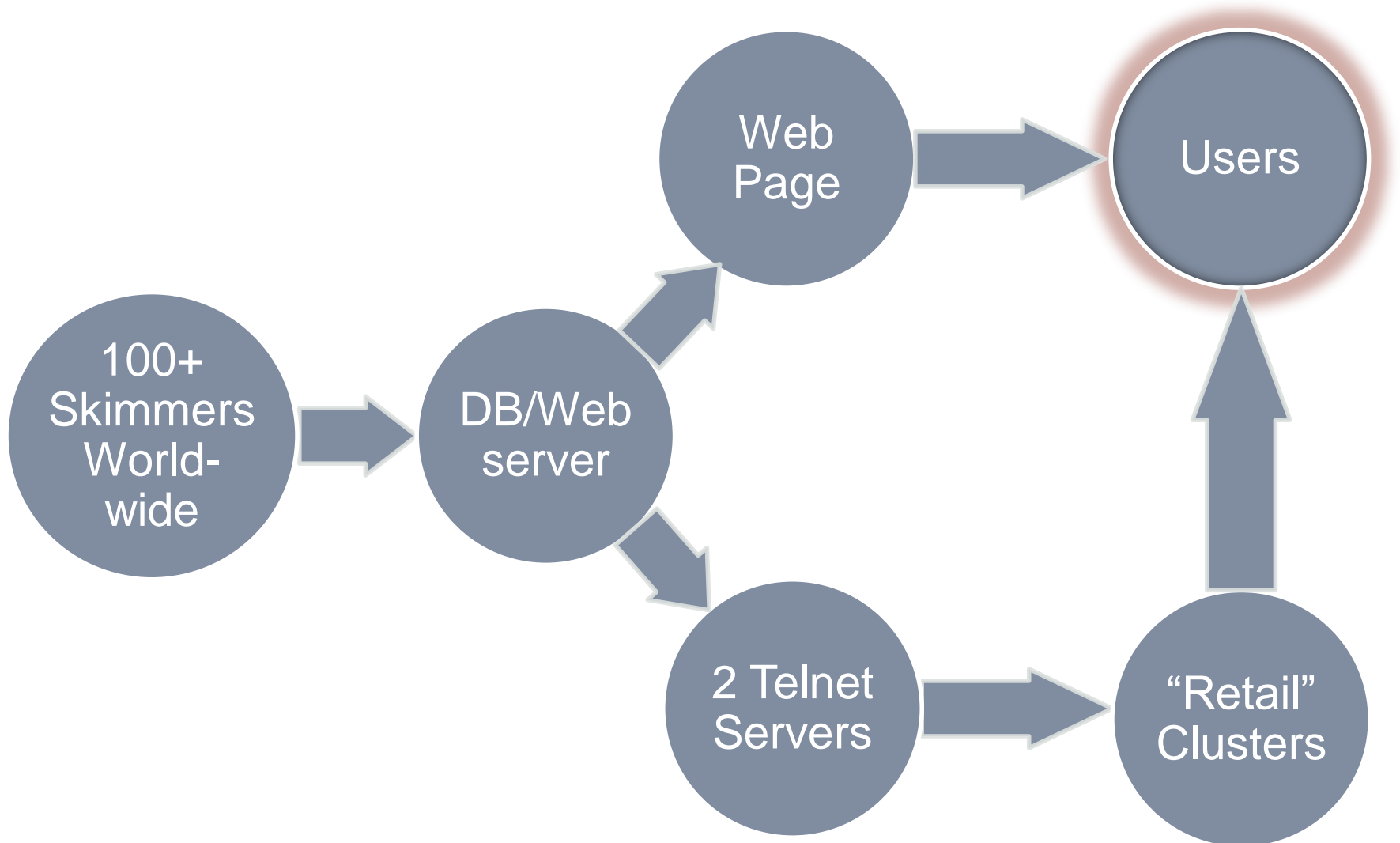


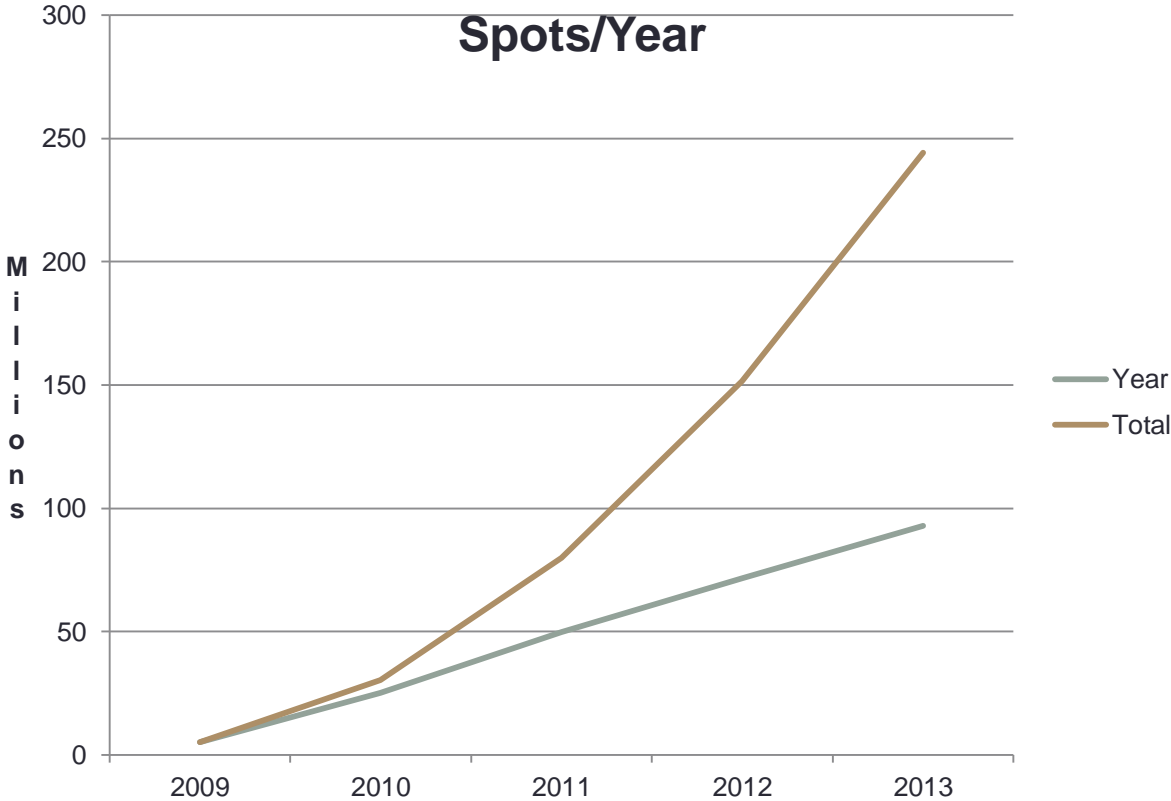
THE REVERSE BEACON NETWORK – SPOTS AND MORE

Pete Smith, N4ZR and the RBN Team

How the RBN Works



RBN Spots by Year



What's a Skimmer?

- A volunteer operator – no experience required
- A Software Defined Receiver – US\$20-900
 - Receives bands, not individual frequencies
- A multi-band antenna or antennas
- CW Skimmer software running on a Windows XP/7/8 PC. Some now also running DL4RCK's RCKSkimmer for RTTY and PSK31
- Aggregator software – provided by the RBN free
- A moderate-speed Internet connection

Milestones

- **2008** – CW Skimmer released and RBN begun as a web-based system..
- **2008-9** - SDR-IQ and QS1R receivers introduced.
- **2009** - First RBN spots
- **2010** – F5VIH/SV3SJ developed Spots Analysis Tool
- **2011-13** – Huge increase in spot volume and number of Skimmers
- **2013** – Release of Viewprop. Beginning of RBN/Yasme Gapfiller program

The RBN Web Site

Firefox main page - Reverse Beacon Network

www.reversebeacon.net/main.php

REVERSE BEACON NETWORK SSN:118 SFI:156 A:4 K:0 callsign lookup:

welcome main dx spots skimmers downloads about contact us

options:
show/hide

news
RBN blog: stay tuned!
we have 101 skimmers online
skimmers online:
AA4VV - 80m,40m,160m
BH4TXN -
BY5CD - 20m,40m
DF7GB -
10m,20m,30m,40m,17m,12m,15m
DJ3AK -
10m,20m,30m,40m,12m,15m
DJ9IE - 40m
DK0TE - 10m,20m,30m,40m,15m
DK8NE -
DK9IP -
40m,17m,12m,20m,15m,30m,10m
DL1AMQ -
DL1EMY -
40m,17m,10m,20m,15m,30m
DL2CC - 10m,20m,40m,15m
DL3KR - 40m
DL8LAS -
40m,17m,12m,10m,20m,30m
DL9GTB -
DQ8Z -
10m,20m,30m,40m,17m,12m,15m
EA4TX - 10m,20m,40m,15m
EA6VQ -
E6IZ - 20m,30m,80m,40m,17m
F8FKJ - 10m,20m,30m,12m,15m
G0PZA - 10m,20m,40m,15m
G4IRN - 10m
GW8ZR -
40m,17m,12m,20m,15m,30m
HA1VHF - 20m,15m

no filter selected, showing all spots rows to show: 50








search spot by callsign

de	dx	freq	cq/dx	snr	speed	time
N7TR	W1FJ	7004.8	CW CQ [LoTW]	24 dB	20 wpm	1142z 19 Dec
DK9IP	RL110RAEM	21034.9	CW CQ	34 dB	24 wpm	1142z 19 Dec
SV8RV	UN7RBF	14035.9	CW CQ	10 dB	22 wpm	1142z 19 Dec
PY1KN	EA8/DJ9BN	21023.0	CW CQ	8 dB	22 wpm	1142z 19 Dec
SK3W	UN7RBF	14035.9	CW CQ	39 dB	23 wpm	1142z 19 Dec
DL1EMY	RL110RAEM	21034.9	CW CQ	38 dB	28 wpm	1142z 19 Dec
DN4WA	UN7RBF	14035.9	CW CQ	42 dB	21 wpm	1142z 19 Dec

What You Can Get There

- Spots as They Happen

no filter selected, showing all spots rows to show:
search spot by callsign

de	dx	freq	cq/dx	snr	speed	time
RN4WA	 UR7VT	3541.0	CW CQ	5 dB	32 wpm	1950z 06 Jan
DL9GTB	 G3JKB	1830.0	CW CQ	20 dB	28 wpm	1950z 06 Jan
SK3W	 G3JKB	1830.0	CW CQ	19 dB	28 wpm	1950z 06 Jan
RZ3DVP	 OH3FM	1820.4	CW CQ [LoTW]	15 dB	23 wpm	1950z 06 Jan
V51YJ	 W1AW/4	24895.0	CW CQ [LoTW]	8 dB	27 wpm	1950z 06 Jan
HA2EQD	 UR4LQ	7010.4	CW CQ	4 dB	18 wpm	1950z 06 Jan
DL1EMY	 G3JKB	1830.0	CW CQ	16 dB	28 wpm	1950z 06 Jan

Archived Raw Data

November

01	Friday	2074KBytes	20131101.zip
02	Saturday	6941KBytes	20131102.zip
03	Sunday	14996KBytes	20131103.zip
04	Monday	3100KBytes	20131104.zip
05	Tuesday	1509KBytes	20131105.zip
06	Wednesday	1603KBytes	20131106.zip
07	Thursday	1874KBytes	20131107.zip
08	Friday	1823KBytes	20131108.zip
09	Saturday	4978KBytes	20131109.zip
10	Sunday	4347KBytes	20131110.zip
11	Monday	1599KBytes	20131111.zip
12	Tuesday	1450KBytes	20131112.zip

The Spots Analysis Tool

1. Select a comparison date
 MM/DD/YY

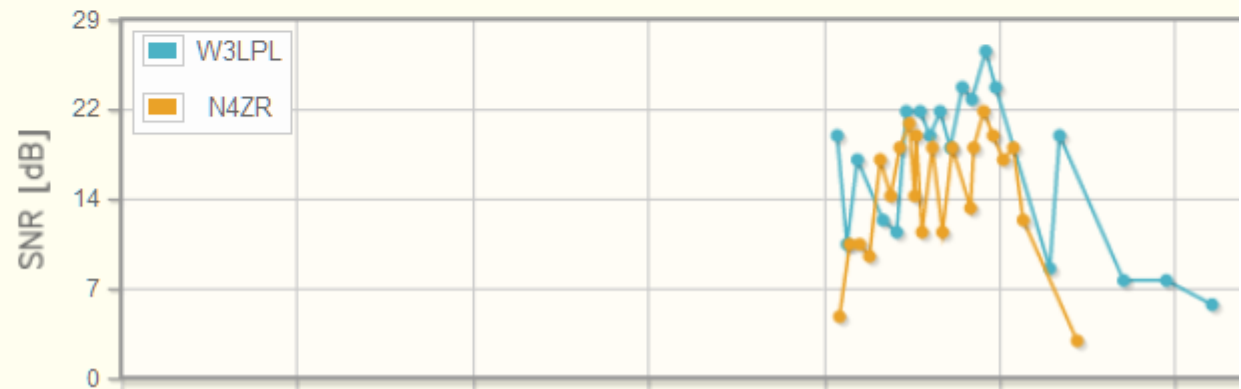
2. Select a Reverse Beacon
▼ Europe

- DF1LON 17782 spots
- DF7GB 49534 spots
- DJ9IE 38442 spots
- DK0TE 50715 spots
- DK8NE 6 spots
- DK9IP 60857 spots
- DL1EMY 55292 spots
- DL2CC 27136 spots
- DL3KR 17545 spots
- DL8LAS 58002 spots
- DL9GTB 38697 spots
- DQ8Z 56105 spots
- EA4TX 298 spots

Plot: SNR Freq

Spots for W3LPL N4ZR at DK9IP

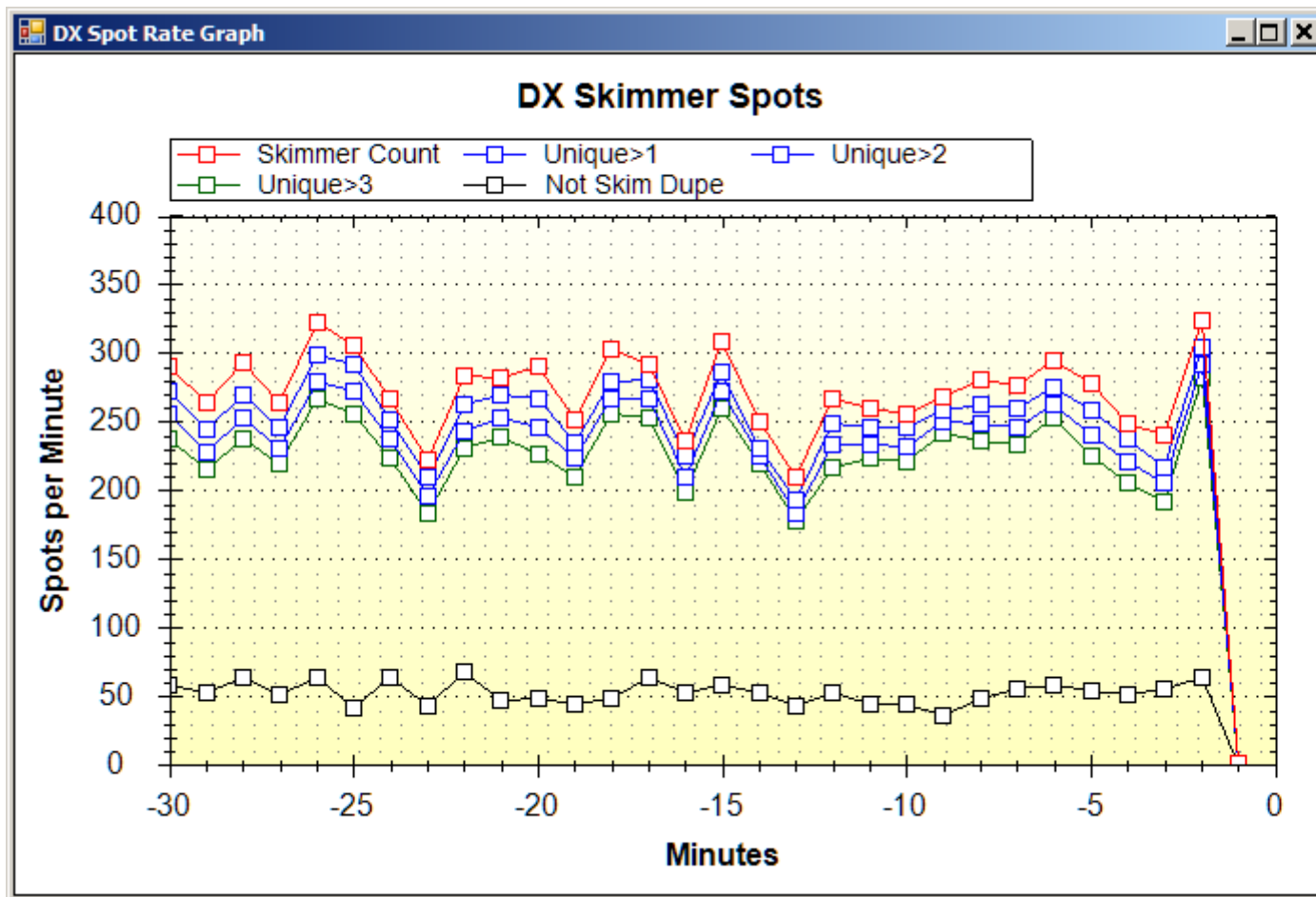
10m spots



Pros and Cons of RBN Spots

- 100x as many spots as traditional spotting network
- Everything spotted, not just those judged as “rare”
- Duplicate spots (though not on CC Cluster)
- Too many busted spots, despite 99% accuracy per Skimmer, because there are so many Skimmers
- Occasional frequency “images” due to SDR setup problems.

What the RBN Sends



Using RBN Spots

- Use filters that you set at DX cluster node or in client
 - Save favorite combinations in logging software
 - AR Cluster has extensive filtering options for RBN spots – CT1BOH quality filters really work!
 - CC Cluster does most filtering, dupe removal for you
- Develop techniques for jumping spots quickly
- Experiment!

Examples of Filtering

- AR Cluster: set/dx/filter call=N4ZR or (not skimmer and spottercont=NA) or ((skimmer and unique>2) and (spotterstate=[WV,MD,VA,PA,NC]))
- CCCluster: Use Client to set criteria and send to cluster

CC User

Users	DX = 13	WWV = 2	Login Msg	Ann	
Filter Type					
<input checked="" type="radio"/> Spotter State					
<input type="radio"/> Announce					
<input type="radio"/> Weather					
<input type="radio"/> DX State					
Band					
<input checked="" type="radio"/> All Defined					
<input type="radio"/> 160					
<input type="radio"/> 80					
<input type="radio"/> 40					
<input type="radio"/> 30					
<input type="radio"/> 20					
<input type="radio"/> 17					
<input type="radio"/> 15					
<input type="radio"/> 12					
<input type="radio"/> 10					
<input type="radio"/> 4					

V8	W9	W0	VE	
MI	<input type="checkbox"/> IN	<input type="checkbox"/> CO	<input type="checkbox"/> NB	<input type="checkbox"/> SK
OH	<input type="checkbox"/> IL	<input type="checkbox"/> IA	<input type="checkbox"/> NS	<input type="checkbox"/> AB
WV	<input type="checkbox"/> WI	<input type="checkbox"/> KS	<input type="checkbox"/> PE	<input type="checkbox"/> BC
		<input type="checkbox"/> MN	<input type="checkbox"/> NL	<input type="checkbox"/> NT
		<input type="checkbox"/> MO	<input type="checkbox"/> QC	<input type="checkbox"/> NU
		<input type="checkbox"/> NE	<input type="checkbox"/> ON	<input type="checkbox"/> YT
		<input type="checkbox"/> ND	<input type="checkbox"/> MB	
		<input type="checkbox"/> SD		

What Else?

- Antenna tests/comparisons
- Near real-time propagation reporting
- Potential for propagation research/validation of propagation predictions

Antenna Tests

Send TEST or CQ twice, your call 2-3 times, and look for spots

Call Sign	Flag	Call Letters	Freq	Mode	Signal	Speed
KA9SWE	USA	N4ZR	14064.3	CW CQ [LoTW]	33 dB	27 wpm
K6XT	USA	N4ZR	14064.2	CW CQ [LoTW]	35 dB	27 wpm
K3LR	USA	N4ZR	14064.3	CW CQ [LoTW]	13 dB	27 wpm
N6NC	USA	N4ZR	14064.2	CW CQ [LoTW]	9 dB	27 wpm
N7TR	USA	N4ZR	14064.2	CW CQ [LoTW]	32 dB	27 wpm
PJ2T	USA	N4ZR	14064.2	CW CQ [LoTW]	11 dB	27 wpm

QSY, change antennas, and TEST again

VE6AO	USA	N4ZR	14064.2	CW CQ [LoTW]	25 dB	28 wpm
K4XD	USA	N4ZR	14062.8	CW CQ [LoTW]	10 dB	27 wpm
SK3W	USA	N4ZR	14062.8	CW CQ [LoTW]	9 dB	27 wpm
VE6AO	USA	N4ZR	14062.7	CW CQ [LoTW]	7 dB	27 wpm
N7TR	USA	N4ZR	14062.8	CW CQ [LoTW]	8 dB	27 wpm

Or Use the Spots Analysis Tool

1. Select a comparison date
 MM/DD/YY

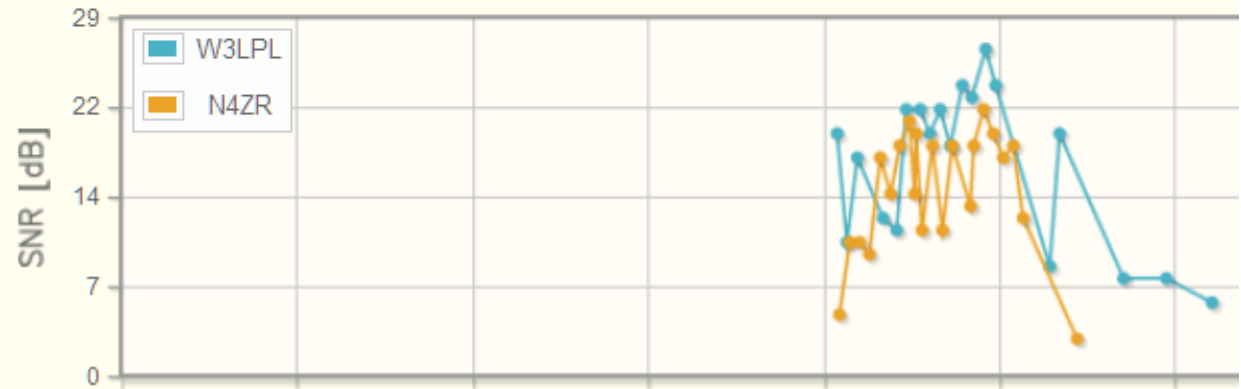
2. Select a Reverse Beacon
▼ Europe

- DF1LON 17782 spots
- DF7GB 49534 spots
- DJ9IE 38442 spots
- DK0TE 50715 spots
- DK8NE 6 spots
- DK9IP 60857 spots
- DL1EMY 55292 spots
- DL2CC 27136 spots
- DL3KR 17545 spots
- DL8LAS 58002 spots
- DL9GTB 38697 spots
- DQ8Z 56105 spots
- EA4TX 298 spots

Plot: SNR Freq

Spots for W3LPL N4ZR at DK9IP

10m spots



The Big New Idea

- Use RBN spots *to and from* an area you define to characterize propagation in near real time.

Which spots to capture

Spots with DE or DX near you

Maximum near-side spot distance (km):

Spots referencing certain calls

DE or DX starts with:

All spots (except duplicates)

Distance filter origin

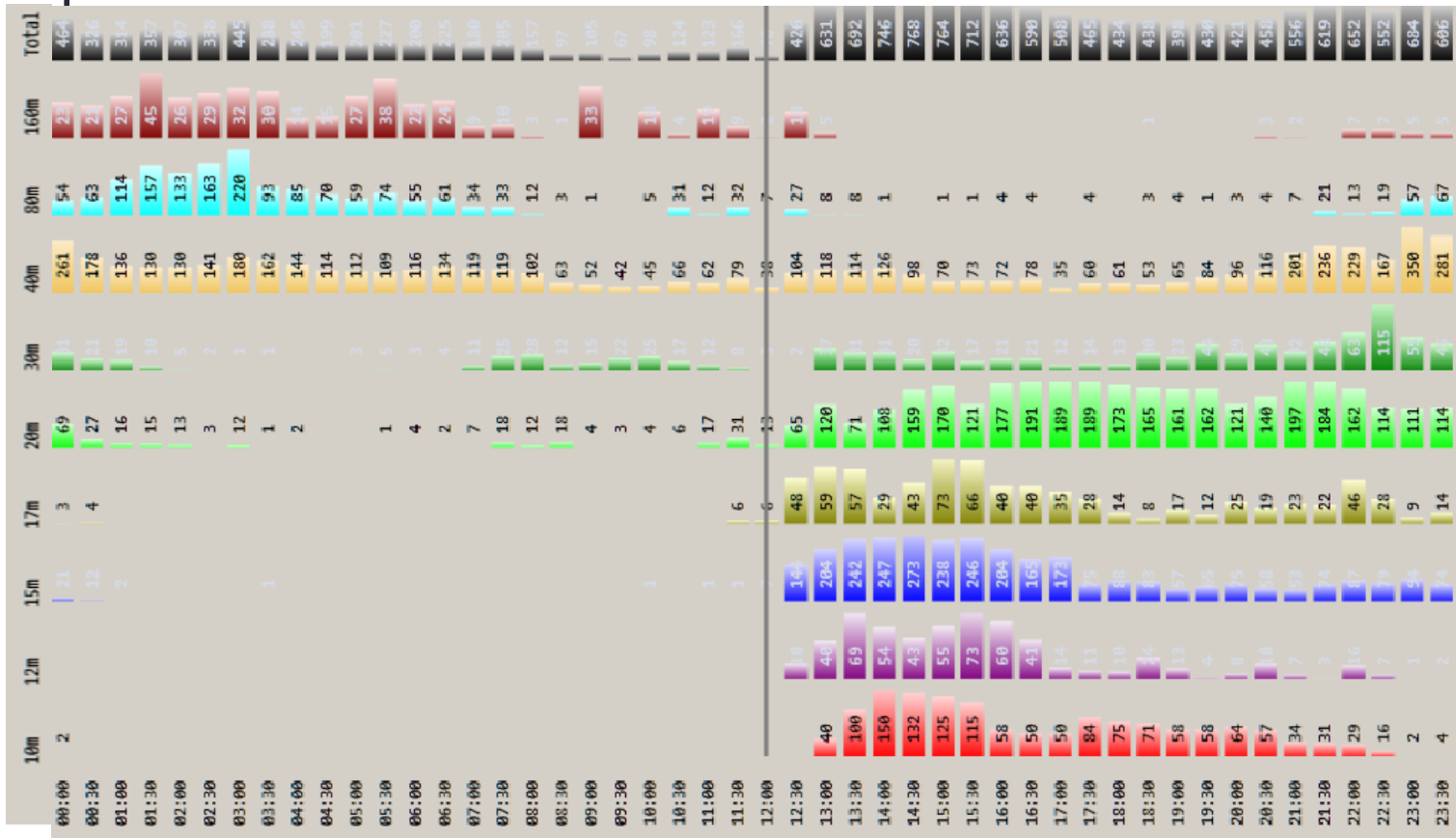
Set origin location for distance filter from User tab

Origin location for spots:

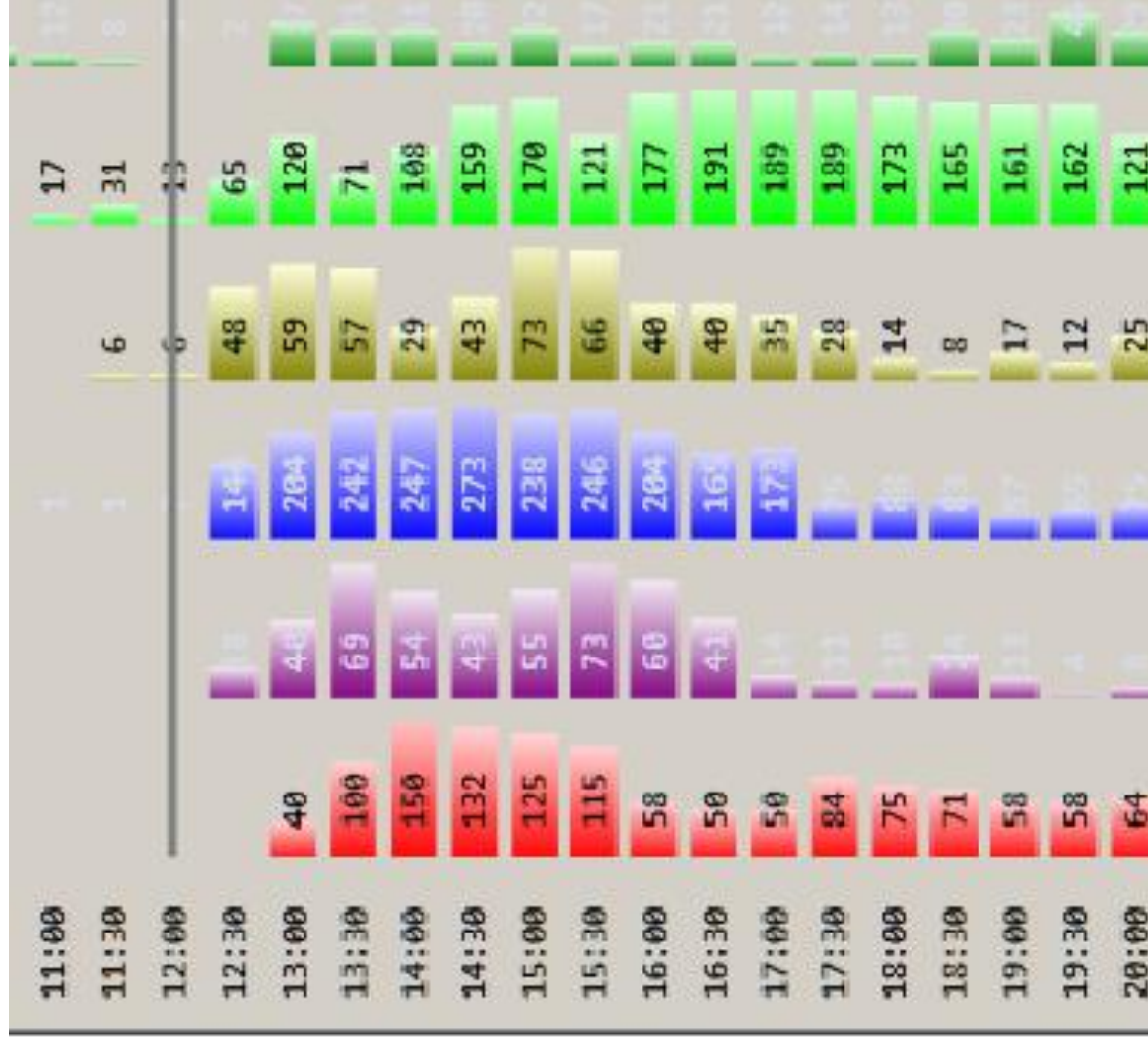
Latitude Longitude

Other Key Features

- Continuous charting of propagation for rolling 24 hour period



Zooming In



Other Key Features

- Path Grid

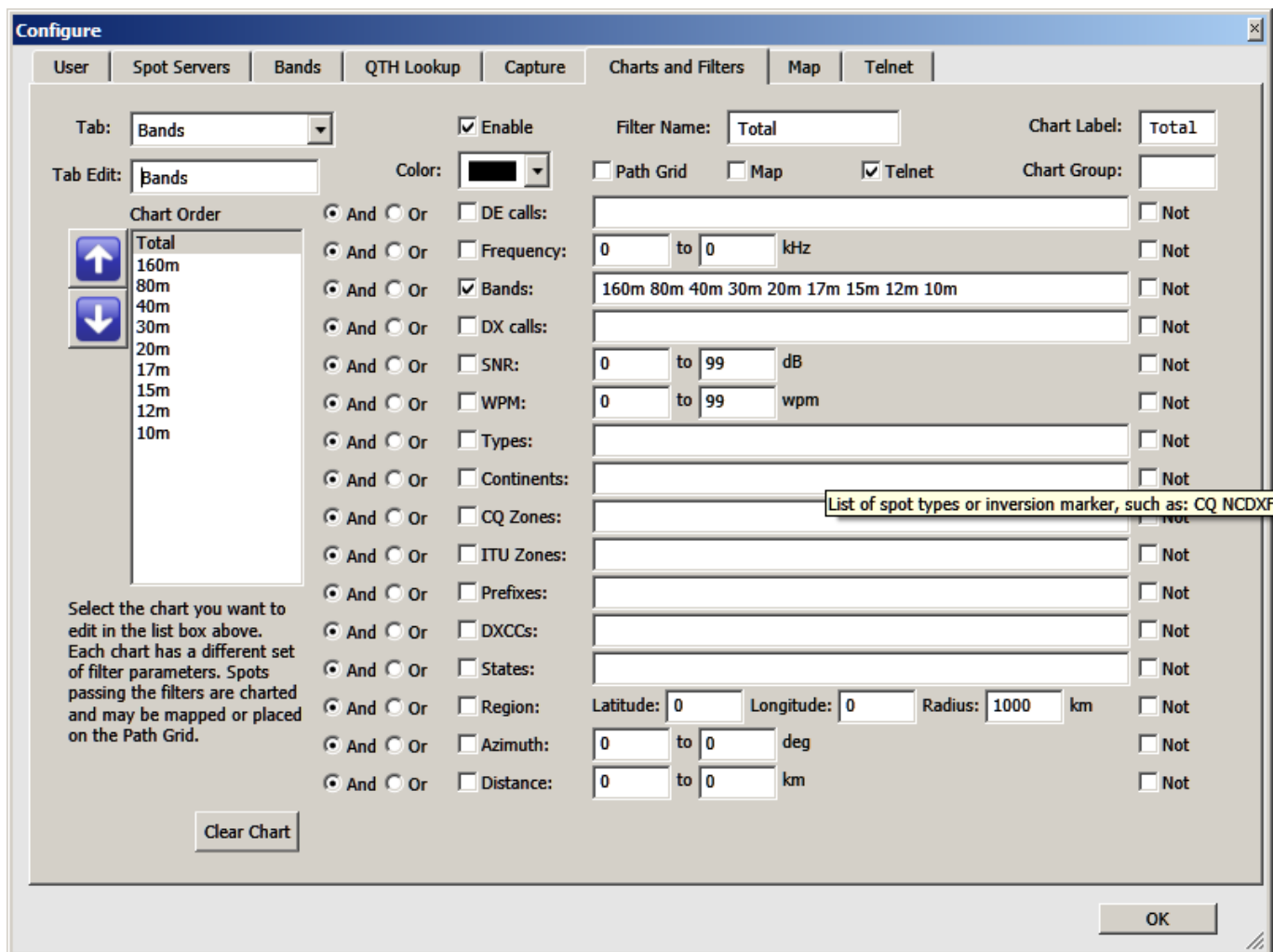
DE	Freq	Band	DX	SNR	WPM	Type	Ct	CQ	ITU	Pfx	DXCC	Location	St	Lat	Lon	Azm	Dist	Name
NY3A	3501.0	80m	DF5ZB	3	24	CW	EU	14	28	DF5	DL	Germany		51.00	10.00	47.1	6568	
LW9DYQ	21070.9	15m	K3JT	0	0	BPSK+	SA	13	14	LW9	LU	Argentina		-34.47	-58.55	164.4	8394	Daniel L. Schmidt
N2QT	10102.0	30m	FG5FR	26	22	CW	NA	8	11	FG5	FG	Guadeloupe		16.24	-61.66	145.2	2940	C. Frantz Selbonne
WZ7I	14072.2	20m	K9ZJ	0	0	CLUSTR	NA	4	8	K9	K	USA	WI	43.01	-88.28	298.9	1046	Richard W Hageman, Jr
WZ7I	7042.1	40m	OK2ZL	0	0	CLUSTR	EU	15	28	OK2	OK	Czech Republic		49.36	16.64	46.6	7072	Vladislav Cada
W2ZK	7021.0	40m	VK6FZM/MM	0	0	CLUSTR	OC	29	58	VK6	VK	Australia		-26.91	119.95	305.5	17960	
WT4Q	1830.3	160m	4K6FO	0	0	CLUSTR	AS	21	29	4K6	4J	Azerbaijan		40.37	50.21	37.4	9700	Alim Mamedov
WZ7I	14071.2	20m	K9EEH	0	0	CLUSTR	NA	4	8	K9	K	USA	IL	41.80	-89.68	290.2	1117	Richard A Little
WE9V	14011.0	20m	WB2KSP	31	25	CW+	NA	4	8	WE9	K	USA	WI	42.55	-88.05	296.6	1010	Chad J Kurszewski
W9CA	14011.0	20m	WB2KSP	20	26	CW+	NA	4	8	W9	K	USA	IL	42.28	-88.15	294.8	1008	Cortek Radio Associat
W4KKN	14032.6	20m	W1AW/3	18	27	CW	NA	5	8	W3	K	USA	CT	41.71	-72.73	48.8	471	ARRL HQ Operators Clu
K3LR	3504.4	80m	VA2GU	40	27	CW	NA	5	9	VA2	VE	Canada	QC	48.05	-69.77	27.7	1162	Hugh Gilbert (roy) Rc
W3LPL	18075.6	17m	V44KAO	10	32	CW	NA	8	11	V44	V4	Saint Kitts & Nev		17.50	-63.00	146.5	2750	Oliver Liburd
WA2VUY	7147.1	40m	VK6KC	0	0	CLUSTR	OC	29	58	VK6	VK	Australia		-31.86	116.29	299.4	18590	John Coultham
W3BGN	7012.7	40m	Z6/LZ1BJ	0	0	CLUSTR	EU	15	28	Z6	Z6	Kosovo		42.67	21.17	50.9	7767	
WZ7I	18078.9	17m	W4CI	36	25	CW	NA	5	8	W4	K	USA	FL	28.65	-81.34	200.5	1219	David H Hillebrandt
WZ7I	28120.8	10m	PY1MX	21	0	PSK31	SA	11	15	PY1	PY	Brazil	RJ	-22.83	-43.01	146.6	7738	Junior - Valdemar Her
WZ7I	14070.4	20m	YV7BMZ	0	0	CLUSTR	SA	9	12	YV7	YV	Venezuela		11.06	-63.96	153.9	3367	Jose Luis Blanco.P
NC7J	18086.0	17m	KB2RAW	9	19	CW+	NA	3	6	NC7	K	USA	UT	41.07	-111.94	285.7	2966	Utah Contest Club
WZ7I	3512.0	80m	OZ4UN	10	24	CW	EU	14	18	OZ4	OZ	Denmark		55.98	12.40	41.1	6483	Poul-Erik Karlshoej
N2QT	21084.6	15m	CO3JA	24	0	RTTY	NA	8	11	CO3	CO	Cuba		22.50	-81.00	192.8	1875	Efren Alvarez
K3LR	14017.3	20m	W6PU	40	21	CW	NA	3	6	W6	K	USA	NM	36.38	-104.34	271.7	2416	Robert L Martinez
WZ7I	21071.6	15m	KK6AL	0	0	CLUSTR	NA	3	6	KK6	K	USA	CA	34.04	-118.48	274.6	3718	Albert R Karel
WZ7I	7019.0	40m	UT5MD	12	22	CW	EU	16	29	UT5	UT	Ukraine		49.50	31.00	40.7	7921	Vladimir Fedorenko
WZ7I	3503.3	80m	9A7R	12	27	CW	EU	15	28	9A7	9A	Croatia	HR	45.57	15.61	50.6	7219	Ivica (Braco) Soric
WZ7I	7039.8	40m	IK8DUE	0	0	CLUSTR	EU	15	28	IK8	I	Italy		40.72	14.71	55.5	7441	Mario Napoli
WZ7I	14071.6	20m	W9DCS	0	0	CLUSTR	NA	4	8	W9	K	USA	WI	42.95	-87.85	299.3	1011	Daniel C Schneeberger
WZ7I	14072.6	20m	C6AAJ	33	0	PSK31	NA	8	11	C6	C6	Bahamas	PA	26.52	-78.63	186.7	1397	C/O Stephen A. Ikler
WZ7I	7043.7	40m	SV2DSJ	0	0	RTTY	EU	20	28	SV2	SV	Greece		40.57	22.97	51.8	8025	Panagiotis Violistis
VE6AO	21023.5	15m	WA4APB	21	24	CW+	NA	4	2	VE6	VE	Canada	AB	51.12	-113.97	307.5	3161	Calgary Amateur Radic
W3OA	18091.0	17m	K2JF	28	12	CW+	NA	5	8	W3	K	USA	NC	35.58	-80.95	223.8	516	Richard T Williams
KA9SWE	14011.6	20m	N3JB	35	20	CW+	NA	4	8	KA9	K	USA	WI	43.03	-89.38	297.3	1130	Dale W Burmester
W4KKN	18027.0	10m	VA2GU	11	10	CW	NA	11	14	VA2	VE	Canada	NM	33.73	-70.77	174.6	8110	Galileo Rossi

Click column headers to sort; shift-click to sort by more than one column; click and drag to change column order.

Active paths: 33

Other Key Features

- Extremely “granular” filtering capabilities



Other Key Features

- Ability to download and chart RBN data for any day in the past.
- Built-in Telnet server
 - Insert between any server with RBN spots and your logging program
 - Use ViewProp's filters to feed your logging program

Resources

- RBN website – <http://reversebeacon.net>
- RBN blog – <http://reversebeacon.blogspot.com>
- Tutorial - <http://reversebeacon.blogspot.com/2013/12/a-new-tutorial-on-using-rbn.html>
- Download of Aggregator – on the RBN web site
- Download of ViewProp - <http://zl2ham.wikispaces.com/>
- ARCluster filters – <http://ab5k.net/ArcDocsVer6/UserManual/ArcCmdSummary.htm>
- CCUser - <http://www.bcdxc.org/ve7cc/default.htm#prog>
- Mailing lists:
 - skimmertalk@contesting.com
 - viewprop@yahoogroups.com
 - RBN-OPS@yahoogroups.com
- That's all folks!