59	45	10	6	3	85	154	86	32
15	79	141	111	86	24	18	24	6	71	160	117	53
16	82	142	102	131	42	41	18	24	78	182	83	33
17	61	166	116	89	36	33		12	62	181	84	3
18	17	121	123	70	48	21	9	13	82	86	22	
19			71	128	107	74	66	70	135	47		
20			18	56	119	40	93	75	46			
21				29	54	23		50	9			
22								4				
23												

The South American beacons (mostly located in LU but with contributing beacons from PY, YV and HP) show a clear pattern of propagation extending throughout the year. The best time to work South America was in the mid-afternoon in the winter months, the best time becoming progressively later in the day until mid-summer when the best times were in mid-evening. Openings were more extensive (occurring over more hours per day) in the months around the equinoxes than at other times of the year.

For those who use (listen to) 10m on a regular basis, none of the patterns described here will come as much of a surprise. However, it's nice to see confirmation!

G0AEV