

Amateur Radio in the 21st Century

Steve Nichols G0KYA

Chairman, Propagation Studies Committee

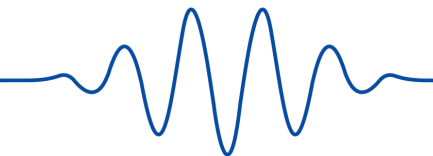


What can radio amateurs do? What new tools can AR offer for HF propagation research?



Radio Society of Great Britain

Advancing amateur radio since 1913



History



“It is are raining not here also”

1961



Present day



2016 – Tim Peake, 10 amateur radio UK schools contacts with ISS – thousands inspired.

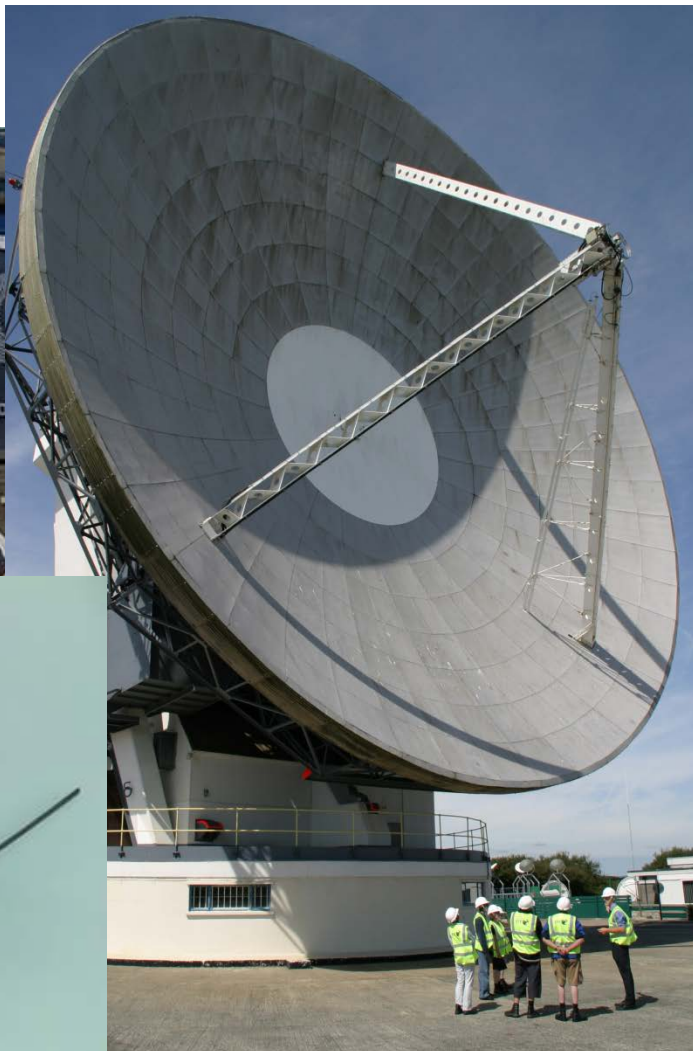
Present day



2017 - Amateur radio moonbounce from Goonhilly



Present day



FunCube: Providing daily telemetry to schools on 145MHz



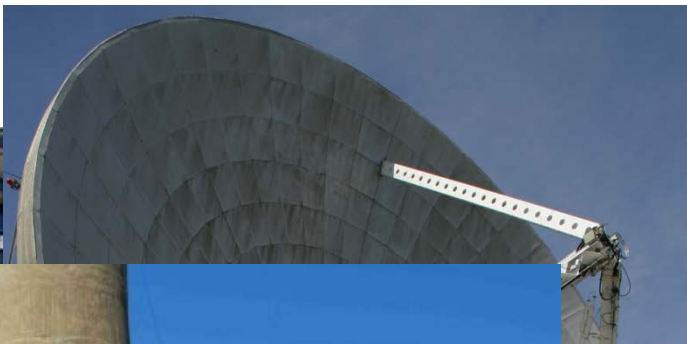
Present day



DXpeditions: K1N logged 138,409 contacts



Present day



YOTA 2017 – 80 young people from around the world



Amateur radio 2017

- There are approximately 30,000 active radio amateurs in the UK (80,000 licences and 21,000 RSGB members)
- There are about three million amateurs worldwide, about 25% are in the USA.
- The UK has three licence levels:

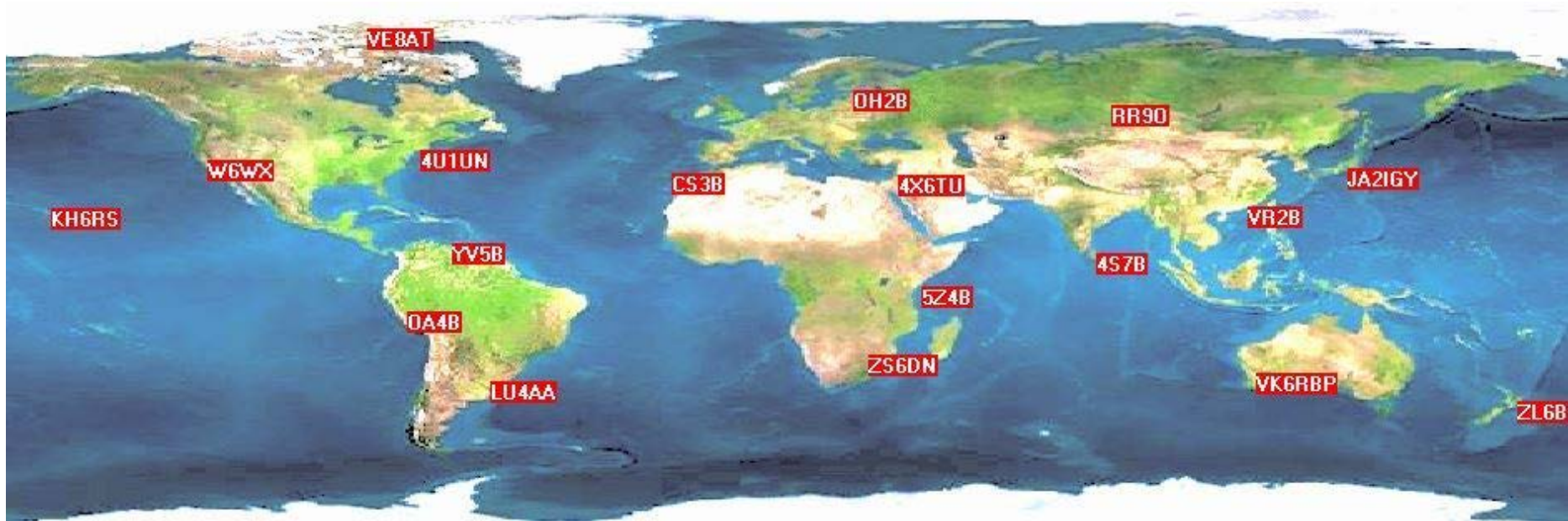
Foundation – 10 Watts

Intermediate – 50 Watts

Advanced – 400 Watts

- UK radio amateurs can use designated bands from 136 kHz to 134 GHz
- Popular HF bands are 160m (1.8 MHz) to 10m (28 MHz)
- Licences require basic knowledge of propagation, hence the need for ongoing education

Tools – International Beacon Network

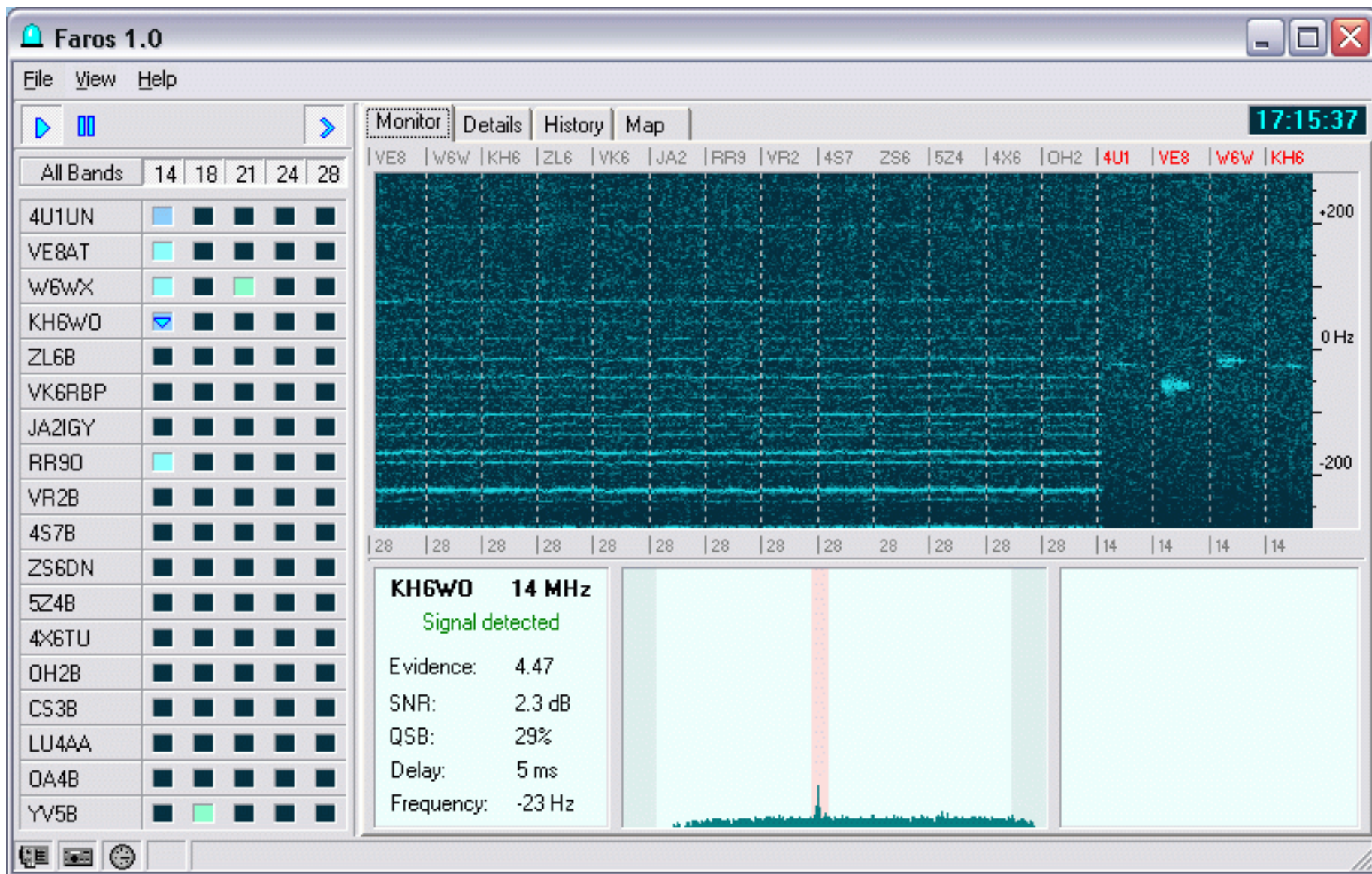


The NCDXF, in cooperation with the IARU, constructed and operates a worldwide network of high-frequency radio beacons on 14.100, 18.110, 21.150, 24.930, and 28.200 MHz.

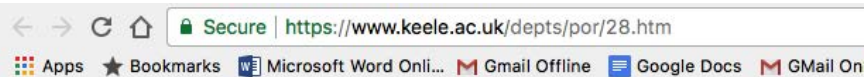
Beacons step down from 100, 10, 1 and 0.1 Watts



Tools – IBP network and Faros



Tools – 10m and 6m beacons



28169	ZB2TEN	Gibraltar	IM76HD	4	1/4 Vert	Omni	A1	24?											
28171	XE1FAS	Publa PU	EK09UB	12	Dipole		A1	24											
28173.0	IZ1EPM	27k NE Turin	JN35WD	20	1/2 Vert	Omni	A1	24											
28174	VE1VDM		FN85AA				A1	?											
28175	VE3TEN	Ottawa ON	FN25	10	GP	Omni	A1	24											
28176.9	HP1RCP	Cerro Jefe	FJ09HD	5	Slope Dip		A1	24											
28177	IW1AVR	Cravanzana		5	Vertical		A1	?											
28178	IQ0GV		JN61TR				A1	?											
28180.3	I1M	Bordighera	JN33UT	5/20	2x5/8 Vert	Omni	A1	30/60min											
28182.4	SV3AQR	Amalias	KM07QS	4	GP	Omni	A1	24											
28183.2	XE1RCS	Cerro Gordo	EK09OS	8	AR10	Omni	A1	24											
28184.0	VE2REA	Quebec QC	FN46IT				A1	24											
28185	VA3SRC	Burlington ON	FN03BE	5	Dipole		A1	PT											
28187.6	VE7KC	Penticton BC	DN09EL				A1	24											
28188	OE3XAC	Kaiserkogel	JN78SB	20	7/8 GP@750m	Omni	A1	24											
28188.1	JE7YNQ	Fukushima	QM07				A1	24											
28188.9	SV5TEN	Raad	KM46CK	5	Vertical	Omni		24											
28189.5	LU2DT	Mar del Plata	GF12	5	Vert. Dip.	Omni	A1	psk											
28189.8	LU8XW	Ushuaia	FD55UE				A1	?											
28190	LU3HFA	Cordoba CD	FF78UP	5	Vertical	Omni	A1	24?											
28190	LU4VI	Villa Regina	FF60VI				A1	24											
28191.5	A62ER	Sharjah UAE	LL75QI				A1	OP?											
28192	EP4HR	Shiraz	LL69GP	20/2/0.2	Dipole		A1	24											
28193	EI7GR		IO53MG				A1	?											
28192.9	VE4ARM	Austin MB	EM09HW	5	GP	Omni	A1	24											
28193.5	A47RB	Oman	LL93FO	10	Vertical	Omni	A1	OP?											
28193.5	LU2XPK		FF66DE				A1	?											
28193.9	IW4ERI		JN54AS	1.5			A1	?											
28194	IW4ERI		JN54AS				A1	?											
28195.1	IY4M	Bologna	JN54QK	20	5/8 GP	Omni	A1	H>H+30m											
28196	VA3ITA	Bramton ON	FN03CW				A1	IRREG											
28196.1	LU4JJ	Concordia ER	GF08XO				A1	24											
28196.7	LU5FB	Rosario SF	FF97PB				A1	24											
28197.0	VE7MTY	Vancouver BC	CN89	5	Vertical	Omni	A1	24											
28197.7	IK3OTW						A1	?											
28193	LU2ERC	Ensenada	GF15AD	10	Vertical	Omni	A1	24											
28198	LU9FE		FF98GR				A1	?											
28199	LW6DJD	La Plata	GF15AC	5			A1	?											
28199.3	LU1FHH	El Trebol SF					A1	24											
28200.0	4U1UN	UN New York	FN30AS	100-0.1	Vertical	Omni	A1	IBP cycle											
28200.0	VE8AT	Eureka,Nunavut	EQ79AX	100-0.1	Vertical	Omni	A1	IBP cycle											
28200.0	W6WX	Mt Umunhum CA	CM97BD	100-0.1	Vertical	Omni	A1	IBP cycle											
28200.0	KH6RS	Laie, Oahu HI	BL10TS	100-0.1	Vertical	Omni	A1	IBP cycle											
28200.0	ZL6B	Nr Masterton	RE78TW	100-0.1	Vertical	Omni	A1	IBP cycle											
28200.0	VK6RBP	28k SE Perth	OF87AV	100-0.1	Vertical	Omni	A1	IBP cycle											
28200.0	JA2IGY	Mt Asama	PM84JK	100-0.1	Vertical	Omni	A1	IBP cycle											

G3USF's Worldwide List Of 50MHz Beacons

Updated 3 October 2017

Freq	Call	Town	Loc	Pwr	Antenna	QTF	Mode	Status	Last Rept
40021	OZ7IGY	Jystrup	J055WM	20	H Dipole	Omni	A1/P14	24	0317
40050	GB3RAL	Nr Didcot	I091IN				A1JT65B	24	NonOp

40MHz Beacons

50MHz Beacons

Beacons in IARU Region 1 will be moving to frequencies above 50400

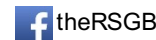
50000	GB3BUX	Nr Buxton	I093BF	25	HTurnstiles	Omni	A1	24	0617
50000.7	F1VJT	Hyeres	JN23XD	2	GP	Omni	A1	OP?	0517
50001	BV2B	Taipei	PL05SA	10	GP	Omni	A1	24	0616
50001	BV8YB								0617
50001	VE1UW	Pictou NS	FN85QN				A1	?	0817
50001	VE9SIX		FN21tr				A1		0517
50001.4	IW3FZQ	Monselice PD	JN55VF	8	5/8 GP	Omni	A1	24	0817
50002	IK4ISR	S.Georgio Piano	JN54QQ					IRREG	0516
50002	PY2RPT	Americana	GG67TG	5	Inv Vee	Omni	A1	24	0616
50002	F6KBO		IN88GN	10	Halo	Omni	A1	?	0917
50003	VO1FRR	40k NW St John	NLGN37JS	10	Fold Dip	Omni	A1	IRREG	0917
50004	A47RB	Oman	LL93FO					24?	0216
50004	I0JX	Rome	JN61GW	10	5/8 Vert	Omni	cw	24	0917
50004.85	I0JX						FT8		0917
50004.5	AH2G	Mt Barrigada Guam	QK23	50	Horiz Loop	Omni	A1	24	0417
50005	9M4SIX	Penang Island	OJ05DJ	50	5/8 GP	Omni	A1	24	0416
50005	EI0SIX	Enniskerry	I063VE			Omni	P14/cw24	1/5min	0917
50005	GB3MCB/SS	Austell	I0700J	40	Dipole	E/W	F1	5mcycle	0917
50006	A71A	Doha	LL55SH	10	Vertical	Omni	A1	?	0616
50006	PY2SFY		GG77GA				A1	?	0716
50006	IW9GDC	Messina	JM78SD		Big Wheel			P14+cw	0817
50007	VA2ZFN	Mt Kanasuta QC	FN08HE	4	Halo	Omni	A1	24	0917
50007	EA7URC		IM77RQ				A1	24?	0917
50007	HG1BVB	Horman	JN87FI	20	X-Dip	Omni	F1	24	0917
50007	ZD7VC	St Helena	IH74	45	M2 Loop@20M		A1	OP?	0516+
50007	LU8DZE							?	0917
50007.5	F7ZKY		IN96LV						0917
50007.8	DU1EV	Metro-Manila	PK04MP	10	1/2 GP	Omni	A1	24	0517

Lists managed by Martin Harrison G3USF



Radio Society of Great Britain

Advancing amateur radio since 1913



theRSGB



@theRSGB

Tools – modes available

Traditional modes

- CW – Morse (0 db to -12dB SNR)
- RTTY – radio teletype (-5 dB)

Weak signal modes

- PSK31/63 – phase shift keying (-10 dB SNR)

Even weaker signal modes

- FT8 - Franke-Taylor design, 8-MFSK modulation (-20/-24dB SNR)
- JT65 – Joe Taylor 65-MFSK (-28 dB SNR)
- WSPR – Weak Signal Reporter Network FSK (-29dB SNR)

* Measured in 2500 Hz noise bandwidth

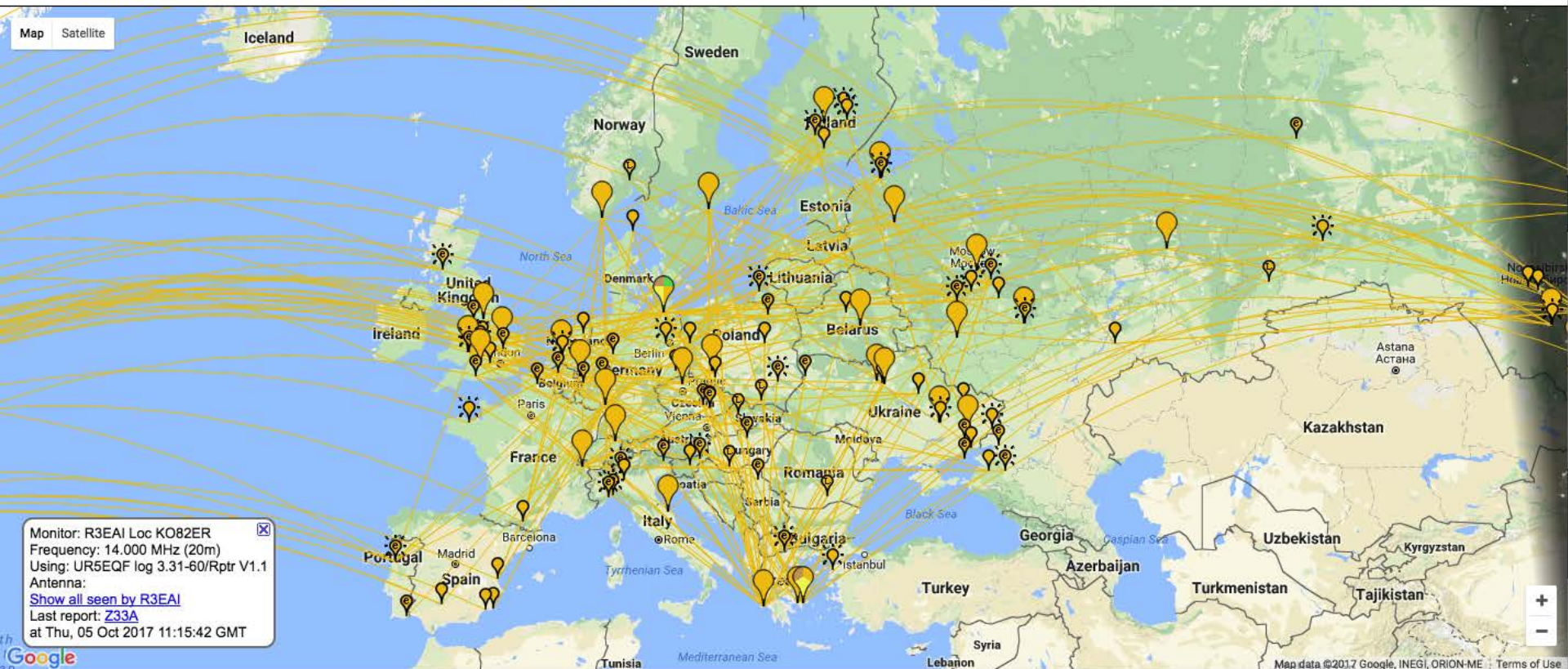
PSKreporter

Secure | <https://pskreporter.info/pskmap.html>

Apps | Bookmarks | Microsoft Word Onli... | Gmail Offline | Google Docs | Gmail Online | AJ Bell Youinvest SIPP | Share Portfolio | Thi... | www.convectivewa... | Homepage | NOAA | ...

On 20m | show signals | rcvd by anyone | using PSK31 | over the last 1 hour | Go! | [Display options](#) | [Permalink](#)

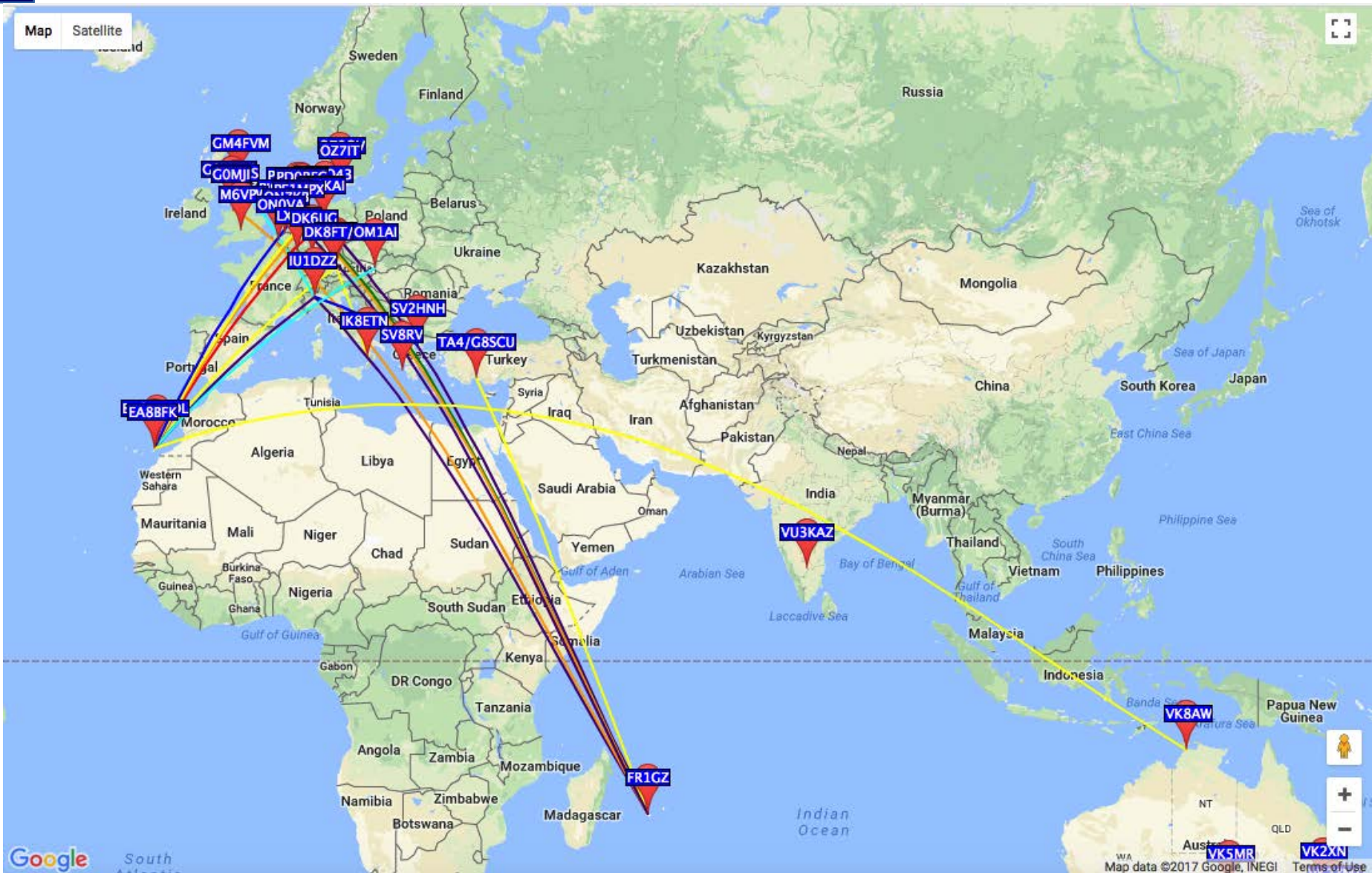
Automatic refresh in 5 minutes. Large markers are monitors. [Display all reports.](#)
There are [32 active PSK31 monitors](#) on 20m. [Show all PSK31 on all bands.](#) [Legend](#)



[System statistics](#). Comments, problems etc to [Philip Gladstone](#). [Online discussion](#) of problems/issues. Reception records: 1,810,916,258

[PSKREPORTER.INFO](https://pskreporter.info)

WSPR



Radio Society of Great Britain

Advancing amateur radio since 1913

f theRSGB

@theRSGB

WSPRnet

User login

Username *

GOKYA

Password *

.....

[Create new account](#)
[Request new password](#)

Frequencies

USB dial (MHz): 0.136, 0.4742, 1.8366, 3.5926, 5.2872, 7.0386, 10.1387, 14.0956, 18.1046, 21.0946, 24.9246, 28.1246, 50.293, 70.091, 144.489, 432.300, 1296.500

Spot Count

792,084,197 total spots
1,089,780 in the last 24 hours
58,032 in the last hour

Navigation

Database

Specify query parameters

50 spots:

Timestamp	Call	MHz	SNR	Drift	Grid	Pwr	Reporter	RGrid	km	az
2017-10-05 11:58	HB9LEK	14.097012	-8	0	JN47ij	5	PA5VEN	JO22oj	610	337
2017-10-05 11:58	F5LHF	14.097037	-5	0	JN25em	5	PA5VEN	JO22oj	767	4
2017-10-05 11:58	G0CCL	14.097179	-27	0	JO02	5	PA5VEN	JO22oj	288	90
2017-10-05 11:58	KB9MVV	7.039991	-15	0	EN52tj	5	W3JHG	FN03	769	78
2017-10-05 11:58	LA3JJ	10.140290	-7	0	JO59bh	5	ON7KB	JO21ei	956	205
2017-10-05 11:58	W3PM	1.838004	-28	0	EM64or	1	K9PAW	EN61ar	785	353
2017-10-05 11:58	VK6CQ	10.140125	-24	0	OF78wa	2	VK2TPM	QF56of	3290	103
2017-10-05 11:58	K6PZB	432.301492	+10	0	CM88nk	20	KJ6MKI/U	CM88oi	12	142
2017-10-05 11:58	VK2RH	10.140180	-9	0	QF56oc	0.2	VK2TPM	QF56of	14	0
2017-10-05 11:58	WH2XCR	0.475617	-23	0	BL11je	1	VE6JY	DO33or	5197	35
2017-10-05 11:58	VK2FS	10.140231	-5	0	QF56	0.2	VK2TPM	QF56of	36	140
2017-10-05 11:58	G4GCI	14.097005	-23	0	IO90gu	1	VA3ZV	EN82wv	5885	295
2017-10-05 11:58	WI2XBQ	0.475633	-11	0	CN70vr	1	VE6JY	DO33or	1678	27
2017-10-05 11:58	JR1IZM	0.475772	-19	0	QM06aq	5	J11CBW	PM96uc	71	205
2017-10-05 11:58	F5LHF	14.097038	-24	0	JN25em	5	VA3ZV	EN82wv	6546	301
2017-10-05 11:58	G0UJA	28.126133	+8	-1	JO01bj	0.5	G8AXA	JO01ai	7	231
2017-10-05 11:58	M0RTP	14.097085	-19	0	IO91pk	5	VA3ZV	EN82wv	5905	295
2017-10-05 11:58	G4GCI	14.097005	+2	0	IO90gu	1	DK6UG	JN49cm	703	98
2017-10-05 11:58	KB9MVV	7.039995	+6	0	EN52tj	5	VE3YX	FN16fd	957	60
2017-10-05 11:58	G0CCL	14.097180	-12	0	JO02	5	VA3ZV	EN82wv	5959	295
2017-10-05 11:58	LA3JJ	10.140277	-12	0	JO59bh	5	G8UDI	IO93vj	914	228
2017-10-05 11:58	EA5CYA	28.126039	-17	0	IM99xv	0.2	ILU1DZZ	JN45hk	938	46



Reverse Beacon Network

Gmail - Inbox band: 160m,80m,60m,40m

www.reversebeacon.net/dxsd1/dxsd1.php?f=20

Apps Bookmarks Microsoft Word Online Gmail Offline Google Docs GMail Online AJ Bell Youinvest SIPP

REVERSE BEACON NETWORK

welcome main dx spots nodes downloads about contact us

show/hide my last filters

band: 160m,80m,60m,40m,30m,20m,17m,15m,12m,10m rows to show: 50

cancel filter selection / search spot by callsign

de	dx	freq	cq/dx	snr	speed	time
HB9DCO	UA3KW	14010.3	CW CQ [LoTW]	7 dB	27 wpm	0905z 13 Oct
9V1RM	ST85T	14021.9	CW CQ	14 dB	22 wpm	0905z 13 Oct
HA6PX	4X6TU	21150.1	CW NCDXF	9 dB	20 wpm	0905z 13 Oct
HA6PX	UA3KW	14010.3	CW CQ [LoTW]	43 dB	28 wpm	0905z 13 Oct
SV8RV	DR60 SAL	14071.5	PSK63 CQ	12 dB	63 bps	0905z 13 Oct
SV8RV	R6AK	14070.8	PSK63 CQ [LoTW]	19 dB	63 bps	0905z 13 Oct
SV8RV	ON6DC/A	14033.0	CW CQ	5 dB	24 wpm	0905z 13 Oct
ES5PC	UA3KW	14010.2	CW CQ [LoTW]	8 dB	27 wpm	0905z 13 Oct
DJ9IE	OV1BCN	5290.5	CW BCN	19 dB	20 wpm	0905z 13 Oct
OH6BG	4X6TU	21150.1	CW NCDXF	12 dB	22 wpm	0905z 13 Oct
VE7AB	W1YL	7021.3	CW CQ	25 dB	21 wpm	0905z 13 Oct
SM6FMB	R6AK	14070.5	PSK63 CQ [LoTW]	16 dB	63 bps	0905z 13 Oct
SV1CDN	UA3KW	14010.4	CW CQ [LoTW]	13 dB	27 wpm	0905z 13 Oct
R6YY	9A7TVH	18088.0	CW CQ	3 dB	20 wpm	0905z 13 Oct
R6YY	UA3KW	14010.3	CW CQ [LoTW]	16 dB	27 wpm	0905z 13 Oct
SE0X	DK4AN	7030.1	CW CQ	4 dB	17 wpm	0905z 13 Oct
GW8IZR	EB4IC	14050.0	CW CQ	14 dB	20 wpm	0905z 13 Oct
BD7JNA	UA3KW	14010.3	CW CQ [LoTW]	6 dB	27 wpm	0905z 13 Oct
ON6ZQ	UA3KW	14010.3	CW CQ [LoTW]	21 dB	28 wpm	0905z 13 Oct
JA4ZRK	JL1BHN	7007.0	CW CQ	17 dB	20 wpm	0905z 13 Oct
DJ1RK	UA3KW	14010.4	CW CQ [LoTW]	34 dB	27 wpm	0905z 13 Oct

options: show/hide

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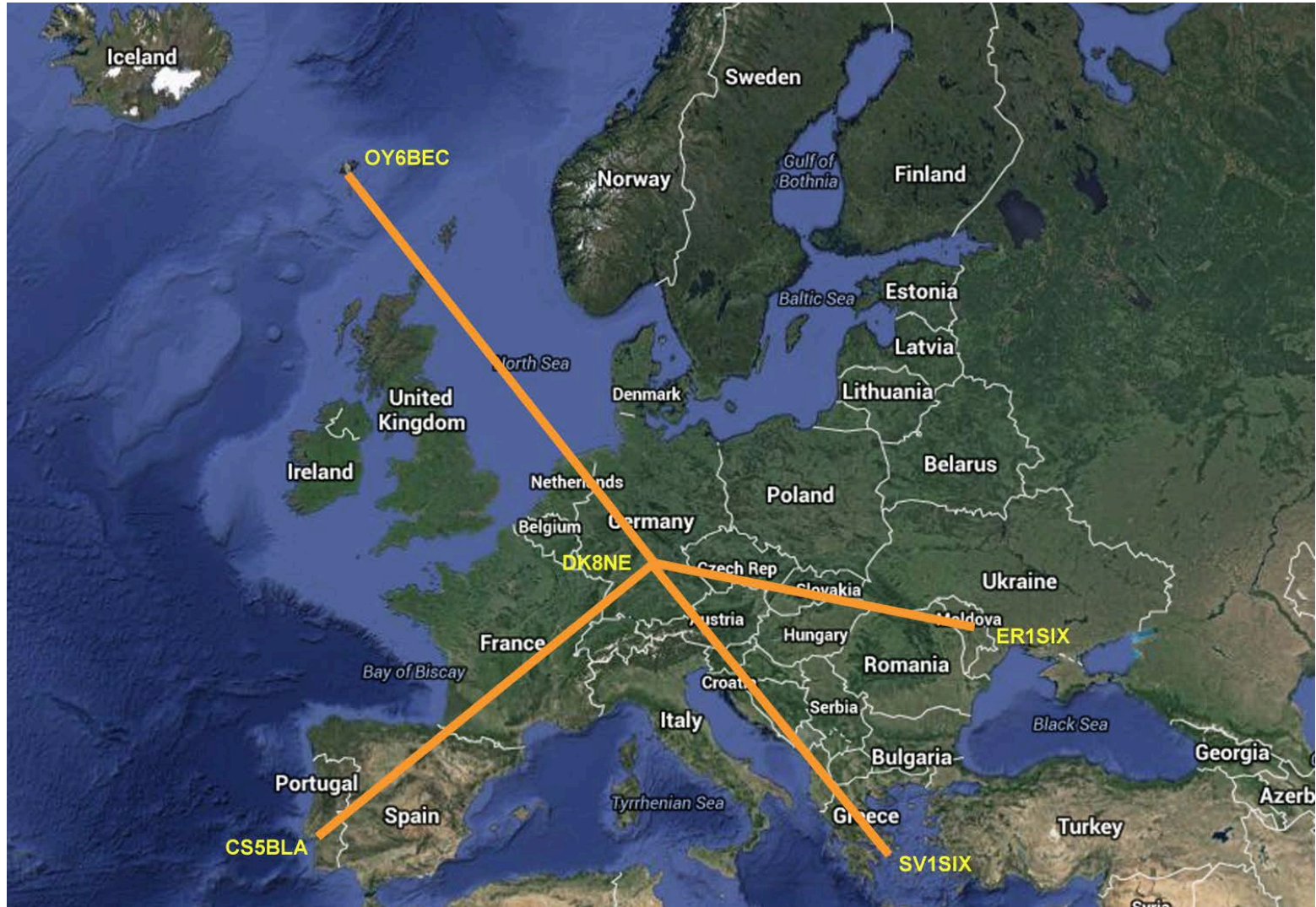
we have 149 skimmers online

skimmers online:

- 3B8CW - 17m, 15m
- 7L4IOU - 40m
- 9A1CIG - 40m, 20m
- 9M2CNC - no spot last 15min
- 9M2ZAK - no spot last 15min
- 9V1RM - 20m, 17m
- AA4VV - 160m, 80m
- AC0C - no spot last 15min
- BD2RJ - 40m, 20m, 15m
- BD4WN - no spot last 15min
- BD7JNA - 15m
- BD7LLL - 40m, 20m, 17m
- BG4GOV - 40m, 20m, 15m
- BG4WOM - 40m, 17m, 15m
- BG8NUD - 20m, 17m
- CX7ACH - 40m
- DF4XX - 40m, 20m
- DJ1RK - 80m, 40m, 20m
- DJ3AK - 30m
- DJ6HP - 30m
- DJ9IE - 160m, 80m, 40m, 30m, 20m, 15m
- DV4TE - 80m, 40m, 20m, 15m

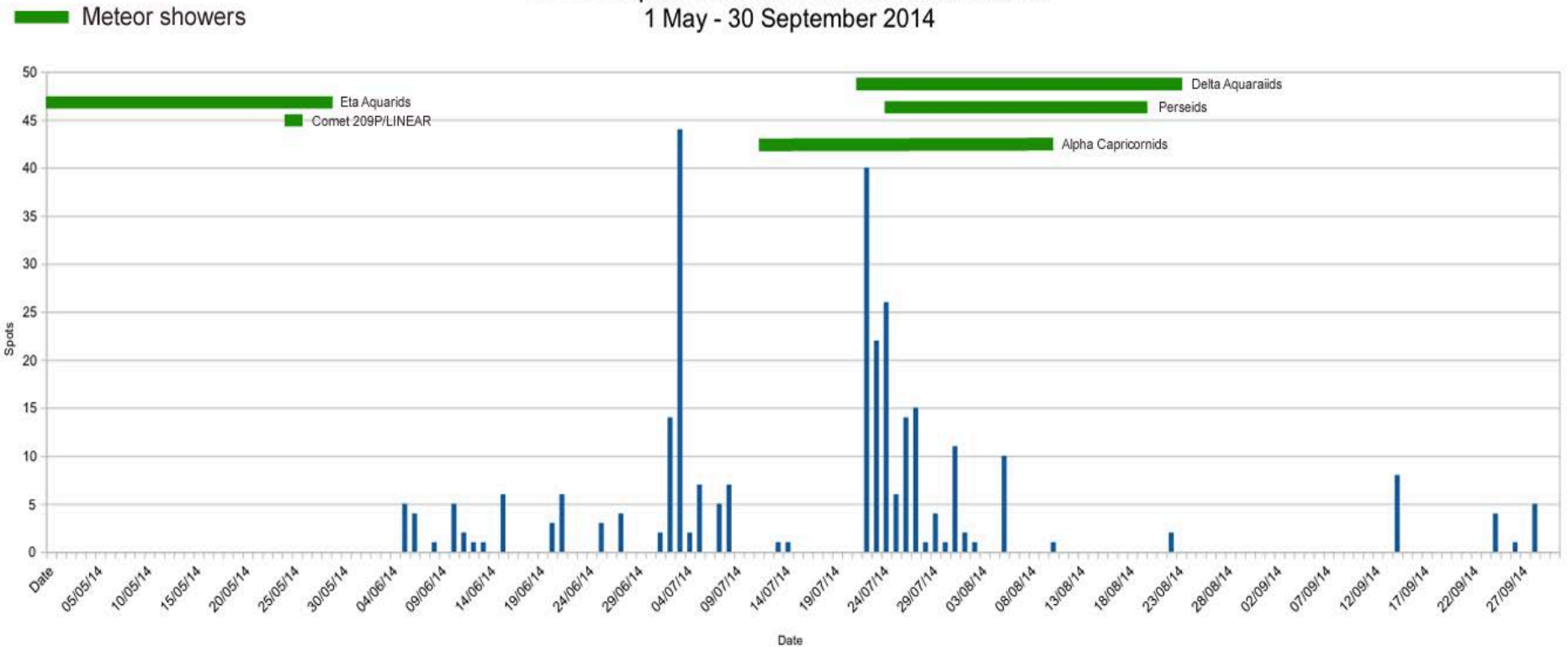


Reverse Beacon Network



Reverse Beacon Network

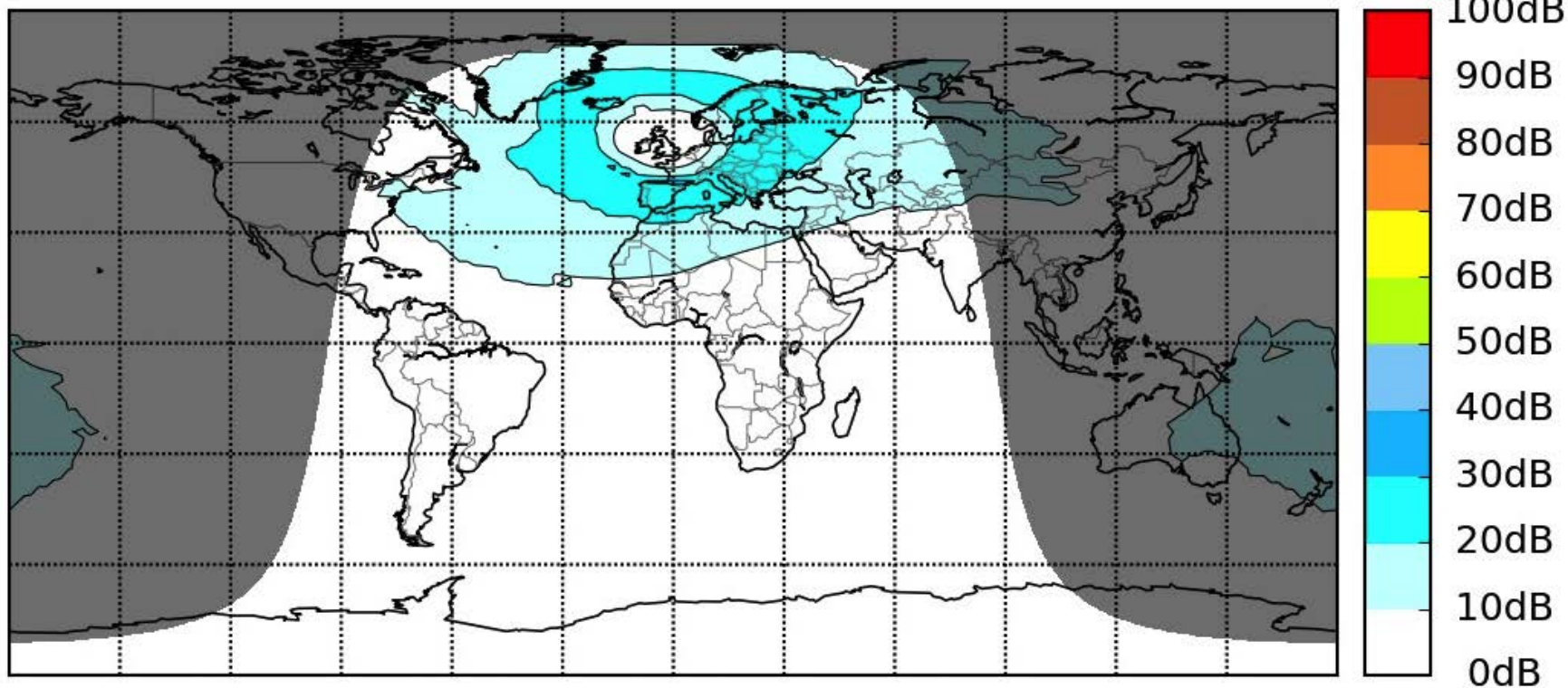
6m RBN spots from OY6BEC received at DK8NE
1 May - 30 September 2014



Predtest.uk (Gwyn G4FKH)

Mid U.K. - Area Coverage

SNR, 14.03MHz, 12:00UTC, Oct 2017, R₁₂: 17, 100W to a Dipole



Hour (UTC): 12:00 Band: 14.02MHz (20m) Type: SNR

Uses ITURHFPROP engine



- TODAY
- ARCHIVE
- COMPARE
- AVERAGES
- WEATHER
- Home

Live data

Thu 05 Oct 2017

Refresh for latest data: [Update Data](#)

FF051 Fairford or RL052 Chilton

F2 (foF2) and Es (foEs) Critical Frequency / F2 Maximum Usable Frequency (MUF) for selected skip distances

Source: FF051 Fairford or RL052 Chilton, Global Ionospheric Radio Observatory



Soon to be Propquest.co.uk

Current contents – VHF (G3YLA)

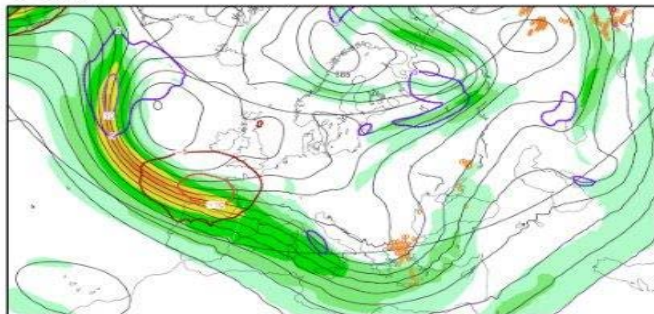
Looking for Sporadic E – May to end of August

06Z14JUN2016

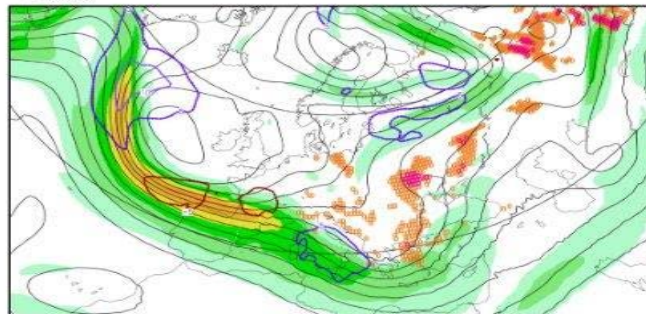
GFS 00Z RUN

300MB GEOPOTENTIAL HEIGHT (DM CONTOURS) AND WIND (KTS. ISOTACHS)

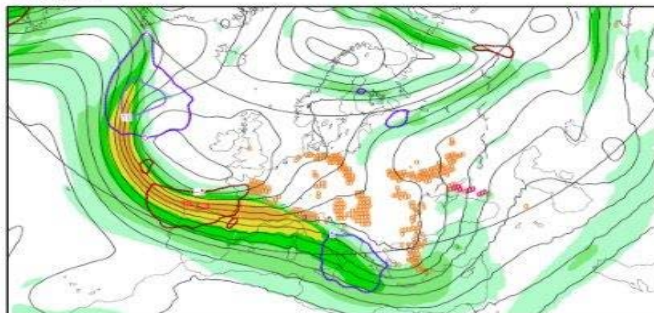
06:00



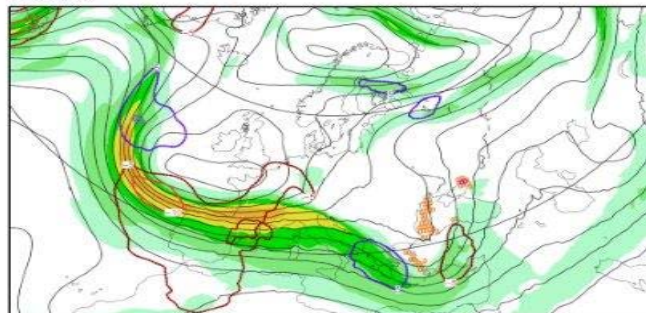
12:00



18:00



00:00



POLAR STEREOGRAPHIC PROJECTION

WEATHERQUEST LTD

300mb jet stream





Any questions

