THE SIX AND TEN REPORT

May 2003

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Analysis of 28 MHz reports from the UK

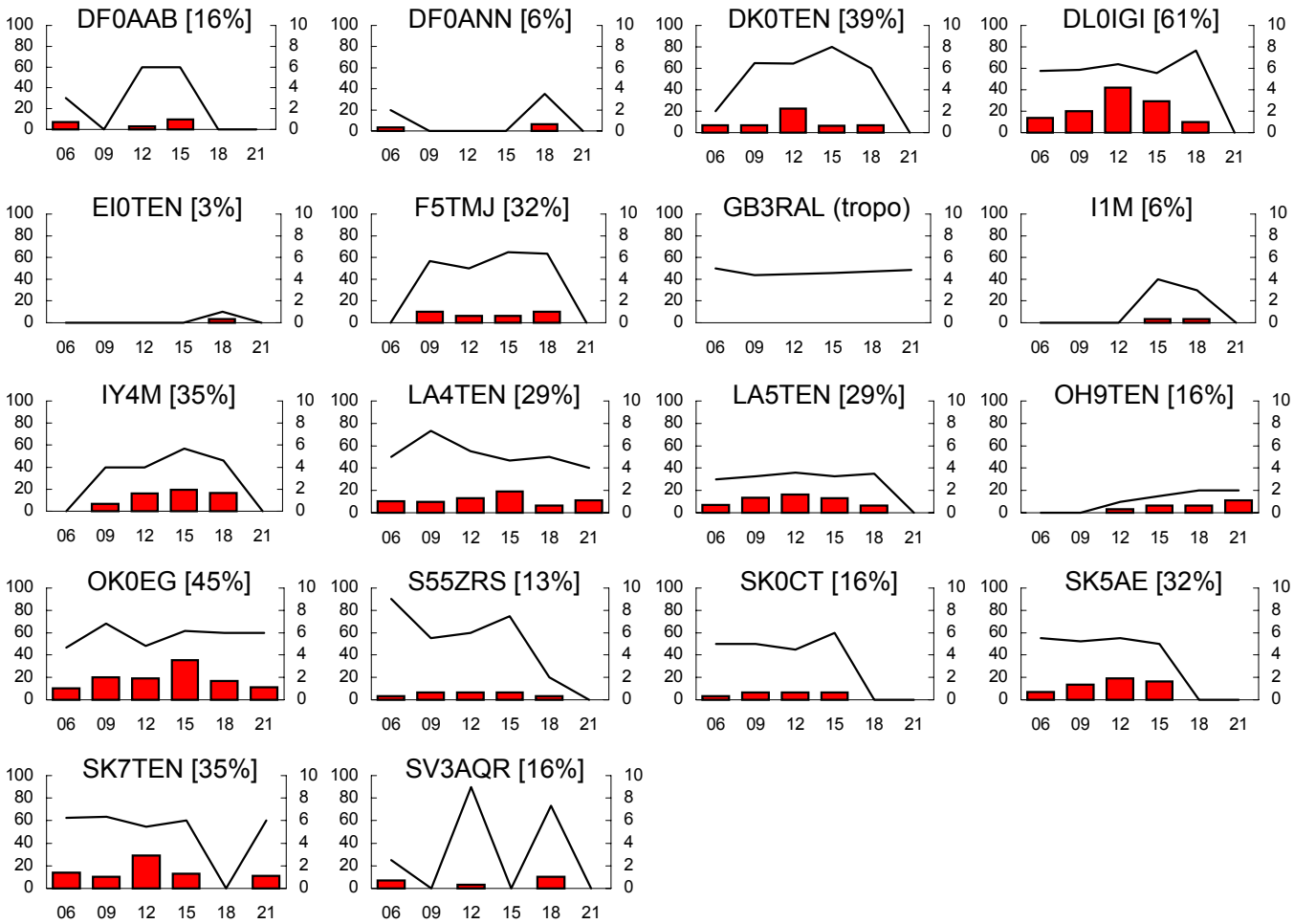
28 MHz reports and logs for May 2003 from G2AHU, G3IMW, G3USF, G4TMV, G4UPS, G0AEV, G0IHF and from packet cluster reports. Compilation and commentary by G0AEV.

The transition between mainly F-layer (direct path and backscatter) and mainly E-layer (sporadic E) propagation was the most obvious feature of 10m activity this month. At the start of the month the F-layer was still capable of supporting occasional openings to the East Coast of the USA and Canada, and skip distances as short as G-SV, but by the end of the month the only F-layer circuits operating were those to Africa and South America. Sporadic E saw a strong opening phase in April and was the key feature of 10m activity all of May, becoming predominant by month end.

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

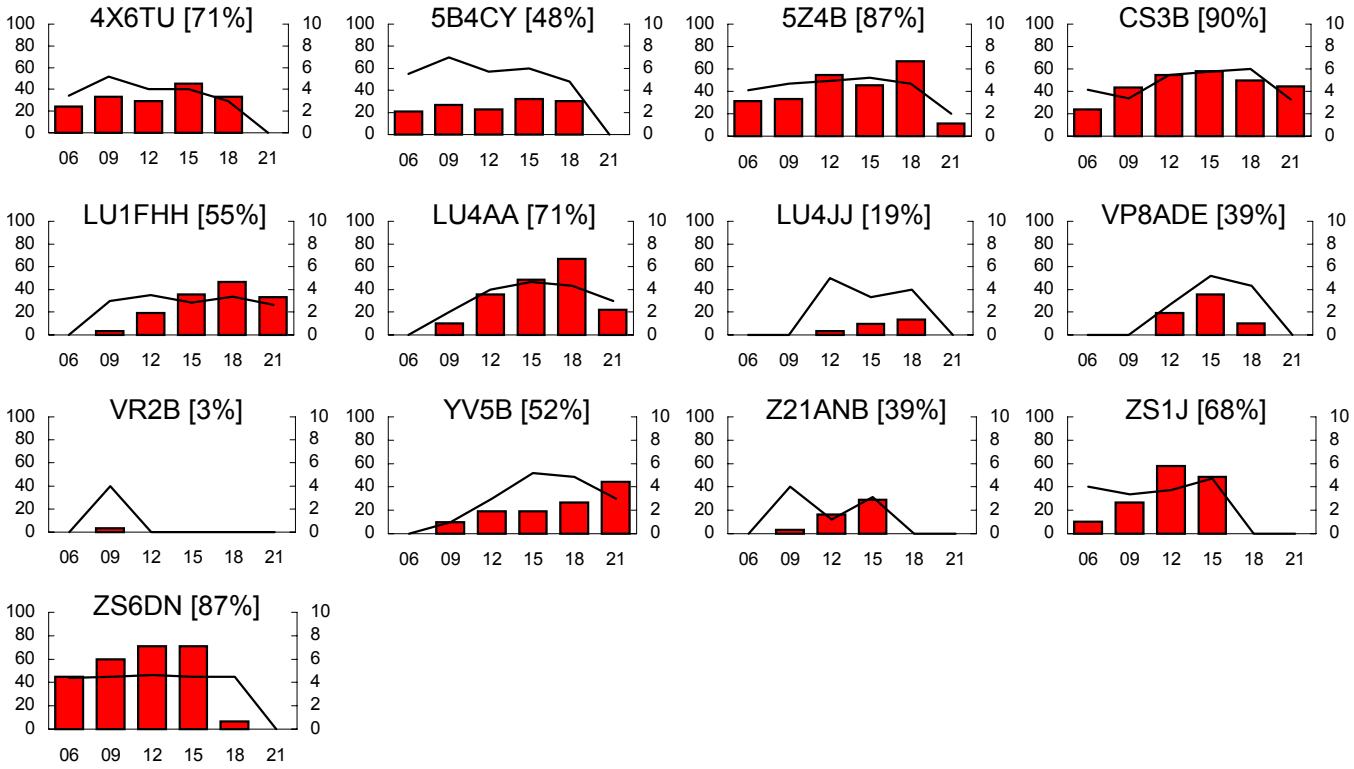


Suggested propagation modes for European beacons. Sporadic E provided the bulk of inter-European traffic on 10m. The exceptions occurred in the first week of the month when SV3AQR was still being heard by the direct F-layer mode and some of the higher powered and closer beacons (mainly DL0IGI and LA4TEN) were reported via F-layer backscatter. SV3AQR was also heard towards the end of the month via Es, however the spiky graph for this beacon almost entirely reflects spotty coverage of the earlier strong F-layer propagation. Late evening openings to SM (SK7TEN) and OH (OH9TEN) were probably by auroral E. GB3RAL is via “tropo” at G0AEV.

European Beacon Notes. OH2B remains QRT after the theft of the beacon transmitter. SK0CT may have suffered a short outage during the month. SK5AE is the replacement for SK5TEN. EI0TEN has changed location and antennas and is not being heard as well as previous results might of this beacon suggest – the one report in May was by F-backscatter.

In June new beacon ER1BEACON (Moldova) on 28.326 was heard in the UK – this beacon could be a little hard to hear in the summer months as it is either a long single E hop or short double E hop distance from much of Britain.

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



Suggested propagation modes. Most of the beacons recorded and charted above were heard by normal F-layer propagation. Sporadic E may have contributed in the second half of the month to the results of 4X6TU, 5B4CY and CS3B. There is also the possibility that some later evening openings to southern Africa and southern South America were by TEP. No long path propagation was identified.

The circuits in operation, as identified from beacon monitoring, were almost entirely restricted to those with a predominant north-south component, plus the reliable single-hop paths to the Near East. This is a typical summer seasonal pattern. There were, for example, no reports of RR9O and only a single report of VR2B. Daily reliabilities were down all round, even on the most reliable circuits to ZS and LU, and this was largely due to the abundance of geomagnetically disturbed and stormy days. The star performer was CS3B, perhaps attaining this status with the help of some sporadic E.

Beacon Notes. It is difficult to be certain of the operational status of the IARU/NCDXF beacon chain from monitoring of 28.200 MHz in the UK because of now restrictive propagation. It is clear though that OA4B and OH2B were still QRT. Both VK6RBP and VE8AT are noted as inactive on the NCDXF web site. The continued absence of any signals from 4S7B, as reported here for many months, suggests a problem with this beacon.

Far fewer DX continuous operation beacons (i.e. other than the NCDXF/IARU time-share chain) are being heard now than at the start of the year. It is believed this is due to propagation changes both seasonal and solar rather than to any significant decline in the number of active beacons.

10m DX in May 2003.

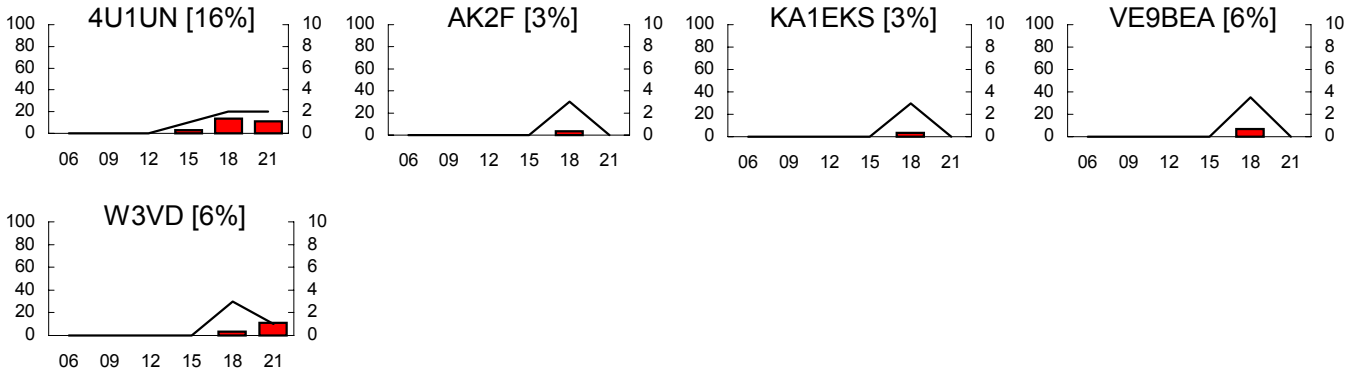
The following list charts a further reduction in the number of different DX countries worked/heard in the UK on 10m this month, particularly in countries in the Northern Hemisphere. Data for this list comes from DX packet cluster spots and from contributor logs.

3X, 4J, 4X, 5B, 5N, 7Q, CE, CT3, D4, FG, FY, HC8, LU, OD, P4, PY, TU, VK9X, YI, YV, ZD7, ZP, ZS

Propagation to North America:

As expected, few North American beacons were heard in May. The 5 beacons logged are all located in the eastern seaboard area of New England and the Canadian Atlantic Provinces, the closest parts of the continent to Britain. Most of the recorded activity was in the first week of May, although 4U1UN was also heard mid-month. All the reports are believed to have been by F2 – double hop Es is only a possibility for the mid-month reports of 4U1UN.

Last month I predicted the daily reliability for 4U1UN, the QRO beacon well placed on the US East Coast, would be close to zero. The actual reliability of 16% was perhaps a bit better than the prediction but clearly marked another downwards step from the 27% seen in April, 48% in March, and 92% in February. This decline is, of course, mostly a seasonal feature and propagation to North America will re-appear in the autumn, albeit at a lower level than in 2002.



A review of Sporadic E in 2002

The “amount” of sporadic E present in any period can be assessed in a number of ways. One method is the estimation of the E-layer “MUF” (in this context thought of as the highest frequency at which the E-layer returns signals to earth), either by direct observation (the maximum observable frequency) or by calculation using the skip distances of open paths and an inferred layer height. (Note that neither of these is “MUF” in the sense used in propagation predictions). Another method seeks to count the number of hours or minutes per day that a path is open at a particular frequency. Both these methods allow quantification of “amount” but suffer the limitation of not taking into direct account how widespread the “amount” is. Given that the usable frequency is above “x” MHz for “y” hours, does this relate to a layer area the size of Europe or to a single point on the layer?

The rationale used in the *Six and Ten Report* is to measure the “amount” of Es by counting the number of different geographically distinct areas that can be heard by a UK observer during an opening. On 28 MHz “areas” comprise the number of unique beacons heard and on 50 MHz the number of countries heard or worked. (For historical continuity, 6m country areas include entities such as “former Yugoslavia” and small counties like T7 and 3A are included with their larger neighbours). The different measures used on the 2 bands reflect the availability of usable data. Even under “dead band” conditions some 6m operators will be listening for, and will report, the most fleeting of openings while on 10m there is a useful group of people who systematically monitor beacon activity. The reverse cases are not true! A useful consequence of this approach is two completely independent views of the “amount” of sporadic E as seen from the UK. A limitation is that the maximum number of available areas is not constant from year to year so year-on-year trends are difficult to assess.

Some frequency control for the “areas” measure is gained from looking at two different frequencies (28 and 50 MHz), but maximum frequency is a secondary consideration for the bands we are concerned with - during the summer months the E “MUF” exceeds 50 MHz on some path on virtually every day. Time control is obtained by counting areas within 3-hourly time bands but in the analysis that follows the time bands are amalgamated into a single daily value, more appropriate when looking at trends over an entire year. So, what do the data for 2002 look like?

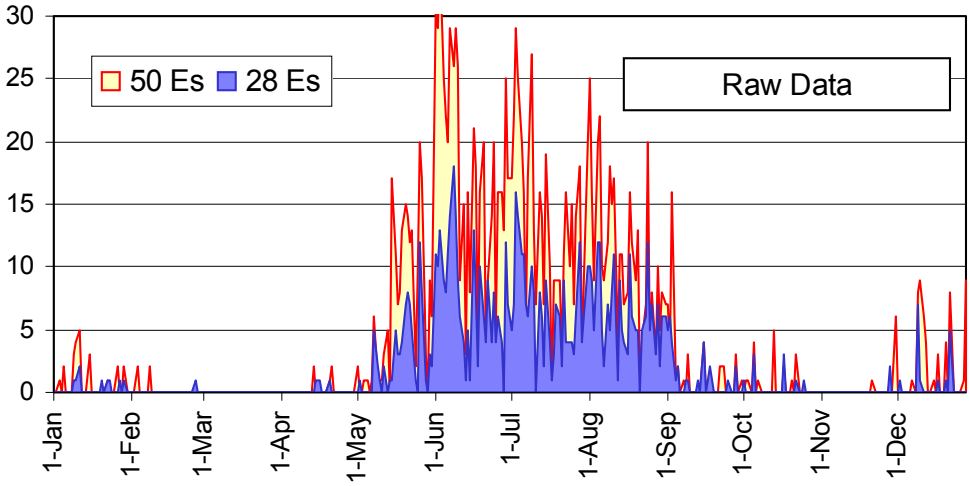


Fig 1. Daily area counts

Figure 1 is a graph showing the counts of areas reported for Es on 50 and 28 MHz for every day in 2002. The “spiky” nature of the graph is a consequence of the variability of the “amount” of Es from day to day. The gross seasonal distribution is clear in this graph: it follows the normal and expected pattern of a dominant summer season (lasting from early May to the start of September) with a much weaker mid-winter season. This year there is no discrete weak autumnal “season”, rather there is a tail of minor Es activity extending from the end of the summer season through to the end of October

Notice the strong correlation between the independent 28 and 50 MHz measures: the 50 MHz counts and higher than those for 28 MHz because of the greater number of country areas compared to the number of 10m beacons within sporadic E range.

Although large-scale seasonal distributions can be seen in the raw daily data it is difficult to discern trends on shorter time scales. Figure 2 presents the same data but as 7-day moving averages. A whole series of graphs with moving averages ranging from 3 to 31 days were produced, but those for 5 and 7 days most clearly illustrate shorter time scale trends. The 7-day average shown below is preferred over the 5-day average because all the averages include week and weekend days, avoiding possible bias due to higher activity levels and more frequent reporting during weekend days.

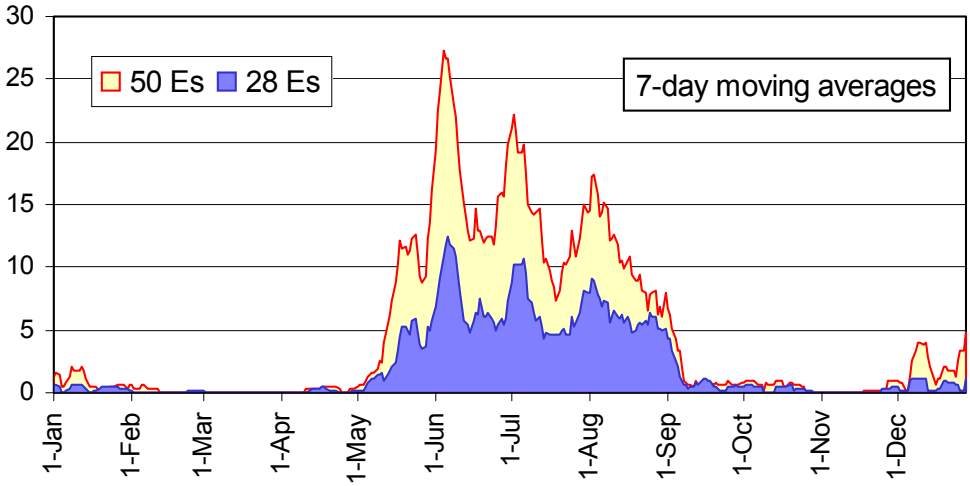


Fig 2. 7-day moving average daily area counts

The summer season is seen in figure 2 to comprise 3 main peaks, the largest of which occurred in early June. Subsequent peaks are in early July and early August. The immediate impression is that this represents a monthly repetition of "good" conditions with a periodicity redolent of the solar rotation period. Unfortunately I can find no evidence for a correlation of these peaks with any sun-derived factor – but perhaps this is not surprisingly as correlation between solar activity and Es has been looked for many times and found wanting.

Between the main peaks there are hints of subsidiary peaks. The positions and dates of the peaks (some of which are not at all well defined) are shown in figure 3. The periodicity of the labelled peaks is close to 2 weeks. No amount of re-working of the data can generate periods of the order of 5 to 7 days that are sometimes quoted as a feature of the repetitive element of sporadic E events.

The results presented here have been compared to a range of solar and geomagnetic indices but it has not been possible to detect any unambiguous correlation between them and no controls on the apparent periodicity of sporadic E events are indicated

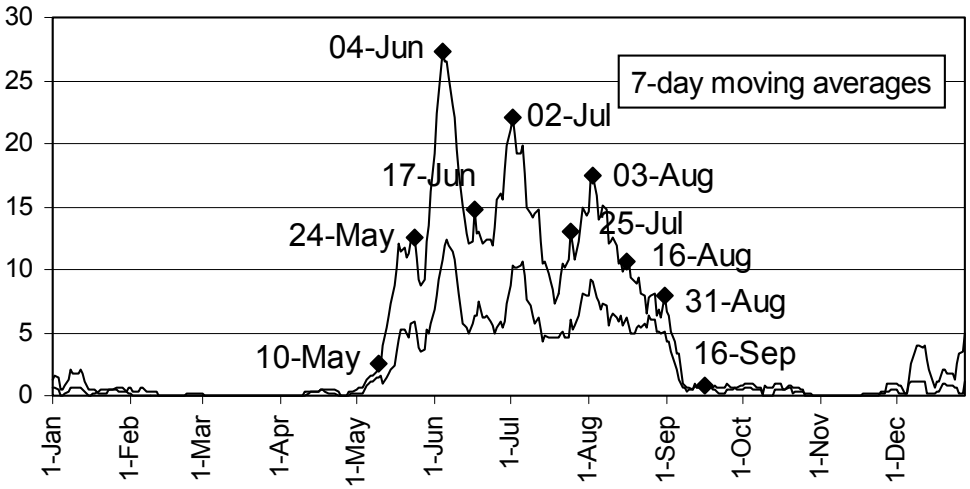


Fig 3. Dates of peaks in Es activity as portrayed in the 7-day moving avergae data
Dates are marked on the 50 MHz line: equivalent peraks are present at 28 MHz.

G0AEV

Analysis of 50 MHz reports from the UK

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

We are well into the post - maximum magnetic phase of cycle 23. Consequently we are likely to have a lack of F layer propagation at 50MHz, many magnetically disturbed days with radio auroras, and a lower incidence of sporadic E than in the last few years. These effects have been in evidence this month. In fact there were only 11 days which were undisturbed (Kp less than 5). On the 29th and 30th Kp was up to 8 and there were some strong auroras. There was some trans-equatorial propagation on 7 days, probably with E layer assistance for the first hop.

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 labeled "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.

Sporadic E

	CN (10%	CT Portugal (26%)	DL Germany (42%)	EI (3%)
D	12 20 31	7 19 20 23 25 26 28 29	6 7 13 17 18 19 20 21 22 23 25 26 27	6
03			9	
06			9	
09		9	8 9 9	
12		9 0 9 9 9	9 9 0 5 0 9	
15	7	9 9 9 0	9 9 4	3
18	8 0	9 9 9	0 0	
21				

	ES (13%)	EA Spain (40%)	EA8(3%)	EA9 (19%)	F France (13%
D	17 20 23 27	9 18 19 20 22 23 24 26 28 31	7	12 20 23 24 28 31	6 23 25 28
03	9				
06	9				
09	5	9 9		0	5
12	7	9		0	9
15	6	5 9 9 9 0 7		0	9
18		7 0 9 6 9 9	9	7 0 0 9	0 9
21	9	4			

	FM (3%)	GM from G (13%)	HA Hungary * (16%)	HB Switzerland (23%)	JY Jordan (10%)
D	24	5 7 20 27	13 19 22 25 26	6 7 13 15 20 22 26	6 7 19
06		7			
09		5 9	7		
12			9 0	0 9 0	
15		9	9 0	9 2 4	7
18				9 0	9 5
21	1		* Reception reports only		

	I/IS/IT Italy (58%)	LA Norway (16%)	LY Lithuania (16%
D	1 6 7 13 15 16 17 18 19 20 22 23 25 26 27 28 29 31	19 20 21 22 27	18 19 23 26 27
06	7 5		6
09	0 9 2 4 0 9		7
12	0 9 0 6 9 9 9 9 9 0 0	9 9 0 9	9
15	0 9 9 0 9 0 9 2 3 5 7	9	5 9 7
18	9 9 5 9	9 9	9
21		6	0 0

	LZ Bulgaria (23%)	OD (13%)	OE Austria (30%)	OH Finland (23%)
D	11 13 17 19 20 25 29	6 7 11 19	7 11 13 17 18 19 22 25 26 27	12 17 20 23 26 27 28
06				7
09	0 7 5			7 9
12	0 9		8 9	9 9 0 7
15	7 0		0 5 9	9
18	0 0 3	9 9 5 0	9 9 7 8	9 9 7
21	9		9 9 9	9

	OK/OM Czech/Slovak Reps. (32%)	ON (3%)	OX (3%)	OY (3%)	OZ (3%)	PA (13%)
D	3 6 9 13 14 17 18 22 23 25 27	6 27	25	27	20	6 21 26 27
06						
09	0b 0 9 9			9		1
12	3 0 9 9 9			0	9	9
15	0 5 9	0b 9				6 9
18	0 0		5			
21						

	SM Sweden (16%)	SP Poland (40%)	SV (13%)	TF (3%)	UN (3%)
D	17 19 20 23 27	6 13 17 18 19 20 22 23 25 26 27 30	6 17 19 25	25	22
03		9			
06	7				
09	9 0b 7	0 9 0 0 9 9 0	0		5
12	8 9	9 9 9 9 9 9	9 7		
15	9	9 7 9 5 9 9 9	9	2	
18	9	9 3 9 0			
21					

	UR Ukraine (35%)	VE1 (3%)	YL (3%)	YO Romania (30%)
D	7 13 17 18 19 20 22 24 25 26 28	20	27	7 13 18 19 20 22 23 24 25 26
03			9	
06	5 0			7
09	7		9	7 8 7
12	0 0 9 9		0	9 0
15	9 9 5			6 9 0 0 9
18	5 5	9	9	5 5
21				

	YU/S5/T9/Z3/9A Former Yugoslavia (42%)	4X Israel (19%)	5B (3%)	A4 (3%)	D4 (3%)
D	6 7 13 16 19 20 22 23 25 26 27 28 29	6 7 19 23 25 26	6	25	25
06	0 9 9	6			
09	9 9 0 9				
12	9 9 9 0	0		4	
15	9 9 9 0 9 9	2 7 0	0		3
18	9 9 9 9	9 5			
21					

	9H Malta (35%)	
D	6 7 13 18 19 20 26 28 29 30 31	
06	0	
09	0 9	
12	9 8 5 9	
15	9 9 0 3 9	
18	9 2 6 9 0 7	
21	3	

DX Propagation

Tabulated results for DX countries (other than those likely to be attributable to multi-hop Es) are shown below. The notation is the same as that used for the Es results.

	7Q Malawi (13%)	9J (3%)	FR (3%)	PY Brazil (7%)	Z2 (3%)	ZD8 (7%)	ZS South Africa (3%)
D	6 7 13 20	6	28	12 28	6	5 28	6
06							
09							
12			0				
15	1 5 4	0	5		5		1
18	3			9 6		0 5	
21							

Solar flux and sunspot numbers continued to show the fairly low values of the last few months, so any DX openings to the Northern Hemisphere would almost certainly be by multi - hop sporadic E. Trans-equatorial DX was possible, aided by Es into the UK. But, due to seasonal changes, the Southern Hemisphere countries were less extensive than last month. The openings occurred in the afternoon or early evening suggesting F type TE. The earliest opening was to FR, those to South America were the latest as the path would have to be skewed across the magnetic equator. I happened to catch the opening to Brazil on the 20th. Es was fairly widespread. In the previous 2 hours there were Es openings to EA, LA, HB, OH and to VE1 and W1 presumably by multi - hop Es, and no doubt a suitably placed patch of Es provided the first hop linking to TE into PY1 and PY5.

Summary and comparison of “DX” and Es

The tables below display counts of countries, or areas, heard/worked summarised from the results tables above.

DX (Es + 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			
15						4	1													1								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
03																											4				
06					1														2	2		1	5			1	3				1
09							2							1			2	4	5	9	2	4	5		1	2	9	1	3	1	
12			1			7	2					1	2				8	7	5	7		9	6		5	8	6	1	1	1	2
15	1					9	10		1		2		8		2	2	3	1	7	4		5	2	1	9	10	2	2	1		4
18						3	8				1	2	5				1	1	10	5	1	4	3	3	6	3	5	7			2
21													1					1	2	4				1	1	1	1				

This month there is good correlation between the days with Es and those with DX openings. This is understandable because all DX openings were into the TEP zone south of the magnetic equator. To reach the UK a first hop via Es would be needed.

Meteor Scatter

There are three major meteor showers in May peaking on the 5th 7th and 12th. G3HBR reported a long burst from GB3LER on the 5th. Looking at the packet cluster spots it is clear that there has been much activity using the JT6M mode and that contacts have been taking place both during the showers and later in the month, but it sometimes difficult to separate definite contacts from tests. Here are a few where contacts probably took place.

Other propagation modes could be involved, but the early morning contacts are most likely via m/s. In all there were 38 JTM6 contacts spotted. Using ' = ' to signify a contact, here are some of the JT6M spots. As predicted by Steve last month this mode appears to be creating new enthusiasm for m/s work. There were no reports of old - style m/s contacts among the spots.

2nd	09z	1044 IW1CCH = G0CHE, GW3LEW = IW2JMC , 1048 G0CHE = IW1CCH.
		1134 IW1CCH (JN35) = GW3LEW.
4th	12z	1434 G4PCI = LA2AB.
5th	09z	0910 G3HBR < GB3LER 529 a long burst lasting some 5 mins, with stronger peaks,
		GB3RMK in and out on bursts.
6th	06z	0853 SM5LE = GM4PLM.
5th	06z	0820 OZ1PIF = G4PCI.
7th	06z	0823 IW5ACZ = G0CHE ' tnx QSO mni ping'
8th	06z	0726 F1JG = G4PCI, 0734 F1JG (JN23) = G0CHE (IO90), 0741 SP6NVN = G4PCI.
	12z	1208 F4JVG (JN16) = GM8OEG (IO86).
9th	06z	0700 F1JG = GM8OEG, long burst.
10th	06z	0759 F4JVG = G4PCI.
	12z	1200 G0CHE = F1EBE.
	15z	1529 F4JVG = GW3LEW (IO71)
	18z	1824 G0CHE = ON4ANT
	21z	2148 OZ1PIF = G4PCI
12th	12z	1320 OE5MPL (JN76) = GW3LEW .
13th	06z	0813 OZ1PIF = G4PCI.
16th	21z	2247 OZ1PIF = GW4WJA tnx difficult JT6M QSO.
18th	06z	0748 G0CHE = GM8OEG.
24th	06z	0651 GM8OEG = I0WTD, 0706 G0CHE = S53J, 0714 G4PCI = S53J, 0734
		OE5MPL (JN78) = GM8OEG, 0752 F1NNI (IN88) = GM8OEG 27 JTM6,
		0758 G0CHE = I2WSG tnx jtm6 all ok.
	09z	0935 PA2VST = G0CHE.
	12z	1201 OE5MPL = GM4ISM (IO85),
	15z	1503 PA2VST = G4PCI,
25th	06z	0646 G1SDX (IO80) = OE5MPL, 0655 G1SDX = SM7JUQ, 0657 G4PCI = SM7JUQ
		0751 GM8OEG = I2SWG 27 R27 jtm6 fb refl.
	09z	0904 G0CHE = F5IQA tnx fb jt6m qso, 0957 G4ISM = F6FHP TNX JTM6 now 55
		constant Es, 1014 G0CHE = GM4ISM, 1024 G4PCI = S59F.
26th	21z	2237 OZ2M = G1SDX,
31st	18z	1846 G4PCI = CN8LI, (CN8LI 5W 6elts.) 1855 CN8LI = G0CHE.

The G4UPS - SM7AED morning skeds continued after a break when Ted was away. Skeds took place on 18 days, from the 13th onwards. The average strength of SM7AED at G4UPS was 4.2 and the average percentage of signals audible within a set period was 88.8, with a minimum of 50 on the 27th. The skeds were almost all after the major showers, so should be attributed to sporadic meteor trail reflections, with the exception of the 23rd when propagation appeared to be by normal Es mode.

Aurora

This month, there were 20 magnetically disturbed days, when Kp exceeded 4. There were some reports of radio auroras on almost all of these days. These were mostly weak 'Scottish type'. However there were three days on which auroras were reported further south. The maximum value of Kp was 8 on both the 29th and 30th. On these days stations in the south and SW England took part. During the Harang discontinuity period Auroral E was reported (characterized by a T9 or non-auroral tone). Although the name 'auroral E' is generally used it is interesting to note that ionisation during this period is not necessarily restricted to E layer heights. In the Harang discontinuity periods coast to coast contacts have been reported in USA. At such times much greater distances than a single E layer hop may be worked. It is suggested that ionisation up to F2 layer heights may occur (see G2FKZ's book Radio Auroras*). (Note by G0AEV: 2-hops at normal E-layer height seems to me to be a reasonable explanation).* This month we again have reports of the VE8BY beacon and OX3VHF being heard in GM. There is also a report of K1SIX being worked from GM (though not T9), and Martinique being heard (This last is an interesting event, but arguably could be included under Es multi-hop). Again I shall be using the shorthand '=' to signify a contact, and also '<' to signify 'hearing'.

1st	18z	1513 GM8LFB (IO88) < GB3LER/B weak auroral.
5th	15z	1601 GM3WOJ (IO77) < GB3LER/B weak Au.
	18z	1845 GM4PLM (IO75) < GB3LER/B 51A, QTF 0.
6th	18z	1829 GM8LFB < GB3LER/B & GB3RMK/B auroral.
7th	00z	0204 GM7PBB < GB3LER 55A, OY6SMC/B 53A.
	15z	1500 GM7PBB < OY6SMC/B, GB3LER/B & GB3RMK all Au. 1632 GM3WOJ < GB3LER/B 54A.
8th	15z	1713 GM3WOJ < GB3LER/B weak Au, and 1733 GM8LFB < GB3LER/B & GB3RMK Au. 1737 EI7IX (IO53) < GB3LER/B 51A. 1742 GM8LFB < OY6SMC/B 51A building. EI7IX < GB3RMK, GB3LER 53A. 1746 MW1MFY (IO81) < GB3RMK 41A, 1756 ON4ANT < GM3XOQ 53A, MW1MFY < GM3XOQ 57A.
	18z	1802 EI5FK = GM3XOQ via Au.
9th	21z	2134 GM4WJA < GB3LER/B 55A also OY6SMC/B. 2340 GM8LFB < OY6SMC/B 52A, GB3LER/B 56A & GB3RMK 51A. 2354 EI7IX < GB3LER/B 41A
10th	00z	0030 GM8LFB < JW9SIX 519 AuE. 0056 EI5FK < GB3LER 51A. 0101 SM0KAK (JO89) < GB3RMK/B 53A.
11th	00z	0219 LA6FJA (JP50IR) < GB3LER/B 41A.
	18z	2012 GM8LFB < JX7SIX/B (IQ50) 539 AuE, 2024 SM2HTM < GB3RMK/B 559 AuE, GM8LFB < LA7SIX/B 579 & JW9SIX/B 539, & at 2032 OH9SIX/B (KP36) 589. 2039 SM2CEW < GB3LER 599. 2040 GM8LFB = LA4SU (JP77) 55. 2057 LA5FTA (JP99) < GB3LER/B 599.
	21z	2102 LA5FTA = GM4WJA 58. 2147 GM8LFB = LA3TQ (JP99) 59, & at 2203 wks LA1NG (JP66) 59.
12th	18z	2025 EI7IX < GB3LER/B 41A.
14th	15z	1503 GM3WOJ < GB3LER/B strong aurora. MM5AJW (IO88) < GB3LER/B 57A, EI7IX < GB3LER 51A, 1521 OZ1DPR (JO45) < GB3LER 51A, 1531 GM3WOJ < OZ1DPR/B 57A.
15th	15z	1537 GM8LFB < GB3LER weak aurora, also at 1630 GB3RMK 53A, GB3LER now 55A.
	21z	2300 GM4WJA < OY6SMC/B 52A, GB3LER/B 55A.
21st	15z	1631 MM0AMW < GB3LER 53A, 1659 OZ4LP (JO55) = GM4ILS (IO87) aurora.
	18z	18z onwards G2ADR, GM stns auroral 1951 GM4PLM < OH9SIX/B 599, then the following AuE openings were posted on the cluster. 2025 G7RAU 48260 LA/TV S9, 2032 GM4PLM = SM3PZG 599, OH6KTL (KP02) < GB3RMK 559, G0JHC = SM3PZG (JP93) 599 GM4PLM, OH3KLJ 55, 2046 G0JHC < LA4SI 599, also = LB2DF 59++, 2059 GM4PLM = LA4LN (JP50) 55.
	21z	2100 G7RAU (IO90) = SM3PZG (JP93) 5709, LA6PV (JO59) < GB3RMK/B 559, LY2BAW (KO25) < GB3LER 599, 2114 G0JHC < LB6SE (JP42), also < SM4XIP (JP70). Aurora again -2131 EI7IX < GB3LER 31A, G7RAU < LB2DF 59 down to nil in 1 min. 2146 EI7IX < GB3RMK 51A, PA0OOS (IO53) < GB3LER & GB3RMK weak Au sigs. 2155 EI5FK < GM4WJA Au, 2212 MU0FAL < LA5QKA, PA3ECU (JO32) MM5DW (IO89) 59, 2219 DL9USA <MM5DWW, 2225 G3WZT < LC1GAT (JO59), PE2AEX (JO22) MM5DWW 59, 2229 G3WZT < LA9YV (JO59) also < LA7AT (JO59).

2232 G0CHE (IO90) < LA9YV.

22nd 00z 0018 EI5FK < GB3LER auroral.

21z 2338 GM8LFB < JX7SIX/B 569 AuE.

23rd 15z 1741 GM4PLM < GB3LER/B 51A QTF 0.

24th 18z 1901 EI7IX < GB3LER 41A.

21z 2150 **G0JHC hears FM5WD 519 (but working USA)** Au related?

25th 18z 1829 GM8LFB < GB3LER/B going auroral.

26th 21z 2256 GM0EWX WKD TF8GX 59, MM1DHU WKD TF8GX 59++, AuE?
GM4WJA < GB3LER/B 52A, G8VHI (IO92) < TF8GX 59++.

27th 18z 1945 GM4PLM < GB3RMK/B 52A. 2011 EI7IX < GB3LER 31A, 2041 GW0GEI (IO73) < GB3RMK 51A, 2056 GM4PLM hears OH9SIX/B 59 AuE, also G4DEZ (JO03) 52A, and LA4SI 59 AuE. G2ADR < GM STNS.

21z 2104 MM1DHU < OH9SIX 539 also LA4SI 559, 2108 G4PCI hears LA4SI work G4IGO (IO80), 2109 G3VMW < OH8LAE (KP24) also heard by MM1DHU at 539.
2120 OH6JW < GM7PBB 59 AuE. 2134 GM4PLM < JX7SIX/B 52 & at 2141 TF8GX (HP84) 559 AuE, 2142 MM1DHU < LA1NG 59+, 2148 GM7PBB < LA7SIX/B 56.

28th 00z 0022 EI7IX < GB3LER 51A.

15z 1637 GM4PLM < GB3LER 52A'

18z 1828 GM4PLM < GB3LER 52A,

21z 2153 GM7PBB < LA1NG 59, GM4PLM < OH9SIX/B 55 increasing, 2158 GM4PLM receiving in band video via Au, & at 2206 LAING at 59 AuE. 2213 G4KCT (IO93) < LA1NG 54. 2310 MM0AMW (IO75) < VE8BY 539, 2323 GM0EWX < OX3VHF/B 559.

29th 12z 1421 G8VHI (IO90) < GB3LER/B 53A QTF 010, 1435 MM5AJW < GM4WJA 59A, 1453 ON4GG < GM3XOQ 58A, 1459 GW3LEW (IO71) < GM3XOQ (IO87),

15z 1515 EI7IX < GB3LER 53A & GB3RMK 51A, 1525 G0JHC < OZ1DPR 57A, 1537 G4UZN < OY/G4XRV,1543 G25429 (IO93) < EI7BMB (IO63), PA2VST < GM8OEG QTF010, G25429 < GM4WJA (IO87) 56A, 1655 MW1MFY < GB3RMK 59A.

18z 18z onwards G2ADR < GM stations auroral.
18.10 GW3LEW = GM0TGE (IO87) 58A, 1813 LY2BAW (KO25) = G4DEZ (JO03) QTF 300, 1839 F5JKK < G4IGO 55A, 1840 OZ0JX (JO54) = G4DEZ (JO03) 55A, MW1MFY = G1YLE (JO02) 59A, 1845 F5NLY < G4DEZ Au, 1858 F8OP (JN26)< G4DEZ 55A, 1908 G4PCI < GM0EFT 55A, also < G8BCG/P Au, 1916 F8CED (IN87) < G4EGO [G4IGO?] 55A, 1938 M0BCG < GI6ATZ Au, also at 1948 < G3UDA/P Au.

21z 2140 G7RAU 49759 video S9A QTF 040, 2145 G0JHC < EI2JD 57A, 2150 EI7IX < GB3LER 519 AuE, also < GB3MCB 51A, 2209 SP2DDX < GM4ILS Au, 2214 GM4PLM < LY2AAM 59a, 2221 MM1DHU < DL8YHR 59+A, 2234 GW3MFY < OH9SIX 599 AuE, 2235 G0JHC < OH8LAE 599, 2238 OZ1DJJ (JO65) < GI6ATZ (IO74) 57A, 2242 G0JHC < LY2AAM 59A, 2249 GM0EFT (IO86) < DJ9YE 55A, 2250 F5JKK < GI6ATZ 54A, 2254 **GM0EWX = K1SIX,** 2257 **GM4PLM < K1SIX 51A**, 2259 G4UCJ < SP4MPB weak Au, 2307 GM0EFT < SP4MPB 55A, 2312 GM8LFB < LA7SIX/B weak AuE, 2315 MW0BBU < MW1DSK 55A, 2328 MW1DHU < LA4LN 57A, 2340 EI7IX < GM4WJA, 2345 GM8LFB < G1YLE (JO02) 57A,also at 2351 < LC3DAT Au 2356 GM0EFT < GB3MCB 55A QTF 290.

30th 00z 0005 G8VHI (IO92) < GB3LER 56A QTF 020, also < GM8LFB 53A, 0010 GM8LFB = G8GXP (IO93) QSY 70.210, 0027 GM8LFB < G4DEZ 59A, 0043 GM7PBB < GB3MCB 52A, 0111 MM1DHU < G8GXP 59A, 0123 G8GXP < EI5FK 55A

15z 1645 GM4PLM < GB3LER 41A.

18z 2014 GM4PLM < GB3LER 51A QTF 000, 2050 G4PCI < GB3RMK 41A.

21z 2115 G8VHI < GB3RMK 52A QTF 005, GM4PLM < GM0EWX 55A, 2118 G4PCI < GM0EWX 54A, 2120 G8VHI < GB3LER 54A QTF 000, 2125 G4PCI < GM4PLM 41A, 2126 PA0OOS < GM4PLM 52A QTF 310.

Tropospheric Propagation

The few tropo results this month are taken from the packet cluster spots where this seems the likely propagation mode.

10th	15z	1601	MW1MFY = TM7R (IN87) 539/559.
13th	15z	1732	F5JKK < GW3LEW.
26th	09z	1105	MW0RHD < EI2JD 31.
	15z	1513	G4UZN (IO93) < GD0TEP/P 59, 1522 EI7IX < GD0TEP/P
28th	15z	1748	EI5FK < G8BCG/P 53.
29th	12z	1245	G4OBK (IO94) < PA5WT tropo 539.

Postscript

There was a good mix of propagation modes, but we will have to accept that the days of world wide DX are over for some years to come. Es was considered by Brian G3HBR to be 'patchy'. This is borne out by comparing the Sporadic E summary tables for May 2001, 2002 and 2003: this year the larger area counts seem more concentrated in the 12z and 15z time bands. Counts at other times are quite low.

Solar and Geomagnetic Data for May 2003

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

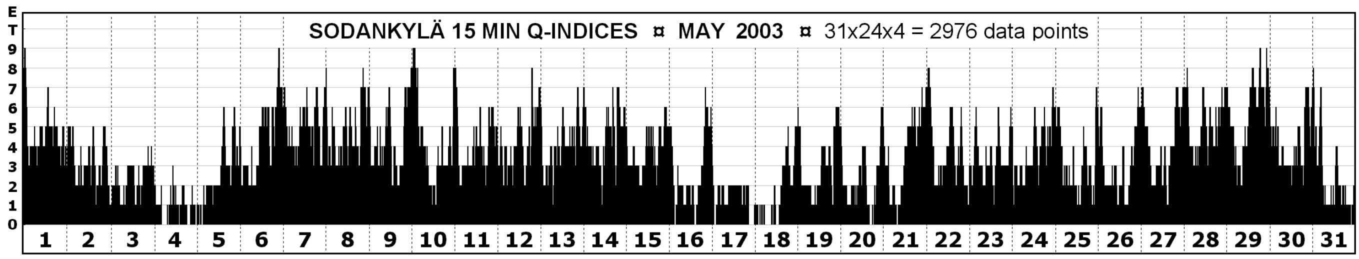
Sunspot numbers (SEC)	Mean 89.6	Max 175 (2nd)	Min 22 (10th)
Solar Flux (28 MHz)	Mean 116.2	Max 149 (1st)	Min 92 (11th)

Solar data for May 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.

2nd	0247-0344	M1.0 SF
26th	0534-0602	M1.9 1F
	1622-1651	M1.0
27th	0240-0321	M1.4 1F
	0506-0716	M1.6 1F
	2256-2313	X1.3
28th	0017-0039	X3.6
	2256-2313	X1.3 2B
29th	0051-0112	X1.2 2B
	0209-0224	M1.5 1F
	1928-1943	M2.8 1N
31st	0213-0240	M9.3 2B

Q-Indices from Sodankylä, Finland (thanks OH2LX)



Väinö’s regular view of geomagnetic activity from Finland (as measured by means of the Q-index) clearly demonstrates the disturbed nature of May 2003, Väinö writes “May was a much disturbed month with the Sodankyla monthly Ak average = 45.3 and Nurmijarvi = 28.6. The most disturbed day was 29th May with Sodankyla Ak = 129 and Nurmijarvi Ak = 170

K-indices. K indices for May 2003 for Hartland are presented below (tnx British Geological Survey)

1	6	4	4	3	4	4	4	3	32
2	2	4	2	2	3	2	2	3	20
3	2	2	2	3	3	2	1	3	18
4	2	1	1	2	1	2	1	1	11
5	1	2	2	1	2	4	4	3	19
6	3	2	2	3	5	4	4	4	27
7	5	4	5	4	3	4	4	4	33
8	4	4	4	4	4	5	5	4	34
9	4	4	4	4	4	4	2	3	29
10	6	4	4	2	2	3	4	2	27
11	4	3	5	4	4	4	3	3	30
12	3	3	3	2	3	4	5	3	26
13	3	2	3	4	3	4	4	4	27
14	4	3	3	2	3	5	5	3	28
15	3	3	3	3	4	4	3	4	27
16	3	2	2	1	2	2	2	3	17
17	3	1	2	1	2	2	2	1	14
18	1	1	0	1	1	4	4	3	15
19	3	2	2	1	2	3	3	4	20
20	3	1	2	2	3	2	2	3	18
21	3	4	1	2	3	5	5	5	28
22	5	4	4	2	4	4	4	2	29
23	2	4	3	3	3	3	2	2	22
24	3	3	4	2	3	4	4	4	27
25	4	3	3	2	2	3	3	4	24
26	4	3	4	2	2	4	3	4	26
27	4	3	3	2	4	4	5	4	29
28	5	3	4	4	4	4	3	3	30
29	4	4	3	2	5	6	7	7	38
30	6	5	5	3	3	6	5	5	38
31	4	4	2	1	3	3	2	1	20

The UK or planetary K indices reach 5 or higher (i.e. at least minor storm) on 22 days

	1st May									2nd May									5th May								
Kp	**6**	**5**	**5**	**5**	4	4	4	3	36	3	**5**	3	3	3	2	2	3	24	2	3	3	3	2	2	2	2	19
Lerwick	**7**	4	4	3	4	4	4	2	32	3	**5**	2	2	3	2	1	2	20	1	1	1	1	2	4	4	3	17
Eskdale	**6**	4	4	4	4	4	4	2	32	3	4	2	2	3	2	2	3	21	1	2	2	2	3	**5**	4	3	22
Hartland	**6**	4	4	3	4	4	4	3	32	2	4	2	2	3	2	2	3	20	1	2	2	1	2	4	4	3	19

	6th May									7th May									8th May								
Kp	4	3	3	4	**5**	4	4	4	31	**5**	**5**	**6**	**5**	4	4	3	3	35	**5**	**5**	4	**5**	4	4	**5**	3	35
Lerwick	3	2	2	2	**5**	4	4	4	26	**5**	4	4	3	**5**	4	4	3	32	4	4	3	3	4	**5**	**5**	4	32
Eskdale	3	2	2	3	**5**	4	4	4	27	4	4	**5**	3	4	4	4	3	31	4	3	4	4	4	**5**	**5**	4	33
Hartland	3	2	2	3	**5**	4	4	4	27	**5**	4	**5**	4	3	4	4	4	33	4	4	4	4	4	**5**	**5**	4	34

	9th May									10th May									11th May								
Kp	4	4	5	**5**	**5**	3	3	3	32	**6**	**6**	**6**	**5**	2	3	3	3	34	**5**	3	**6**	**5**	**5**	3	3	3	33
Lerwick	3	3	4	3	4	3	2	4	26	**6**	**6**	4	2	1	3	3	2	27	**5**	2	4	3	4	4	2	3	27
Eskdale	3	4	4	4	4	4	2	4	29	**6**	**5**	4	2	1	4	4	2	28	4	3	**5**	3	4	4	3	3	29
Hartland	4	4	4	4	4	4	2	3	29	**6**	**4**	4	2	2	3	4	2	27	4	3	**5**	4	4	4	3	3	30

	12th May									13th May									14th May								
Kp	3	4	4	3	4	3	3	3	27	4	3	4	**5**	4	4	4	?	28	**5**	**5**	**5**	4	3	4	4	3	33
Lerwick	3	3	2	2	3	3	**5**	3	24	**5**	2	2	3	4	4	3	3	26	3	3	3	2	4	4	**5**	3	27
Eskdale	3	3	3	2	3	4	**5**	3	26	3	2	3	3	3	4	3	4	25	3	3	3	2	4	**5**	**5**	3	28
Hartland	3	3	3	2	3	4	**5**	3	26	3	2	3	4	3	4	4	4	27	4	3	3	2	3	**5**	**5**	3	28

	21st May									22nd May									23rd May								
Kp	3	4	2	2	3	4	4	**5**	27	**5**	**5**	4	3	4	4	3	2	30	3	4	4	**5**	3	4	3	3	29
Lerwick	3	2	1	1	3	**5**	**5**	**7**	27	**6**	4	3	2	4	4	4	2	29	2	3	2	2	2	4	2	2	19
Eskdale	3	3	1	2	3	**5**	**5**	**5**	27	**5**	4	3	2	4	3	4	2	27	2	3	3	3	2	3	2	2	20
Hartland	3	4	1	2	3	**5**	**5**	**5**	28	**5**	4	4	2	4	4	4	2	29	2	4	3	3	3	3	2	2	22

	24th May									25th May									27th May								
Kp	3	**5**	**5**	3	4	3	4	3	30	**5**	**5**	4	3	2	4	3	4	30	4	4	3	3	4	3	4	**5**	30
Lerwick	3	3	3	2	3	4	3	3	24	4	3	2	2	2	4	3	2	22	4	3	2	2	4	4	**5**	4	28
Eskdale	3	3	3	2	3	4	4	3	25	4	3	3	2	2	4	3	3	24	4	3	2	3	4	4	**5**	4	29
Hartland	3	3	4	2	3	4	4	4	27	4	3	3	2	2	3	3	4	24	4	3	3	2	4	4	**5**	4	29

	28th May									29th May									30th May								
Kp	**6**	**5**	**5**	**5**	4	4	4	4	37	**5**	4	4	3	**6**	**7**	**8**	**8**	45	**8**	4	4	3	4	**5**	4	**5**	37
Lerwick	**5**	4	3	3	3	4	3	4	29	3	3	2	3	**7**	**7**	**8**	**8**	41	**7**	**5**	3	2	3	**5**	4	**5**	34
Eskdale	**5**	3	4	3	4	4	4	3	30	3	3	3	2	**6**	**6**	**7**	**8**	38	**7**	**5**	3	3	4	**6**	**5**	**5**	38
Hartland	**5**	3	4	4	4	4	3	3	30	4	4	3	2	**5**	**6**	**7**	**7**	38	**6**	**5**	**5**	3	3	**6**	**5**	**5**	38

	31st May								
Kp	**5**	**5**	3	1	3	3	2	2	24
Lerwick	**6**	**5**	2	1	3	2	1	0	20
Eskdale	4	4	2	0	3	3	2	1	19
Hartland	4	4	2	1	3	3	2	1	20

May	28 Areas		-- 50 Areas --				2800	- Spots -		Max			X-ray	Max foF2		Min foF2		-- Particle Fluences --		
2003	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-May	3	5	1	0	1	0	149	171	99	6	40	64	B5.2	7.8	18	1.9	03	1.8E+08	5.7E+06	1.1E+04
02-May	2	13	0	0	0	0	144	175	86	5	17	27	B3.6	9.4	13	3.9	04	4.7E+08	3.3E+06	1.1E+04
03-May	0	15	1	0	0	0	148	134	95	3	10	22	B5.5	8.3	19	4.5	04	8.0E+08	3.2E+06	1.1E+04
04-May	1	13	0	0	0	0	142	172	96	3	7	11	B5.8	9.1	19	4.6	04	9.0E+08	3.3E+06	1.0E+04
05-May	0	9	1	1	1	0	129	144	93	4	12	25	B5.2	9.0	19	4.5	04	4.8E+08	8.5E+06	1.1E+04
06-May	8	11	14	4	1	0	122	117	78	5	23	50	B5.5	8.7	17	3.6	04	1.1E+08	4.2E+06	1.0E+04
07-May	10	6	13	0	2	0	110	109	65	6	36	61	B6.1	5.8	19	3.0	04	4.5E+08	8.3E+06	1.0E+04
08-May	0	9	0	0	5	0	101	33	33	5	30	65	B5.4	7.5	17	3.0	04	1.0E+09	9.3E+06	1.0E+04
09-May	3	8	1	0	3	0	97	23	20	5	29	55	B2.7	7.0	18	3.2	04	3.2E+08	2.0E+06	1.0E+04
10-May	1	1	0	0	2	1	93	22	17	6	43	49	B1.1	5.2	19	2.2	04	6.8E+07	2.2E+06	1.1E+04
11-May	2	5	3	0	1	5	92	47	36	6	31	55	A7.7	8.0	20	2.3	02	1.1E+08	2.7E+06	1.2E+04
12-May	0	9	3	1	1	0	94	66	38	4	18	40	A6.9	7.0	16	3.2	05	2.9E+08	2.3E+06	1.1E+04
13-May	5	4	11	1	0	0	96	59	41	5	25	41	A9.4	6.7	20	3.1	03	4.5E+08	5.5E+06	1.1E+04
14-May	0	7	1	0	3	0	96	75	43	5	27	45	B1.0	7.1	20	3.1	04	7.8E+08	6.8E+06	1.1E+04
15-May	0	6	2	0	2	0	99	97	50	4	23	39	B1.3	8.2	19	3.7	04	3.6E+08	1.2E+06	1.1E+04
16-May	0	6	2	0	0	0	103	97	51	3	9	15	B1.5	7.8	21	3.8	04	4.5E+08	7.7E+05	1.1E+04
17-May	9	7	11	0	0	0	102	81	48	3	9	15	B1.6	6.7	19	4.2	04	2.7E+08	1.6E+05	1.1E+04
18-May	6	9	9	0	0	0	109	79	44	3	10	17	B1.7	7.2	17	4.1	03	3.1E+08	6.0E+05	1.1E+04
19-May	5	9	18	0	0	0	115	75	54	4	12	22	B2.0	7.5	11	4.6	04	7.4E+06	9.1E+04	1.1E+04
20-May	7	12	19	1	0	0	117	77	61	3	12	21	B2.4	7.1	21	4.9	03	6.0E+06	1.9E+05	1.1E+04
21-May	5	12	2	0	7	5	119	79	50	5	20	45	B2.6	8.3	10	4.6	04	1.2E+07	4.7E+05	1.2E+04
22-May	8	5	13	0	1	1	118	110	65	5	25	48	B2.7	6.0	17	3.2	02	1.0E+07	1.2E+06	1.2E+04
23-May	11	9	15	0	1	0	118	87	57	5	21	31	B2.5	7.0	18	4.1	04	4.2E+07	6.9E+05	1.2E+04
24-May	1	4	5	0	1	0	117	84	40	5	22	44	B2.7	6.6	18	4.5	05	3.1E+07	4.5E+05	1.2E+04
25-May	3	5	18	0	1	0	121	51	39	5	22	31	B2.5	7.1	19	3.3	22	9.9E+07	3.1E+05	1.2E+04
26-May	11	9	15	0	1	1	125	65	52	4	18	31	B3.5	7.1	20	3.8	03	1.8E+08	5.9E+05	1.1E+04
27-May	11	10	16	0	3	4	129	116	57	5	26	52	B4.3	7.8	19	4.1	03	5.1E+07	4.2E+05	1.1E+04
28-May	6	5	7	3	1	4	130	116	62	6	36	50	B5.9	8.8	16	3.2	03	3.1E+07	1.7E+07	2.6E+05
29-May	4	8	4	0	13	2	138	98	56	8	89	121	B3.0	8.0	17	3.1	23	4.8E+07	2.4E+08	2.9E+06
30-May	0	1	1	0	4	0	117	62	44	8	49	74	B3.3	5.7	21	2.3	02	5.0E+05	5.2E+07	2.5E+05
31-May	3	9	4	0	0	0	113	57	42	5	17	39	B4.5	n.a	n.a	2.8	01	3.6E+06	1.6E+07	8.0E+05
Sum	125	241	210	11	55	23														
Average	4.0	7.8	6.8	0.4	1.8	0.7	116.2	89.6	55.2	4.8	24.8	42.1		7.5	18	3.6	03	2.7E+08	1.3E+07	1.5E+05
Maximum	11	15	19	4	13	5	149	175	99	8	89	121		9.4	21	4.9	05	1.0E+09	2.4E+08	2.9E+06
Minimum	0	1	0	0	0	0	92	22	17	3	7	11		5.2	10	1.9	22	5.0E+05	9.1E+04	1.0E+04

50 MHz Outside Britain

Compilation and Commentary by G3USF

Europe, Africa and the Middle East

Auroral-Related

Only three days with the Ap in single figures and auroral-related propagation reported on twenty two days. The mean monthly Ak at Sodankyla, furnished by OH2LX, was a hefty 45.3, and at Nurmijarvi 28. On the most disturbed day Sodankyla recorded 129 and Nurmijarvi 170. Aurora was reported from locations south of the Baltic/Scotland on nine days, though on four the only southerly reports came from vigilant EIs in IO53, who seem to have a special line to aurora. This included reception of the VE8BY beacon on the 28th, where weak AE looks the most likely mode. The only really big event was on the following day, when Kp8 was reached and, propagation briefly touched northern Italy. As the record shows, many contacts were made during the seven hours or so of the principal phases, though in view of the day's Ap of 89 it is perhaps surprising that there were not more. We usually comment on the many days when OH was the sole or major source of reports. However, comparison with the earlier UK/aurora section suggests that these islands did particularly well this month, being in on virtually every opening including a couple that seem not to have registered in OH.

May 1 0000-30 Au>OH5IY 0000-20 AuFM>OH5 0040-0210 Au>OH5 0050-0120 AuFM>OH5 1330-1430 Au>OH5 1414 Au>OZ(000) 1720-40 Au>OH5
May 5 1610-40 Au>OH5 1720-40 Au>OH5
May 6 000-50 Au>OH5 1330-1600 Au>OH5 1610-20 Au>OH5 2130-2230 Au>OH5 2240-2330 Au>OH5 2300-10 AuFM>OH5
May 7 0000-10 Au>OH5 0120-0230 Au>OH5 1230-1330 Au>OH5 1400-1530 Au>OH5 2350-2400 Au>OH5
May 8 0000-50 Au>OH5 0110-30 Au>OH5 1210-30 Au>OH5 17-1800 GB3LER>EI(IO53 51a) GB3RMK>EI(41a IO53) OY6SMC>EI(41a IO53) GM>ON(53a) 18-1900 GM(IO87)>EI 48250>LY 2110-30 Au>OH5 2200-30 Au>OH5 2310-30 Au>OH5
May 9 0030-0120 Au>OH5 1100-1320 Au>OH5 2120-2200 Au>OH5 2300-2400 Au>OH5
May 10 0000-0450 Au>OH5 0040-0120 AuFM>OH5 0056 GB3LER>EI(51a) 0320-30 AuFM>OH5 0317 Au>LY(qtf 350) 0340-50 AuFM>OH5 0400-10 AuFM>OH5 0710-20 AuFM>OH5 07-0800 49750>SM2 1904 OH9SIX>SM3(53a)
May 11 0000-20 AuFM>OH5 0030-0140 Au>OH5 0030-0130 AuFM>OH5 0140-50 Au>OH5 0150-0200 Au>OH5 0210-30 Au>OH5 0219 GB3LER>LA(JP50 41a) 2150-2210 Au>OH5
May 12 2020-40 Au>OH5 2025 GB3LER>EI(IO53 41a)
May 13 0030-0110 Au>OH5
May 14 14-1500 Au>OZ 15-1600 GB3LER>EI(IO53 51a) OZ>OZ(52a) 1643 Au>PA(JO21) 1903 ON>PA
May 21 16-1700 49750>OZ SM5(JO99)>OZ(JO55) GM(IO87)>OZ(JO55) 17-1800 SM5(JO99)>OZ(JO54) SM5(JO99)>OZ(JO54 55a) LA(JO59)>OZ(JO454 55a) 19-2000 OH9SIZ>OZ(JO55 599) JX7SIX>HB(JN46 57) LA>LY(559) JX7SIX>OZ(579) LA(JP66)>PA(JO21 599) 20-2100 LA7SIX>SP2(599) JX7SUIX>PA(JO32 599) GB3LER>OH6(KP02 559) JX7SIX>DL(JO32 599) OH8SIX>DL(JO53 599) OH6>EI(IO53 41) OY6SMC>OZ OH9SIX>PA599) SM3>EI OH9SIX>PA(JO22 59) OY6SMC>PA(JO22 579) LA(JP66)>EI(IO53) SM3(JP82)>EI(IO53) 21-2200 OY6SMC>OZ(JO65) GB3LER>LY(KO25 599) EI(IO53)>OH6(KP02) LA(JP32)>PA(JO22 59) GB3LER>EI(IO53 31a) SM5>OZ(57a) GM(IO87)>EI) 22-2300 EI>LA SM7>OZ(JO65 330) OY6SMC>PA(539 325) OZ>EI(IO53 559) GM>PA(JO32 59) GM(IO89)>DL GM(IO89)>PA(JO22 59) 2220-30 AuFM>OH5
May 22 0010-20 AuFM>OH5 0200-20 AuFM>OH5 1410-1500 Au>OH5
May 24 1320-30 Au>OH5 2330-2400 Au>OH5
May 25 0000-10 Au>OH5 2350-2400 Au>OH5
May 26 2258 JX7SIX>EI(IO53 519) 2304 TF8GX>EI(IO53 31)
May 27 0100-30 Au>OH5 0140-50 Au>OH5 20-2100 GB3LER>EI(IO53 31a) OX3VHF>OH6(KP02 529) OH3>SM5(55a) JX7SIX>OZ(JO55 589) 2040-50 Au>OH5 21-2200 OH9SIX>EI(519 IO53) JW9SIX>SM5(599) LA(JP66)>DL(JO71 mode?) JX>PA(529 JO32) JX>SM5(559) JX7SIX>EI(IO53 519) 2330-2400 Au>OH5
May 28 0000-30 Au>OH5 0110-20 Au>OH5 0220-0300 Au>OH5 1100-1200 Au>OH5 1210-20 Au>OH5 1510-30 Au>OH5 1957 JW9SIX>OH5(KP30 599 mode?) 20-2100 JW5SIX>OH5(KP30 599 mode?) JW5SIX>OH2(KP20 539 mode?) JX7SIX>OH7(599 mode?) 2150-2210 Au>OH5 22-2300 LA>EI(IO53 519) GM>OH2(mode?) LA>DL(JO62 51 mode?) 2310 VE8BY>EI(419 IO53 mode? TF3SIX>EI(IO53 419 mode?) 2340-50 Au>OH5

May 29 0000-20 Au>OH5 0040-0110 Au>OH5 1250-1300 Au>OH5 1330-1610 Au>OH5 14-1500 SM0>LA(JP50) PA(JO33)>LA(JP50) ES4(KO39)>LA(JP50) SM3>LA(JP50) SM6>LA(JP50) LA(JP50)> DL(JO53) OH3>PA(57a) LA>PA PA>ON(57a) GM>ON(58a) SM6(JO78)>PA(030) LA(JO89)>DL(JO53) OY(IP62)>LA(JP50) 1410-40 AuFM>OH5 1450-1530 AuFM>OH5 15-1600 OZ>ON(59a) PA>LA(JP50) OZ>LA(JP50) OY(IP62)>PA(010) GB3LER>EI(IO53 53a) GB3RMK>EI(IO53 51a) OZ>DL(JO31 49a) OZ(JO46)>LA(JP50) OZ(JO45)>ON(JO20 030 57a) SM7>PA(035) OZ>DL(JN48 55a) OZ>PA(045) LA>PA GM>PA(010) YL2(KO26)>OZ(JO65 55a) 16-1700 OH7(KP42)>DL(mode?) SP6(JO80)>DL(JO53) ES2(KO29)>OZ(JO65 58a) LA(JP21)>LA(JP50) LA(JP42)>LA(JP50) 17-1800 JW5SIX>SM3(JP82 559 mode?) SM5(JO99)>LY(KO25 330 57a) OH3>LY(55a) SP2(JO93)>LY(KO25 300) LA(JO59)>LY(KO25) LY(KO25)>OH3(KP11 57a) 18-1900 SM3(JP71)>LY(KO25 330) SM4(JP80)>LY(KO25 330) LA(JO59)> PA(JO32 59a) SP6(JO80)>LY(KO25 300) OZ(JO54)>LY(KO25 300) G(JO03)>LY(KO25 300) JX7SIX>OH7(KP32 55a) LY(KO06)>LY(KO25 300) LY(KO06)>DL LA(JO59)>KO25(305) G(JO03)>F(51a IN78) SP2(JO94)>OZ(JO65 59a) G>F(55a) G(JO03)>OZ(JO54 55a) OH6(KP23)>LY(KO25 59a 360) LY(KO06)>OZ(57a) SM5(JO99)>OZ(JO65 55a) LY>SP9(JO90 55a) G(JO03)>F(JN26 55a) 1830-40 Au>OH5 1900-30 Au>OH5 19-2000 SP2>OZ(58a) LY(KO06)>DL ON(JO20)>LY(KO25 280) 49739tv>I1(JN35 330) JW9SIX>SM2AE 599) JX7SIX>(KP15 599) DL(JO62)>LY(KO25 280) DL(JO44)>LY(KO25 300) JW9SIX>LA(JP50) DL(JO41)>LY(KO25 55a 280) DL(JO41)>LY(KO25) 2054 LY(KO06)>LA(JP50) 21-2200 OH3(KP11)>OZ(JO54) OH3(KP11 529)>OZ(JO65 55a) OZ(JO54)>LA(JP50) OZ(JO54)>OH3(KP11 55a) OH3>DL(JO62) OH3>PA(JO32 529) SM7(JO62)>DL(JO66 57a) LA(JP50)>PA(JO33 53a) OH3(KP11)>EI(IO53 599) EI>EI(51a) OH3(KP11)>PA(JO22 025) SM7>PA(JO32 55a) GB3LER>EI(519) GB3MCB>EI(IO53 51A) 22-2300 OH1SIX>EI(IO53 529) GM>SP2 ES0SIX>EI(IO53 519) LY(KO06)>DL(JO3! 57a) LY(KO06)>DL(JO52) SM7>SP2 SM7>PA YL3>OZ(57a) YL3>PA GI(IO74)>OZ(JO65 57a) SM6>PA(055) EI(IO63)>F(56a) GI(IO74)>F(53a) SP4>PA(050) OH2>PA(050) LY>PA(JO32 57a) LA(JP50)>EI(IO53) GM(IO87)>EI(IO53) YL3>SP4(53a) LY(KO26)>PA(55a) 2210-2400 Au>OH5 2220-2400 AuFM>OH5

May 30 0000-0100 Au>OH5 0000-0140 AuFM>OH5 0120-40 Au>OH5 0150-0210 Au>OH5 0150-0200 AuFM>OH5 0250-0300 Au>OH5 0350-0410 Au>OH5 2200-20 Au>OH5
May 31 0000-0100 Au>OH5

Other Modes

May is more familiar for the quantity rather than the quality of contacts reported. This year was no exception, with a number of days with many hours of sporadic-E across much of the continent, often persisting even during geomagnetic disturbances (cf results for the 11th and 29th). SV1DH, who worked more 'entities' this month than in May 2002, shows in his report what was possible by Es. (It helps, of course, being located near the edge of the continent - as we are also in the UK).

By the same token, there were several relatively quiet days, such as the 16th, on which there were few reports. A notable feature of propagation within Europe was the volume of 'JT6M' contacts, especially early in the morning, probably by MS, with activity levels encouraged by a burst of activity from 4U1ITU - presumably being operated in the margins of WRC03.

Some DX was recorded, both east and west, probably by way of multihop Es or Es-assisted in either direction. This included Indonesia into the Mediterranean on the 4th and Afghanistan into Cyprus on the same day. A4 was worked from Mediterranean countries on the 25th and 28th, also reaching G on the 25th, DL,ON and PA on the 28th and PA on the 29th, with A6 working SP on the 19th and Mediterranean contacts on the 25th. HZ was worked from the Mediterranean on the 25th, 29th and 31st, and further to DL on the 20th and SP and YO on the 31st. The pattern was similar to 2002. To the west, contacts were reported with North America on the 19th, 20th and 25th (plus the 29th auroral) and to the Caribbean on the 4th, 21st and 24th, presumably by multihop Es. Though modest this was a better result than in May 2002. Not everything necessarily gets worse as we move down the cycle!

Europe<>North America/Caribbean

	Mediterranean	Iberia	Northern Europe
W1	1 day 20	2 days 19 20	2 days 20(G) 29(G -Au)
W2		1 day 20	
W4	1 day 20	3 days 19 20 25	
VE1		1 day 20	1 day 20(G)
VE8			1 day 28(EI-AE)
VO		2 days 19 20	
FM		2 days 4 24	1 day 24(EI,G)
KP4	1 day 24	1 day 24	
J8	1 day 21		

By contrast, the path between Europe and Southern Africa was a mere shadow of what it had been a year previous. While there were a number of goodish openings, propagation was reported from the Mediterranean on only 15 days, compared with 30, and on 9 days further north against 18 in 2002. ZS was down - from 23 days into the Mediterranean to 3; 7Q suffered less, dropping from 22 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	31
Med	+	+	+			+	+						+		+	+	+	+	+	+	+		+	+							
North		+				+	+				+	+	+						+	+					+						

Europe<>Southern Africa

	Mediterranean	Northern Europe
7Q	11 days 2 3 13 15-21 24	7 days 6(DL,EI,G) 7(G) 11(OE) 12(PA) 13(G) 19(SP) 20(G)
9J	4 days 2 3 6 7	4 days 6(DL,G,PA) 7(DL,OZ) 11(DL,SP) 17(HB,LY,OE,OH,SP)
ZS	3 days 1 2 23	3 days 2(SP) 6(G) 25(LY)
Z2	2 days 2 6	1 day 6(G,OZ)
V5	1 day 1	

West Africa was worked from the Mediterranean on only five days and from northern countries on just two, but paths are clearly not at their seasonal best in May. From elsewhere in Africa, there were reports of SU into the Mediterranean on the 3rd and 21st, VQ9, also into the Mediterranean, on May 4, 6 and 21 and FR into the Mediterranean and G and ON on the 28th

Europe<>West Africa

	Mediterranean	Northern Europe
D4	2 days 2 4	1 day 25(G)
5U	1 day 3	1 day 3(LZ)
TR	2 days 6 13	
S9	1 day 4	

May 1 0651 I5>OZ 07-0800 F>OE3 OE3>I5 OH1>OE3 OZ>I2(ms) 08-0900 I2>F(ms) 09-1000 SM7>OH1 (bs) CN>9H 10-1100 LX>9A 11-1200 F>OK2 SP6>LX PA>SP6 12-1300 SM0>LA,ON,OZ LX0SIX,ON0SIX> EA7 OE3>OH6 LA,F>OZ G>LX 9H>I2 5Ztv>SV1 ZS6TWB>I5 I2>9H 13-1400 3Ctv,5Ntv>SV1 I0>I5 14-1500 LU7WW>I7 SV1>I7 OH1>ON ZS6NK>CT 15-1600 S5>9A OZ>F OH6>ON 16-1700 S5>I4 OH6>LX EI>9A GM>I2 17-1800 F>9A S55ZRS>EI PY1RO>IS0 YU1>9A YT1>YO7 9H>SV1 F>OK1 V51KC>IS0 18-1900 V51KC>EA3 I3>9A(t) F,YU1>9A OZ>YU1 HB>PA(t) 19-2000 DL>ON ON>DL S5>9A ON>LX

May 2 06-0700 ON>SP2,SP6 07-0800 I0>SP2 F>OK2(ms) SP6>F 08-0900 LZ1>YO7 I1,I2>OK1 I5>OK2 G,F>I2 09-1000 YU1>PA 10-1100 I0,ON>I2 G>I1 11-1200 GW,PA>I2 OZ,GW>I1 ZS6TWB,ZS6DN>I9 PA>I112-1300 5Ztv>SV1 F>OZ ZS6WB>I2,SP6,I5,I1 13-1400 IZ1EPM>I2 5Ubc>F YT1>9A 14-1500 CEbc,3Ctv>SV1 D44TD>I9,I2 ZR1ADI>I9 SV1,9H>I2 15-1600 3Ctv>9A D44TD>I9 OK1>DL YU1,F>OE3 16-1700 I0>I2 D44TD>EA3,EA6 Z22JE>EA6 V51E>I5 9J2KC>EA3 17-1800 3Ctv,7Q7SIX>SV1

May 3 06-0700 OH7>ON,9A 07-0800 LA>OZ 08-0900 OH1>OZ(ms) F>OK1 I5>LX 10-1100 F>OZ 11-1200 ON>I5(ms) ON>OK1(bs) OH6>PA LA>ON 14-1500 I5>PA 15-1600 4X4SIX>I8 5U7JB>SV1,LZ2 5Ubc>F,9A,PA SU1SK>9H,I8 SU1HM>9H 16-1700 OH3>PA SU1HM>I8,I0 SU1SK>I0

May 4 data missing? 14-1500 YC1BYO,YC1MH>9H YC1HER>9H,5B YB0DPO>5B 15-1600 YF1OO>5B HZ1MD>5B 5Ubc>F SV1,9H>D44TD D44TD,YA4F>5B FM5WD>CT VQ9X>SV1 9H>S9TX

May 5 07-0800 YT1>YO7 I5>OZ 08-0900 I5>OZ 09-1000 OZ>F PA>I2 1023 I5>OZ 12-1300 PA>I5 14-1500 LY>9A 9A>I7 S55ZRS>OE6 15-1600 YT1>YO7 16-1700 EH8>CT 1706 S5>I5 18-1900 EH8>F,EA6 PY1RO>EA6 ZD8VHF>F,SV1 19-2000 ZD8VHF>EA3,I0,GW F>EA1 20-2100 ZD8VHF>IS0 EH8>EA7 21-2200 OZ>I5

May 6 06-0700 OZ>F F>SP2,SP6 08-0900 OH7,F>OZ 10-1100 YO3KWJ>SM6 11-1200 YT1,LZ2CC>SM6 ES0SIX>I5 SM0>9A 12-1300 SM5>LZ2 CT0SIX,PI7SIX>EI GM>SP9 GB3LER>SP6 OZ7IGY>EA7 1240-1325 E2)qtf SW)>Jokela 13-1400 EI,OZ,GM>DL GM>OK1,SP9,PA OY6SMC>DL GI,DL>OZ I5>SP6 14-1500 EA7>DL I6>EI EH8>OZ GM>I5 15-1600 I0JX>F F>YO2 9H1SIX>SP6 I0>EI,F I9,OD>F I9>YO7 I5>EI EA7,F,SV9,EA4,EA5>9A SV8>I1 EA6,EA2>OZ SV5SIX>I0 LZ3>F VQ9X>EA7 HB>I7 EA6>DL HB9SIX>F 16-1700 SV9>OE6 4X>I0,F OD>F 4U1ITU>DL,9A,YO2,EI T9>I1 7Q7SIX>EI,G EH6>OZ VQ9X>F,9H I0>SQ6 I8,I9>DL F>LZ2,YO7 ,DLIS0,I9,DL,F>9A EH8>DL EH3>YO7 3A>YO2 JY,OD>CT EH7I2 SV8>CT T9>I3 9H>PA 4X4SIX>HB I9>EA7 I0>F DL>EA1 EH2>DL 17-1800 EH5,F>HA1 Z22JE>G,9H,OZ EA5,I9>DL F>DL,OK2,I3 I5>F 7Q7SIX>DL IS0>I3 GJ>5B 9J2GS>DL,EA7,PA,G 3A>PA 4X>I8 YU1>YO7 EI>I1 F,I7>LX SV9>I5 4U1ITU>JY I9>F,ON 18-1900 I0,TA1,I9>F F>I5,LX,PA,F JY>HB I1>LZ2,I8 I9,EH6>I2 I5,EH3,EH5,YU1>9A 9H,EH7>I1 4U1ITU>JY EH2>ON I9>I5 EH6>S5 EH5>LX CT>PA 19-2000 EH5>PA 4U1ITU>EA3,EA5 CT,EA2>DL EH9>DL,HB,I5,ON EH1,CT>PA CT,EH1>ON I5>I2(bs) LX>EA7 PY5CC>DL,ON,I5.I2,PA,I1 PY1RO>I2,I1,DL EH6>I0 I9>EA5 EH8,9H>F PY1VOY>DL CT>ON,F 20-2100 CT>I0,PA,DL EH7>HB,I5,I2 EH5>ON HB9SIX>DL EH1>OE5 21-2200 CT0SIX>DL

May 7 07-0800 4X>YO7,I7 08-0900 4X,9A>I7 I9>I5,YO7,DL F,SV9SIX>YO7 G>I5 4X>I5,HB,I8 09-1000 I1,I2>YO7 I9>I5,SP2,PA 4X>9A HB,EA7,SV1SIX>DL 9H1SIX>SP6 T7>I4,CT SV1SIX,SV5SIX,SV9SIX>I5 I2>LZ2 I0JX>EA1,SP6 Z3>SP6 I8>DL IK5ZUL,SV9SIX,I9>9A 10-1100 I9>9A,OE3 SV9SIX>HB SV1SIX>DL 9H1SIX>LZ2 11-1200 I9>SP6,I2,SP9,DL I8>I2,SP9 SV9,LZ1>I2 9H>F OK2>SP9 LZ1>I4 SV1SIX>SP6,OZ SV9SIX>SP6 OK1,SP5,S5>9H I8,I9>S5 I8>DL 12-1300 3A>YO7,EA7 9A>EA3 SV1SIX>OE3,S5,I1 SV9SIX>OE3 LZ2CC>I0 I9>F EH7>9A LZ1>I0 9H>DL YO3KWJ>I7 DL,OZ,F>I6 OZ>I0 SP9>I5 13-1400 EH6>DL,SP6 I6>I8 I9>OZ ES2,I9>YO2 I8>YO7 G>I9 CT0SIX,SV1SIX,EH2>9A LZ1>PA YO3KWJ>DL,PA SV8,SV9SIX,SV2>DL SV9SIX>SP6 LZ2CC>I2 14-1500 I0>YO7 I9>SQ6,SP9 SV8>S5,I4 OE6>SV8 I9>SP9 YO2>I7 SV9SIX>S5 SV4>9A,PA UT5>I5 EH7>DL I5>LZ2 I8>SQ6,SP9 I5>LZ2 15-1600 9H>SQ6 DL>EA3 I0JX>SP9 EH7>YU1 F>LZ2 EH3>OZ 4X4SIX>YU1 SV1SIX,I8>DL

F,I2>LZ2 9A>F,SP9,OZ I5>EI LZ2CC>F EI,G,YZ1>I5 I7,9H>DL I9>SP9,PA,DL EH2,YO2>OZ 16-1700 4U1ITU>F GU>DL,OK1 F>9A,PA EI,G>9A EH5>OE3 G>I2,OE3 GW>I7,OE3 YZ1>PA SP5>I9 UR5>DL 4X>I5,F I0>ON GM>I2 ZS6NK>DL OD>PA,LZ2 YU1,UR5,5B4CY,F,G,T9>DL T9>F EI>OE3,HA1 LY>OE3 SP8>EA3 I7>ON UR5>PA 4X,OD>F 17-1800 LY>I1,EA3 OH2>9A,I5 YZ1,OD>OZ 5B4CY>F ZS6AXT>DL OH9SIX,YU1,IS0,YO3,Z3,4X>DL 9J2BO>DL OM8>EA3 OH3>I0 LZ3,LZ2>F GW>EI 9J2GS>I0,OZ YO9,YT1>I1 OE3>HA1 SV8>DL 4X>PA,SP9 SV1SIX>OE3 YO3>I5 9H>PA,DL I9>PA SV8>SP2,SP9 OD>OM3 18-1900 4X>DL,LZ5 9H>PA SV9SIX>F,OM3 LX0SIX>ON G>I7 9H>LY,ON,9A JY>F,HB 4X4SIX,JY,SV1SIX,I7,G>F ON>SP6 OD>I0 LZ2>IS0 19-2000 G>F 9H>PA LX0SIX>DL(t) CT0SIX,SV1SIX>PA F>CT I2>I5 G>EA7 EA2>EI EH1,CT0SIX>PA 20-2100 CT>F EH7>EI

May 8 07-0800 F>SP2(bs),SP6 F,SP9>ON G>F,SP6 08-0900 F>SP6 ON>F 0921 OK1>OZ 11-1200 G>S5,I2 F>9A,I2,DL 12-1300 S5>OZ GM>F 13-1400 SP6>OH7,I5,OK1,G SV4>DL HB>I2 16-1700 UY5>SP2 aurora 1928 SP2>I9 2300 W7GJ>OK2(eme)

May 9 07-0800 GM>F 08-0900 I5>LX 11-1200 OM3>9A,SP9 13-1400 SP6>9H 16-1700 3Ctv>F 5Ztv>SV1 PA>I5 17-1800 CT,EH1,PA>DL CT0SIX>OZ 18-1900 EH1>ON,DL CT>PA EI>T7,I0,I5 9H1SIX>EA5 1920 I3>I5 2037 I3>9A aurora

May 10 0610 F>9A(bs) 0729 GM>I2 08-0900 OH7>OZ 4X>YO7 GM,ON>F 09-1000 I0,IS0,HB>ON 10-1100 I4>OZ I0>F YT1>YO7 4X>YO5 LX0SIX>F I5>I0,F 1151 F>F 12-1300 G,I0>F OE5>ON,F F>9A I5>ON YT1>YO7 OK1>LX 14-1500 SV1>F,SV8 15-1600 I3,OK2>9A F>EI 16-1700 YU1>YO7 I5>OZ 17-1800 RN6MT>F GW>DL 18-1900 ON,G>CN 19-2000 HB9SIX>DL(t) TR8KPJ>CT3 OZ>F 2148 G>OZ

May 11 0530 LX0SIX>F 06-0700 GM>DL SV1SIX,LZ1JH>I1 SV9SIX>SP6,OE5 LZ1>I4,I2,I1,HB SV4>LY,SP8,DL OK2>I5 LZ2SIX>I0 I7>OK2 I9>ER1 SV1SIX>DL 07-0800 I7>SP6 SV7,4X4SIX>9A ON>F LZ1>S5,9A,I3,HB,I5 SV1>OZ,HA1 4X,S5,LZ1,I4>9A I0JX,IS0,SV2>ER1 I8>SQ6 SV1SIX>OE3,OE5 9H1SIX>SP6 SV9SIX>OE5 LX0SIX>DL(t) 08-0900 I5>OZ YU7,Z3>9A SV2>OE3 UR5>DL Z3>S5,OE3 SV2>OE3,SQ8 LZ1>I1,F SV8>9A,OE3 09-1000 I0,IS0>CN LY>I4 G,LZ2>DL I3>OE5,DL DL>PA F>ON I0>YO2 YO3KWJ>F S5>9A SV9SIX>DL DL>ON SV1SIX>OE5 DL>PA(t) 10-1100 OZ>I5,F 11-1200SP4>ON 12-1300 I5>CN OE5>ON OE5>F,HB SV1SIX>SP4 13-1400 SV9SIX>SP5 LZ3>9A UX1>I2 LZ2CC>DL F>ON SV2>OK2 14-1500 LZ3,LY>9A LZ2CC>HA1 YU1>SP2 YO5,YO7>DL,PA YO3>I3,9A LZ1>OE3,I1,I3 YO8,SP7,UR,SP5,SP8,SP4,LY>9A LZ1>SP9 YO5>F,OE3 YO3KWJ>OE3 LY>YO2 YO1,UR>DL LZ2>SQ6 SV4>DL OT7>HB SP4>S5 UR>IS0,OE5 YO8>DL OK2>CN 15-1600 SV7>HA7 YO8>HB SV4,LZ2>DL UR>I1 LZ1JH>OE3 LZ1>9A,EA5,OE3,OE5 SV1SIX,I9>DL UT3>I1 9H>OZ HB>YO7 SM7>9H SV8>OK2 YO3>I2,9A SV2>HA7 TA1>9A UT7>DL Z3>SP9 9H>HB,ER1 UT7>I9 SV7>OE3 SV9SIX,SV1>SV9 US5,I7>ON 16-1700 I7,LZ2,YO3,TA1>DL SV7,I9,9H1SIX,F>OE5 Z3>I2,DL,SP9 SV1SIX>HA7,HB UR>DL,I2,I5,EA6,ON I9>F HB>I2 OD5SIX>I0,PA EH5,EH6>I7 LZ2,I8>PA YO3>OE3 SV7>9A SP4>I8 YO8>I2,I3 5B4CY>PA,DL 17-1800 UR>I5 4X>I0 SV1SIX,5B,YO3KWJ,4X4SIX,OD,I0,3A>DL I7>F 4X>I0 SV1SIX,YO3KWJ>OE5 EH6>HA7,HA5 I7>I2 SP8>I4 OD>F UR>DL,SM5,9H,F,I5,I4,I3 YO3>ON I8,I9>HA7 7Q7SIX>OE5 LY>I5 YU1>EA3 9J2KC>SP6,DL I2>I8 LZ2>DL,I5,PA SV1>I1 I9,9H>HA5 I9>OE3 18-1900 LY>DL,9A,OE5 9J2KC>DL UR>I4,I5 I9,SV1,9H>9A YO5>I3 LZ2>SP9 I2>CN 9A>OH2 EH5>I7 SV2>HA9 I9>OE3 TA1>DL,EH5 9H>PA OE3>OH2 SV9SIX,SV1SIX>I1 LZ2CC>I2 19-2000 SV1SIX>OZ,SP9 I9>I2,LX,EA1 SV2>I1,DL 9H>PA 20-2100 SV1SIX,SV9SIX>SP6 SV2>OZ SP6>HB OY6SMC>SM2 JX7SIX>SM2,SM6,OZ JW9SIX>OZ LA7SIX>OZ,SM6,PA GB3LER,GB3RMK>SM2 21-2200 JX7SIX>SM6 2208 LA>EI

May 12 0532 4X>YO7 0700-1000 R1(qtf E)>Jokela(Es) 08-0900 SV9SIX>I5,I9,SP2 4X4SIX>I9,SP2 0840 R1(UA)>OHtv/fm group(Es) 10-1100 GW>OZ,F 11-1200 F>ON ES4>OH5 SV9SIX>I0 12-1300 LA>SP2 GB3RMK,GB3LER>OH5 OH9SIX>PA,ON GM>OH5 13-1400 GW>OE5 I4>ON 14-1500 OZ>OE3 15-1600 EH8>>EA6 9H1SIX,I9>OE5 LZ2CC,LZ1,4X,YU1>PA YKtv>SV1 SV1SIX>F YO3KWJ,LZ2>DL YU1,LZ2CC>I1 LZ1>I2 16-1700 YU1,LZ2>I1 SG5>I5 4X>YU1,DL 9H1SIX>SP6 I9>OM3 PA>5B OD,LZ3,YU1,SV8,LZ2,5B4CY>PA EH6>CT SP9>I8 SP8>I4 I9>OZ LZ2>DL,F 17-1800 EH6>SP8 4X>DL 9H,I9>OZ UR>9A,I3,CT YO9>I1 YO3KWJ,LZ2CC>F CT>I5 LZ2,SV8,SV1SIX>SP6 I5>CT 4X>YO2 DL>I8 7Q7SIX>PA 9H>DL 18-1900 SV1SIX,9H>OZ I8>F IS0>OM3 9H>DL PY5CC>EA7,I2,9A S5>I1 19-2000 PY5CC>I1 PY1VOY>DL,EA7,G CN>PA,DL PU2WDX>I1,S5,DL EH9>DL,I2,I5,S5,PA I0>EA5 PY2VA>I2,DL,9A PY1RO>HB 20-2100 9H>EA5 PY1RO>DL PY1VOY>G 21-2200 9H>CT

May 13 0527 LX0SIX>DL 08-0900 SV9SIX,SP5>EA6 G>OZ YO3KWJ>SM6 09-1000 S5>SM3 YO3,UR,LZ1>I5 SV8>SQ6 UR>I1 YO3>I0 10-1100 LZ2>OZ,PA,ON YO3KWJ>I2,PA LZ1>OZ UR>S5 SV1SIX>OE3,DL DL>YO7 SV9SIX,YO3,S5>OE3 OE5,LZ1,YO3,UR>DL LZ3>DL,OE5,OE3 YO5>I5 1015 ItalyA>OHtv/fm group (Es) 11-1200 LZ1>OZ,DL YO3>ON,PA,DL YO9,YO5,YZ1>DL UR>HB LZ3>OZ,DL LZ2>PA,DL SV1SIX>OE5 YO5>F 12-1300 LZ4>DL ES0SIX>I0 13-1400 YO3KWJ>F G,4X4SIX>9H 14-1500 OD5SIX,4X4SIX,EPtv,YKtv>SV1 15-1600 OD5SIX>F YU1,4X4SIX>PA G>SP9 I0>DL S55ZRS>F G>YO5 UR>EA6 T9,I0>DL F>OE3 16-1700 GW>YU1

YU1,9A,T9>DL OZ7IGY>I5 LZ3,YU1>OE6,PA SP8>I1 SM4,SM7>I0 YO9,OD5SIX>ON I5>OZ 4U1ITU>OH5,OH1,OZ SM6>I3 GB3LER>9A OZ>HB SM6>I2 17-1800 OZ,SM6,EI,GM>9A SM3>I2 GW,OK2,LY>F UR>LX,F YO5,OE6>ON G>HA1 OZ>I8,I2 4U1ITU,YU1,F>DL YL3,SQ9>LX G>YO7,I7 ON,PA,EI>HA1 SP4>HB DL>PA,HB SM1>I0 DL,OZ>EA3 YO7>PA YU1>EI EH6>OZ 18-1900 PY5CC>CT,EA7,DL,SP2,9A,SP6,LY 7Q7SIX>G G,GM,F,PA>9A I0>PA OK2>ON PA>DL I4,OE6,PA>ON OM3,YU7,YU4,YT1,SP1>F OE2>PA DL>I1 GM,PA>I5 LX>I0 GM>HB,I8,I5 GB3LER>I0 G>I5 19-2000 F>9A PA>ON 21-2200 9H>CT 22-2300 SV1SIX>I3 10-1100 I9>HB I5,HB>CN 1239 S55ZRS>OE6 aurora 17-1800 I6>S5 18-1900 7Q7SIX,TR0A>EA7 I5>S5

May 15 06-0700 F>OZ 0850 G>OZ(ms) 10-1100 OE3<OE6 1532 4U1ITU>S5 OE3XLB>HA1 16-1700 4U1ITU>I0,I2 17-1800 7Q7SIX,3Ctv>SV1 19-2000 LX>PA OZ>OE3

May 16 0551 OZ>F(t) 06-0700 OE3XLB>HA1 OZ2>OZ 08-0900 ON>9A 09-1000 OE3XLB>OE6 GW>OK 14-1500 OE3>OZ 2247 GM>OZ

May 17 0355 ZS6NK>I5(eme) 08-0900 4X>I9 OE5>OZ(ms) 10-1100 SV9SIX>IS0 11-1200 OM5>DL 12-1300 I5,G>F I5>LX I0>PA LZ2CM>YO7 F>OZ 1200 ItA,E3(I,HB)>OHtv/fm group (Es)13-1400 FX4SIX>OZ GB3LER>DL,OE5,SP6 GM>SP6 GB3IOJ>OH1 GM>SP6 SP4>F LA>I5 YO2>EI 14-1500 LA,SM6,ES2,LZ2,LZ1>F F>I5 EI>OH5 4X>YO2 EI>I0 I1,I2>EI UR>I9,DL,PA I9>DL SV8>I7 SV9SIX>SP6 SV9>EI,YO7,S5,9A PI7SIX>YO2 YO2>PA 15-1600 HB9SIX>EI UR>F,DL YO3KWJ>PA SV8>F I9>SP6,EA4 I7,I9>EA7 SV9SIX>OE3,I2,SP9 OE6>OE3 4X>YU1 SV1>OE3 YO3KWJ>OZ I9,SV1>LZ2 SP8>HB LZ2>OZ LZ1>DL,OZ I0,I9>CN I0>OH2 9H>CT ES5>DL 16-1700 9H>OE5,CN SV9SIX>LA I9>OE3,I2,LZ2 OH2>I0 LZ2>DL,OH2 UR>DL,F,I3,OE3 EH7,SV9>I1 SV9,CN>I5,HB ES4>I9 OZ,OH3,ES2>LZ5 SP8>I3 YO9>OZ F>EH8 YT1>OH2 Z3>CN,I9 4X,YO9>DL 7Q7SIX>I9 SV9>I2 SP8>EA7,I2 9J2BO>OH2 LY>9A DL>YO7 17-1800 UR>F,DL,LX,PA,ON,OK1 7Q7SIX>9A 9J2BO>HB,I8,I9,OE5,SP9,9A SM7>HA1 YT4>OZ SP8>DL LZ2,SP4>F LY>CN,YU4 LZ2>PA SQ8>DL,F SV7>EA6 SP4>I1 YU1>DL OH3>YU7 18-1900 CN>LY 9J2BO>LY,I8 HB9SIX>EA7 LY>EA6 9A>CT CT0SIX>I0

May 18 05-0600 4X>YO7 06-0700 SP2>SP6(t) SV9SIX>SP2,SP6 SV1SIX>SP6 OE5>F 9H>YO4,I9 SV8>I0 ,I4,I3 LZ1>9H G>F ZC4>SV2,I0 OD>9A,I0 07-0800 SV8>I4,I1 4U1ITU>OZ,I2 ZC4>9A,9H OD>I7 SV9>I4,I1,DL SV1>S5,F SV9SIX>9A,OE3,F I9>OK1 SV1SIX>I1 SV5>I0 I9>DL,OE3 SV2,YO3KWJ>F I4>I2 08-0900 I9>DL,OE5,SQ9,LX I8>DL,F 4U1ITU>OM3,I1 9A>LZ3 OD5SIX>SV2 0800 R1(UA)>OHtv/fm group (Es)09-1000 I9>F,9A,PA SV9SIX>I8 LZ2>EA3 GB3MCB,F>I7 I8,9H1SIX>DL OD>F GB3LER>OM3 SV9SIX>I2 9H>PA UR>SQ6 F>I7 10-1100 OD>YU7 I9,9H,IS0>PA I9>SQ6,F,SP6,OH7 SV8>HB 9H>DL,I3 EH5>DL IS0>F EH5>HB,LZ2 OD>5B LY>HB 9H>OE6 S5>OZ EH9>F 11-1200 I6>OZ YU1>ES1 SQ9>PA S5,I3,I4>OZ LY>F,9A SP8>PA S5>OE3 GB3LER>OK2 F>SP2,9A,OE5 SP3>EA3 12-1300 LY>SV1,F LZ2CM,LZ1JH>F I9>SP6 YT1>I1 4X>LY OK1>I0 13-1400 9A>I1 SP3>I0 UR>I8,EA6,I3 YZ1>F,DL,ON I6>OZ HB,9A>DL OK1>I9 HB>OH5 I0>SP2 GM,HB(t)>DL 14-1500 PA>LZ5 HB>YO7 YU1,YU7>PA 4N,LZ2CC>DL LZ2CM,YO3KWJ>PA PA>DL,EI YO7>PA,ON,DL LZ3>EI YO3KWJ>DL CT>CT2 15-1600 7Q7RM>IS0 LZ2CC>IAS0 9H>DL,OE6 ES0SIX>OE6 16-1700 OH2>OE6 LZ2>IS0 IK5ZUL>OH5 OE6>ES1 9H>F,HB,I2,I5 YZ1>SM6 I9>I2,HB,LY,DL LY>DL,I8 OH5>I4 HB,UR>LY YU1>EA6 YO3KWJ>OZ S5>IS0 EH6>I7 I4>I1 1610 ItA>OHtv/fm group (Es) 1630 R1(UA)>OHtv/fm group (Es) 17-1800 9H1SIX>OE5,SP6 LY>DL UR>ON,PA,DL,OZ,SP2 YL3>YO2 9H>ON YU1>OH2 SV1,SV6>EA6 EH9>EA3 18-1900 YU7>LY 3Ctv>SV1 CT>EA6,I9,IS0 UR>OZ,OE3 I6>F CT>I0 19-2000 EH9>I2 CT>9H EH7>I1,I2 LZ2CC,EH9>F LZ1>F,I2,OZ,DL CN>HB,LX YU1>F 20-2100 EH7>I2 CT>IS0 I9>LY,OZ UR>I2 EH9>LY,9A LY>I5 YT1>PA EH3,I8,YO4>9A SV1SIX>DL 21-2200 9H,YO4,GB3LER,YU,LZ,SV>PA LY>I8 LZ1JH>OZ LZ2CC>F YO3KWJ>DL

May 19 05-0600 9H>F,HB,I0 SV1SIX>I0 OZ>SP2 OD5SIX>9H 06-0700 YO3KWJ,LZ1JH,YO7>SP6 YU1>LY OM3>OM7,YO5 LZ1>OZ LZ2CC>SP6,OZ UR>OK1,OE3 07-0800 LZ1>SP6 SV1SIX,SM7,YO3KWJ>OZ 4X>OZ,PA,I0 UR>DL OD5SIX>I0 Z3,YU1,LZ3>OZ 08-0900 YO3>OZ LZ2,UR,YO9,LY,4X,YU7,YO2>DL LY,4X>I0 OH3,ZC4>I0 UR>PA ES0SIX>I0 T9>SP2 09-1000 ES1>I5 PA,SP8>DL YL3>I5 DL>HA1 YL3,LY>I1 SV9SIX>I5,HA1 YU7>OZ 10-1100 PA,9H>LZ5 YU7>PA LA,OZ>I1 I9>OE6 SV1>I5 SM0>I0 GB3RMK,SV1SIX,SV9SIX>HA1 SV1SIX>DL,HA1,OE3 11-1200 LZ2>I0 I9>YU4,EA5,9A,OE3 9H1SIX>SP6,9A SV1SIX>OE5 UR>I0 12-1300 EH6>I9 I3>EI OH6,ES0SIX>LZ2 YU1EO>OH5 4X>UR UR>DL 13-1400 K4MM>CT SM5>LZ2 VO1ZA,W1JJ>EA7 YU7>OH2 OH2>9A 4N>OH6 7Q7SIX>I9 UR>OK1 1300-20 FM(Es)>OH5IY130, 1520 FM(I,LZ,PA,F)>OHtv/fm g 14-1500 SV1SIX,SV9SIX,LZ1,UR,SV4 OH6>DL UR>OE3,SP5 HB>OH5 YO8>I0 OE6>LZ2 SV3>PA UR,SV8>OE3 CT>F LZ1>ON 7Q7SIX>SP6 HB>LZ2 SV8>9A DL>OH6 1435-1715(E2(qtf SW)>Jokela Es 15-1600 SP8>I7 UR>YU4,I3,I4,I9 YO7>SP2 ES4,LA,SV1SIX,SM3>HA1 SV8>SP9 YO7>SP8 OH5>F,ON LA,LZ1>9A 3Ctv>F F>EA7 OH2>LZ5 LZ3,UR,SV1SIX,SM0,SV3,OH9SIX,SV8,OH6,OH5>DL SM3>OE3 ES0SIX>LZ2 EH9>I9 SV8>PA SP8>I7 LA>OE3 SV9SIX>PA 1510-50 FM(Es)>OH5 16-1700 LA,LY,UR,YO8>9A YO8,EI,I9,UR,LZ3,SP8,OD>DL OH6>I2 LX>OE3 F>SP2,SQ6 I9>5B YO3,SV1>I1 SV9>S5,OH2 UR>PA,9A,S5 SV1SIX>OH6 L,OH3,OE6,SM5,YL,OE1>F OD>OM7 Z3>OM7,I0 SV7>OE3 OH8>SP9 YO8>PA 1600-30 FM(Es)>OH5 17-1800 GM,LZ3,UR,SP1>9A OD>SP2 SP5,SP1>S5 Z3,YO2,SV3>DL UR,SV1SIX>F,9A SP9>YU4 OH5>ON UR>OK1 PA>F EH5>OH2

PY5CC>I2,OZ,OH2,SP2,DL Z3,UR>I8 T9>OZ,SQ6,F OM3>DL GM,LZ1>OE3 I3,SQ9>SV1 EH7>I9 18-1900 A61AJ>SP9 UR>EI ON>OE3 DL,F,HB>OH2 LZ2>DL OK2>HB TA1>I9 T9,EH5,OE6,I3,ON,I5,EA4>DL I9>I8,F 9H>CN EH5,S5>PA I3>EH2 OE3,OM3,S5>F HB>9H,SQ6 OH2>I2 SP2>I7 I3>EA2 I9>I4 G>LZ219-2000 SQ6>I1 HB,SP9,YO7>CN T9,LZ2>PA SQ9>I1 TA1>OE3 LZ2CC,YO7>F I9>OZ,IS0 4X,LZ2,SV8>ON YO7>I2,PA EI>I5 YU1>LX OD,TA1>SP6 TA1>I2,OK2 JY>OK2,SP9 TA1,UR>4X 9H>EA6 OD>SP9 SV2>DL,ON LZ2>I2 20-2100 SV8>SP9 4X>SQ2 SV1SIX,SV8,S5>LY G>LZ2 SV8>HB,OE3,S5 OD5SIX>SV8 2235 I0>CT

May 20 06-0700 SV9SIX>I5,SP6 SV1SIX>SP6 S55ZRS>OE6 07-0800 9H1SIX>OE5,SP6 LZ2CC,YO3KWJ>DL EH9>HB 08-0900 LZ2CC>DL I9>OE6 4X4SIX,OD5SIX,I5MXX>9H YU1,YO3KWJ,I9,9H>PA 9H>OE5 LZ2CC,SV1SIX>EA3 4X4SIX>UR I9>SP6,9A,F,LZ2 YO7>DL 09-1000 EH6>5B,I8 9H1SIX>I2 I8>PA,9A EH9>I0,YU1,OE5 YU1>OZ 9H>SP2 10-1100 I9,CN>I1 9H1SIX,CT0SIX>4U SV8>EA3 OD5SIX>OE6 EH5,EH7>I8 LZ2CC>DL 11-1200 9H1SIX,OD5SIX>LZ2 LZ1JH>SP2 EH7>DL,4U,9A,I6 EH9>HB GW>F LZ2>PA OH6,UR>DL UR>OK1,OE3 1145-1220 E2(qtf SW)>Jokela(Es) 12-1300 UR>I2,OE3,DL ZB>I4,I2 SV9SIX>OE3 CT,UR,EH5>I7 EH9,SV9,SV1SIX,UR>DL OD5SIX>UR EH7>F,I2 I8>LZ2 LZ2CC>EA7 EH9>EA2 13-1400 LA,OY6SMC,GB3LER>DL I9,OY6SMC>SP9 SV9SIX>DL,OE5 UR>I5 SV1SIX>OE3 OK1,9A>I7 Z3>DL,I4,I2 LZ2>I2 UR>S5,I9,I5 LZ3>OE3 SV9SIX>OK1 LZ1,EH7>I2 EH7,EH9>9A YU1>I5 T99YVZ>EA6 EH7>I3 EH5>LZ2 14-1500 OY>DL,OE5 EH9>9A EH7>YU4,LZ2 SV1,UR>DL I8>EA2 UR>YU4,OE6 SV9SIX>DL,EI(ms) OY6SMC>OE5 F>I9 9H1SIX>F CN>PA 15-1600 CN>PA,DL,9A,9H EH5>DL,I3,OK1 CT>HB EH7>F,ON,LX LZ2>I1 I2>LZ2 I9>OK1 HZ1MD>5B 16-1700 EH7>S5,I1,EI,OE6,OE5 4U,SV8,I9>DL CT0SIX,EH5>EI CN>F YO3KWJ>OH5 YO6>I1 HZ1MD>DL LZ1>SP6 4U>I0,F,EA7 OH1SIX>PA EH4>HB SV8>OZ EH4>I4,S5,I8 ZB2>I4 JY>DL,F CT>EI UR>I1 17-1800 EH4,SV2,OH6,4U,ZB2,LZ3>DL 7Q7SIX>I9 EA4>I2 JY>SP9 I5>EA5 ZB2,OH8,UR>PA UR>OZ,SP1,I0 YL3>YO3 CT>I8 YU1>OH3 4X>I9 SV8>OZ EH9>F,I1 EH5>ON SV1SIX>4U 18-1900 EH5>I0,EI SV2,Z3>LY CT0SIX>4U EH2>HB EH9>DL,PA,4U DL>I9 EH1,CT>EH2 DL,UR,SP8>I9 LZ2>EA3 SV8>OZ CT0SIX>9A LA7SIX>OH5 EH7>PA,HB EH3>YO3 ZB2>F 5B4CY,SV8,OH9SIX>DL LY>F EH4>9A 19-2000 I9,LZ1,LX,LZ2CC>DL EA1,SQ8>I8 EH7>LX YU1>EA3,EI I8>EA4 I9>EA2 VE1RG>EA7,G VO1ZA,W1JJ,K2MUB>EA7 CT0SIX>I1 LZ2>EA3 OH9>LA OH7>OH5 PY5CC>9A,DL PY1RO>9A,I2 PY3ISO>DL,G KM1E>GW DL>CN LA>OH6 EH4,EH7>9A EH7>LX OH9SIX>DL JX7SIX>SM6 20-2100 LA>LY,OZ,9H,SM6 EH7>9A PY5CC>LX,EI,OZ,G OH9>DL,OZ,CN LA>DL,OZ VE1YX>GW PY2VA>F,9A 9H>DL,LX GW>EA5 EH4>F,LX K4RX>IS0,9H,F I9>OE3 OK1>I9 W4GF,K4RX,K6EID/>EA7 CT>LX LA7SIX,OH6>DL OH8>DL,OZ 21-2200 W4GF,AC4TO,K2RTH/4K6EID/>EA7 OH6,SM2>PA LA>LY,DL,PA SM3>OZ K4RX>CT,EA5 EA7>F,EH1 EH1>CT CT0SIX>EI 22-2300 K1SIX,K2OVS>CT

May 21 08-0900 G>OZ 11-1200 GM>DL LZ2CC,OY6SMC>PA GB3RMK>DL,PA LA>F 12-1300 HB>F,SP2 I2>EI 13-1400 EH1>EI 4X>9H OH9SIX>OZ S5>9A 16-1700 SU1HM>I9,I7,9H VQ9X>I9 4X>I9 1722 7Q7SIX>IS0 aurora 1952 J88JA>I2 2050 YO3KWJ>S5 2152 CT>PA

May 22 05-0600 UR>9H SV9SIX>OM7 4X4SIX>LZ2 96-0700 SV1SIX>SP2,HA1,OZ,9A SV9SIX>SP2,SP6,HA1,9A,I5,EA3 4X4SIX,OD5SIX>YO7 LZ3,UR>I8 LZ2CC,LZ1JH>PA PI7SIX>YO7 YO3KWJ>9A,PA UR>I5 07-0800 YO3KWJ>DL,OE6,LX I9>LZ2 4X>YO7,9A,PA,HA1,9H DL>LX PA>YO2 YO7>PA LZ2CC>I1,HA1,OE5 LZ1>OK1,I1 UR>I5 4X4SIX>9H SV9SIX>9H SP8>LZ2 OD5SIX,9H1SIX>LZ2 0753 KK4XO>DB3NV?! LZ1>DL 08-0900 LZ1>DL,HB YO3KWJ>HA1 UR>I4,9A,OE6,I4,YU1 YO8,LZ3>DL YO5>OK2,PA LZ2>PA YU1>LX YO3>I5 SV1SIX>DL,SP6,OE5 LZ2CC>SP6,DL 09-1000 YO5>DL I9>OM7 SV>I4,ON YU1>OE5 UR>DL,I2,OE6,S5 9H1SIX>OE5 YO7>OZ Z3>DL IZ1EPM>LZ2 SV9SIX,SV3,YO5>LX YO9,SV1SIX>PA 10-1100 TA1>OZ YO9,YO5,LZ1,YO3KWJ>DL UR>PA,4U,SP9,OE3,OK2 YO8,YO3KWJ>DL RW3>OK1 1040-1120 FM(Es)>OH5 11-1200 UR>4U,DL,ON,SP9 YO8>PA,I2,DL LY,SQ7,SP8,4U>DL YO5>DL,ON LZ2>SP9 OZ6VHF>EI TA2>OZ,SP9 LY>I2 SQ7,SP8>PA ES0SIX>OE5 1140-50 FM(Es)>OH5 12-1300 OZ6VHF>SP9 OH3,SP8,UR,LY,RW3,YL3,EI>DL GM,YO2>EA2 SP9,RW3>OZ GM,SM5>HA1 SM0>YU4 OH5>T7 SP0>EA3 LA>I2 FX4SIX>EI 1200-40 FM(Es)>OH513-1400 GW,GB3RMK,OH1SIX,ES0SIX>DL EA6,F>OZ SM5>F I2>OH5 GM>9A 14-1500 UR,CT>DL OE5>CT CT>I8 GM,ON>9A LX1SIX>EA6 S55ZRS>EA7 15-1600 CT0SIX,EH2,EH4,EH7,4U>DL EH7>F CT>OE5 9A>EA1 EH5>PA ON0SIX>EA6 16-1700 CT,EH4,I2,4U>DL DL>EA5 EI,G>OE3 YL2>I9 LA,CN>I1 OM3>ON EH8>F 4U>OZ 17-1800 EH4>ON EH8>DL,EA7 4X4SIX>YO7 OK2,4U,GB3LER,EH2>DL OZ,DL>I5 DL,EI,GM>9A CN,OM3,EH3>PA 4U>LY G,ON>SP6 F>SP2 LA>I2,HB D44TD>F 18-1900 EH8>EA7,F D44TD>CT3 20-2100 I9,I0JX>DL LX>CT I7,I8>PA 21-2200 I5>EI LZ2CC,LX0SIX(t)>F G>I7

May 23 0421 FX4SIX>F(t) 05-0600 SV9SIX>SP2 OD5SIX,4X>YO7 06-0700 OD5SIX>9A,YO7 9H>OE5 4X>9A 9H1SIX>OE5 UR>9H SV1SIX>DL SV9SIX>DL,OE5 07-0800 4X>9A UR,G>DL SV9SIX>YO7 SV1SIX>HB,9A,I1 HB>DL 0720-50 FM(Es)>OH5 08-0900 I2,HB,I8,LA,GI,YO5,UR,YZ1,LZ3,YO3,GM>DL YL2>I7 OD>YU1 I9,OH3,4X>9A CT>SP6 LZ1,LZ3,UR>OZ SV9SIX,OM3>OE6 I9,9H>I5 YO5>EA3 OH9SIX>OM3 0820-30 FM(Es)>OH5 0850-0900 FM(Es)>OH5 09-1000 ES0SIX>OE6 HB>DL OZ>I8 UR,YU7,YO2>PA 9H,I9>I2 SM7>I5(eme) 10-1100 OH3>F ES0SIX,OH9SIX,OH1SIX>DL OH3>PA 11-1200 I8>EA2 OH9SIX,OM3,HB>PA GB3RMK>OH5 I0JX,I5>EA1 S55ZRS,IZ1EPM>CT F>DL 12-1300 F>DL 13-1400 SM5,GB3LER,LA>F GB3RMK>I2 OY6SMC>HB 14-

1500 GB3LER>I2,I5 GM>I1 OZ7IGY,ES0SIX>F OY6SMC>I2 HB>DL LA>EA3 GM>I0,SP5,9A,OK2 EI>OK2 15-1600 9H>PA HB>CN EI>OE3,S5,EA7 EH7>HB 9H>ON,PA OE9>CN SV9SIX>4U 4U>I5 16-1700 CT0SIX>EI ZS6NK>I9 I9>F CT>I2,I0,EI S5>I2 17-1800 EH4>I8 HB>DL EA7>OE5 18-1900 CT>I0,IS0,T7 EH4>IS0,HB EH9>I5 EH5>F I5>EA5 SV9SIX,LZ1JH,CTSIX>IS0 EH9>ON,PA 19-2000 EH7>PA,LX,ON

May 24 0753 GM>F(ms) 08-0900 OZ,PA>LX 09-1000 LX>OZ OH6>ON G>PA 10-1100 GM>PA 11-1200 I5>I2 12-1300 GM>OE5 I5>F OE5>I0 OE3>I5 13-1400 I2>I5 I5>I2 OE3,OE5>SP6 I9>9H 15-1600 G>PA OE3XLB>9A 16-1700 GB3MCB>9A EH9>5B CT>HB 17-1800 9H1SIX>EA5 YT1>YO7 EH5>I9 9H>EA5 OM3>SP9 PY5CC>I8,I0 18-1900 PY5CC>I9 9H>EA7,PA,I5 EH9>F HB9SIX>DL ZD8VHF>I1 19-2000 KP4EIT>9H,EA7 WP4N>EA7 EH4>I1 I5>IS0 20-2100 FM5WD,WP4U>EA7 21-2200 YV1DIG>EI FM5WD>EI,G

May 25 0420 LZ2>YO7 06-0700 G>OE5 IS0>S5 07-0800 I7,S5>I3 GM>F,I2 YO3,LZ2>YO7 I7>IS0 DL>I7 I5>I1 08-0900 GM>F I8>I1 I6>I7 EH9>IS0 09-1000 I9,I2>I8 I3>OE2 I5>DL SP2>OZ I3>I1 4X>YO7 10-1100 I8>PA 4X4SIX>I7 S5,I2>IS0 4X>YO7 I1>I4 11-1200 4X>YO7 SV9SIX>OE6,9A SV1SIX>DL YO3KWJ>9H 12-1300 I2>CN EI>9A ZS6AXT>LY I4>I0 I1>I5 13-1400 GW>I1 LY>F I9,SP2>9H CT0SIX,I3>F SV1SIX>DL,OZ I7,LZ2CC>DL 14-1500 OD5SIX,YO3KWJ,5B4CY,LZ1,LZ2,4X4SIX,YO9,I5>DL LY>I8 A45XR>9A,G A61AJ>5B,I2,9A CT,LZ2CC,YO2,I7>LY F>EH8 YB0AN>5B I8>OZ CT0SIX>EI 4X>PA,9A ER1FF>F UR>9A I9>CN OZ>LZ5 YU7>EA3 15-1600 ER1FF>F,PA A61AJ>9A 9H>CN G>CT SV8>OE5,I1 YO5>DL SV7>OZ,I3,OE3,CN YO8,UR>PA HZ1MD>9A,5B LZ1>OE3 LZ2>DL D44TD>GW K7BV/1,WB8XX>D44TD UR>DL,LX,I3 I4>9A 16-1700 YO8,YO3KWJ,YO5,YO7,LZ1,UR>DL YO3>OE3 YO7,SV1SIX>I2 ER1FF>PA SM5,LZ2CC,OH6,LY,DL>9A SK7>LZ5 UR,YO8>I3 CT3,K3HCE>D44TD LY>I1,HB LZ1>I5 SP8>LX OE3>OH2 YO7>I5 YO2>SP2 SV7>IS0 17-1800 T9>OZ LY,SQ9>LX SV7>I9 DL,GB3LER>9A 4N,SP6,LZ2,T9,9A,OE6>DL YR8>PA LY>F,HB SV8>PA,IS0 SP8>I2 TA1>IS0 SQ9,YO5,OM3,YO7>DL DL,9A,G>HA5 YO2>F ER1,SQ2>F SP2>I5 LY>EA6 18-1900 HF7>DL,OE2 OZ>I2 HF6>ON EH9>I9 DL>I5 HB,YU1,OK1,OE6,G,OE3>DL SM7>I5 YO5,OE3>EI,DL,F S5>OH2 YO7,SP8,OE4,SM7,UR>F SP3>HB OK1>I2 19-2000 UR>F,PA,4X SP9,OE3,OE9,EI,HB,F,LZ1>DL HB>SP6 I2>SP2 OK1>I5 DL>YO7 YU1,T9,SP8,DL>F YU1>EI PY2XB>9H I4>9A OZ>I6 PY5CC>EA7 PY1VOY>EA7,I0 LA,LY>I1 SV1SIX>I1,I5 SV5SIX>I5 SV9SIX>I1,I5 20-2100 I6>F LZ2CC>DL,9A PY1RO>CT LZ1>9A

May 26 07-0800 4X4SIX>9H 08-0900 YU1>RU3,DL,9H I9>DL 09-1000 ES1>YO2 YU1>PA 9H1SIX>OE2,OE5,HA1 OD5SIX>HA1 I9>OE6 UR>DL 10-1100 UR>OE6,I4 9H1SIX>OE5 I9>OK1,OE5,OE6,DL LY>9A,I8 OH6>OE2 11-1200 LZ2>DL SQ5,SP1,YL2,SP4,3Z7>9A ES0SIX>S5 LY>OE5,I8 YU1>LA YO5>OK1,DL LA>LZ5 YO5>SP9 OH5>I4 UR>OE5,ON 12-1300 G>CT 9A>SM3 CT0SIX>EI OH2>YU4,OH5 ES1,OH1SIX>DL SM3>SQ6,OK1 YU1>LA OH5>PA OH5,OH9SIX>DL ON>OH5 I2>I4 13-1400 OH8>ON,DL OH6>PA GW>SQ6 GB3LER>I5 GD0TEP>OE3 PA>I7 OH2,OH9SIX>DL 4X>I9,9H 14-1500 OH8>DL GW>OE5 GD>I4,I7,I8,DL,9A OH6>PA GU,GW>SP9 GW,G,GM>HA1 GB3LER>I4,HB SM7>F YL1>I5 I5>PA G>I7 DL>EA3 GM>9A OD5SIX>I9 GM>OE2 15-1600 GW>OE3 I8>ON I4>ON DL>EA3 LZ2CC,OE3XLB,OE5,9A1CAL>F GD>SP9,EI,F,CN GB3LER>OH5 I4,I8>PA LA7SIX,EH3,I2>DL OK1>EI DL,OZ>I1 F>SP9 1540-1620 FM(Es)>OH5 16-1700 F,GI>SP9 I3>PA CT>I1,DL OH0>LZ5 PI7SIX>I4 I9,OE3>F I3>EI I5>PA F,YL>OE5 YL,I1>DL SP1>EA3 S5>EI GB3MCB,OH8>9A F>EA6 OH5>SP9 LA7SIX,I1,OH5,LY>DL 9H>HB UR>PA LY>OE5,OZ,DL 9H>OE6 1630-50 FM(Es)>OH5 17-1800 UR,LY,9H>DL 4X4SIX,EH6>LZ5 YO3KWJ>EA6 YL>SP2 ES0SIX>SP9,SP6 OH7>HA5 UR,9H,CT,I9,CT>PA LZ1,LZ2,LZ3>EA3 9H,SP6>OH2 I8>I0(short),I5(short) UR>OZ I9>YU4,I4,I1 YL1>SP5 LA7SIX>LY,OZ OH8>PA 1700-10 FM(Es)>OH5 1720-1800 FM(Es)>OH5 18-1900 S5>EI I9>HB,I1,HA5 I9,OH8>PA 9H,OH6>9A SM0>HA7 ON,DL>I9 T9>EA6 9A>YU4 UR>OZ OH5>SP9 LA>9H SV1>I1 I9>9A SV1SIX>I1 YU1>OH6 I8>DL 9H>PA SV1SIX>F OH8>DL 19-2000 9H,I9>DL LX>I8 I9>I3.SP6 I8,SV9SIX>F G>EA5 CT0SIX>PA,F I3>I9

May 27 0410-20 FM(ES)>OH5 0424 ES0SIX>F 05-0600 PI7SIX,LX0SIX,RU4>LY LY>F YL1>DL,F ES2>OE2 06-0700 ES1,OH4>9A EH6>I9 SK0,LA,YL1>LZ5 LZ1JH.LZ2CC>OK1 LZ2>OZ YL2>DL UR>HA1,DL,I1 07-0800 9A>LY LZ1,YO3KWJ>OK1 YL1>OE5,I7,I8,YO2,DL,S5,9A OZ6VHF,SM7,LA>HA1 LY>RU3 08-0900 9H>DL OH7,SP4,SP7,OH9SIX,LY>RU3 YO5,LZ2>PA YL1>I4 SV8>OZ LZ1JH>DL 9A>OZ LZ1,YL1,YT1,YO3KWJ,4N>DL 09-1000 YL1>I8,DL,EI,HB,9A OH3>I5 UR>DL,ON,I5,PA YO7,YO3KWJ>OE5 YL2>YU1 LZ2CC,SP4>PA SM3,LY,YO7,UR,OY6SMC>DL SV1SIX>SP9 LX0SIX,S55ZRS>LA OH3>HB 10-1100 UR,SP4>PA SV1SIX,SV9SIX>SQ6 LA>9A OH1SIX>EA6 SM6>EI GM,OY6SMC,GI,UR>DL GB3LER>SP9 YL1>EI GB3MCB,GW>LA YO3KWJ>4U GM>OE6,SP6,OK2,PA OY6SMC>PA ES2>OK2 1030-40 FM(Es)>OH5 11-1200 UR,GB3RMK>DL GM>PA YL2>9A,SP6 LA>F ES0SIX>SQ9 YL1>EI SQ9>LY,YL2 OZ6VHF>EI 12-1300 OH6>OM8 YL2,YL1>I0 YO3KWJ>DL 13-1400 YO3KWJ>PA RU3,LZ2,I9,OZ>DL SP8>9H YO2>SM6 T7>I4,OM8 LZ2>OZ LZ1>RU3 I9,CT>9A YL1>I0 PI7SIX>I9 OM8>EA7 T9>EA2 YL2>I9 LZ2CC>I9,OE5,RU3 I3,S5>CT SV1SIX>OK1,OE5,OH5 14-1500 EH7,SV1SIX>DL GW>I9 SV8>OH5,PA,DL SV3>HA1,SP5,EA3,PA,SP9 YO9>I9 OH7>OH5 I9,UR>PA Z3>S5 SV9SIX>EA6 15-1600 I9>LZ5 SV8>I3,HB,I2,OZ,DL,HA1,OE5,9A LZ2>OK1,RU3,DL,I9 SV9SIX>OZ,DL,OE3,YZ1 SV1SIX>OZ,YZ1 OH9SIX,UR>DL UR,YL2>I9 OD5SIX>YZ1 YO3KWJ>OZ UR>EA3,OE3,I2 I9>YU4 SV1>OE5 YO6>I9 SV1SIX>OE5 4X>9A I9>I5 16-1700 JY>DL,9A,SP2 SV1,I9>9A SV3,SV8>OH5 SV8,I9>9A

LA7SIX>DL,SV1,RU3,PA SV1>SP6,YO2 SV9SIX>HA5,9A,EA3,OE5 SV8,I9,SV1>HA5 UR>HA5,SQ3,SP2 LA>PA SV1SIX>OH5,OE5 9A>SV1 OH9SIX>DL RU3>SM6 LZ1>I2 HA5>EA5 SV8>I0 17-1800 LA>PA UR>IS0,I2,I9,YU4 SV1,5B4CY>HA5 LZ1,YO3>I8 LZ3>HB LZ3>I5 SM6>RU3 OH8,OH6,OH9,UR,OZ,4X>DL OH7>PA D44TD>CT3 OH1>OH6 SV8,9H1SIX,SV1SIX>F OH8>PA G>ON,PA OD5SIX>I5,9A SV9SIX,SV5SIX,SV1>9A OZ>RU3 OH9>I9 18-1900 SP2>LY OH8,UR,OH6,OH9,OD5SIX,SM2,JY,OH3,OH7,LZ2>DL OH7>OE3 SV8,I9>EA1 UR>EA6 SM3>PA YU1>I1 JY>HB,OZ SV1>OH6 LZ2,UR>I2 OH9>OK1 4X>OZ,HB OH6,UR>PA LY>YU4 UR>F,I2 OH1SIX>RU3 19-2000 OH0,OH2,SL0>HA5 UR>F OH4>OE3 OH2>DL I8,UR>PA,LX ES5>I6 OH6,OH2>9A YL1>DL,SP2 OH0>9A SV8>SP2,SM2,SM6,OE3,OK1 OZ>DL LY>SP2 aurora

May 28 07-0800 OH9SIX,I6>SP2 EH3>CN 08-0900 EH9>I5 YL1>SP2 9H1SIX,9A1CAL>EA6 09-1000 CN>PA,EA3 12-1300 9A1CAL,CT0SIX>EI LZ1>9H 13-1400 GD>LA 14-1500 I9>9A FR1GZ>ON,G,F I1>S5 15-1600 I9>DL,PA,ON,OZ OE3XLB>EA6 FR1GZ>ON,I1,S5,9A,DL,G,SP8 SV1SIX,9H1SIX>I1 I0JX>F I8,9H>HB F,ON>I8 9H1SIX>ON HB>ON YL1>EI T9,YT1,I0>I 16-1700 I0>S5 I9>ON,I1,F GB3LER>OH2 IS0>OZ,OE5 SV9SIX>OE6 I0JX>I1(short) UR>DL,OZ LZ2>SM3 HB9SIX>EI 7Q7SIX>9A,SM3,PA,OE5 I8>F SM0>LZ5 9H>DL SP6>SP9 SV9SIX>I3 17-1800 LZ2,UR,9H,YO9,SP9,T9>PA PI7SIX>IS0 SR9HFA>RU3 SV9SIX,I0JX>F LZ2,LZ1>SK0 I9>SP2 EH3,S5>9A RU3>OE2 UR>DL,SP9,OE5 G>EI LZ2>RU3 S5>EA5 LY>OE5 EH1>PA IS0,I0>HB 18-1900 OH2,ES0SIX,EH9,UR,YL1,EH3>9A EA6,JY>DL 9H1SIX,CT>F LZ1>SP9 TA2>OZ LY>DL A45WD>DL,PA I0,G>CT UR,EH7>PA ES0SIX>HA1 UR>OE3,DL,PA A45XR>F EH5>EH1 JY>OZ PY5CC>G 19-2000 A45WD>SP9,EA3,PA A45XR>9A,DL,S5,PA,ON UR>DL,EA3,EA5 EH9>F EH3>CT I5MXX,9A>EA5 4X>DL,9A LZ2CC>SP9 EH9>OE2 LZ2>DL G>F(bs) SP2,LY1>I5 LZ2,CT,YO3KWJ>ON ZD8VHF>F 20-2100 ZD8VHF>G PY5CC>YU1,ON,EA1 CT>9H LX0SIX>DL(t) 21-2200 9H>CT aurora

May 29 05-0600 4X>9H 06-0700 LZ1JH,SR9FHA>I1 LZ1,SV1SIX>DL YO3KWJ>F 07-0800 I8>LY LZ1>F,I2,I4,OZ YO3KWJ>DL,PA SV1SIX>DL,F,OE3 LZ2>DL SV9SIX>DL,SP6 YO3>HB LZ3>F 08-0900 LZ2>PA,DL,OE1 LZ3>DL,F,PA LZ1>DL,OK1,PA YO8>I8,I5,DL YO3>PA 09-1000 LZ3>PA,DL,OK1 LZ1,9H>OE3 9H>HB SV1SIX>I5,PA 9H1SIX>DL,OE5,HB YO7>PA SV1SIX,I8,YU1>PA I2>YU1 LZ2>DL,F I9>F I8>F,ON 10-1100 I0JX>OE5 I7,LZ2CC>DL HB>YU4 YO2,YO7,YU1>F YT1>HB HB>LZ5 I8,9A,YU1,SV8,T9>PA DL,F>9A SV1SIX>DL I7>DL,OK1,EA1 SV8,YU4>ON I0>OZ I0JX>OE5,DL 9H1SIX,I9,I8>DL SV2>OE5 11-1200 I8>OE5 I5,9H,SV2,I0,I8>DL F,OZ>I5 HB,EH2,F>9A G>CT F>OE3 12-1300 F>9A,OE5,OE3 I5>PA,DL,ON CT,HB>OZ EI>F EH9>HB EH7>DL 14-1500 GW>I9 SV9SIX>I1 15-1600 aurora I2>I5 I9>EA5,EA7 EH7>9A I9>I1 EH9>I0,F 9H1SIX>F SP9>S5(t) EH8>EA5 I9>F 16-1700 HZ1MD EH7,EH8,EH9,CN>9A 9H1SIX,I9>F EH7>S5,EA5 EH8>CT CN>DL,F PY1RO>F,9A,I5 PY5CC>9A,DL,F,HB SV1>9A(bs) EH6>DL I3>EA3 17-1800 PY5CC>DL,9A,OE5 PY1RO>DL,HB CT,ZB2>9A I8>I0 F>ON I9>EA3 ZB2>I1,9A,OE5 EA7>DL 9H>CT EH5>F 18-1900 EH7>HB aurora 19-2000 SP2>I5 LZ2,CT>ON YL1,LY2>I5 9A>EA5 A45WD>PA YO3KWJ>ON ZD8VHF>F 20-2100 ZD8VHF>G PY5CC>YU1,ON,EA1 CT>9H LX0SIX>DL(t) 21-2200 9H>CT aurora

May 30 0735 LY>SP6 0833 LY>SP2,DL 09-1000 LY>OE5,OE6,F(t/ms),OE3,ON 10-1100 LY>DL,PA HB>EI 12-1300 LY>SP6,OK2(ms),DL LZ2CM>YO7 13-1400 YC1HER,YB0AR>5B LY>DL 14-1500 LY>SP2,DL,F 15-1500 LY,YL3>DL 16-1700 YL3>DL I9>SP6 EH8>EA3 LY>SP2 17-1800 9H1SIX>DL 18-1900 I9>IS0,F 9H>F 19-2000 LY>SP2,SP9 20-2100 TA2,LZ1,SV1SIX>I1 OE3XLB>SP9

May 31 0457 JY>YO7 05-0600 GM>F(ms) 4X4SIX>I0,YO7,9A OD5SIX>9H HZ1MD>5B UR>4X 4X>9A,S5 06-0700 5B4CY>9A 4X>9A,I8 HZ1MD>5B,SP8,9A UR,ZA,YO9>4X TA2>S5,I8 07-0800 HZ1MD>I8,I0,I4,YO7,I5,9A,I1 ZA>I0 4X4SIX>YO7,9A OD5SIX>9A GB3RMK>I2 LY>DL,DP6 5B>YO7 SV8>I5,I3 HV,TA2>4X TA2>I8 08-0900 SV8,TA2,4X>I5 SV5,SV1,SU1SK>9A OD>I4,9A SV1>OK1 SV1SIX,SV8>I0 LY>PA EI>F TA2>I7,SV1 HZ1MD>I1,EA7 5B>I1,I2 SV9>UR 09-1000 SV9SIX>9A,SP6 TA2>I8 LY>DL SV3,5B>I5 JY>I1,I8,I9,I4,9A ZA>5B,I8,F,JY,5B,I9 5B>I9,9A,I4 HV,4X,I5>9A HV>I5(bs) 4X>I2 10-1100 4X>I5 UR>4X OD>5B,I8,I4,IS0,EA5,EA7 5B>I0 HV>I4,9H EH8>EA7 ZA>I8,IS0,9A,4X SV9SIX>I1 I8>I5(bs) 11-1200 9H1SIX>I0 OD>IS0,EA6,I8,CT,ON SV9SIX>I0 EA6>EA3 HZ1MD>YO7 9H>CT I9>I8,I0,I1 SU1HM>4X ZA>EA7 EH9>I0 HV>IS0 12-1300 OD>EA7 I5>DL ZA>EA6 YKtv>OK1 EH7>IS0 SV1SIX>I2,SP9 SV9SIX,SV5>I2 HV>EA6,EA7,EA5 I2>PA EH9,SV5>I5 ZA>EA3 I8>EA7 13-1400 SV5>I1,I5 SV1SIX>DL,SP6,HA5 OD>I1,I4,I3,9A,OK2,LZ2 HV>9A OE6>DL SV3>9A,S5,DL 14-1500 SV1SIX>ON SV9SIX>DL I9>DL OE5>SV8 LY,UR>PA TA2>I0 9H>DL,ON 5B4CY,4X4SIX,UT5G,OD5SIX>I9 15-1600 I9,9H,EH7,LX0SIX>DL I9>LX,4X,EI UR>I9 SV1SIX,SV9SIX>DL TA2>CT,I4 SV8>CT,I1,9A,I2 EH>F,9A EH6,I4>9A EH6>HA1 OE6>EA5 7Q7SIX>DL CT>I5 LZ2>CT 16-1700 EH6>SP9,9A EH5,G>9A ZA>EA3,I1 EH7>S5 CU3>CT,I9 I9,9H>DL ZB2,Z3,I8>F S5>CT SV9SIX,EH5>HA5 Z3>EA3 EH1>CT,EA6 9A>EA3 F>EA7 TA2>I0 EA6>9A,HA5 SV3,EH4>9A CT>LZ2 I1>I8 I9>I2,EI,F 17-1800 4N>EA5 YO2>EA76 EH6,OD>9A EH6>SV1 ZA>EA7,EA3,EA5,CT 4X,I9,EA7>9A EH9>I2,DL I9,EH7>DL OD>EA3,EA5,EA1,EA7 I9>I1,EA7,I5 EH3>CT 18-1900 OD5SIX>9A,CT CT,4X4SIX,EH5>9A I9>DL,EA1 ZA>I9 I9,EH5>I0 I8>EA3 GU>9H,CN I0>CT EH7>I0,I2,9H,SV2 F,G>CN EA6>CT EH9>HB JY>EA7 9H>EA2 19-2000 EH7>I3,S5 EH8>EA2 I0>EA7 9H,EH9>EA1 EH3>I9 EH9>S5 CT>9H,I9 F>CN 20-2100 G>CN SV9SIX,SV1SIX>IS0,OE6 OD5SIX>IS0 21-2200 LZ2>I9 SV9SIX>OE6 2226 LA>PA

50MHz PROPAGATION REPORT FOR MAY 2003 BY SV1DH

1. Data for all days (31)
2. Relatively good days on: 2,4,6,7,19,20,27,29,31
3. 48 MHz AF video (3C+5Z)on: 1,2,9,15-18,24,29 (29%)
4. 55 MHz AF video (5N) on: NIL
5. Opening to ZS6 on: 2 (3%)
6. " to 7Q on: 2,3,15,16,24 (16%)
7. " to V5 on: 1
8. " to 5N on: 4
9. " to D4 on: 4
10. " to 9J on: 3,17
11. " to ZD8 on: 1(+),4,5,18 (13%)
12. " to TR on: 6 (3%)
13. " to 5U on: 3
14. " to FR on: 28
15. " to VQ9 on: 4(1530-1600),6(1545-1600) (6%)
16. " to EH8 on: 2,6,29(2E)
17. " to EH9 on: 29(E)
18. " to PY on: 1,3,4,6 (13%)
19. " to LU on: 4
20. " to CX on: 4
21. " to 5B on: 19(E (3%)
22. " to 4X on: 6,7,12,13,21,26,31(E) (23%)
23. " to OD on: 4,6,13,20,31(E) (16%)
24. " to TA on: 31
25. " to HZ on: 31
26. " to F on: 7,11,12,18,20,26-29(E)
27. " to I on: 1,2,21(B), 4,6,7,11,13,18,19,20,22,23,25-31(E)
28. " to IS on: 17,18,25,26,29(E)
29. " to T7 on: 27
30. " to CT on: 6,20,29(2E)
31. " to EH on: 6,18,19,20,26-29(E)
32. " to EH6 on: 6,18,19,26,28,29(E)
33. " to 9H on: 1(B),3,4(E)
34. " to DL on: 7,11,12,13,19,20,22,23,25,27-29,31(E)
35. " to HB on: 7,20,22,23,25(E)
36. " to SP on: 7,11,13,18,19,20,25,27-29,31(E)
37. " to OK on: 11,19,22,27,31(E)
38. " to OM on: 7,11,22,27(E)
39. " to HA on: 11,19,22,27(E)
40. " to LZ on: 27,31(E)
41. " to YO on: 19,27(E)
42. " to YU on: 18,19,27(E)
43. " to 9A on: 18,19,22,23,27,31(E),29(B)
44. " to S5 on: 19,27,31(E)
45. " to T9 on: 19(E)
46. " to OE on: 7,11,13,19,20,23,27,29(E)
47. " to 4U on: 6,20(E)
48. " to LX on: 20,22(E)
49. " to ON on: 19(E)
50. " to PA on: 7,11,12,13,19,20,22,29(E)
51. " to OZ on: 11,12,19,22,27(E)
52. " to GM on: 19(2E)
53. " to UT on: 12,19,22,23,27,28,31(E)
54. " to LY on: 4,7,11,12,17,18,19,20,25,27-29(E)
55. " to YL on: 20,28
56. " to ES on: 27

57. " to OH on: 19,27(2E)
58. " to OH on: 27(2E)
59. " to LA on: 27(2E)
60. " to SM on: 27(E)

61.Special events on:
1 (1730 9H to PY very strong)
2 (0308 M1.0 flare+1030/1200 foF2>11.3Mhz+1300-1330 PY2,5 to VR2 >18000Km+1345 9J to VR2+1400 CEM+1430 IT to ZS1)
3 (1045 9J to JR6+1400 VQ9 to JR6+1515 9H to YB+1700-1900 CEM S5)
4 (1430-1515 9H+5B to YB+1800-1945 CEM S9+20 many)
5 (1100 VQ9 to YB+1130 9J to JA)
6 (1245 VQ9 to YB)
7 (1145 MUF to HZ >43Mhz)
11 (First activity from SV2ASP/Athos ~18z)
13 (1200 VQ9 to YB)
14 (Very poor day)
19 (1315 EH7 to VO first of season +1600 EH8 55.275Mhz video S9+ 2Es +1830 SV to EA5 on 2m)
20 (0930 foEs>20Mhz+1130 EH8 55Mhz video+1530 5B+JY to HZ+1915-2030 W.EU+9H to W+VE)
21 (1600 IT to VQ9 Es+TEP)
23 (1000 VQ9 to YB)
24 (1100 VU to VR2+1800 IT+9H to PY)
25 (1430-1500 5B+N.EU to A6 NEs+ 1715 EH8 55Mhzvideo +1830-1930 9H+IT+I0 to PY)
26 (0550 M1.9 flare+1500 EH8 55Mhz video+1637 M1.0)
27 (0306 M1.4+0626 M1.6+2307 X1.3 flares+1500 55Mhz video+2030 4X to PY)
28 (0027 X3.6 !!flare+ 1900 N.EU to PY+C.EU to A4)
29 (0105 X1.1+0218 M1.5+1937M2.8 flares+0815 DL to A4+1630 EH8 55Mhz video+C.EU to PY+2100 K=8!)
30 (Severe mag storm, very poor day)
31 (Very good NEs)

62. DXCC entities heard/worked during MAY 2003 : 56 on 4 cont
63. DXCC entities heard/worked on 29th MAY 2003 : 14 on 2 cont. 73 COSTAS

The Americas

Auroral-Related

May 1 00-0100 W9>W1(FN32) K0KP>W3(53a) W2>W1
May 7 0221-3 VE8BY>VE6(599a) W7GZ>VE6(539a)
May 8 0137 VE8BY>VE6(539a)
May 9 23-2400 VE4ARM>W9(51a EN44) W0(EN34)>W9(EN44 51a)
May 10 02-0300 W8>W3(55a) W9(EN70)>W8(EN90 55a) 0443 KL7NO(BP54)>W9(EN44 55a AU/Es)
May 12 0326 VE8BY>VE6(mode?)
May 21 2310 K0KP>W0(51a)
May 22 00-0100 W0(EN35)>W0(55a) W9(EN44)>W8(EN83) K0GUV>W9(EN26 52a) W8(EN83)>W9(EN44 53a) K0KP>W9(EN50) 04-0500 W1>VE6(AE 53) N8PUM>VE6(579 AE) KB8GC>VE6(Es)
May 23 0037 K0KP>W9(53a)
May 24 00-0100 K0KP>W9(54a) W8>W9(53a) VE4ARM>W9(EN44 51a) 0350-8 W9(EN44)>VE6(DO33 59) WR7V>VE6(DO33 59) KE4SIX>VE6(59 DO33 mode?) 0437-55 VE8BY>VE6(DO33 539a) VE3UBL>VE6(DO33) 0618 VE8BY>VE6(537a)
May 25 0100 N8PUM>W9(51a EN44) 03-0400 VE8BY>VE6(529a DO33) VE4VHF>VE6(539a)
May 27 0155 W7(DN62)>W7(DN47 55a)
May 28 00-0100 W8>W1 W1>W2 0359 W1(FN44)>W9(EN44 52a) 04-0500 VA2MGL>W9(EN44 51a) 0604 VE7>KL7 0625 VE6(DO31)>W9(EN44 57a/AE)

May 29 0051 K0GUV>W9(EN44 41a) 0515-9 VE4ARM>W3(EN90 53 mde?) K8PLF>W3(EN90 mode?) 19-2000 W8(EN76)>W8(EN83) W1,W8,W9,W0>W1 W1(FN41)>W8(EN83) K0KP>W1(53a) 20-2100 K0KP(EN36)>W8(EN83) W1(FN44)>W3W8(EN91)>W8(EN83) W8(EN83)>W8(EN 83) W1(FN53)>W8(EN83) W2(FN23)>W1(FN32) 21-2200 W2(FN13)>W3(FN00 55a) W3(FM18)>W3(55a) W8(EN84)>W3(FM19 57a) W2(FM29)>W3(FN00 55a) VE1(FN74)>W1(FN32) W1(FN54)>W1(FN32) W0(EN37)>W8(EN83) K0KP>W8(EN83) 22-2300 22-2300 VE8BY>VE9(FN75) W2(FN20)>W8(EN83) VA2WW>VE9(FN75) W2(FN13)>W8(EN83) VE4VHF>W9(EN44 58a) VE4ARM>W9(EN44 59a) W1(FN35)>W8(EN83) N8PUM>W8(EN7$ 59a) W9(EM69)>W8(EN84) 23-2400 W9>W4(Mode?) W5(EM25)>W8(EN74 mode?) W9(EM69)>W4 55a) 23-2400 W7(CN87)>W7(DM09) W3>W4(55a) W1>W4(51a) W8>W4(52a) W3(FM18)>W1 OX3VHF>VE1 W3(FM18)>W5(EM64 mode?) W8(EM99)>W9(mode?) VE8BY>VE9(FN75)

May 30 00-0100 VA2WW>W1 W4(EM86)>W8(EN83) W4(EM78)>W9 VE7(CN89)>W7(CN84) VE7FG(CO83 59a)>W7(CN84 52a) W3>W1 01-0200 VE1>W3(59) W1(FN34)>W3(FN00) VE8BY>W9(EN44 529 AE) VE8BY>VE3(FN03) VE4VHF>W8(EN91) VE4ARM>W3(FM19 539 AE) VE1(FN74)>VE3(FN03 VE4VHF>W9(EN61 559) W3>W2 02-0300 VO1>W1(mode?) VE4VHF>VE3(FN03 579) 08-0900 N8PUM>VE6(599 AE?) WR7V>VE6(AE> 599) W8>W4(mode?) W4(EM95)>VE6(DO33 53a) 2243 K0KP>W9(52a)

Other Modes

Propagation between South America and Europe was intriguing. PY results were pretty much in line with 2002 for the Mediterranean with 10 days (2002 11), Iberia 5 days (6) and northern Europe with 6 days (5). While Es was probably an important factor, especially for the North, PY was into all three areas on the 29th at times when the 3-hour Kp was either 7 or 8. ZD8VHF was also copied in the UK while the 3-hour Kp was 8. This looks very much like one of those occasions when ionization was driven southward during a storm. The 1st, which was one of the better days for working between the Mediterranean and South America was also disturbed. Curiously, Brazil was the only South American country reported from Iberia, unlike 2002 when other countries shared openings on 7 days.

South America Mainland<>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	31
Med	+		+	+		+							+							+				+	+			+	+		
Iberia					+							+	+												+				+		
North						+						+	+							+				+				+	+		

South America<>Europe

	Mediterranean	Iberia	Northern Europe
PY	10 days 1 3 4 6 13 20-24 25 28 29	5 days 5 12 13 25 29	6 days 6(DL,LZ,ON,PA) 12(DL,G,HB) 13 (DL,LY,SP,4U) 20(DL,EI,G,LX,OZ) 28(G,ON,YL) 29(DL,HB,ON)
LU	2 days 1 4		
CX	1 day 4		
YV			1 day 24(EI)
ZP	1 day 1		
ZD8	5 days 1 4 5 18 24	1 day 5	3 days 5(G) 28(G) 29(G)

During May all US call areas except W7 (but none in VE) worked In some part of South America, with openings on three of the four most disturbed days (Ap 40, 89 and 49 respectively). The 30th was clearly the best day despite (or because of?) the high level of geomagnetic activity. There was relatively little propagation on magnetically quiet days - though these also tended to coincide with low flux levels. There were reports on 11 days compared with only four in 2002 and as the table below shows a number of this year's openings were reasonably widely shared, both at the US end and in South America, where both northern and southern countries were worked.

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
+				+	+					+			+			+						+	+		+			+	+

North<>South America

LU<>W3 1 day 6	PY<>W1 1 day 17	CE<>W2 1 day 11
LU<>W4 4 days 1 11 14 26	PY<>W2 1 day 17	CE<>W3 1 day 11
LU<>W5 2 days 1 26	PY<>W3 1 day 17	CE<>W4 1 day 11
LU<>W6 1 day 1	PY<>W4 2 days 11 17	CE<>W5 1 day 1
LU<>W8 1 day 30	PY<>W5 3 days 11 17 26	CE<>W6 1 day 1
LU<>W9 1 day 30	PY<>W8 1 day 17	FY<>W1 1 day 24
LU<>W0 1 day 26	PY<>W9 1 day 17	FY<>W4 1 day 23
YV<>W1 2 days 23 24	CX<>W4 2 days 11 14	HP<>W1 1 day 30
YV<>W2 1 day 24	HK<>W1 1 day 30	HP<>W2 1 day 30
YV<>W3 2 days 23 30	HK<>W2 1 day 30	HP<>W3 1 day 30
YV<>W4 2 days 23 30	HK<>W3 1 day 30	HP<>W4 1 day 30
YV<>W6 1 day 30	HK<>W4 1 day 30	HP<>W5 1 day 5
YV<>W8 1 day 30	HK<>W8 1 day 30	HC8<>W1 1 day 29
YV<>W9 1 day 30	HK<>W9 1 day 30	HC8<>W2 1 day 30
YV<>W0 1 day 30		HC8<>W4 1 day 2

Propagation from the Americas to Africa and Asia/Pacific was sparse. D4 was worked from W1 and W8 on the 25th and - an exceptional contact - an SU<>PY QSO was reported on the 1st, with reception of the TR beacon in ZP also on the 1st. KH6 was worked from XE on the 8th and W6 on the 18th, while HC8GR was heard in Hawaii on the 6th. VR2 and BD were worked from PY on the 2nd. TX4PG was reported from ZP, also on the 1st.

May 1 00-0100 TI5KD,LU7DZ,CE3SAD>W5 LU8DIO,TG9NX>W4 01-0200 XE1KK>W4,W5 02-0300 XE1KK>W0,W5 W2>W0 05-0600 W5,W7,W0>W7 06-0700 AC3A,W5>W7 1419 SV9ANK>LU 1653 W8>W5 17-1800 IT9AF>PY2 9H1AW,9H1SIX>PY1 CT1BXT,EH7AVY,EH4EAI >PP5 18-1900 9H1PI,EH7OC,CN8KD>PP5 XE2>W7 9H1AW>ZP6 19-2000 PY1>PY2 CE3SAD,XE2.LU6QI>W6 20-2100 PP7,PY2>ZP6 21-2200 TR0A>ZP6 SU1SK>PY2 CE3RY>W6 22-2300 TX4PG>ZP6,PY1 W0>W2 23-2400 CE3RY>W6 W2>W1 W9>W3 VE2>W4 W3>W9

May 2 00-0100 W9>W2 W2>W5 W4>VE3 02-0300 W5>W6 W7>W8,W0 03-0400 W5>W3,W9 1259 VR2XMT>PY5 13-1400 VR2XVD,BD7OH>PY5 20-2100 LU>PU2 21-2200 CEbc>W4 23-2400 W4>VE3,W4,W9

May 3 00-0100 W4>W5 01-0200 W0>W4 W4,W5>W1 16-1700 W5,W8>W8
May 4 1745 W5>W5
May 5 00-0100 TI5KD,W4>T4DJ 01-0200 ZF1DC>W4,W5 TI2ALF>W4 TG9NX>W5 02-0300 TI5KD>W4 HP3XUG>W5 23-2400 W4>W2 C6AFP>W3
May 6 00-0100 W4>W3 W2>W4 1858 W5>W7 19-2000 LZ2CC>PY1 21-2200 C6AFP,CO8LY,W4,CO2OJ,49.2(CE),ZF1DC>W3 22-2300 LU9EHF>W3 CO2OJ>W1 C6AFP,W4>W3 V44KAI,HI8ROX>ZF 23-2400 KP2A>Z W4>W2,W1,W4

May 7 00-0100 W4>W3 01-0200 W5>W4 WR7V>VE6(sc) 1651 C6AFP>W3 1851 C6AFP>W3 19-2000 W3>W1 2258 W4>W5 2329 W4>W5

May 8 00-0100 W4>W5,W0 W7GZ>W9 01-0200 W5SIX>W9 W7GZ>W9 0306 W5>W5 1430 W1>W4 16-1700 W2,W3,W4>W4 17-1800 W1,W2>W4 WR9L,K0KP>W1 18-1900 VE1>W4 19-2000 VE1>W4 W4CLM>VY2 2019 48.2(CE)>PY1 22-2300 W7>W5 23-2400 W5>W0 W4>W4(t) N0LL,WB0RMO,W7>W2

May 9 00-0100 W0>W3 W5>W0 VE7>VE7 W6>W6 N0LL>W2,VE3,W3 N8PUM>VE6 W2,W4,W0,W5>W8 W5>W9 01-0200 W5>W8 W4>W0 WR7V>VE6 0242 W8>W5 03-0400 W9>W0 W5>W8 0410 W0>W0 15-1600 W3,W4,W8>W5(sc) 1746 XE1KK>W7 1919 EAtv>PY5
May 10 0054 W8>W5 0109 N9UD>W0 aurora 0422 HC8GR>YV1 12-1300 W0>W3 15-1600 W5RP,KU4WD>W4 16-1700 W5>W4 17-1800 W5,W0>W4 18-1900 W4CLM>W5 W3>W9 19-2000 W4>W5 20-2100 W7>W9 FJ5DX>PY5 21-2200 W5VAS>W3 W8>W4 22-2300 W5,W4>W3 23-2400 W5>W6 W8,W2,W4,W3>W4 W3>W5

May 11 00-0100 W2,W4,W5>W4 W4,W2>W5 01-0200 W4,W5>W5 W4>W1,W0 02-0300 W0>W0 W5>W9 W3>W3 W0>W5 13-1400 W3>W4 W1>W3 1657 XE1KK>W6 1746 KB8GC>VE6(sc) 1806 W5>W4 19-2000 W4>W1 20-2100 W4>W0 3Ctv>W4 21-2200 C6AFP>W3 TG9AFX,PY5CC,CX4CR>W4 9Y4AT>W8 TG4AFX>W1 FJ5DX,K4RX,AB5A,WA4DOS>PY5 48.0(CE)>W3 AB5A>PP5 22-2300 HR1RMG>W2,W4 9Y4AT>W8,W5,W4 TG9AFX>W2 XQ3SIX>W2,W3,W4 W4>W2 TI2NA,LU1DMA>W4 23-2400 TG9NX>W4
May 12 W2>W0 W4>W8 1401 W4>W1 1850 OE8RT>PY5 1948 F6FHP>PY5 20-2100 47.9(CE)>W4
May 13 00-0100 TG9AFX,HR1RMG>W4 01-0200 KB8GC>W3(ms) TG9AFX>W4 W5>W5 0322 VA7SIX>VE6 18-1900 4U1ITU,PY2>PY5 19-2000 W4,W5>W7 20-2100 CT3DL>PY5,PP5 W0>W5 W6,W0,W4>W4 21-2200 W5>W5 XE2,V31MD>W4 22-2300 V31MD>W4,W5,W9 TG9NX>W8 W5,48.3(CE),YS1RR>W4 TG9NX>W8 23-2400 W5>W9 V31MD>W4,W5 W4,W0>W5

May 14 00-0100 W0,XE1>W5 HR1RMG>W4 01-0200 XE1>W4,W5 W5>W7 02-0300 XE1>W4,W5 W5GPM>W7 03-0400 W5>W7 W1,N0LL>W6 W5,W7,VE6>VE6 20-2100 47.9(CE),LU1DMA>W4 21-2200 LU7YS,CX5BW,KP4>W4 23-2400 W5,W1,VE2>W4
May 15 00-0100 W0>W4 W5>W3 01-0200 W5>W4 1519 W5>W2

May 16 2352 W8>W8

May 17 0019 W3>W0 15-1600 W4>W8 W4>W3,W1 16-1700 W8>W0 VE4VHF>W8 20-2100 W4>W8,W3,W4,W1,W2 21-2200 W4>W9,W3,W8 C6AFP>W8,W3 WA2FGK>PY5CC KE4SIX,KD4HLG>W5 KB8GC>W9 PY5CC>W3,W4,W8 W4CLM>W5 VE3CDP/W9>PY2,PY5 22-2300 W4>W8 VE3CDP/W9,K1LH>PY5CC W4>W1 PY5CC>W8,W9 PY2XB>W3,W5 PY2AO>W3 W7>W7 W4>W3,W4 W1>W3 23-2400 W4>W3,W4,W0,W5 W3,W8>W5,W8 C6AFP>W0

May 18 00-0100 W5>W4,W0 W4>W0 W3,W8>W5 W3>W3,W0 WB0RMO>W4 C6AFP>W0,W8 W5GPM>W3 VP9GE>W4 N0LL>W4 W1>W3 01-0200 WB0RMO>W3 VP9GE>W4 W0>W4,VE3,W5 N0LL>W3 W4>W3,W4 W5>W0 W2>W4 W8,W9>W5 02-0300 W4>W0,W5,W2,W3 W0>W0,W2,W9,W5 W5GPM>W2 W5>W4,W8,W9,W0 03-0400 W5>W3,W9,W0,W8 W0>W4 04-0500 WR9L>W9 W0>W4,W5,W0 W7>W5 1240 W>W5 13-1400 W2>W1 C6AFP>W3,W1 W4>W3 14-1500 W5VAS,K4TQR>W1 WA1OJB>W4 W4>W8 W5,W7>W5 N8PUM>VE6 VE3>W5,W4 W4>W1 15-1600 W5,W6,W7>W5 W4>W1,W5 K4TQR>W2 W7>W4 K4TQR,KD4HLG>W3 1622 W1>W1 16-1700 VP9GE>W0,W1,W3 VP9ID>W3 W7GZ>W5 17-1800 VP9GE>W3,W1,W6(?) 18-1900 VP9GE>W1,VE2 W9>W1 VE1SMU>W8 XE2>W5 W5,W6>W6 19-2000 W7,XE2>W6 W0>W1 W8>VE9 XE2>W6 W0>W1 W9>W2 20-2100 W9>W1 K0KP>W3 VO1>W4 CO8LY>W3 W2>W8 21-2200 VO1>W3,W0 W1>W9 W1,W7>W8 K0KP,N8PUM>W3 W9>W2 VE1SMU,VE2,W7>W8 W0>W1 VE2,VE3,VO1>W0 W7,W8,W9>VY2 22-2300 CO2OJ>W4 NH7RO>W6

May 19 00-0100 W1>W4,W0 VE1SMU>W8 VE1>W4 01-0200 VE1,W1,VE9>W4 VE1,VE9,W1>W8 W4>VE9 02-0300 W1,VE1>W8 VE2>W3,W2,W8 VE9>W4 W1>W3 W1>W2,W3,W6 W1,VE2>W0 03-0400 VA2MGL,VE1SMU>W8 W8>W1 VE9>W8 W1>W0,W8 VE2>W4,W0 W9>W1 VE2,VE3>W9 VE4>W3 12-1300 EAtv>W4 W3>W4 13-1400 W3>W1 1517 W4>W2 1533W5>W1 16-1700 W6,W5VAS>W4 1750 W5VAS>W4 1832 W5>W3 1918 W5>W1 20-2100 W6>W6 W0>W1

May 20 01-0200 W4>W1 02-0300 W0>W4 W3>W0 W7GZ>VE6 03-0400 VE7FG,VE6ARC>W7 VE6,VE7,W0>W6 W6>W7 W1>W0 04-0500 VE0>W7 VE6>VE6 W7>W6 05-0600 KL7NO,KL1SF>W6 W6,W7GZ>VE6 1638 WA1OJB>W4 17-1800 W4>W1 18-1900 W8>W4 W9>W1 19-2000 W1>W4 20-2100 9H1BT>W1,W4 F6FHP>W4 KP4>W1 W4>W2 21-2200 VE2,W1>W5 W4,W0>W3 EH7AR>W4 W8>W4 EH5FKX>W2 22-2300 CT1DYX>W2,W4 EH5KFX>W2 W7GZ>W5 W0,W4>W2 W2>VE9 we-2400 W2>W0 W4>W1

May 21 00-0100 W4>W1 W7>W6 01-0200 W4,C6AFP>W0 VE6>W6 W7GZ>VE6 0307 K6FV>VE6 04-0500 W7>W7 15-1600 W5VAS>W1 W4>W2 17-1800 W5>W4 18-1900 W5>W4 1903 W0>W6 aurora 2228 48.3(CE)>W4 2341 W4>W4

May 22 0129 W5>W4 1247 W5>W5 14-1500 W0,VE4VHF>W4 TI2NA>W0 22-2300 W5VAS>W7 W2>W5 23-2400 W5,W7,VE7>W6 W7>W5

May 23 00-0100 HI8ROX>W4 W6,W7,VE4>W5 W0>W8 W5>W9 W7>W4,W9 XE1,W0,W6,W7>W5 W0,W7>W4 XE2>W0 VE4VHF>W5,W8 02-0300 W0>W4,W5 W5>W6 W9>W4,W5 W6>W7 K0KP>W5 W9>W9 03-0400 W7,XE2>W6 VE6>W7 1136 KP4EIT>YV4 1618 W1RA>W4 17-1800 W1>W3 W4>W0 1848 CO8LY>YV4 20-2100 FM5WD>W4,YV4 YV1DIG>W4 K4RX>YV4 J75KG>W4,YV4,W3 YV4AB>ZF YV1DIG>W1,W3,W4 21-2200 CO8LY>YV4,W3,W2 YV1>YV4 8P9HW>W4 FY7THF,V44KAI>W4 22-2300 CO8LY>W4,W3 HI8ROX>W4 2342 W3>W0 aurora

May 24 aurora 01-0200 W0>W4 W4>W9 02-0300 W4>W9 W8>W4,W1 W7>W3,W4 W0>W3 03-0400 VE4VHF,VE5,W7>W4 VE4>W5 04-0500 W7>W0 1139 W0>W3 13-1400 W0>W4 15-1600 W5VAS>W9(ms) W8>W4 16-1700 W4>W5 W8>W4 W6>W0 W7>W4,W0 17-1800 W6>W1,W0 W7>W0 W2>W6(2xEs)>W0 18-1900 VE3UBL>W0 19-2000 W4>W1 YV4DDK,YV1DIG>W2 VP9GE>W4 W2>W0 20-2100 9Y4AT>W1 YV1DIG>W1,W2 FM5WD,YV4DDK>W2 VP9GE>W4 FG5FR>W1 21-2200 V44KAI>YV4 VP9GE>W1,W2 FM5WD>W1,W2 CO8LY>W1 YV1DIG>W1 CTtv>W4 EH8BPX>W4,W2 FY7GS,FJ5DX,FG5FR>W1 22-2300 FY5GS>W1 FJ5DX>W8 VE1>W4,W1 KP4>VE1 TI5KD,W4>W1 V44KAI>YV4 FM5WD>W8 J3/HB9AAI>W8 23-2400 C6AFP>W3,W1,W2 KP4>W1(skew 195) W1,W4>W0 FM1DQ>YV4

May 25 00-0100 W4>VE9 C6AFP,W4>W1 W1,W7GZ>W0 W4>W2 01-0200 W4,W5>W1 W1,W4>W0,W5 W7>W5 W4>W2 02-0300 VE9,VE1>W4 VE9>W8 W8>W4 12-1400 W1RA>W4 W4>W3 KB8GC>W4 CTtv>W4 13-1400 N8PUM>VE6 CTtv>W4 W4>W1 W3>W4 W2>W3 VP9GE>VE9,W1 14-1500 W4>W1 CO2KK>W0 VP9GE>W1 W9>W5 W4,W5 UAtv>W1 15-1600 W1,W2 W5>W3 CT1DYX>W4 VP9KK>W2,W5 C6AFP>W0 16-1700 N0LL,VE1>W4 VO1ZA>W1 WB0RMO,W9>W4 W5>W3 DT5UT(?)>W5 CN8LI>W1 W8>W0 17-1800 W2>W0 C6AFP>W0 W8,W5>W1 18-1900 VE1SMU>W8 VE9>W4 W4CLM>W3 W3>W5 19-2000 W4>W8 W5>W3 W8>VE3 N8PUM>VE6(ms) VA2MGL>W0 WB0RMO,G5GPM>W4 20-2100 KD4HLG>W4 K0KP>W5 W0>W0 W8>W8,W4 W5>W2 W7>W1 VO1,W5>W8 VE4VHF>W2 EH8BPX>W2,W3 W9>W4 VO1>W0 W5>W2 21-2200 EH8BPX>W1,W2,W8 W4,W8,W9>W4 W2,W4,VE3>W5 VA2MGL>W0 CE3SAD>W0 W5>W1 W0>VE3,W1 VE1SMU>W0 VE4VHF>W2 22-2300 W8>VE3,W0 W4>W4 W3,W0>W0 W1,W8,W9,W0>W1 W2>VY2 VE3,W2,W9>W4 W2,VE3>W5 VE1>W1,W2,W5,W0 KD4HLG,W5VAS,W0>W8 23-2400 VE2,VE3,W5.W0>W5 W4>W8 W5>W2 W9>W4 C6AFP>W0

May 26 0124-49 W4,W5>W5 0205-50 WB0RMO>W4 W0>W5 1444 V31MD>W4,W5 15-1600 CO8LY,CO2KK>W5 16-1700 CO2KK>W5,W4 J75KG,W7GZ>W4 W4>W5 17-1800 KP4>W4 W7>W0 18-1900 W4>W0 CO8LY>W4 19-2000 W4>W5 KP4,CO8LY,W5 W5>W3 20-2100 CO8LY,N0LL,48.3(CE),KP4>W4 W5>W2,W3 ZF1DC>W2,W3,W4,W0 LU9AEA>W4,W5 W5GPM>W3 KP4>W2 LU9DFN>W4 W0>W1 21-2200 W4,CO8LY>W3 J75KG>W4 KP4>W5 ZF1DC>W8 LW3EX,HI8ROX,TI2NA>W4 PY5CC>W5 9Y4AT>W8 49.2(CE)>W8 LU9AEA>W0 HI8ROX>W1 22-2300 W4>W3,W8 W3>W0 9Y4AT,HI8ROX,ZF1DC>W4 23-2400 CO8DM>W5 CO2KK>W1,W5 V31MD,ZF1DC,HR1RMG>W4 ZF1DC>W2

May 27 00-0100 ZF1DC>W1,W4 W1,W4>W4 W5>W8,W1,W0 W9>W5 N8PUM>W9 13-1400 W5VAS>W4 CO2KK>W5 14-1500 W1RA>W4 1536 W5,W0>W3 16-1700 FG5FR>W4 W5>W7 W0>W4 1834 W0>W3 20-2100 ZD8VHF>PY1 TR0A,PY1,PY2>PY5 2250 HI8ROX>W4

May 28 00-0100 aurora 1851 F1NNE/P>PY5 1908 YL1A>PY5 2101 W8>W4 2339>WB0RMO>W4

May 29 01-0200 C6AFP,W5,W2,W4>W5 2207 49.2(CE)>W4 2332 HC8GR>W1 2354 HC8GR>W4 aurora

May 30 01-0200 aurora HC8GR>W2 LU1DMA>W8,W9 LU9EHF>W8 N8CJK>YV1 YV4AB>W3 YV5,WA1OJB,W1RA>HP2 TI2NA>W2 HP2CWB>W2 YV1DIG>W3,W9 LU7YS>PY1 LU3HR>W8 HK3JRL>W3 02-0300 YV1DIG>W9,W4 HK3JRL>W1,W2,W8,W9 TI5KD>W1,W2 TI2RPT>W2 YV1DIG>W8,W9 YV5SSB>W9 HK3PJ>W1,W2 YV4DDK>W3 HK3JRL>W8,W3 W6>W7 03-0400 W5RP>W3 W5VAS>W9 C6AFP>W0 W7>W6 W3>W5 W8>W4 W4,W6>W0 W3,W4>W6 04-0500 W9>W5,W3 W3,W5>W3 W4>W9 W4,W6,W7>W7 W7,W8>W5 W6>W3,W4,W7,W5,W2 W8>W1,W3 XE2,YV4AB>W0 05-0600 XE2>W8 K6MYR>YV1 YV1DIG>W0 ZF1DC>W1,W2 W7>W3,W7 W6>W3 W4>W6 W5VAS,W5HN>W1 06-0700 YV1DIG,XE2,W7>W0 W4>W1 ZF1DC>W3 W9>W5 K0KP>W4 07-0800 W5>W9,W4 W3>W0 VE6>W3 0925 W0(EN35)>W4(EM60 mode?) W4(FM06)>W4(EM60 53

mode?) 10-1100 K0KP>W3(FM18 mode?) W0(EN35)>W4(FM06) W0(EN13)>W4(EM60 mode?) W8>W1 W4>W3 W0>W4 VA2MGL>W4 W1>W0(2xEs) 11-1200 VE3>W1,W4 W0>W8,W1 VE4>W3,W4 WB0RMO>W8 VE1,VE2RCS>W0 VA2MGL>W8 N0LL>W4 W5HN>W3 12-1300 W0,W7>W3 W8,WB0RMO,K3DEL>W4 N0LL>W1 W5>W4 W0>VE3 W2,W3>W7(2xEs) VA7SIX>W7 13-1400 W0>W1,W8,W9 K3DEL>W1 VE1>W3,W9 W8>W5 W6>W8 HP3XUG,W9>W1 W1>W3 14-1500 W6>W0,W8 W1>W8 HP3XUG>W3,W4 VE2>W4,W8 W4,W0>W2 W5>W0 VE1>VE3 15-1600 W9>W4 W2>W6 W0>W1,W2 VE4VHF,ZF1DC,C6AFP>W8 CO8LY>W7 W5VAS,W4>W2 W4>W3,W9 ZF1DC>W4 W3>W1,W0 16-1700 VE2,W3>W0 W8>W9 W4,W7,W0>W1 HP3XUG>W2 XE2,W2>W7 YV4AB>ZF XE2>W0 W1,W6>W8 W0>W7 W0MTK,XE1KK>W7 17-1800 W4>VY2 W3>W0 W0>W3,W8 W8>W6 VE4ARM,W6(2xEs),K0GUV,VE5>W9 K0KP>W0 CO8LY>W4 18-1900 VE5>W9 W0>W4,W9 W3>W6 W4>VY2 K0KP>W0 19-2000 ZF1DC>W4 N0UD,VE4VHF>W7 WA7X>W0 VE7FG>W0 20-2100 VE4VHF,CO8LY>W4 W0>W7 21-2200 W2>W5 WB0RMO,W5,N0LL,N0UD(Es)>W0 22-2300 W4,AC3A,W0>W7 W5>W0 23-2400 W9>W9

May 31 00-0100 HI8ROX>W4 N0LL>W6 W0>W7 W6,W0>W6 01-0200 W6>W0 K6FV>W0 W7>W5 W8,XE2>W6 02-0300 W2>W5 KB6BKN>W0 W6>W7,W5 XE2>W0 03-0400 XE2>W6 W6>W7 04-0500 KA7BGR>W6 1443 W4>W3,W1 1705 W4>W5 19-2000 W4>W1,W2 20-2100 VE1>W4 W4,W2>W2 21-2200 EAtv>W4 C6AFP>W8,VE3,W1,W3 22-2300 W4>W2 C6AFP>W1 23-2400 C6AFP>W2,W3 W4>W3 W2>W4

Asia and Oceania

Propagation from Japan was essentially confined to Asia and the Pacific. The exceptions were contacts with VQ9 on May 1,3 and 4 and with 9J on the 2nd, 3rd and 4th, the period when solar flux levels were at their highest and geomagnetic activity was below the monthly average.

VK2 was worked from Japan on the 12th, VK4 on 19 days (1-7 11-13 16 17 19 21 23 24 26 29 31), VK6 on 23 days (1-8 10 1-19, 21, 23, 24,26,29,31) and VK8 on 13 days (1-6 8,11,13,14,16,23,24,29,31) ZL was copied on the 11th and 12th.

Japan

6m DX results in JA during May

DATE	TIME(UTC)	STATIONS
5/ 1	0750-1400	DU1/GM4COK, VK4ABP/b,6RSX/b,8RAS/b, VK9XY, VR2XMT
	0842-0900	4S7EA, 9M2/JI1ETU/b (JR6)
	1430-1700	VQ9LA,VQ9X/b (JA4-6/JR6)
2	0715-1500	BG7JBA, KG6DX, T88KL, Vk4RTL/b, VK9XY, VR2XMT,SIX/b, VU2RM, YC1MH, YC1BYO, YF1OO
3	0030-0200	BG7JBA, VR2XMC,XVD,SIX/b (JR6)
	0400-0430	FO5RA (JR6)
	0600-1300	9M2TO/B,9M2/JI1ETU/b, DU1/GM4COK, HLs, VK4BLK,4ABP/b, VK6RSX/b,8RAS/b, YB0AR,YC1MH,YC1BGT,YC1BYO,YC1EHR
	0850-0900	VU2RM
	0950-1100	4S7EA, 9J2KC
	1400-1500	VQ9LA (JA6/JR6)
4	0050-0130	9M2TO/B, VR2BG,XMT
	0320-1400	BG4AGR,BG9BA, BV2FI,2NT,3FQ,4QI, FK1TK,8CA,8SIX/b, KG6DX, VK4BLK,4FNQ,4RTL/b,6RSX/b,8RAS/b, VR2AI,XMT,XVD,SIX/b
	1110-1300	9J2KC, VU2RM (JA1-7,9-0), Z22JE (JA7)
	1350-1500	VQ9LA,VQ9X/b (JA6/JR6)
5	0005-1200	BG4AGR,BG9BA, FK8SIX/b, VK4AHW,4BLK,4RGG/b,4RTL/b, VK6JQ,6RO,6RSX/b,8RAS/b, YJ0AHA
	1130-1200	9J2KC (JA2-6)
6	0530-1200	9M2TO, VK4FNQ,6JQ,6RSX/b,8RAS/b, XV3AA
7	0830-0930	VK4RGG/b,4RTLb,6RSX/b
8	1100-1300	VK6RSX/b,8MS
9	0752-1700	BD4ACW,BG9BA, BV2KI, VR2XMT,XVD,XZK,SIX/b
	2242-0200	BD7KU, BV2NT, HL1KTX, KG6DX, VR2XMT,XVD,SIX/b

10	0630-1400	BD4ABC,BD4ACW,BG4AGR,BG9BA, BV2NT,3FQ,4PK,4QI,4VJ, BX3AA, DU1/GM4COK,N7ET/DU7, FK8SIX/b, HLs, KG6DX, VK6RSX/b, VR2BG,XMC,XMT,SIX/b
11	0055-0110	VR2XMT (JA4-6)
	0320-1200	BG8AGK,BG9BA, BX2AB, FK8SIX/b, HLs, VK4RGG/b,4RTL/b, VK8RAS/b, YJ0AHA, ZL1VHF/b
	0950-1030	VU2RM
12	0430-1000	FK8SIX/b, VK2DN,2BPL,4BLK,4FNQ,4RTL/b,6RSX/b, YJ0AHA, ZL1VHF/b
13	0500-1220	BV3FQ, VK4FNQ,6RSX/b,8MS,8RAS/b, VR2XMT
	0653-0700	XU7ACE
	1320-1340	BG7IFT
14	0730-1100	BG4AGR, VK6RSX/b,8RAS/b
15	0820-0830	VK6RSX/b
16	0500-1100	5W1SA, BG4AGR, HL5s, VK4CXQ,6RSX/b,8RAS/b
17	0030-1230	BG9BA, BV2KI,BX2AB, HL1LTC, KH0/JH1MLO,KH0/JJ1ENZ, KH0/JR1FKR, KG6DX, VK4ABW,4FNQ,4RGG/b,6RSX/b
18	0650-1300	5W1SA, 9M2TO/B,9M2/JI1ETU/b, BA7IA,BG7IDX, BV2FI,2NT, BX2AB, KH0/JJ1NEZ, HLs, VK6RSX/b, VR2BG,DXA,XMT,XZK, VR2ZST,SIX/b
19	0850-1200	BG4AGR, HLs, VK4ABW,6JQ,6RSX/b
20	0755-0800	BV3FQ
	0800-0945	C21SIX/b (JA8)
21	0715-0930	FK8SIX/b, VK4RTL/b,6RSX/b
22	0032-0040	BV3FQ
	0820-1430	FK8SIX/b, HLs, VK4FNQ,6RSX/b, VR2XMT,SIX/b
23	0100-0130	VR2SIX/b
	0518-1300	BG9BA, BV2NT,4QI, C21SIX/b, FK8SIX/b, HLs, VK4FNQ,4RTL/b, 6RSX/b, 8RAS/b
24	0115-1500	9M2KT,9M2TO, BG4AGR,BG9BA, BV2NT,3FQ,4PM,4VJ,BX2AB/b, DU1HBC,DU1/GM4COK, HLs, VK4PU,4BLK,4CAE,4CXQ,4JSR, VK4ABP/b,4RTL/b,6JQ,6RSX/b,8RAS/b, VR2XMT
25	0025-1030	9M2TO, BV2B/1,2KI,2SR,3FQ,6BU,6GM,6GU,6HJ,BX2AB/b, VR2XMC,XMT,XVH,ZST,SIX/b
26	0420-0500	VK6RSX/b
	0838-1000	KG6DX, VK4RTL/b,6JQ,6RSX/b
27	0325-0330	UA0CQ
29	0200-1000	BG9BA, DU1HBC,DU1EV/B, KG6DX, VK4AHW,4CXQ,4FNQ,4ABP/b, VK4RGG/b,4RTL/b,6JQ,6JJJ,6RPH/b,6RSX/b,8RAS/b, VR2SIX/b
	1155-1210	BV2NT
30	0048-0100	BV2NT
	0629-1230	BV2NT,2KI, DU1EV/B, KG6DX, VR2XMT
31	0100-1100	9M2TO/B, BG9BA, Bv2B/1,4QI,BX2AB/b, HLs, VK4FNQ,4RTL/b,6JQ,6RSX/b,8RAS/b

FM: JA1VOK ja1vok@jarl.com June 9, 2003

Elsewhere

May 1 1236 VK4>VR2 1400 VK9XY>DS1 2308 VK2>ZL3 09-1000 JE7YNQ,KG6DX>HL1
May 2 1256 PY5CC>VR2 13-1400 VR2>VK4 VQ9LA,DU1BP,BG7OH,9J2KC>VR2 14-1500 T88KL>VR2
May 3 0353-9 JH0HZO,VK6RSX>HL1 08-0900 JA7,JA0>HL1 09-1000 HL2>VR2 14-1500 YC1BYO>VR2 15-1600 YB0AR>VR2
May 4 1354 VK8>VR2
May 5 06-0700 VK6RSX,VK4>HL1 07-0800 VK4,KG6DX>DS1 0810 DS1>HL2
May 6 0433 HC8GR>KH6
May 8 1242 VK8>VR2 2243 XE1KK>KH6
May 9 0903 KG6DX>HL1 1154 BG9BA>VR2 1357-9 BG4AGR,BG4ACW>VR2
May 10 07-0800 YJ0AHA>KH6 6N0ZS>VR2 0813 BG9BA>VR2 1339 BV4VJ>HL2
May 11 0903 JA2>HL2
May 13 1144 JA6>HL112-1300 JA2IGY>HL1 BG8AGK,BG8BW>VR2
May 14 00-0100 JA6YBR>HL1 026 JA8>HL1

May 15 10-1100 VK6RSX>HL1 1259 YB0AR>VR213-1400 YC0OK,YC1MH,YC1NYU>VR2 2308 XE1KK>KH6
May 16 10-1100 JE7YNQ,JA1ZYK>HL1
May 17 0639 ZLtv>VK3 07-0800 KG6DX,JA2>HL1 VK4>HL2 08-0900 JA6>HL2 VK6RSX>HL1
May 18 0954 VK6RSX>HL1 10-1100 BV2FI,BA7IA>DS1 BV2KI>HL1 1212 9M2tv>VK3
May 19 0936 HL3>DS4 1100 BV2NT>HL1
May 24 01-0200 JA6>HL2 06-0700 JE7YNQ,JA8>HL1 07-0800 DS1>HL2 08-0900 VK6RSX,VK4>HL1 0918 6N0ZS>VR2 0947 VK6>HL1 1034 VU2VVP>VR2 1411 BG7IDX>VR2
May 25 0028 BG7IGG>VR2 0229 BV2B/1>VR2 0330 JA1>VR2
May 26 0935 VK6RSX>HL1
May 28 0136 JA2IGY>HL1
May 29 0555 JE7YNQ>HL1 08-900 VK6,VK4>HL1
May 30 0116 BV2>DS4
May 31 0149 JA0>HL1 BV2B/1>DS1

Beacon News

1802.5 W0AH reported here with milliwatt beacon. Status?
14318.4 PA1SDB Appingedam JO33KH with 55mw to Inverted Vee A1 24/7
28220.3 ER1AAZ now here, apparently replacing ER1BEACON
28252 N9AVY new beacon - no details as yet (N5MT)
28276 W4FUM new beacon from EM73WW near Stone Mountain GA with 10 watts to 5/8 Vertical (W4FUM)
28287.3 SM0NCL/3 Tasjx JP83 with 50 watts to GP. Status unclear.
28321 DK5KZ has resumed operation with 5w to A99 (DK5KZ) 21MHz frequency to follow shortly
50067 K0EC reported here from DM69
50070 KG6JAI Burbank CA reported by K0GU. No further information
50077 K4AHO reported from EL98HP (KB8GC) Change of callsign for KU4WD?
50082.5 LU8DCH San Iidro(BA) runs 1.5w to 5/8 A1 24/7 (LU8DCH)
50386 F1GTU JN05IF with 5 watts to loop omnidirectional (PA1SIX)

28 MHz Worldwide

A month with no surprises in which cyclical decline and geomagnetic activity took their toll, with Es increasingly dominant in the northern hemisphere and east-west F2 falling away. Under-reporting; seems increasingly prevalent; certainly the number of DX summit spots is now falling dramatically. This leads to the band appearing to be in a worse state than it actually is. This could have ominous implications for band occupancy in the next few years. During the entire month there was not a single 'spot' of propagation between North America and Asia (admittedly difficult at this season and stage of the4 cycle), whereas in May 2002 30 per cent reliability was achieved in both the (US) morning and evening periods. Reported propagation between North America and Africa during the American morning was down from 56 per cent reliability to 26 per cent. The best result was for the European evening path to South America at 94 per cent, but even that was below the 2002 level. On the other hand, thanks in part to Dxpedition activity, North America was able to work into Oceania every day except the 28th and Europe had propagation reported to Africa on all but the 13th and to South America on all days but the 7th. So it might have been a great deal worse - and no doubt will be.

Beacon news and 28 MHz Worldwide

Compilation and Commentary by G3USF

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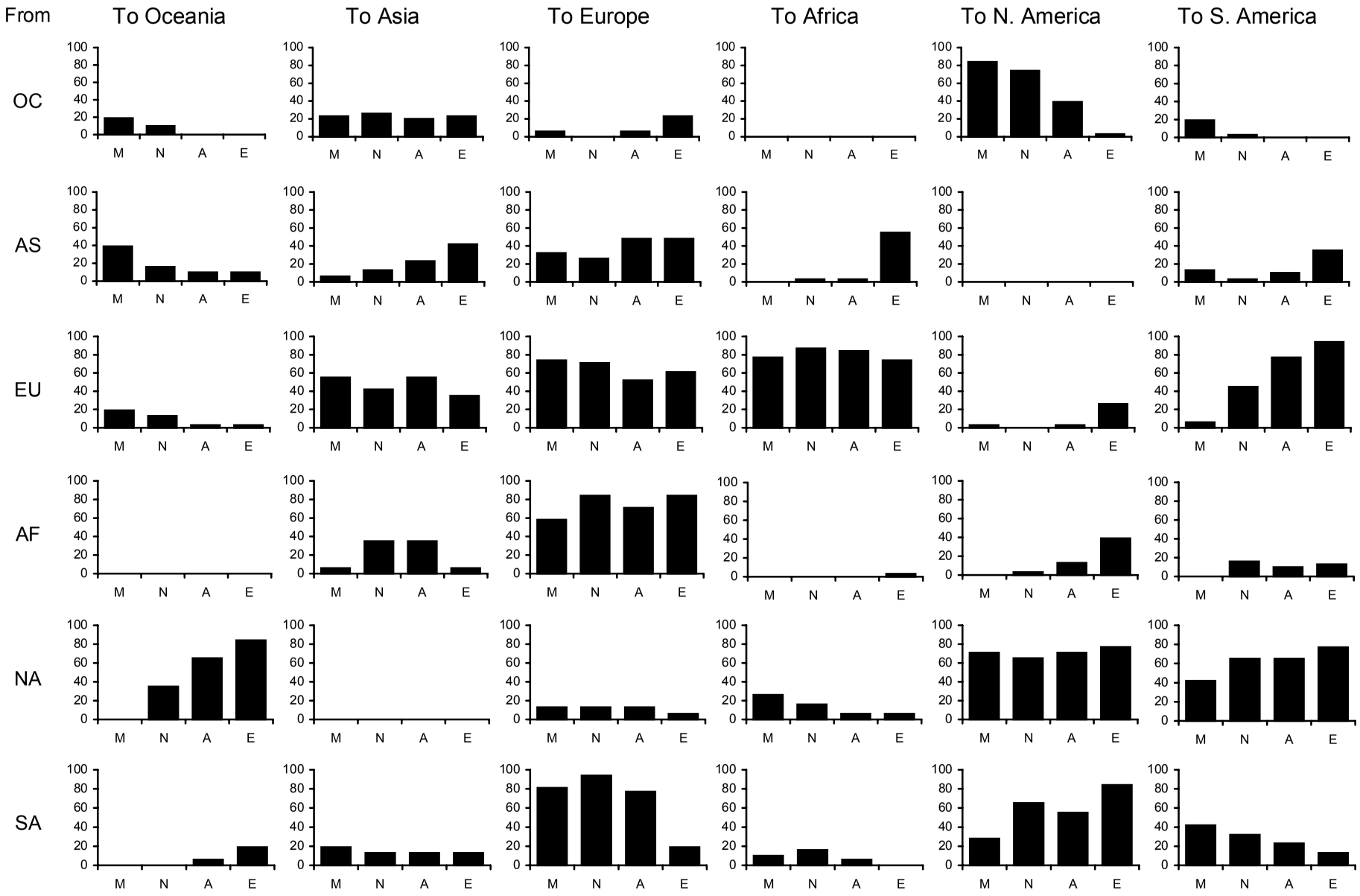
28 MHz Worldwide - May 2003



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