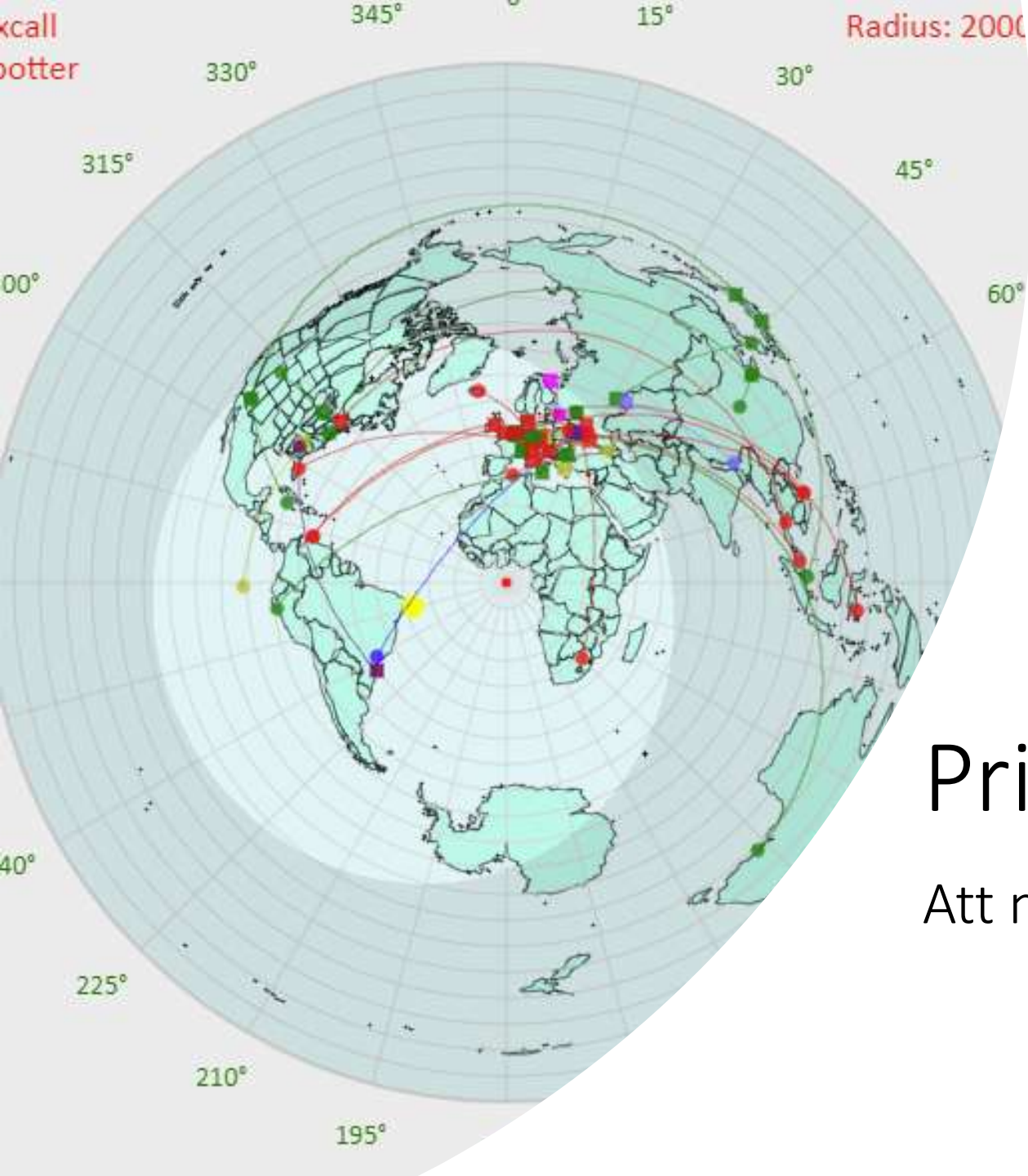




Prickar och bakvända fyrar

Att navigera i amatörradions digitala skärgård

Björn Ekelund SM7IUN



Fyrar?

NCDXF/IARU International Beacon Project

Transmission Schedule

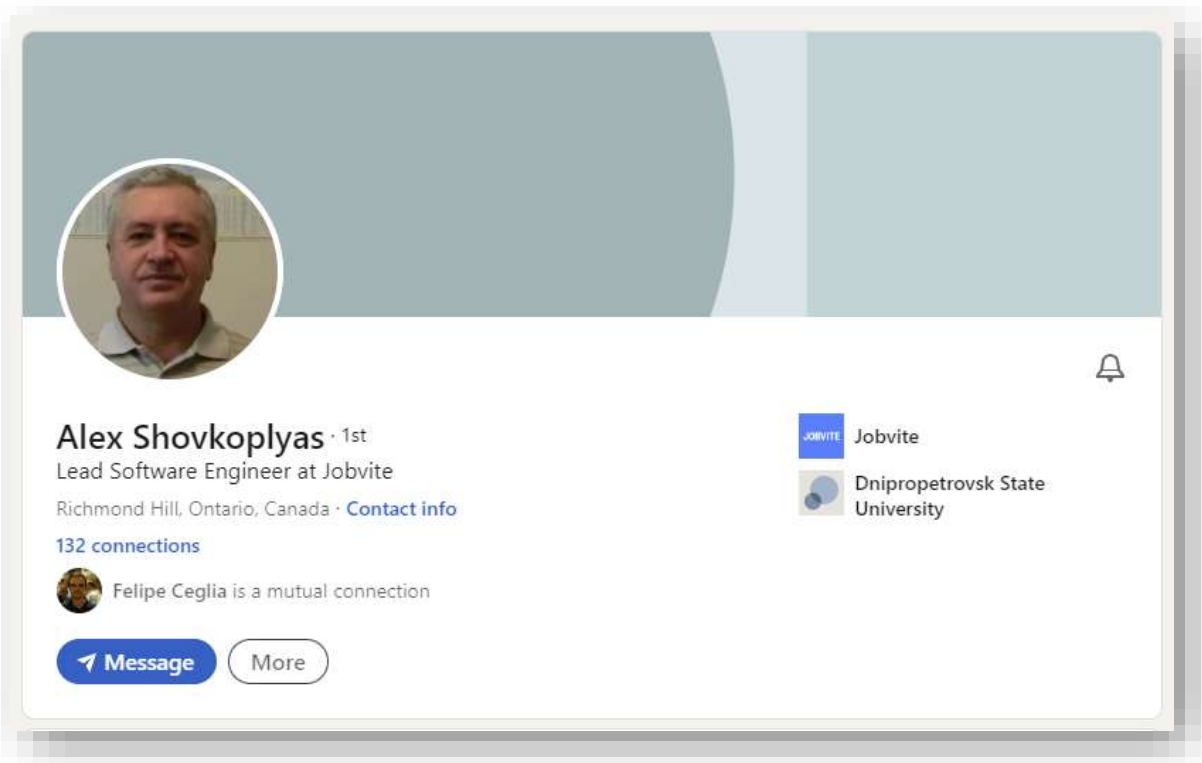


Bakvända fyrrar!

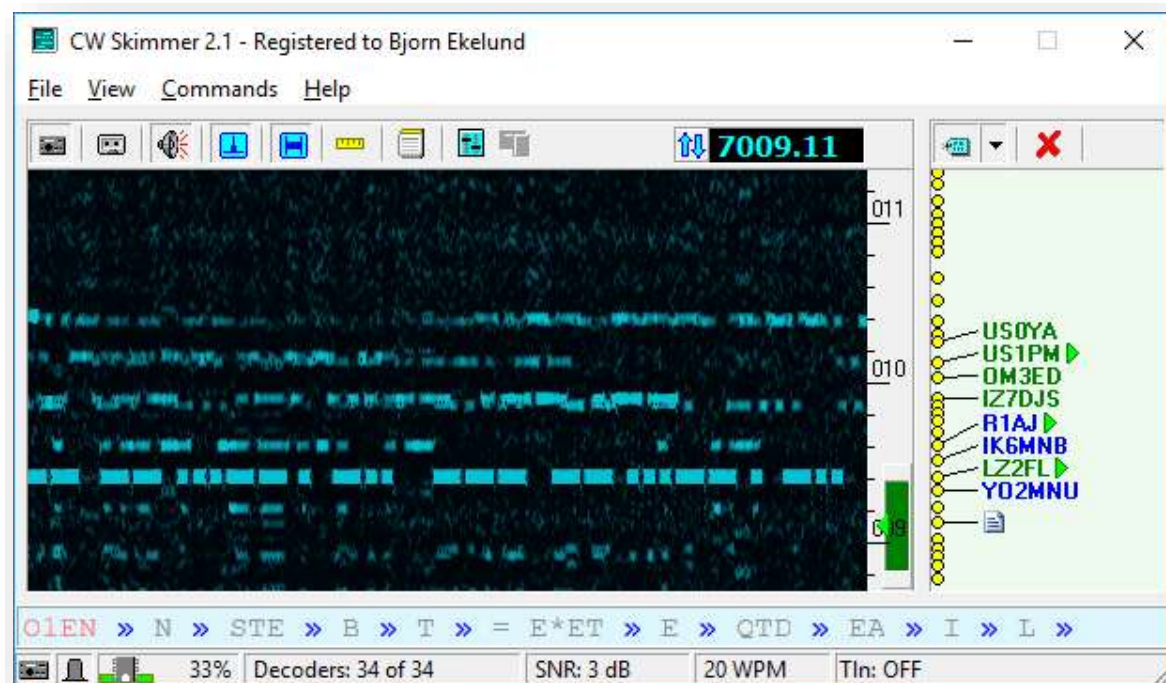
/ 160m / 80m / 40m / 30m / 20m / 17m / 15m / 12m / 10m / 8m / 7m
world wide / zoom to US / zoom to Europe / zoom to North Atlantic

Det startade med en briljant ingenjör

Alex Shovkoplyas, VE3NEA ex UR5EMI
"Canadian ham of the year" 2014



Morseavkodaren "CW Skimmer"



- Publicerad 2008 efter "sju års funderande"
- Baserad på Bayesisk statistik, en "sorts" enkel AI
- Primärt tänkt att hantera pile-ups

2008: Planeterna stod på linje

Alex VE3NEA



Felipe PY1NB
(now CT7ANO)

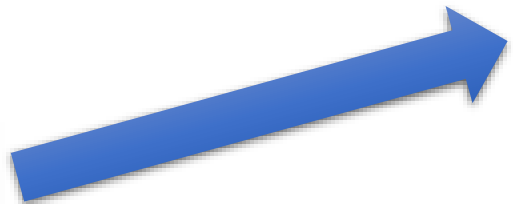


Dick W3OA



Nick F5VIH

Pete N4ZR



Phil N8VB



REVERSE BEACON NETWORK

welcome | main | dx spots | skimmers | downloads | about | contact us

Map | Satellite | Hybrid

Greenland | Iceland | Sweden | Finland | Norway | United Kingdom | Ireland | Denmark | Poland | Belarus | Ukraine | Romania | France | Germany | Austria | Italy

POWERED BY Google

1500m / 80m / 40m / 30m / 20m / 17m / 15m / 12m / 10m / 6m / 3m

world wide / zoom to US / zoom to Europe / zoom to North Atlantic

show/hide my last filters

showing spots for DX call: LA3ZA rows to show: 50

search spot by callsign

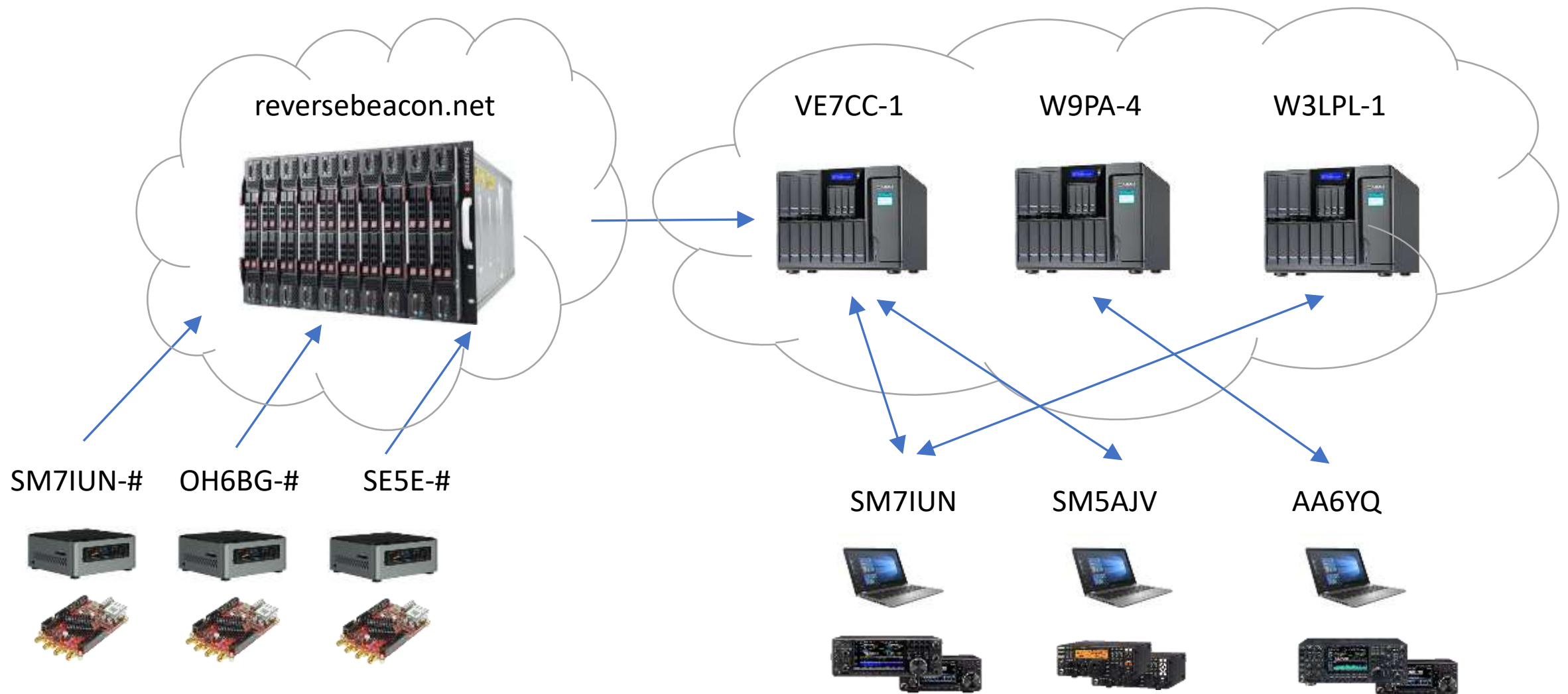
de	dx	freq	cq/dx	snr	speed	time
DL0LBS	LA3ZA	3534.4	CW CQ [LoTW]	19 dB	16 wpm	2031z 22 Apr
DL1EMY	LA3ZA	3534.3	CW CQ [LoTW]	29 dB	15 wpm	2028z 22 Apr
DR1A	LA3ZA	3534.3	CW CQ [LoTW]	23 dB	15 wpm	2028z 22 Apr
LA5EKA	LA3ZA	3534.3	CW CQ [LoTW]	16 dB	15 wpm	2016z 22 Apr
DF7GB	LA3ZA	3534.3	CW CQ [LoTW]	19 dB	15 wpm	2016z 22 Apr

The Reverse Beacon network

- Ett globalt nätverk av robotmottagare, "skimmers"
- Över 200 "skimmers" som lyssnar dygnet runt
- Global täckning men flest mottagare i EU och NA



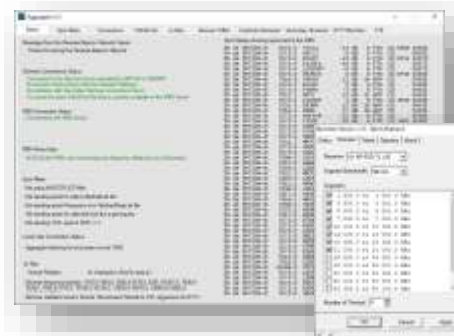
RBN och klustret



En skimmers beståndsdelar

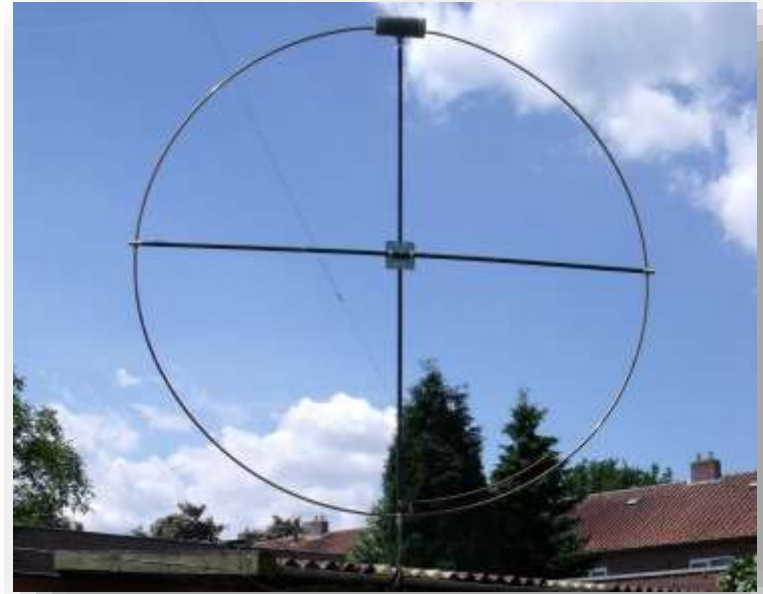


```
for i in people_data.users:
    response = client.api.statuses.user_timeline.get(screen_name=i.screen_name)
    print 'Got', len(response.data), 'tweets from', i.screen_name
    if len(response.data) > 0:
        tweet = response.data[0]['created_at']
        tdate = datetime.strptime(tweet, '%a %H:%M %d %b %Y')
        today = datetime.now()
        howlong = (today - tdate).days
        if howlong > daywindow:
            print i.screen_name, 'has tweeted in the past', daywindow,
            totaltweets += len(response.data)
        for j in response.data:
            if j.entities.urls:
                for k in j.entities.urls:
                    newurl = k['expanded_url']
                    urlset.add(newurl, i.user.screen_name)
    else:
        print i.screen_name, 'has not tweeted in the past', daywindow
```



#1 Antenn

- Skall vara
 - Bredbandig
 - Alltid ansluten
 - Vara immun mot lokala störkällor eller placerad i en störfri miljö
- Behöver inte
 - Fungera för sändning
 - Vara särskilt effektiv, SNR är viktigare än RSSI
 - Vara stor



#2 Mottagare

- Behöver
 - Ha en digital kvadraturutgång samplad vid 48, 96, eller 196kHz
 - Producera radiodata i QS1R- eller HPSSDR-format via Ethernet
 - Täcka hela kortvågen, helst 1.8 till 52MHz
 - Ha stöd för ett flertal mottagarinstanser
 - Vara frekvensstabil
- Behöver inte
 - Knappar och vred
 - En audiokedja



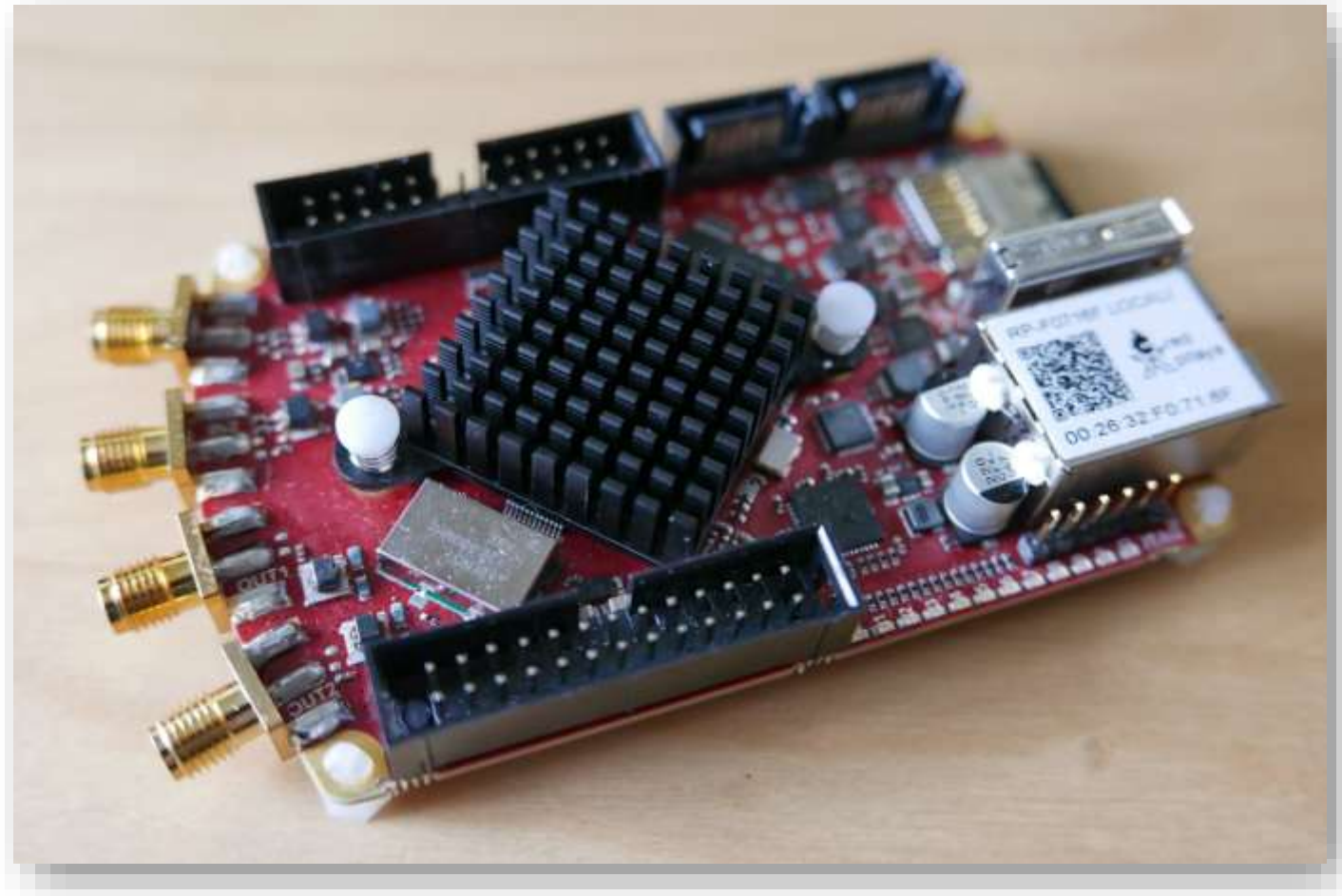
SDR-mottagare



“The Raspberry Pi of DSP”

Red Pitaya 122.88-16

- Byggt på Xilinx Zynq 7020
- FPGA med 85,000 logiska celler
- 220 programmerbara DSP segment
- Prestanda på 276 GMAC/s
- 667MHz Cortex A9 MPcore med Neon and CoreSight co-processorer
- Två 122.88MHz 16 bit ADC/DAC
- Fyra 100kHz ADC/DAC
- 16 GPIO
- ABLNO XO <50fs jitter



Pavel Demin @ KU Leuven



Pavel Demin · 1st

IT Engineer at Université catholique de Louvain

Ottignies-Louvain-la-Neuve, Walloon Region, Belgium · [Contact info](#)

129 connections

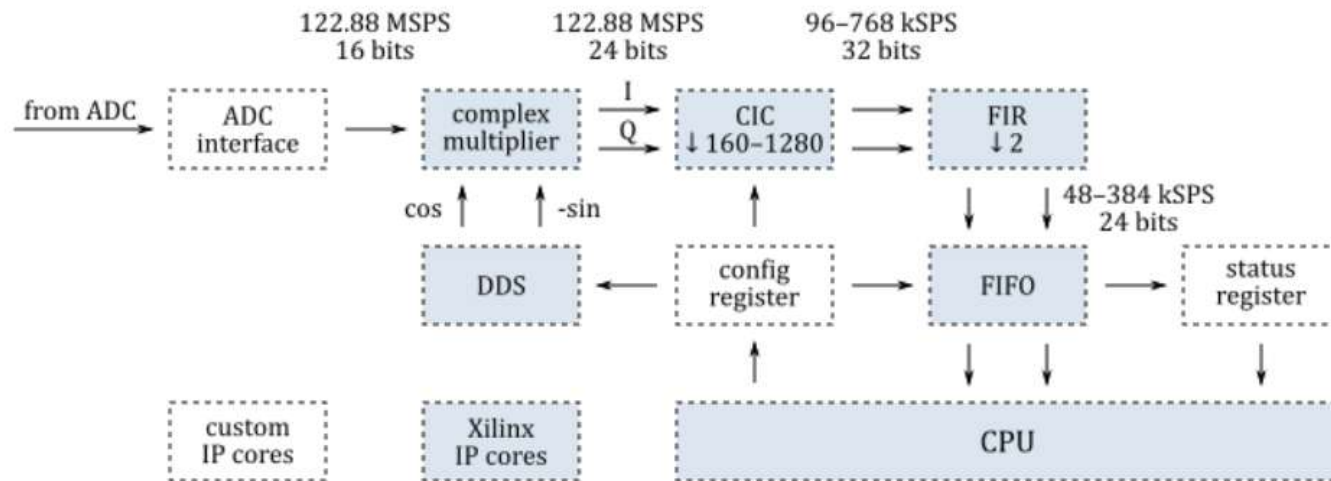


Felipe Ceglia and Rok Ursic are mutual connections

[Message](#)

[More](#)

Université catholique de Louvain
Université Joseph Fourier - Grenoble 1



1. List of components
2. Links
3. Development machine
4. LED blinker
5. SDR receiver
6. SDR transceiver
7. SDR transceiver compatible with HPSDR
8. SDR receiver compatible with HPSDR
9. Embedded SDR transceiver
10. Wideband SDR transceiver
11. Multiband WSPR transceiver
12. Multiband FT8 transceiver
13. Pulsed Nuclear Magnetic Resonance
14. Multichannel Pulse Height Analyzer
15. Scanning system
16. Vector Network Analyzer
17. Alpine with pre-built applications

Skimmernodens programvara

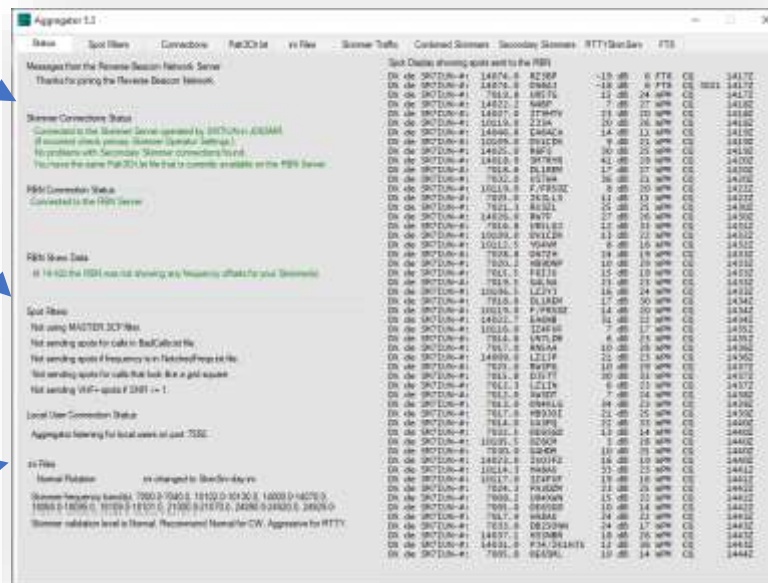
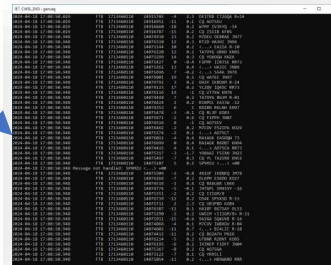
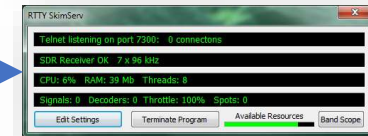
RBN

Windows PC

Morse

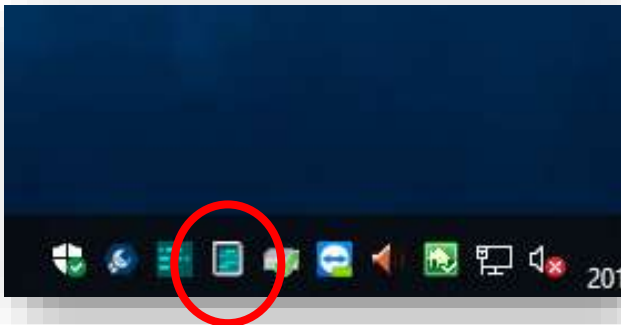
RTTY

JT moder



CW Skimmer Server

- En "inbyggd" version av CW Skimmer
- Telnet gränssnitt till RBN Aggregator eller en klusternod
- 8 × 92kHz segment motsvarar 10-20% last på en 2GHz Core i5 processor
- Kostar 75 USD



<http://www.dxatlas.com/SkimServer>

Skimmer Server v.1.6 - Bjorn Ekelund

Status | Skimmer | Telnet | Operator | About

Telnet Server

✓ Telnet Server OK

SDR Receiver

✓ SDR Receiver OK

Activity

Segment	Decoders
3 500.0 kHz	111
5 350.0 kHz	0
7 000.0 kHz	160
10 102.0 kHz	25
14 000.0 kHz	67
18 068.0 kHz	1
21 000.0 kHz	4
24 890.0 kHz	0

Decoders 368 Number of CPU's 4

Spots in 30 min. 421 CPU Load 14.4%

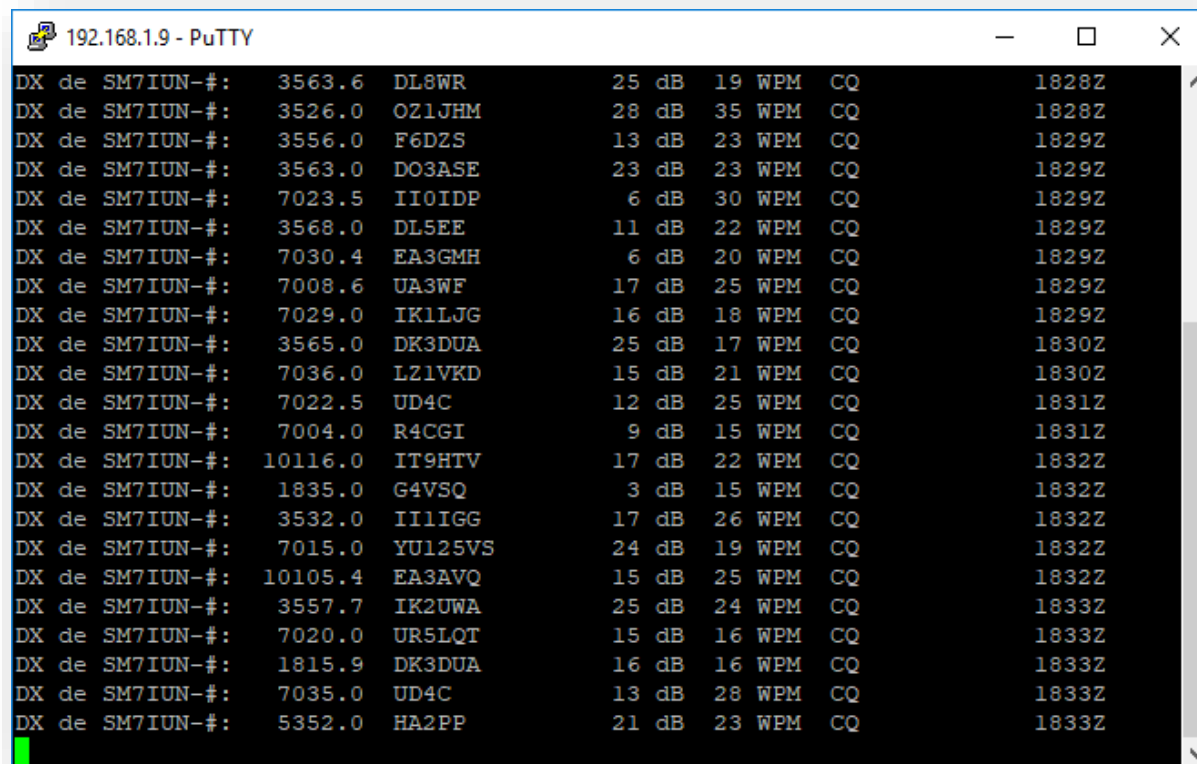
Telnet Users 1 Signals Decoded 100.0%

OK Cancel Apply

✓ ✓

CW Skimmer Server

Producera ett Telnetflöde med frekvens, avkodad anropssignal, SNR, sändningshastighet och tidpunkt

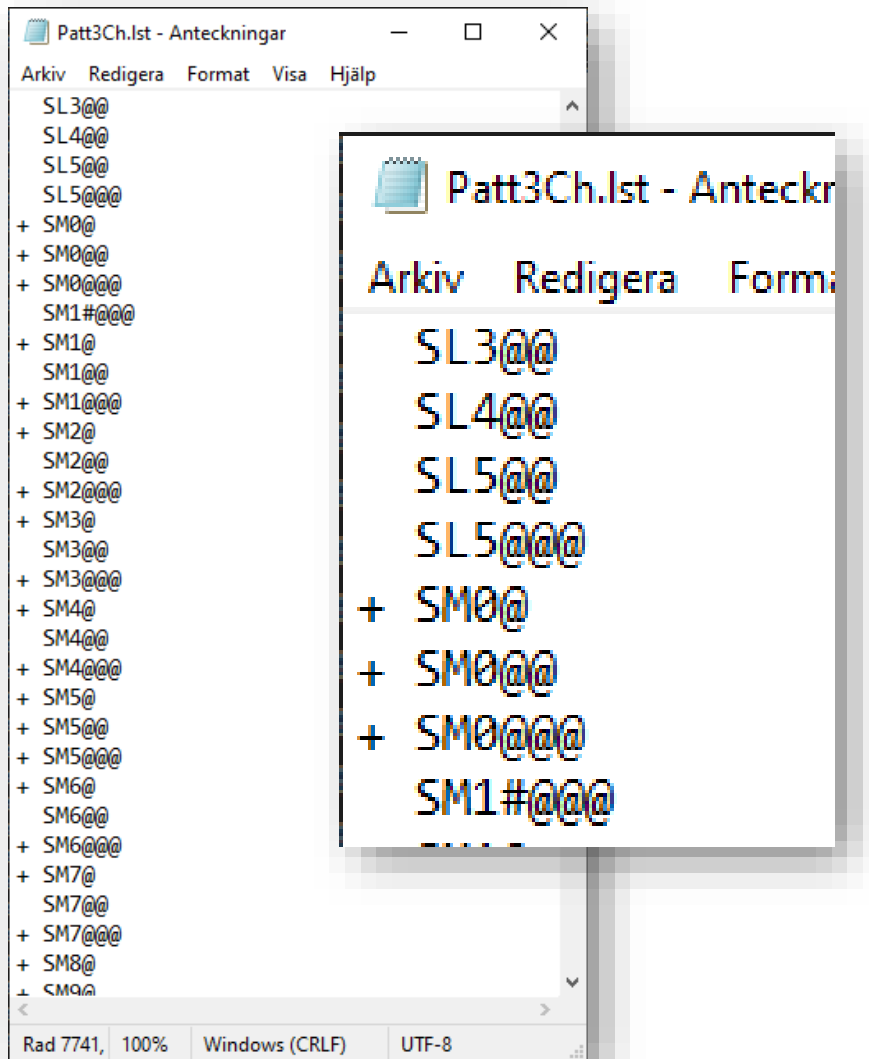


The screenshot shows a PuTTY terminal window titled '192.168.1.9 - PuTTY'. The output is a continuous stream of text representing CW call reports. Each line contains a call sign, frequency, decoded signal, SNR, speed, and time. The data is as follows:

Call Sign	Frequency (kHz)	Decoded Signal	SNR (dB)	Speed (WPM)	Time
DL8WR	3563.6	DL8WR	25	19	1828Z
OZ1JHM	3526.0	OZ1JHM	28	35	1828Z
F6DZS	3556.0	F6DZS	13	23	1829Z
DO3ASE	3563.0	DO3ASE	23	23	1829Z
II0IDP	7023.5	II0IDP	6	30	1829Z
DL5EE	3568.0	DL5EE	11	22	1829Z
EA3GMH	7030.4	EA3GMH	6	20	1829Z
UA3WF	7008.6	UA3WF	17	25	1829Z
IK1LJG	7029.0	IK1LJG	16	18	1829Z
DK3DUA	3565.0	DK3DUA	25	17	1830Z
LZ1VKD	7036.0	LZ1VKD	15	21	1830Z
UD4C	7022.5	UD4C	12	25	1831Z
R4CGI	7004.0	R4CGI	9	15	1831Z
IT9HTV	10116.0	IT9HTV	17	22	1832Z
G4VSQ	1835.0	G4VSQ	3	15	1832Z
II1IGG	3532.0	II1IGG	17	26	1832Z
YU125VS	7015.0	YU125VS	24	19	1832Z
EA3AVQ	10105.4	EA3AVQ	15	25	1832Z
IK2UWA	3557.7	IK2UWA	25	24	1833Z
UR5LQT	7020.0	UR5LQT	15	16	1833Z
DK3DUA	1815.9	DK3DUA	16	16	1833Z
UD4C	7035.0	UD4C	13	28	1833Z
HA2PP	5352.0	HA2PP	21	23	1833Z

- Normalt rapporterar CW Skimmer Server endast stationer som ropar CQ men en del (LID) skimmerägare väljer att rapportera alla hörda call.

Mönsterdatabasen Patt3ch.lst



- @ = valfri bokstav
- # = valfri siffra
- + = aktiv station
- SL7FRO ✗
- SM0HEV ✓
- "Watch list" för prioriterade call

Udda call för dxpedition eller contest?

Kontakta **Pete N4ZR** pete.n4zr@gmail.com

<https://www.reversebeacon.net/pages/patt3ch.lst+36>

Vem blir spottad?

- Lyssnar på flera tusen 50Hz "kanaler"
- 256 tecken långt minne
- Nyckelord: CQ QRZ TEST NA SS FD UP
- Känslig för QSD
- 10 minuters repetitionscykel

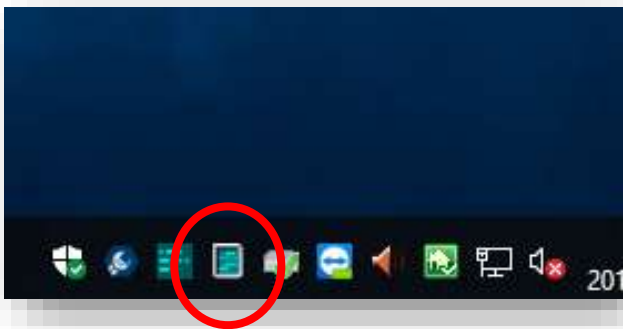
- CWT SM7IUN ✗
- CQ CWT SM7IUN ✓
- WSEM RM2D ✗

Number of Repetitions Required to be Spotted

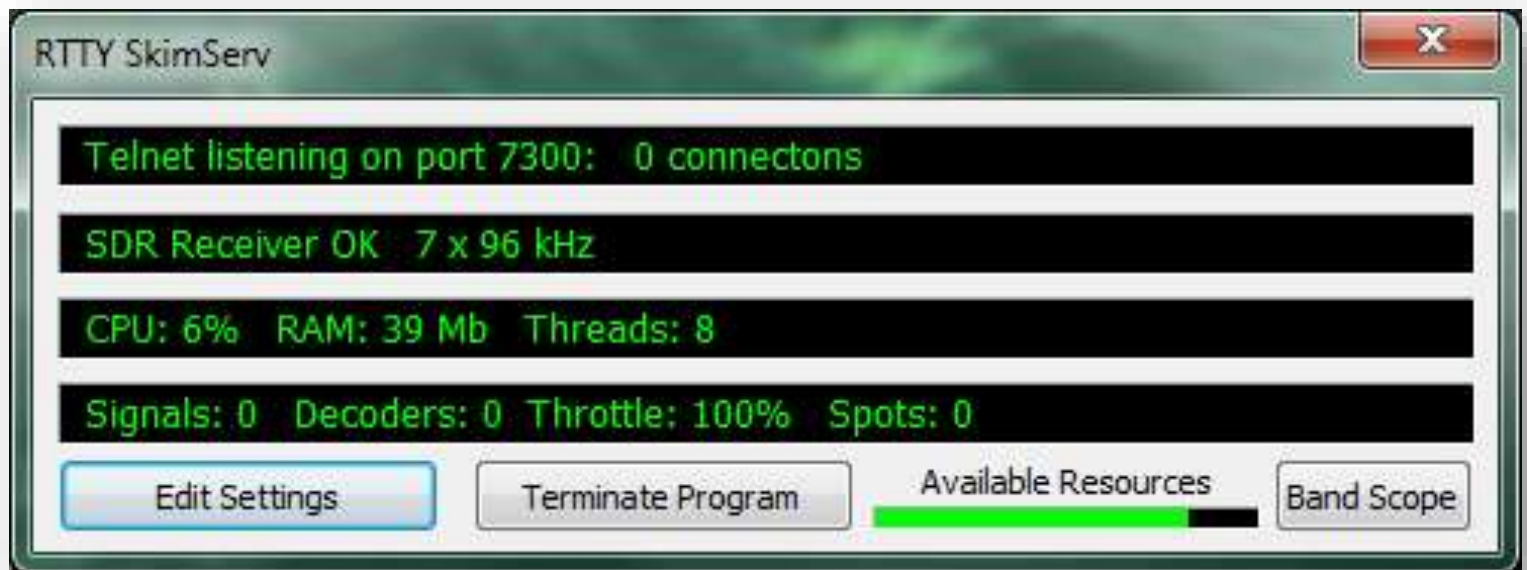
Pattern File/Validation	Minimal	Normal	Aggressive	Paranoid*
Watch list	1	1	2	2
+ in pattern file	2	2	4	-
No + but in file	2	3	4	-
Not in file	2	5	-	-
Not ITU prefix	-	-	-	-

RTTY Skimmer Server

- En RTTY-version av CW Skimmer Server med ett Telnet gränssnitt till RBN
- CPU-krävande
- Kostar 50 USD

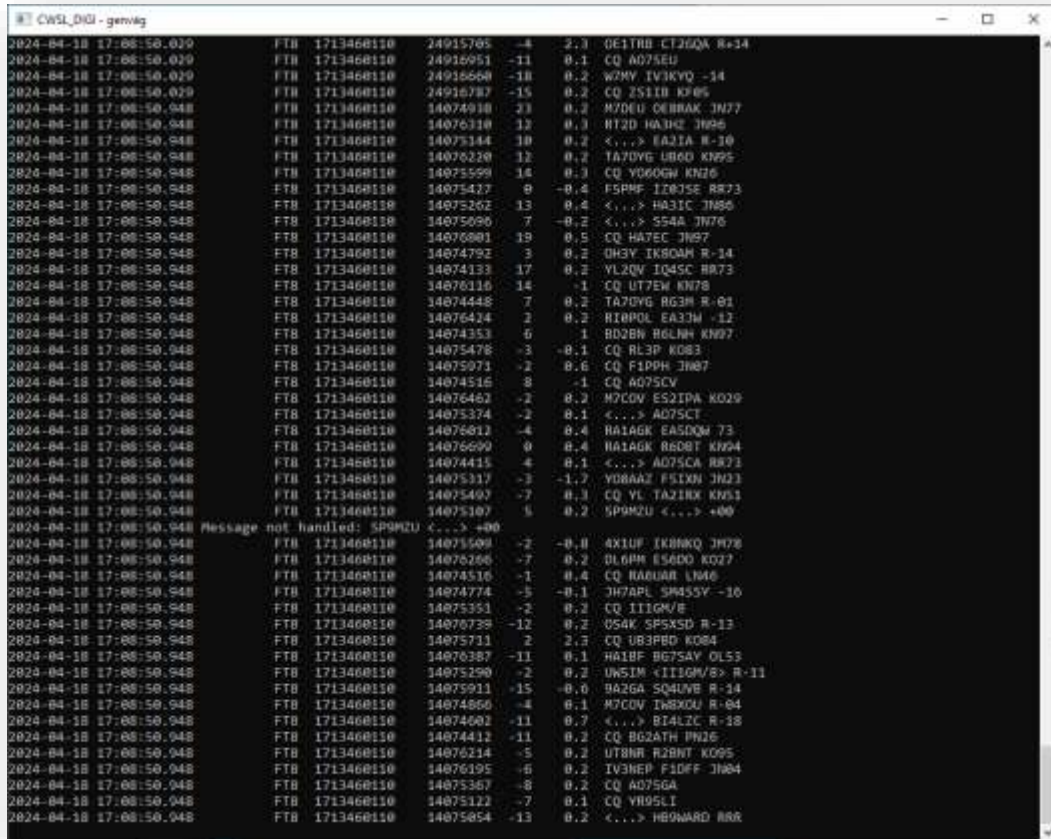


<http://www.dxatlas.com/SkimServer>



CWSL_DIGI

Avkodar alla trafiksätt som stöds av WSJT-X: FT8, FT4, JT65, JS8Call, WSPR, etc.

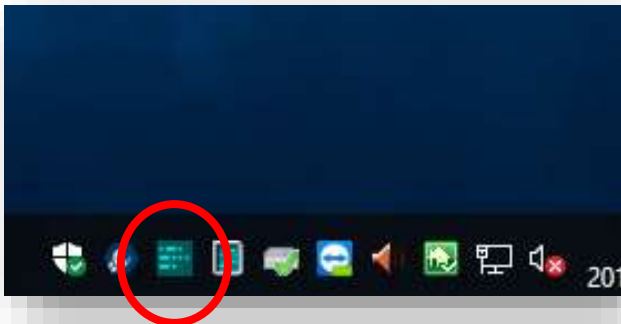


```
CWSL_DIGI - genväg
2024-04-18 17:08:50.000 FT8 1713460110 24915705 -4 2.3 0E1TRB CT2GQA R=14
2024-04-18 17:08:50.000 FT8 1713460110 24916951 -11 0.1 CQ A075EU
2024-04-18 17:08:50.000 FT8 1713460110 24916660 -18 0.2 WZMV IV3KYD -14
2024-04-18 17:08:50.000 FT8 1713460110 24916787 -15 0.2 CQ ZS110 K705
2024-04-18 17:08:50.048 FT8 1713460110 14074910 23 0.2 M70CU OE1RAK JH77
2024-04-18 17:08:50.048 FT8 1713460110 14076310 12 0.3 HT2D HA3HE JH96
2024-04-18 17:08:50.048 FT8 1713460110 14075144 10 0.2 <...> EA2JA R-10
2024-04-18 17:08:50.048 FT8 1713460110 14076220 12 0.2 TA70YG UB60 K095
2024-04-18 17:08:50.048 FT8 1713460110 14075599 14 0.3 CQ Y060GH KN10
2024-04-18 17:08:50.048 FT8 1713460110 14075427 0 -0.4 F5PMF IZ0JSE RR73
2024-04-18 17:08:50.048 FT8 1713460110 14075262 13 0.4 <...> HA3IC JH50
2024-04-18 17:08:50.048 FT8 1713460110 14075090 7 -0.2 <...> S54A JH70
2024-04-18 17:08:50.048 FT8 1713460110 14076001 19 0.5 CQ HA7EC JH97
2024-04-18 17:08:50.048 FT8 1713460110 14074792 3 0.2 OH3V IK5OAH R-14
2024-04-18 17:08:50.048 FT8 1713460110 14074133 17 0.2 YL2QV IQ45C HA73
2024-04-18 17:08:50.048 FT8 1713460110 14076116 14 -1 CQ UT7EW KN78
2024-04-18 17:08:50.048 FT8 1713460110 14074448 7 0.2 TA70YG RG3H R-01
2024-04-18 17:08:50.048 FT8 1713460110 14076414 2 0.2 H0P0L EA3JW -12
2024-04-18 17:08:50.048 FT8 1713460110 14074353 6 1 BD2BN H0LNN KN97
2024-04-18 17:08:50.048 FT8 1713460110 14075476 -3 -0.1 CQ RL3P K0B3
2024-04-18 17:08:50.048 FT8 1713460110 14075071 -2 0.6 CQ F1DPM JH07
2024-04-18 17:08:50.048 FT8 1713460110 14074516 8 -1 CQ A075CV
2024-04-18 17:08:50.048 FT8 1713460110 14076462 -2 0.2 M70CV ES2IPA K029
2024-04-18 17:08:50.048 FT8 1713460110 14075374 -2 0.1 <...> A075CT
2024-04-18 17:08:50.048 FT8 1713460110 14076012 -4 0.4 HA1AGK EASDQM 73
2024-04-18 17:08:50.048 FT8 1713460110 14076699 0 0.4 HA1AGK RD0BT KN94
2024-04-18 17:08:50.048 FT8 1713460110 14074415 4 0.1 <...> A075CA RK73
2024-04-18 17:08:50.048 FT8 1713460110 14075317 -3 -1.7 Y0RAAZ F51XN JH23
2024-04-18 17:08:50.048 FT8 1713460110 14075497 -7 0.3 CQ YL TA2IRX KN51
2024-04-18 17:08:50.048 FT8 1713460110 14075107 6 0.2 SP9MZU <...> +00
2024-04-18 17:08:50.048 Message not handled: SP9MZU <...> +00
2024-04-18 17:08:50.048 FT8 1713460110 14075509 -2 -0.8 AX1UF IK0NKQ JH78
2024-04-18 17:08:50.048 FT8 1713460110 14076266 -7 0.2 DL6PM ES6DD K027
2024-04-18 17:08:50.048 FT8 1713460110 14074510 -1 0.4 CQ RA0UAR LW46
2024-04-18 17:08:50.048 FT8 1713460110 14074774 -5 -0.1 JH7APL SM4SSV -10
2024-04-18 17:08:50.048 FT8 1713460110 14075351 -2 0.2 CQ I11GM/E
2024-04-18 17:08:50.048 FT8 1713460110 14070739 -12 0.2 054K SP5XSD R-13
2024-04-18 17:08:50.048 FT8 1713460110 14075711 2 2.3 CQ UB3PD K0B4
2024-04-18 17:08:50.048 FT8 1713460110 14076387 -11 0.1 HA1BF BG75AY OL53
2024-04-18 17:08:50.048 FT8 1713460110 14075290 -2 0.2 UNSIM <I11GM/S> R-11
2024-04-18 17:08:50.048 FT8 1713460110 14075911 -15 -0.0 BA2GA SQ4UVE R-14
2024-04-18 17:08:50.048 FT8 1713460110 14074860 -4 0.1 M70CV IWBXOU R-04
2024-04-18 17:08:50.048 FT8 1713460110 14074602 -11 0.7 <...> B14LZC R-18
2024-04-18 17:08:50.048 FT8 1713460110 14074412 -11 0.2 CQ BG2ATH PN26
2024-04-18 17:08:50.048 FT8 1713460110 14076214 -5 0.2 UT8NR R2BNT K095
2024-04-18 17:08:50.048 FT8 1713460110 14076195 -6 0.2 IV3NEP F1DFF JH04
2024-04-18 17:08:50.048 FT8 1713460110 14075367 -8 0.2 CQ A075GA
2024-04-18 17:08:50.048 FT8 1713460110 14075122 -7 0.1 CQ YH95LI
2024-04-18 17:08:50.048 FT8 1713460110 14075054 -13 0.2 <...> H09WARD RRK
```

- Producerar spottar via UDP på samma sätt som WSJT-X och MSHV
- Kan köra ett godtyckligt antal avkodare men det **kostar processorkraft**
- Rapporterar **alla hörda stationer**
- Gratis

RBN Aggregator

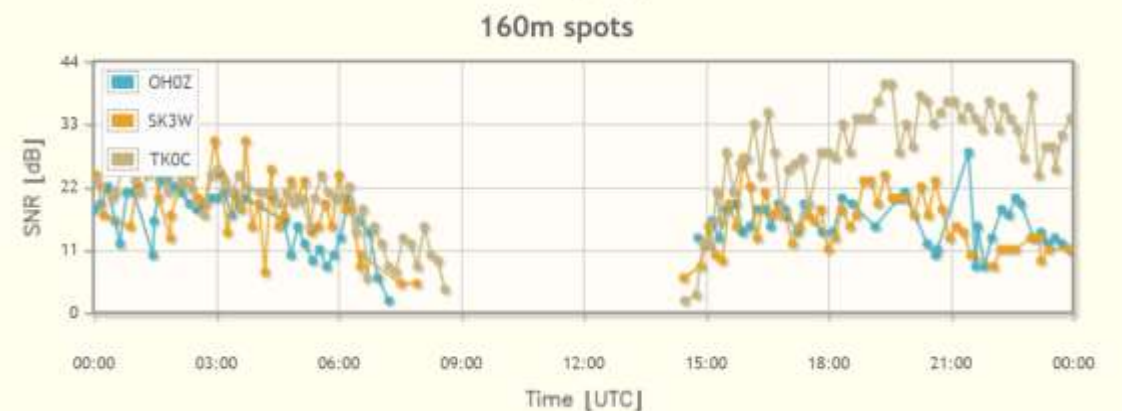
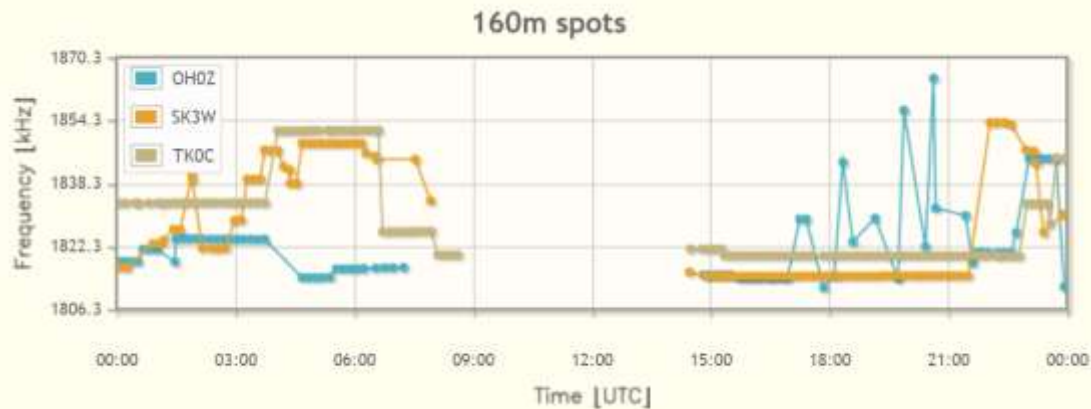
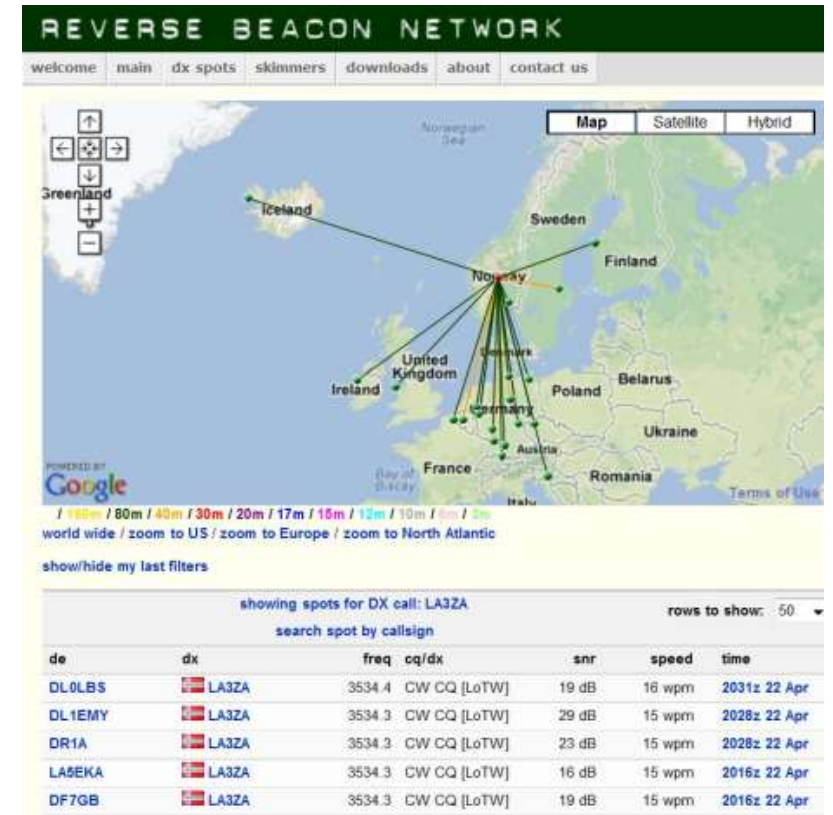
- **Kurerar och aggregerar** spottar från skimmermottagaren innan den rapporterar dem till RBN
- Försumbar CPU-last
- Ansluter till CW Skimmer Server och RTTY Skimmer Server via Telnet
- Ansluter till WSJT-X, MSHV och CWSL_DIGI via UDP



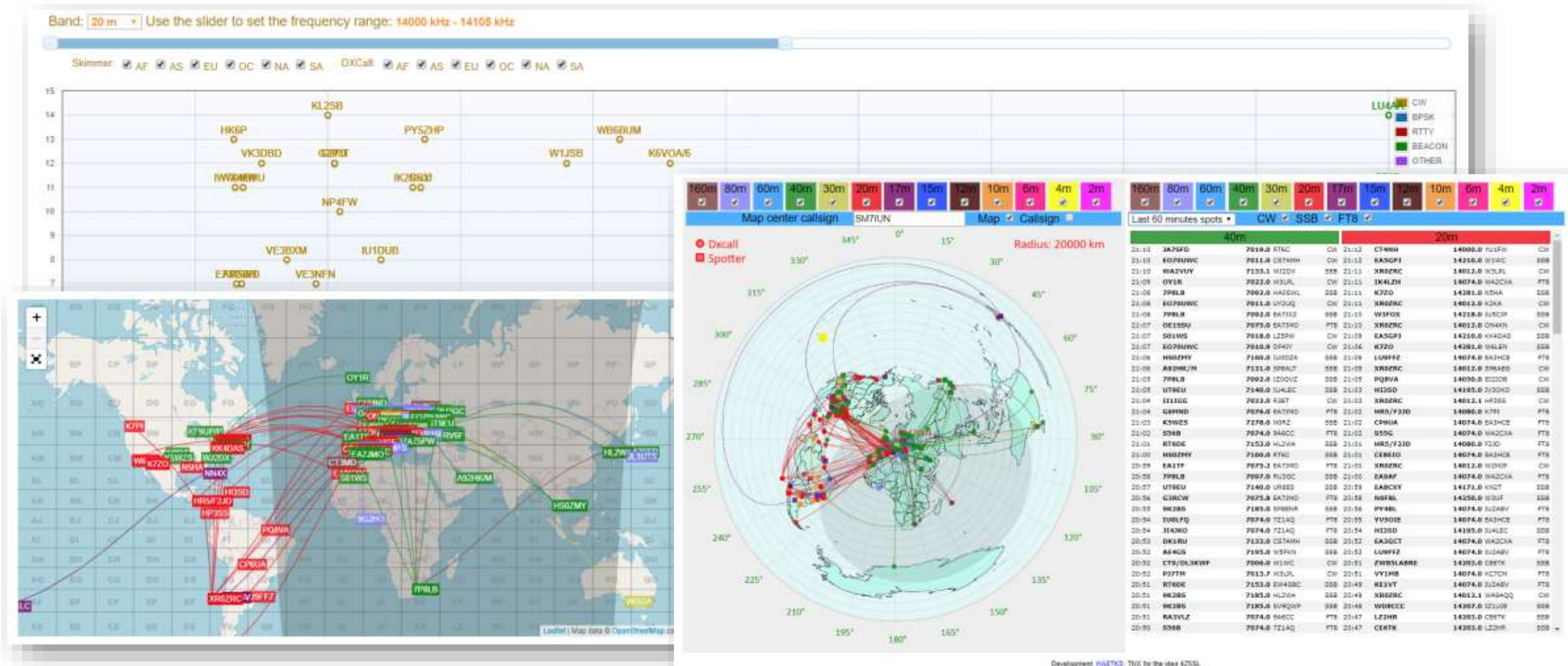
Aggregator 5.4b1											
Status	Spot Filters	Connections	Patt3Ch.lst	ini Files	Skimmer Traffic	Combined Skimmers	Secondary Skimmers	RTTYSkimServ	FT8		
Messages from the Reverse Beacon Network Server						Spot Display showing spots sent to the RBN					
Thanks for joining the Reverse Beacon Network						DX de SM7IUN-#: 7013.0 F6IJ 21 dB 22 WPM CQ 1617Z					
						DX de SM7IUN-#: 7017.0 RK3Q/7 28 dB 24 WPM CQ 1618Z					
						DX de SM7IUN-#: 7009.6 HB90BQR 27 dB 21 WPM CQ 1618Z					
						DX de SM7IUN-#: 10116.0 IZ7WMM 31 dB 30 WPM CQ 1619Z					
Skimmer Connections Status						DX de SM7IUN-#: 7038.1 YL3AJT 31 dB 15 WPM CQ 1619Z					
Connected to the Skimmer Server operated by SM7IUN in JO65MR.						DX de SM7IUN-#: 7026.6 DJ6ZM 23 dB 28 WPM CQ 1620Z					
(If incorrect check primary Skimmer Operator Settings.)						DX de SM7IUN-#: 7019.7 GOCBO 18 dB 14 WPM CQ 1620Z					
No problems with Secondary Skimmer connections found.						DX de SM7IUN-#: 14039.3 W7QC 10 dB 26 WPM CQ 1621Z					
You have the same Patt3Ch.lst file that is currently available on the RBN Server.						DX de SM7IUN-#: 7013.0 F6IJ 17 dB 20 WPM CQ 1621Z					
						DX de SM7IUN-#: 7014.3 R1ZY 22 dB 25 WPM CQ 1621Z					
						DX de SM7IUN-#: 10114.0 RX3Q 25 dB 25 WPM CQ 1621Z					
RBN Connection Status						DX de SM7IUN-#: 7011.3 RV6LNZ 19 dB 24 WPM CQ 1622Z					
Connected to the RBN Server.						DX de SM7IUN-#: 14006.0 LZ2HR 3 dB 30 WPM CQ 1622Z					
						DX de SM7IUN-#: 14011.6 SVOAMS 10 dB 19 WPM CQ 1622Z					
						DX de SM7IUN-#: 10113.5 W3WP 24 dB 22 WPM CQ 1622Z					
						DX de SM7IUN-#: 7013.3 R1ZY 21 dB 25 WPM CQ 1622Z					
						DX de SM7IUN-#: 14060.0 EA5EQ 2 dB 12 WPM CQ 1623Z					
						DX de SM7IUN-#: 14020.7 ZB2CW 6 dB 26 WPM CQ 1623Z					
						DX de SM7IUN-#: 10110.0 LZ7DL 10 dB 23 WPM CQ 1623Z					
RBN Skew Data						DX de SM7IUN-#: 10118.4 YT2ZE 16 dB 20 WPM CQ 1624Z					
At 16:29z the RBN was not showing any frequency offsets for your Skimmer(s).						DX de SM7IUN-#: 7011.0 RK4CT 22 dB 28 WPM CQ 1624Z					
						DX de SM7IUN-#: 7025.0 UA6EED 15 dB 27 WPM CQ 1624Z					
						DX de SM7IUN-#: 7006.3 RU3KA 20 dB 21 WPM CQ 1625Z					
						DX de SM7IUN-#: 14100.0 ZS6DN 10 dB 18 WPM CQ 1625Z					
						DX de SM7IUN-#: 14018.0 5V7EI 7 dB 26 WPM CQ 1625Z					
Spot Filters						DX de SM7IUN-#: 7016.3 RU3KA 19 dB 21 WPM CQ 1626Z					
Not using MASTER.SCP filter.						DX de SM7IUN-#: 7018.5 DL1GZH 14 dB 13 WPM CQ 1626Z					
Not sending spots for calls in BadCalls.txt file.						DX de SM7IUN-#: 10119.4 GS8VL 35 dB 20 WPM CQ 1626Z					
Not sending spots if frequency is in NotchedFreqs.txt file.						DX de SM7IUN-#: 7038.2 RN6HI/B 7 dB 17 WPM CQ 1627Z					
Not sending spots for calls that look like a grid square.						DX de SM7IUN-#: 14028.4 K2TV 17 dB 22 WPM CQ 1627Z					
Not sending VHF+ spots if SNR <= 1.						DX de SM7IUN-#: 7007.0 OK3EE 42 dB 18 WPM CQ 1628Z					
						DX de SM7IUN-#: 10113.0 LZ2JB 15 dB 14 WPM CQ 1629Z					
						DX de SM7IUN-#: 10114.1 UB7K 33 dB 25 WPM CQ 1629Z					
						DX de SM7IUN-#: 7025.0 UA6EED 19 dB 27 WPM CQ 1629Z					
						DX de SM7IUN-#: 3520.0 R3OR 8 dB 26 WPM CQ 1630Z					
						DX de SM7IUN-#: 7017.0 RK3Q/7 26 dB 25 WPM CQ 1630Z					
Local User Connection Status						DX de SM7IUN-#: 14052.0 IT9FRT 19 dB 14 WPM CQ 1630Z					
Aggregator listening for local users on port 7550.						DX de SM7IUN-#: 3541.0 DK5JPL 17 dB 28 WPM CQ 1630Z					
						DX de SM7IUN-#: 10114.1 UB7K 33 dB 25 WPM CQ 1630Z					
						DX de SM7IUN-#: 14030.0 4Z4DX 23 dB 20 WPM CQ 1630Z					
						DX de SM7IUN-#: 14028.5 HZ1TT 31 dB 26 WPM CQ 1631Z					
ini Files						DX de SM7IUN-#: 7030.3 G0EJV 3 dB 22 WPM CQ 1631Z					
Normal Rotation ini changed to SkimSrv-gray.ini						DX de SM7IUN-#: 7013.0 HB9JCI 6 dB 24 WPM CQ 1631Z					
						DX de SM7IUN-#: 3521.0 SP1JPM 22 dB 28 WPM CQ 1632Z					
						DX de SM7IUN-#: 3518.0 UA6KAC 16 dB 23 WPM CQ 1632Z					
Skimmer frequency band(s): 3500.0-3570.0, 7000.0-7040.0, 10102.0-10130.0, 14000.0-14070.0, 14099.0-14101.0, 18068.0-18095.0, 18109.0-18111.0, 21000.0-21070.0,						DX de SM7IUN-#: 7013.3 R1ZY 27 dB 25 WPM CQ 1632Z					
						DX de SM7IUN-#: 10113.5 RW3WP 26 dB 22 WPM CQ 1632Z					
Skimmer validation level is Normal. Recommend Normal for CW, Aggressive for RTTY.						DX de SM7IUN-#: 7011.0 PA2SAM 20 dB 28 WPM CQ 1632Z					
						DX de SM7IUN-#: 14010.0 EA1XT 13 dB 36 WPM CQ 1632Z					
						DX de SM7IUN-#: 7026.2 YT4EW 11 dB 22 WPM CQ 1633Z					

The Reverse Beacon network

- En webbtjänst
- En kortvågens "data lake" med all data tillgängligt för nedladdning (CW & RTTY)
- 300,000,000+ datapunkter sen 2009
- En rik uppsättning analysverktyg

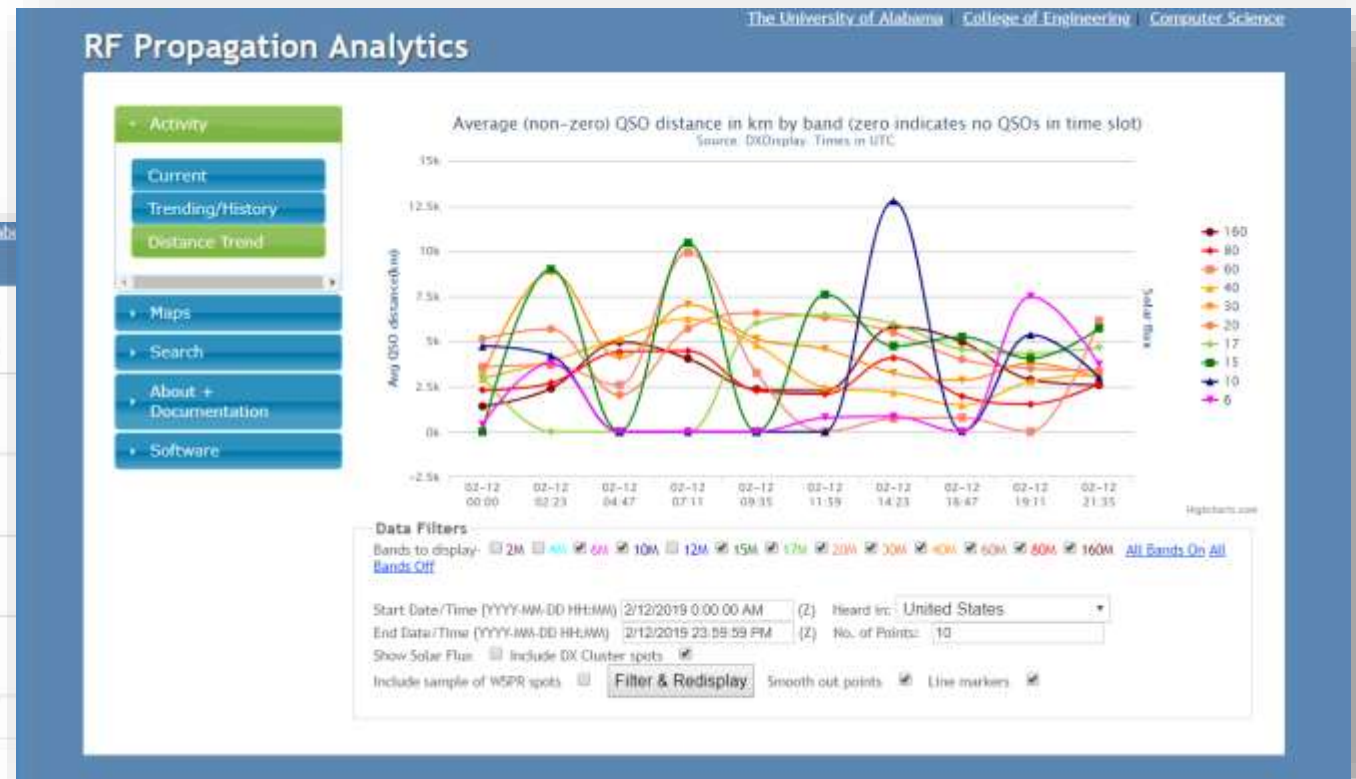
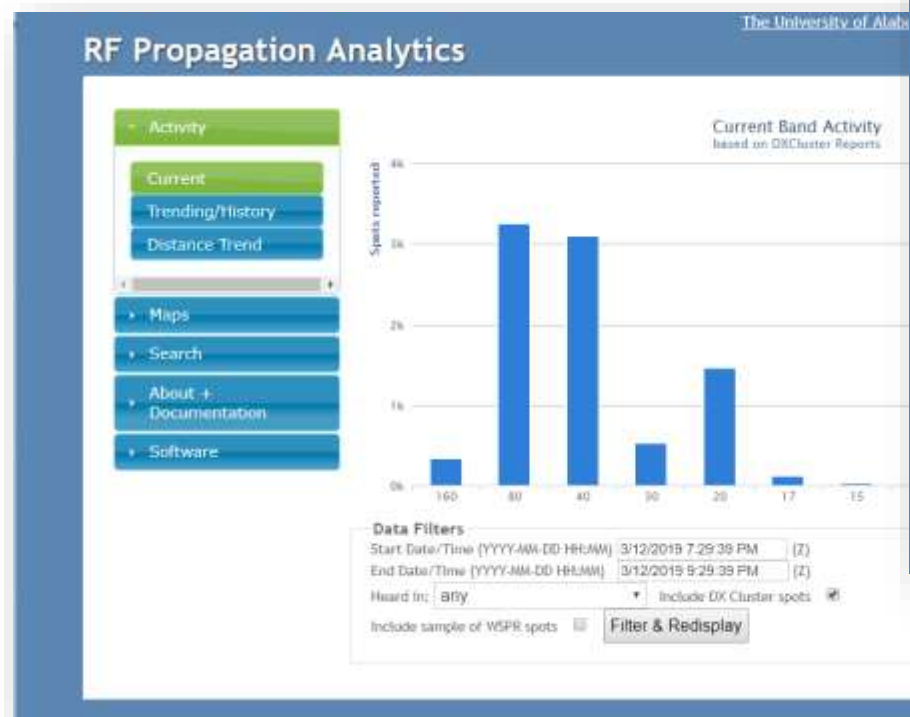


Cloud-to-cloud: HA8TKS



<https://dxcluster.ha8tk.hu>

Cloud-to-cloud: University of Alabama



Cloud-to-cloud: DX maps

The screenshot displays the DXMAPS 4.0 interface, which provides real-time information on QSO/SWL activity. The top navigation bar includes links for Site, Personal, Radio, Software, DX maps, DX news, and a search bar. The main header reads "DXMAPS 4.0 - QSO/SWL real time information". Below this, there are tabs for Map, List, Graph, and Chat, along with a "LF - HF" and "VHF & up" filter. A sidebar on the left offers various audio and video options, including "ROYALTY FREE AUDIO TRACKS", "FREE FILES", "CORPORATE MUSIC", "SOUND EFFECTS", "BACKGROUND MUSIC", "MUSIC FOR VIDEOS", and "AND MORE!". The central map shows a world map with a grid overlay, displaying numerous QSO/SWL connections as lines between various locations. A right sidebar contains a table of active stations, listing their call signs, frequencies, and other details. The table is organized into two columns, with the left column showing stations from 18:57z and the right column showing stations from 18:58z. The table includes columns for call sign, frequency, mode, and distance. The bottom of the page features a "START NOW" button.

DXMAPS 4.0 - QSO/SWL real time information

Map List Graph Chat

Europe Africa N.America S.America Asia Oceania World

2200 m 600 m 160 m 80 m 60 m 40 m 30 m 20 m 17 m 15 m 12 m 10 m All bands Ticker

Click on the map for info of that location
Right-click for more options

WWW.DXMAPS.COM - QSO/SWL 18:57z

2019-03-17 18:57 IK2QEB (JN55LD) 14 218.0 SSB 5V7EI (JJ06) 4399 km
2019-03-17 18:54 I7OEB (JN99AX) 14 218.0 SSB XR0ZRC (FF06) 12851 km
2019-03-17 18:54 F8JUV (JN18BW) 14 074.0 FT8 6W7ON4AVT (IK14M) 4220 km
2019-03-17 18:50 IV3RJ (JN65SW) 14 215.0 SSB 9G2DX (IJ95) LoTW 4705 km
2019-03-17 18:50 DL9IU (JO50KQ) 14 074.4 FT8 CE2FME (FF47) 12189 km
2019-03-17 18:50 F8BNU (JO10K) 14 032.0 CW 5X3C (KJ61HW) 6066 km
2019-03-17 18:49 TA5FA (KN90UX) 14 248.0 SSB 5X3C (KJ61HW) 4397 km
2019-03-17 18:46 E15GSB (JO51WU) 14 218.0 SSB 5V7EI (JJ06) 5109 km
2019-03-17 18:44 K0DMW (EN35) 14 097.1 WSPR F1AGR (JN04RJ) LoTW 5955 km
2019-03-17 18:44 QZ7IT (JO65DF) 14 097.1 WSPR V53ARC (JO87) 8649 km
2019-03-17 18:44 G4CUB (JO93FI) 14 097.2 WSPR F1AGR (JN04RJ) LoTW 1010 km
2019-03-17 18:44 IZ0FKE (JN61FW) 14 097.2 WSPR G0CCL (JO02BF) 1472 km
2019-03-17 18:44 QZ7IT (JO65DF) 14 097.1 WSPR G0CCL (JO02BF) 865 km
2019-03-17 18:44 EA2AAE (IN82KU) 14 097.1 WSPR G0CCL (JO02BF) 1069 km
2019-03-17 18:42 TA5FA (KN90UX) 14 248.0 SSB 5X3C (KJ61HW) 4397 km
2019-03-17 18:42 TR0TTEL (JH40RL) 14 218.0 SSB OE3ZJC (JN85HH) 5361 km
2019-03-17 18:41 DL7JAN (JN49IF) 14 248.0 SSB 5X3C (KJ61HW) 5727 km
2019-03-17 18:40 IW9GYL (JM77MN) 14 022.0 CW E51DOM/MM (JF97) 7796 km
2019-03-17 18:36 EA7JZZ (IM87EC) 14 215.0 SSB 9G2DX (IJ95) LoTW 3521 km
2019-03-17 18:36 IK2WSO (JN45OL) 14 218.0 SSB 5V7EI (JJ06) 4401 km
2019-03-17 18:36 IV3JOKO (JN66IS) 14 215.0 SSB 9G2DX (IJ95) LoTW 4694 km
2019-03-17 18:35 IK2YDJ (JN55) 14 218.0 SSB XR0ZRC (FF06) 12580 km
2019-03-17 18:34 VK3KHZ (QF22PE) 14 097.1 WSPR HB9TJM (JN38FQ) 16524 km
2019-03-17 18:34 DL1PA0EHG (JO32SQ) 14 097.1 WSPR EA7ADI (IM77AI) 2000 km
2019-03-17 18:34 QZ7IT (JO65DF) 14 097.1 WSPR G0CCL (JO02BF) 865 km
2019-03-17 18:34 EA8BFX (IL38BO) 14 097.2 WSPR F1AGR (JN04RJ) LoTW 2210 km
2019-03-17 18:34 EA8BFX (IL38BO) 14 097.1 WSPR MIAFZ (JO01DE) LoTW 2774 km
2019-03-17 18:34 SM4VEY (JO59WK) 14 097.0 WSPR EA7ADI (IM77AI) 2755 km
2019-03-17 18:34 OP0GVN (BS59VI) 14 097.1 WSPR G0CCL (JO02BF) 13675 km
2019-03-17 18:34 TF1VHF (HP84WL) 14 097.0 WSPR EA7ADI (IM77AI) 3199 km
2019-03-17 18:34 QZ7IT (JO65DF) 14 097.0 WSPR EA7ADI (IM77AI) 2415 km
2019-03-17 18:34 EA8BFX (IL38BO) 14 097.1 WSPR G0CCL (JO02BF) 2869 km
2019-03-17 18:34 EA8BFX (IL38BO) 14 097.1 WSPR PD1RA (JO22XF) 3094 km
2019-03-17 18:34 DK8FTA (JN58OE) 14 097.1 WSPR HZ15K (KL91) LoTW 3860 km
2019-03-17 18:33 IK4ZGX (JN54KV) 14 022.0 CW E51DOM/MM (JF97) 8640 km
2019-03-17 18:33 SV7XRO (JO60CF) 14 218.0 SSB IK8BQE (JN70EN) LoTW 4035 km
2019-03-17 18:32 IK4SE (JN54PL) 14 218.0 SSB 5V7EI (JJ06) 4335 km
2019-03-17 18:31 OE3IDE (JN78KK) 14 218.0 SSB 5V7EI (JJ06) 4867 km
2019-03-17 18:31 IT8ZZ (JM68QD) 14 223.0 SSB IK8BQE (JN70EN) LoTW 282 km
2019-03-17 18:31 F4WBL (JN25) 14 218.0 SSB XR0ZRC (FF06) 12163 km
2019-03-17 18:30 IK8ROF (JN70EN) 14 218.0 SSB XR0ZRC (FF06) 12594 km

WWW info: SFI=70 A=12 K=2 Unsettled SWX=Minor storm

4399 km Up 6. Trx
12851 km FT8
4220 km trn 4 qso 73 s
4705 km trn FT8 qso
12189 km trn for qso.73 up
6066 km
4397 km
5109 km Thanks Lads La Fheile Padraig
5955 km EN35=>JN04RJ WSPR SNR=-29
8649 km JO65DF=>JO87 WSPR SNR=-22
1010 km JO93FI=>JN04RJ WSPR SNR=-25
1472 km JN61FW=>JO02BF WSPR SNR=-11
865 km JO65DF=>JO02BF WSPR SNR=-23
1069 km IN82KU=>JO02BF WSPR SNR=-24
4397 km up5
5361 km
5727 km up5
7796 km up 0.8 great ears!! Enjol 3Y0i
3521 km Trn QSO, 5/7 in Spain, 73
4401 km 5 to 10 up
4694 km
12580 km trn for qso
16524 km QF22PE=>JN38FQ WSPR SNR=-25
2000 km JO32SQ=>IM77AI WSPR SNR=-20
865 km JO65DF=>JO02BF WSPR SNR=-20
2210 km IL38BO=>JN04RJ WSPR SNR=-22
2774 km IL38BO=>JO01DE WSPR SNR=-20
2755 km JO59WK=>IM77AI WSPR SNR=-11
13675 km IB59UH=>JO02BF WSPR SNR=-26
3199 km HP84WL=>IM77AI WSPR SNR=-22
2415 km JO65DF=>IM77AI WSPR SNR=-2
2869 km IL38BO=>JO02BF WSPR SNR=-3
3094 km IL38BO=>JO22XF WSPR SNR=-21
3860 km JN58OE=>KL91 WSPR SNR=-24
8640 km trn
4035 km a great dvar.
4335 km mondo pescatori...
4867 km NOT XR0ZRC
282 km e ascolta poi scrivi.
12163 km
12594 km

ROYALTY FREE AUDIO TRACKS

FREE FILES

CORPORATE MUSIC

SOUND EFFECTS

BACKGROUND MUSIC

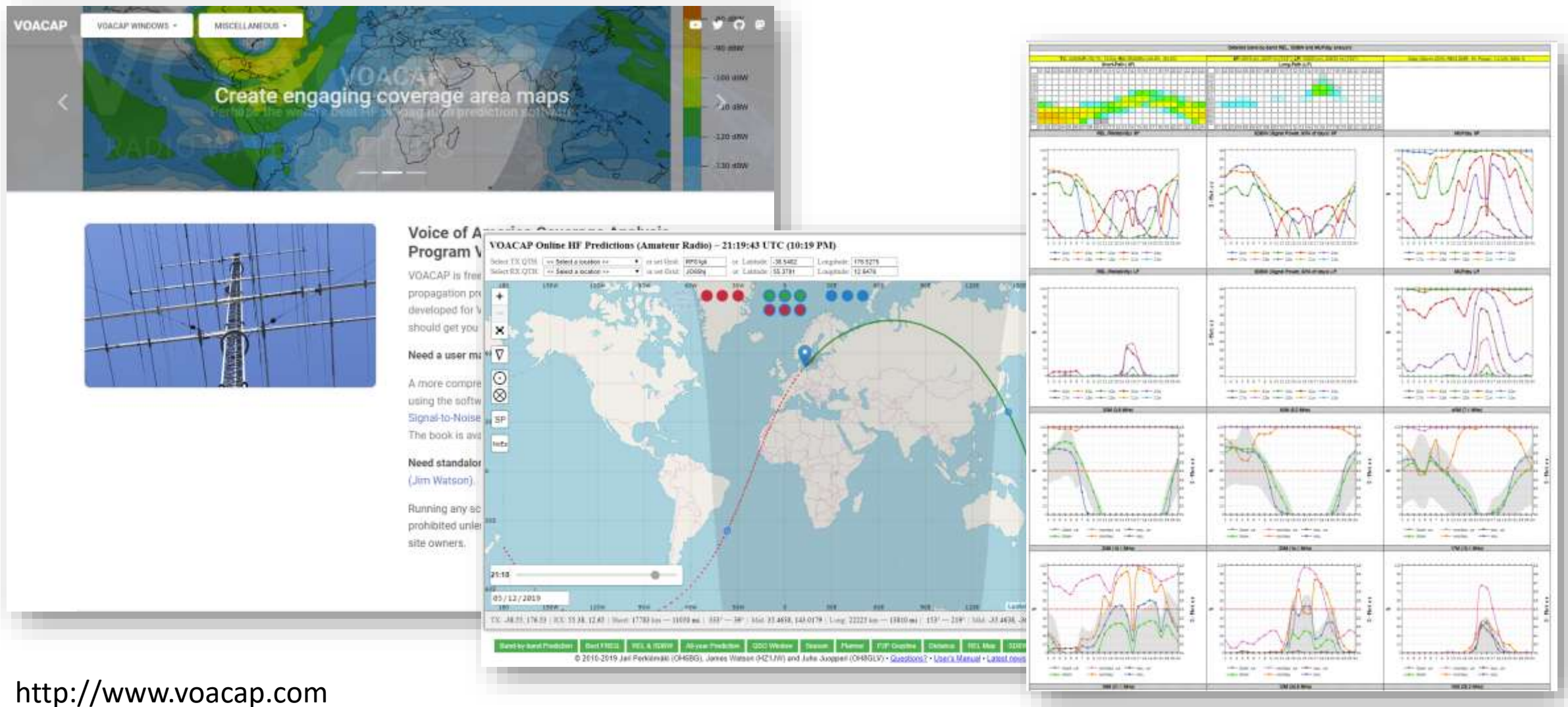
MUSIC FOR VIDEOS

AND MORE!

START NOW

<https://www.dxmaps.com>

Cloud-to-cloud: VOACAP



Klientprogram: DXLab SpotCollector

Del av den betydligt större DXLab-sviten för komplett hantering av en amatörradiostation. Integrerad med utbredningsförutsägelser, loggbok, diplomhantering, etc.

SpotCollector 8.3.0 @ 2019-03-12 21:52 Z [CC,DXK,PF,DXV,PV] 6 entries (log: SM7IUN.mdb)

WV 03-12 2106 Z
SFI 71 History
Q: 6 A 9 1 K

Outgoing spot
Call CT1ILT 1 840,0 Freq Cluster
Notes X Local

Spot source status
Report Stats Prop Config Help

	Freq	Call	DXCCCountry	Mode	LastTime	Notes	Source	Network	LastOr	NA	SA	EU	AF	AS	Odx	State	Need	SPS	SPro
	1 820,6	3B8XF	Mauritius Islan	CW	2019-03-12 2144	QSX 1822.25	DL1ROJ	EI7MRE	EU			Y			359		DZ		
	1 824,6	JA5DQH	Japan	CW	2019-03-12 2142	CW 18 dB 22 WPM CQ	JF2IWL-#	VE7CC	AS			Y		Y	1270		DZ		
	1 840,0	7P8LB	Lesotho	FT8	2019-03-12 2141	FT8 normal	EU0EU-@	CQDX	EU			Y	Y		897		DZ		
	7 092,0	7P8LB	Lesotho	SSB	2019-03-12 2142	only Ja	IV3RJT	CQDX	EU			Y			630		D	3	
	10 110,0	XR0ZRC	Juan Fernand	CW	2019-03-12 2145	QSX 10111.88 IOTA SAC	EA4ZK	EI7MRE	EU		Y	Y		Y	936		DZ	-8	3
	14 012,0	XR0ZRC	Juan Fernand	CW	2019-03-12 2149	still 569 here	DM5EM	EI7MRE	EU	Y	Y	Y			538		D	7	38

Sort
First Call
Last Freq
Rcv Az

Filter: SQL [Need F]
ce2sv X AutoHide Need Call DXCC Freq Tag Band Mode Cont Origin
Audio Age LoTW eQSL Mrthn S C
Need F Need C N+ EU CWops Unkwn Need S My spot Myneed

Color codes
verified unneeded unconfmd unwrkd B or M unwrkd counter special tag

Vad kan RBN göra för dig?

Test



- Bandöppningar
- Fyller bandkartan
- Spottar dig
- Visar lediga frekvenser
- Jämförelser med konkurrenter

DX

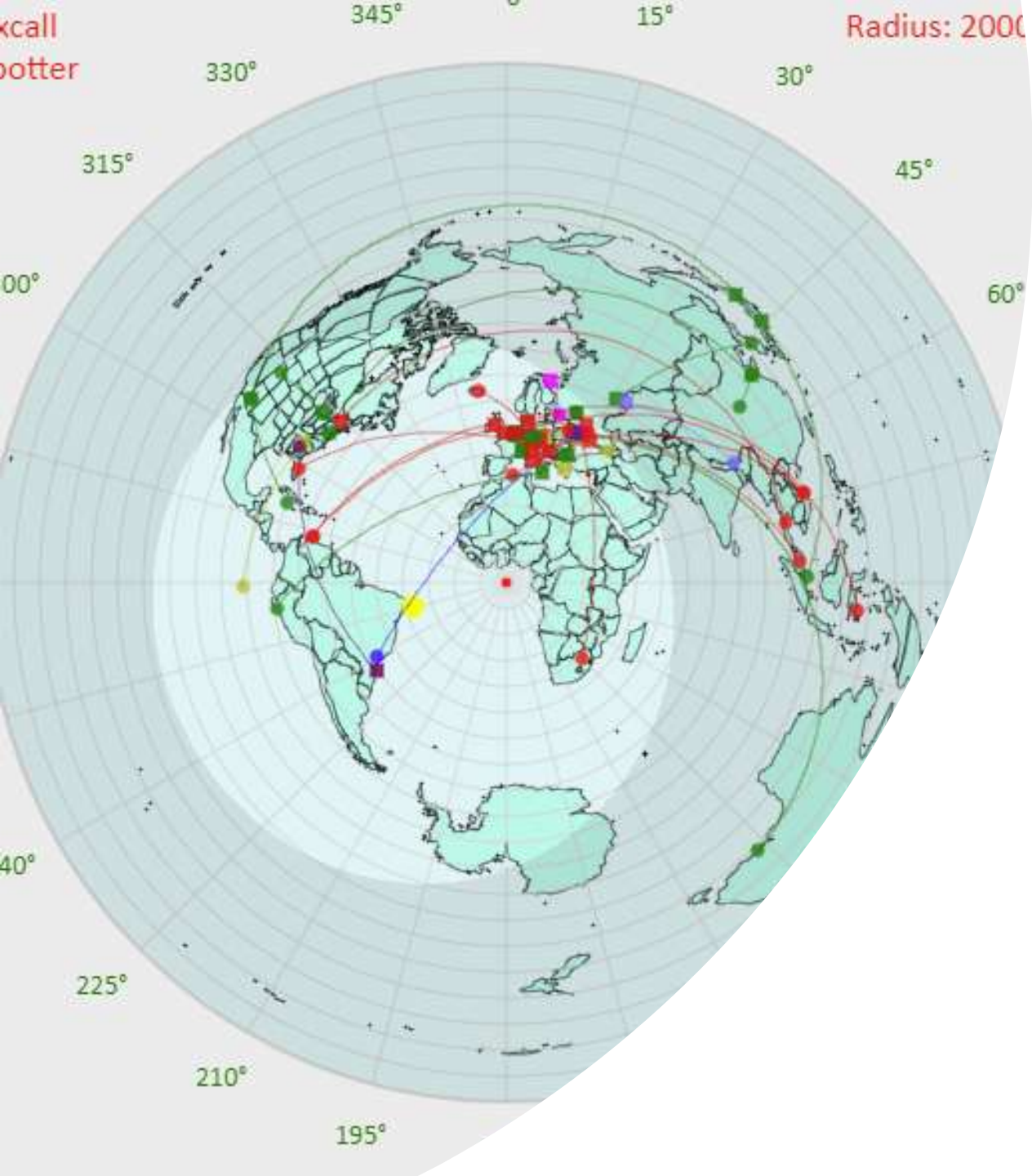


- Varseblivning
- Bandöppningar
- Utbredningsanalys
- Varningar

Antenn-experiment

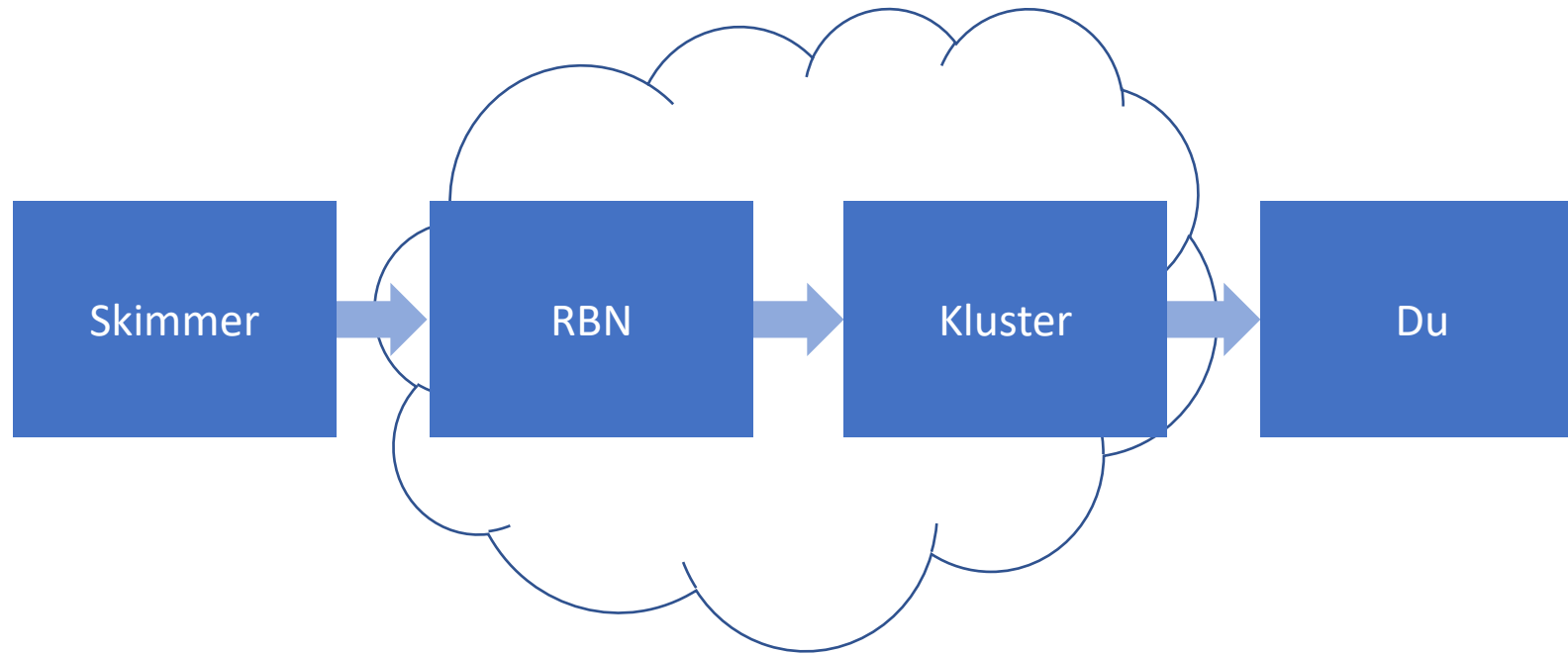


- Antennprestanda
- Riktverkan och utbredningsvinkel
- A-B tester



Tack

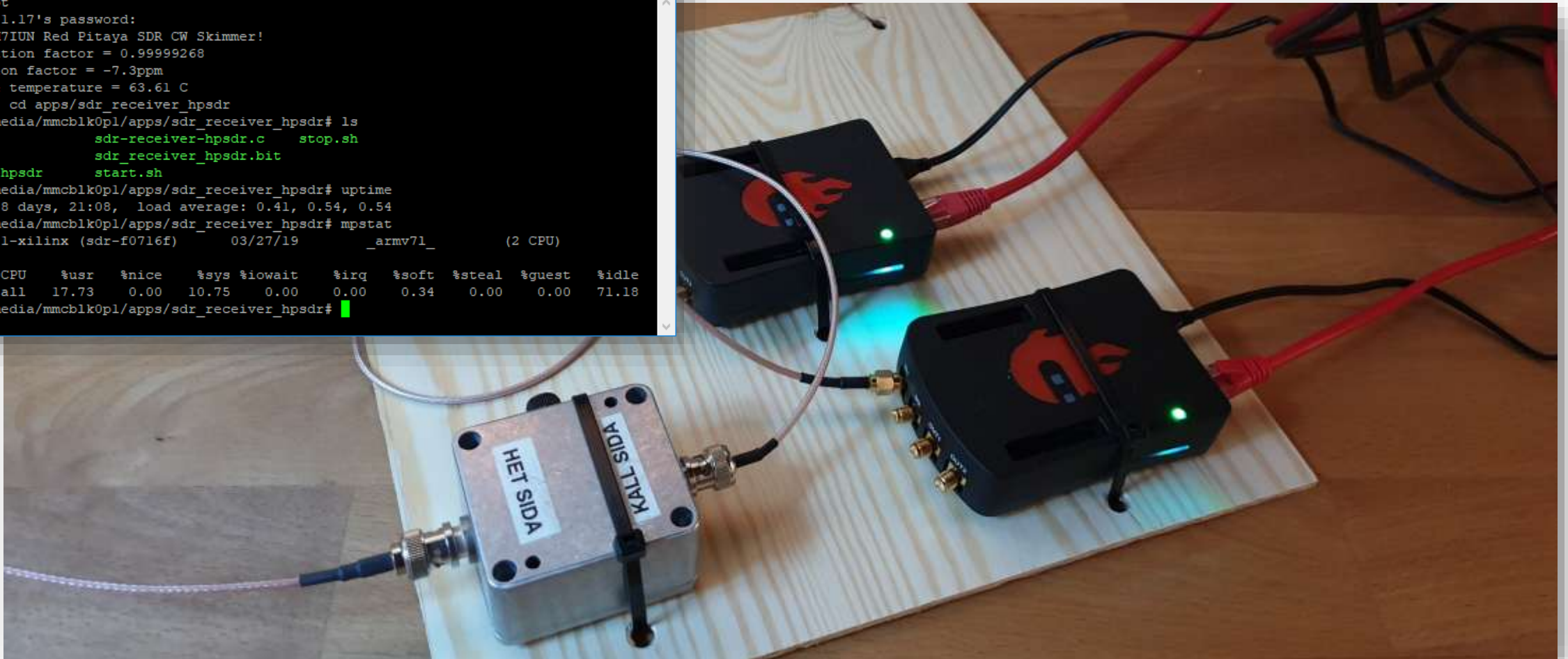
Hela kedjan



SM7IUN-#

```
192.168.1.17 - PuTTY
login as: root
root@192.168.1.17's password:
Welcome to SM7IUN Red Pitaya SDR CW Skimmer!
HPSDR calibration factor = 0.99999268
FT8 calibration factor = -7.3ppm
Zynq 7020 die temperature = 63.61 C
sdr-f0716f:~# cd apps/sdr_receiver_hpsdr
sdr-f0716f:/media/mmcblk0pl/apps/sdr_receiver_hpsdr# ls
Makefile          sdr-receiver-hpsdr.c  stop.sh
index.html        sdr_receiver_hpsdr.bit
sdr-receiver-hpsdr start.sh
sdr-f0716f:/media/mmcblk0pl/apps/sdr_receiver_hpsdr# uptime
 12:20:18 up 8 days, 21:08,  load average: 0.41, 0.54, 0.54
sdr-f0716f:/media/mmcblk0pl/apps/sdr_receiver_hpsdr# mpstat
Linux 4.14.101-xilinx (sdr-f0716f)      03/27/19      _armv7l_      (2 CPU)

12:20:19      CPU    %usr   %nice    %sys %iowait    %irq   %soft  %steal  %guest   %idle
12:20:19     all    17.73    0.00   10.75    0.00    0.00    0.34    0.00    0.00   71.18
sdr-f0716f:/media/mmcblk0pl/apps/sdr_receiver_hpsdr#
```



#3 Värddator och mjukvara

- “CW Skimmer Server” och/eller “RTTY Skimmer Server”

- Avkodar telegrafi inom den anslutna radions passband
- CW tar ca 10-20% av en 2GHz Core i5 medan RTTY tar **mycket** mer

- “CWSL_DIGI”

- Kör ett godtyckligt antal kopior av WSJT-X utan GUI

- “RBN Aggregator”

- Konsoliderar och kurerar strömmen av avkodade anropssignaler från flera skimrar och publicerar på RBN
- Kan styra bandcykling

