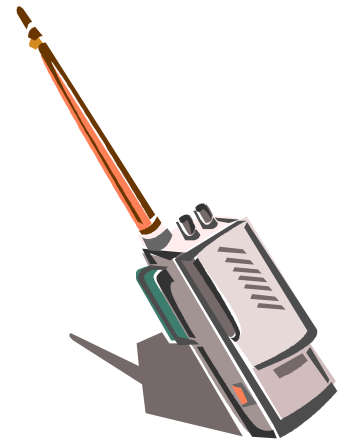


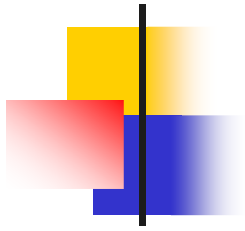
Fishing for DX tools, techniques and lessons learned



Joseph Kasser
G3ZCZ/VK5WU
March 2017



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2008, 2017



Similarities

Fishing

- Fishing rod
- Understand attributes of fish
- QRM
 - overhead branches
 - Rocks and floating logs
- QRN
 - Weather
- Human element
 - Patience
- Throw it back when caught for others to catch
- Tools and gadgets facilitate
- Fish to catch depends on location/body of water

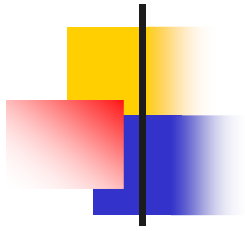
Chasing DX

- Aerial pole
- Understand attributes of DX
- QRM
 - Other stations
- QRN
 - Propagation
- Human element
 - Patience
- Working it allows others to contact it
- Tools and gadgets facilitate
- DX to work depends on location/frequency

August 1961 QST

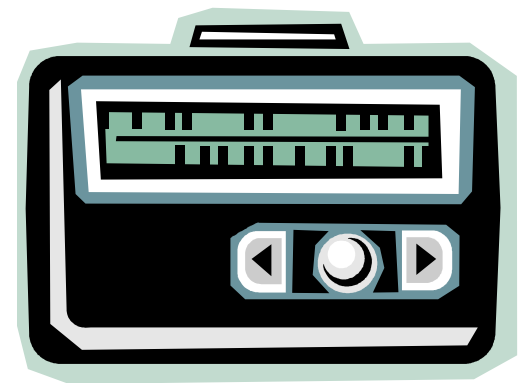


- Fishing compared to DXing



What is DX?

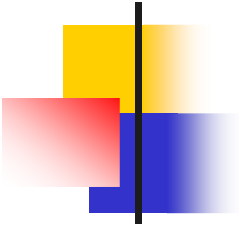
- Wikipedia
 - Diagnosis, medical shorthand symbol generally written as Dx or D_x
 - The DX molecule or motif, used in DNA nanotechnology
- Amateur Radio
 - “Distant Transmission”
 - It depends
 - Frequency
 - Location



DX through the years – tools, techniques and learning lessons

- 1960's A3571, BRS and G2PE5S
- 1968 G8BTB [and brief ON8IK, F2WN], G3NHZ
- 1970 G3ZCZ/W8
- 1972 G3ZCZ/W3
- 1981 4X/G3ZCZ
- 1989 W3/G3ZCZ
- 1999 VK5WU
- 2007 G3ZCZ
- 2008 9V1CZ





1960's A3571, BRS and G2PE5S

- Medium Wave Dxing
 - HE-30
 - Long wire under gutter around half the house
- DX TV
 - Bush TV sets Europe and Russia
- Location is important
 - Higher is better on VHF





Some DX

RADIO STATION

W C S M

WC SM RADIO INC.

PHONE 586-5134

CELINA, OHIO

Nov. 26 1965

THE QUALITY MUSIC SPOT

350 K.C.

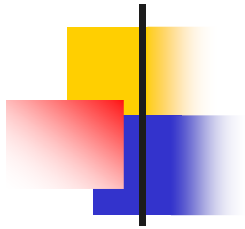
ON YOUR AM DIALS

Mr. Joe Kasser
67 Lyttelton Rd.
London N.2., England

Dear Mr. Kasser:-

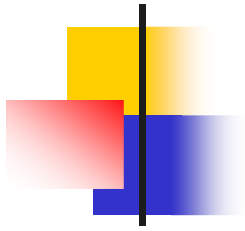
Thank you very much for the DX report on this Station on
Nov. 16 1965.

It is hard to believe that you picked up our signal. You have the
distinction of reporting from the greatest distance.




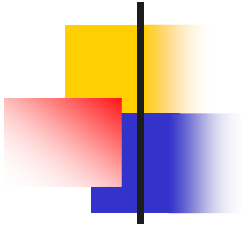
1968 G8BTB, G3NHZ

- *A Low Power Transceiver for Two Meters*
 - 10-50 mW AM using 2N918 final
 - Superregentive receiver
 - Eddystone die cast box
 - Telephone handset
 - Rabbit's ears aerial (extendable)
 - 1000 mile per watt award (/P with 4 element beam)
 - Dream of working stateside from portable handheld
 - Pedestrian portable
- Thinking about automatic Morse code sending



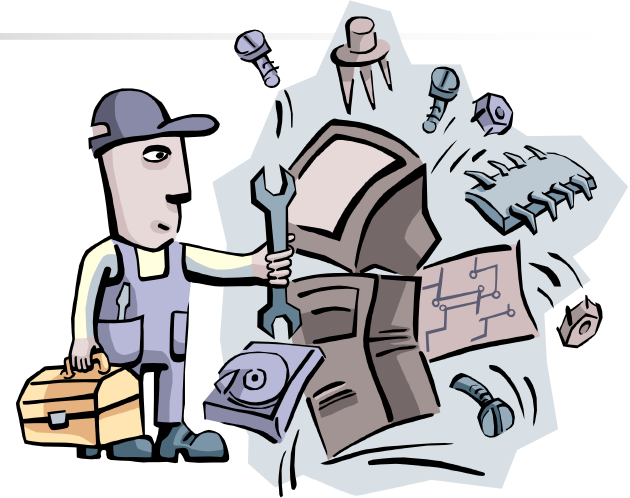
The space bug hits

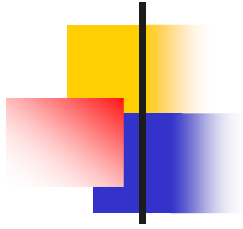
- Australis - OSCAR 5
 - Launched January 23, 1970
 - DX
 - 1434 - 1477 Km
 - Downlink on 144.050 MHz and 29.45
 - Middle of the night passes
 - Telemetry 



Projects

- Preamplifiers
- BFO's
- Q multipliers
- Audio filters
- Modular – plug and play at VHF/UHF
- **Interoperability**





Lessons learned at G8BTB

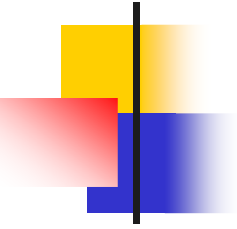
- Knowledge comes from experience
 - Magazines
 - Personal
 - Other person's via magazines, talks, etc
- Take everything with a pinch of salt
 - Not everything you hear or see is correct
- Amateur radio is fun and has many facets and challenges
- Build it, use it **and then learn why it works** to improve it
- Location makes a difference



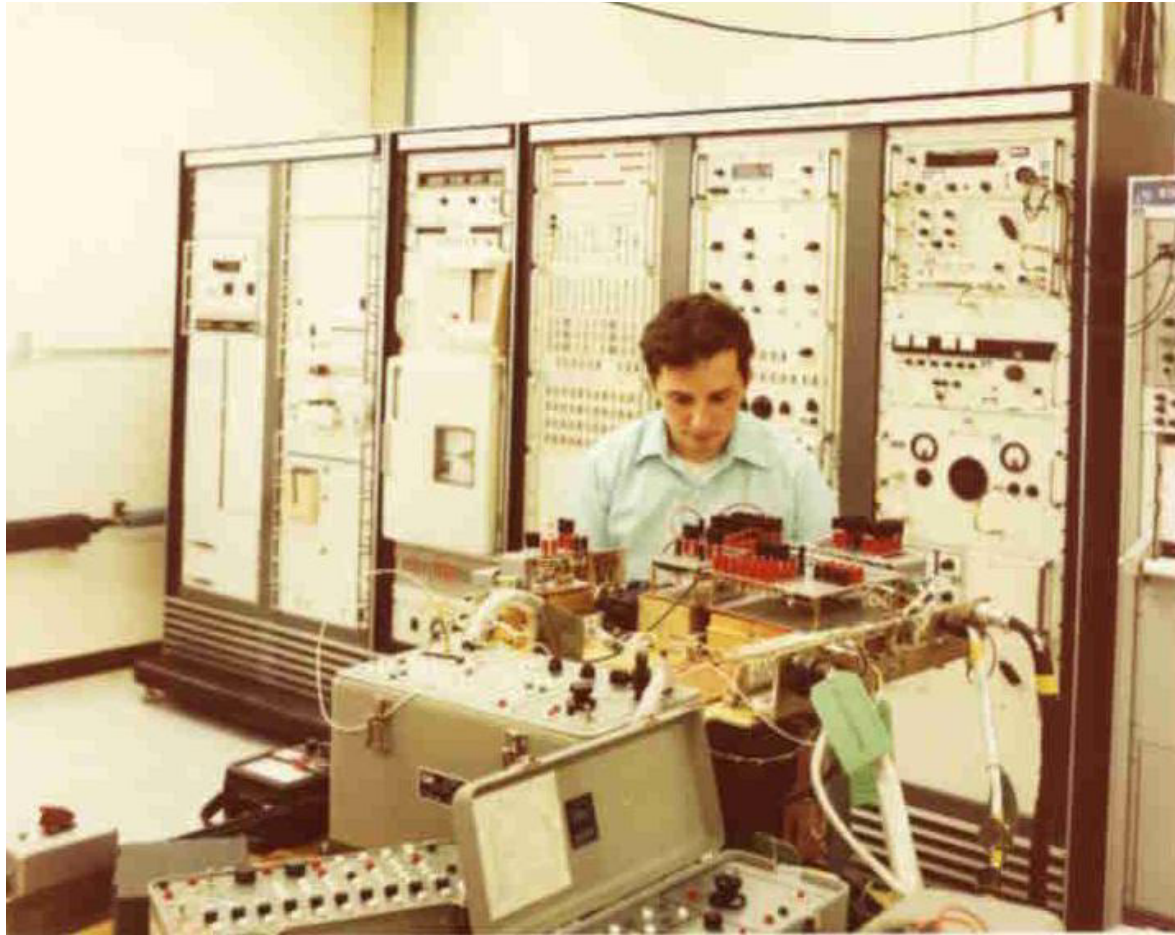
1970 G3ZCZ/W8

- Ann Arbor
 - Balanced wire in digs for 80-40-20.
 - Lunar DXpedition
- Detroit
 - Early FT-101 multi band, mostly transistor
 - Mobile whip on balcony
 - Adjustable angle punched through pile ups
 - Morse code got through when SSB failed
 - RTTY as a challenge using Model 15

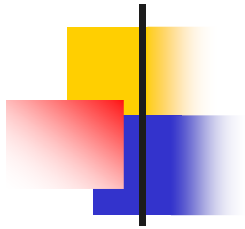




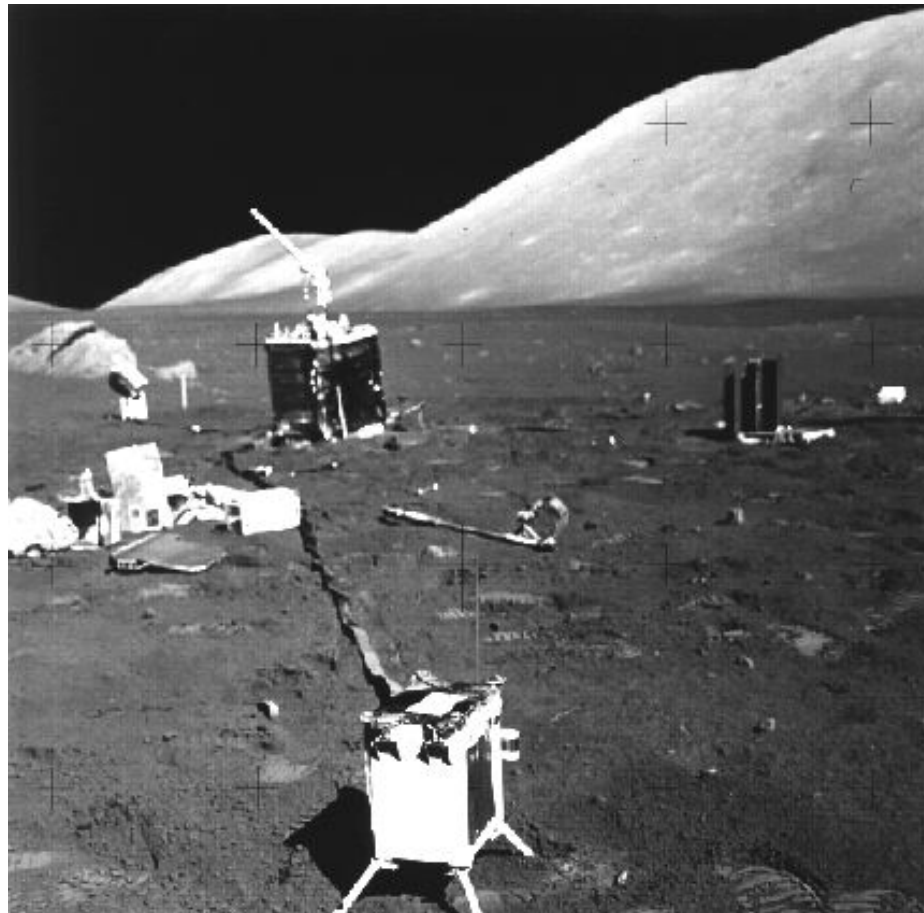
ALSEP



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Dxpedition QTH?

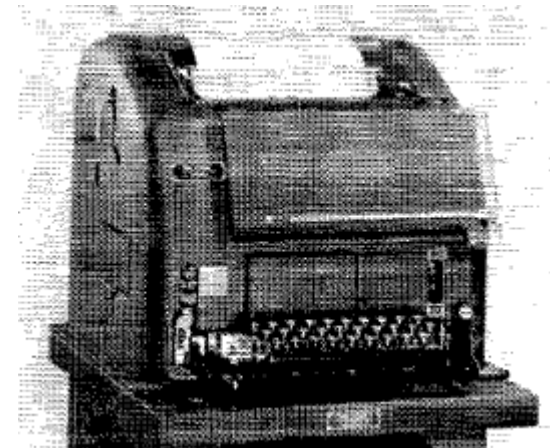


Copyright Joseph Kasser, G3ZCZ, 2008

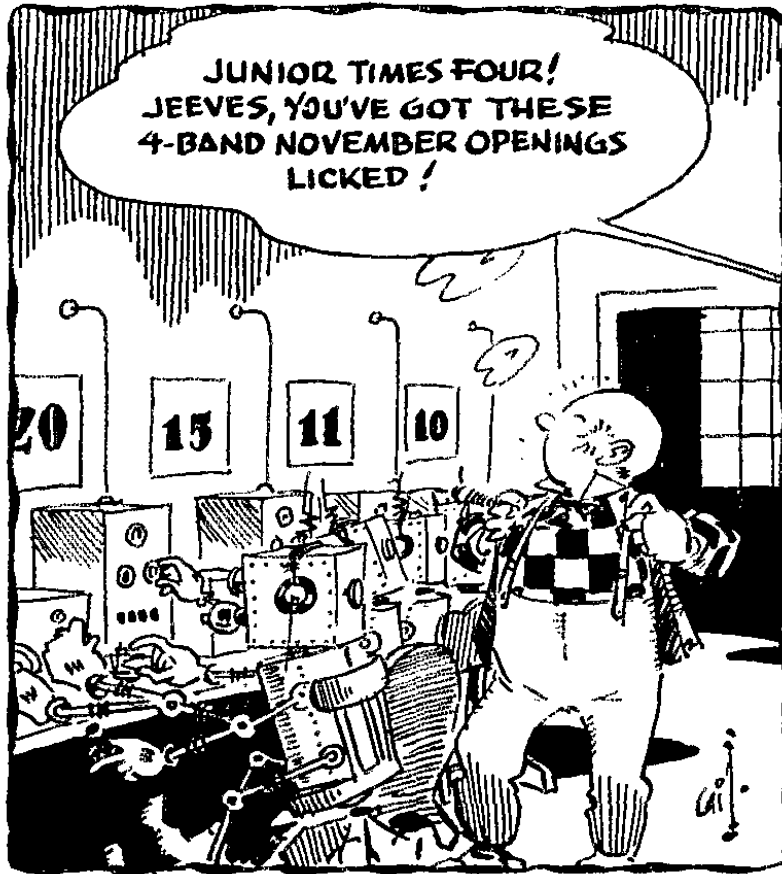
RTTY in 1970-72



- RTTY is a challenge
- Brag tapes
- SORCARS
- August 1954 QST



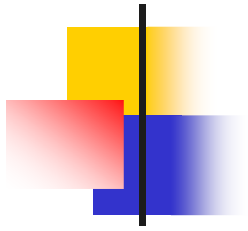
Thinking about an automated contest operator



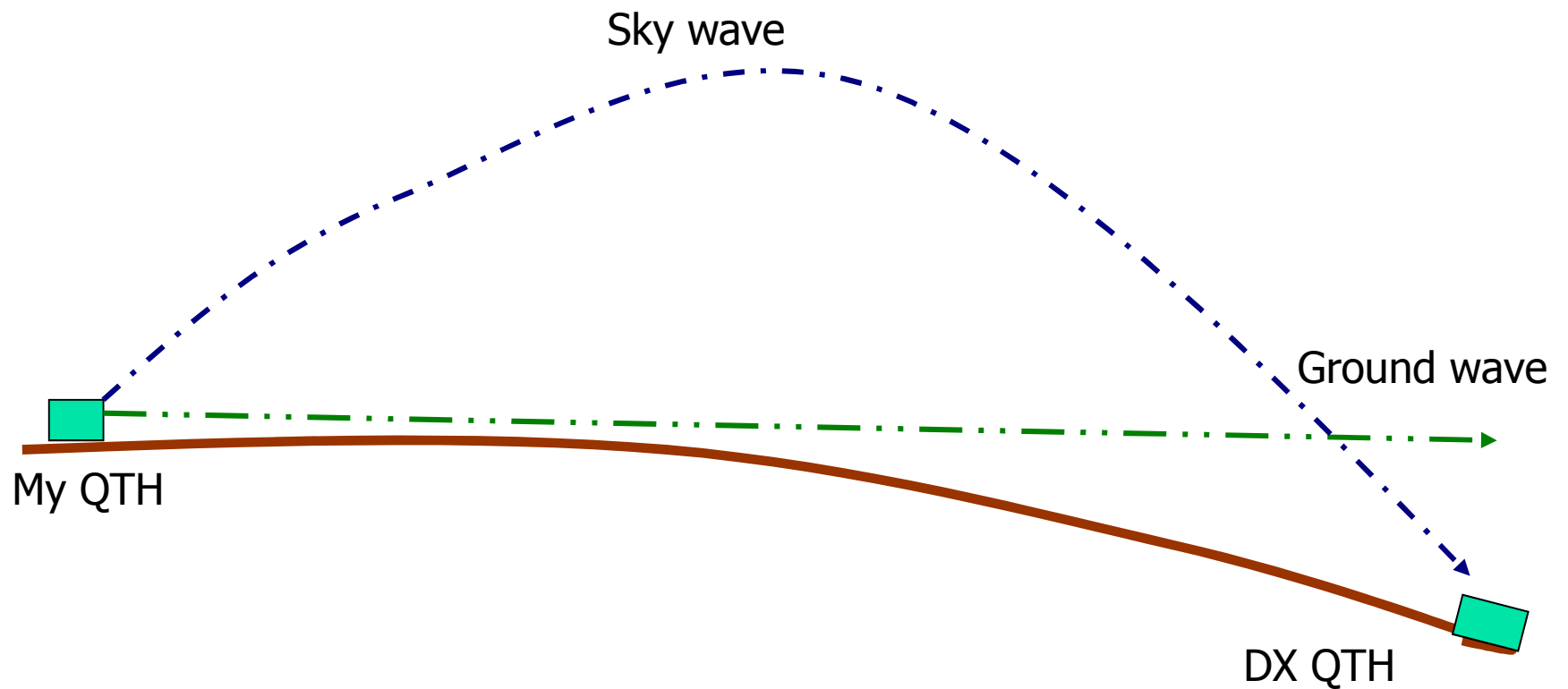
QST November 1956
QST March 1958

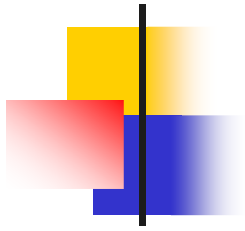
- Self
- Operating
- Radioteletypwriter
- Contest
- Amateur
- Radio
- Station
- RTTY Journal, Dec 1972, Jan 1973, Feb 1973.

Copyright Joseph Kasser, G3ZCZ, 2008



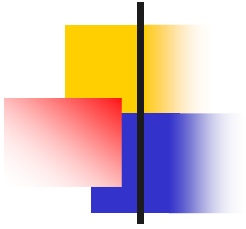
Lessons learned – Radio Propagation





1972 G3ZCZ/W3

- HF balanced wires
- OSCAR from balcony
- OSCAR mobile
- Mode B terminal
- Into microcomputers to help working DX
 - Contest logging
 - Orbit predictions
 - 1st on-the-air ASCII signals
- PVRC DX Repeater
- QRP fun

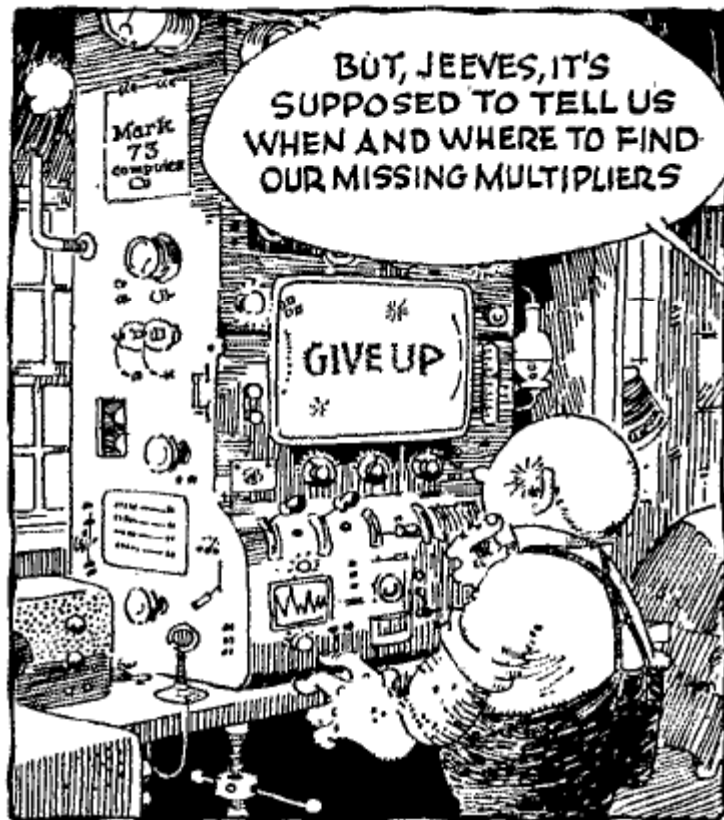


Systems integration



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Locating DX stations



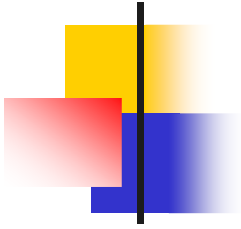
— Reprinted from March 1964 QST.

- PVRC 147MHz audio repeater
- DX spotting
- DX predicting
- Early packet radio QSO tests on AMRAD repeater took place, but no applications

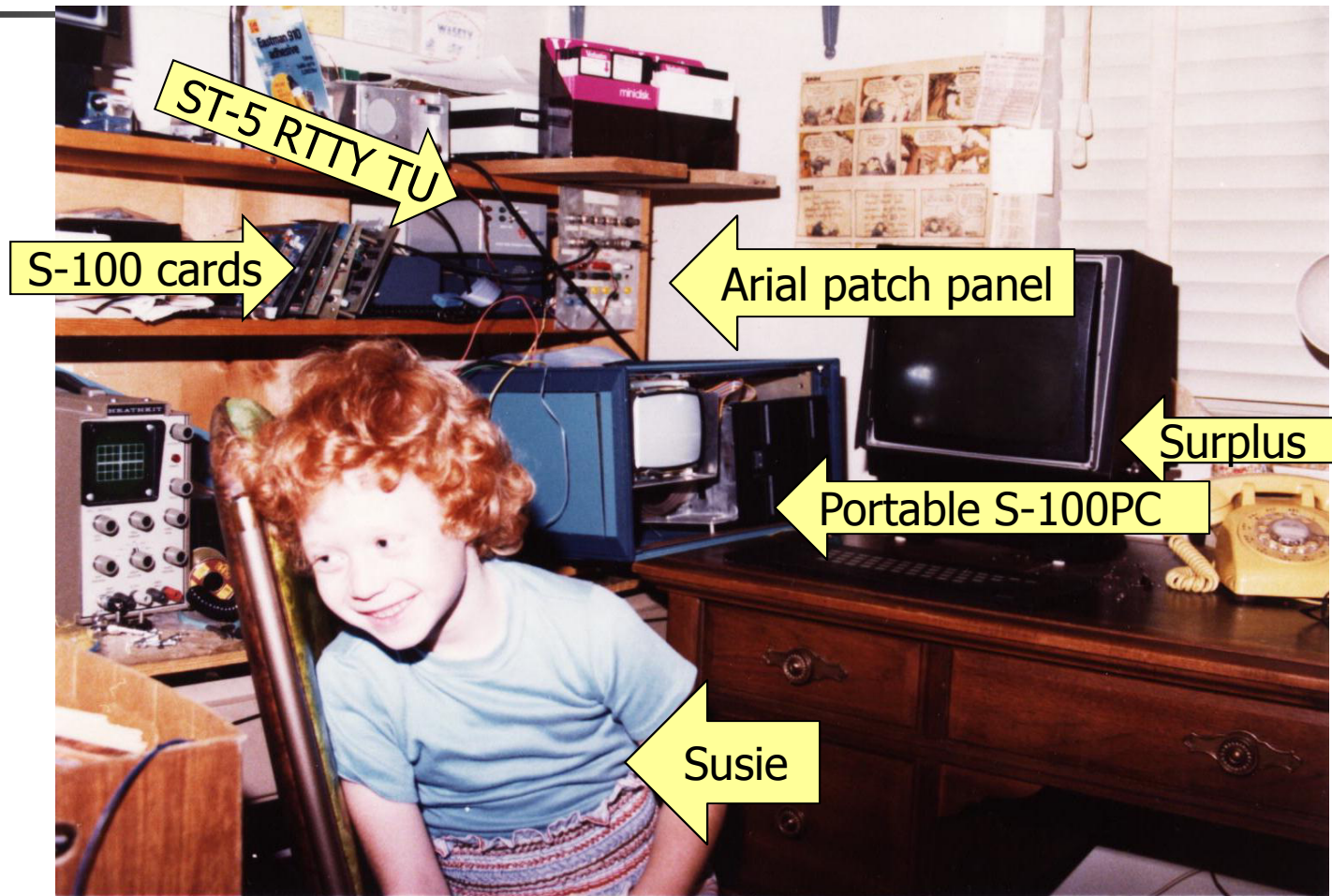
QST March 1968

Copyright Joseph Kasser, G3ZCZ, 2008

20

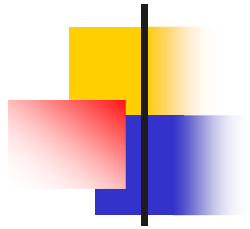


PC state of the art circa 1981

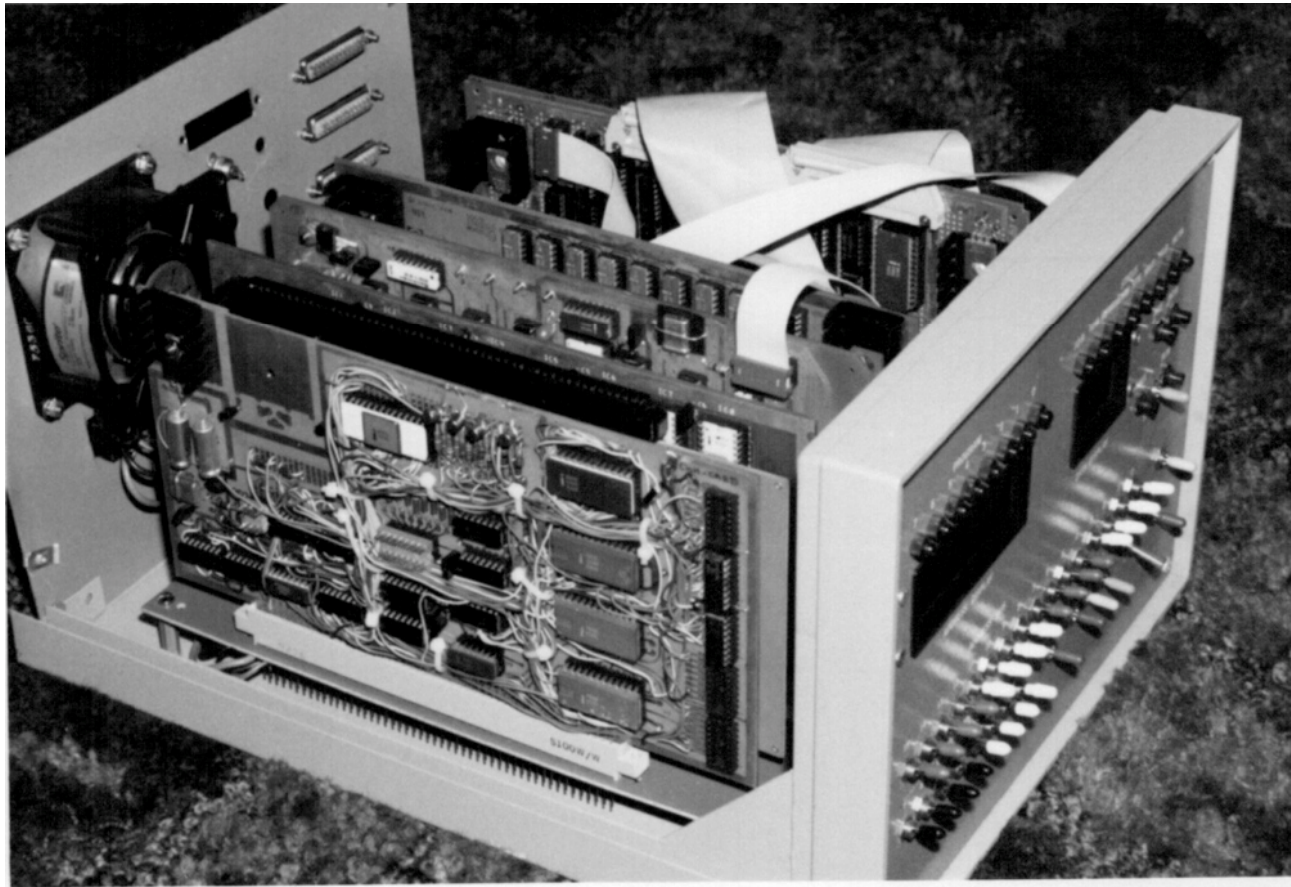




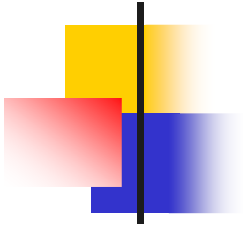
Copyright Joseph Kasser, G3ZCZ, 2008



S-100 microcomputer with front panel

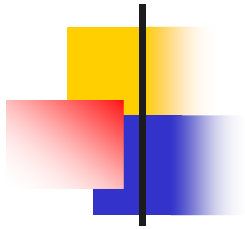


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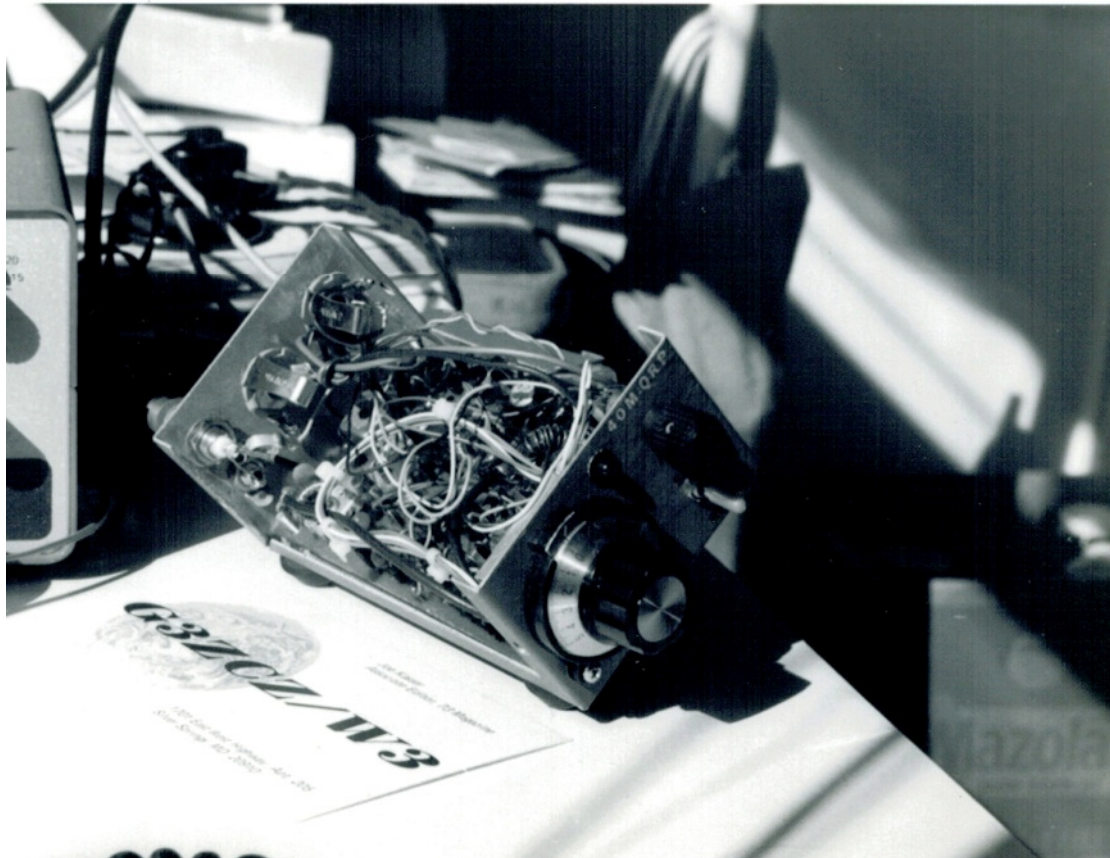


QRP fun

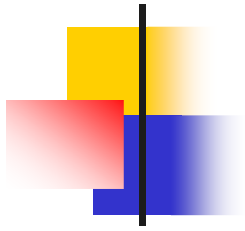
- 40 M
 - Xtal controlled TX
 - Direct conversion RX
 - ATU
 - Random length long wire aerials
 - Maryland, London, California



40 M QRP (1W)

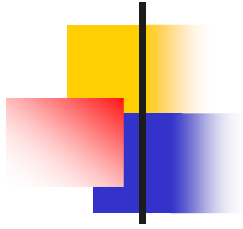


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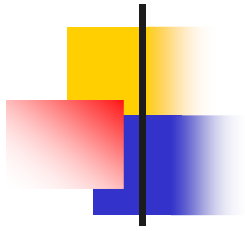
Gizmos and gadgets

- Automatic CQ devices
- Automatic QSY for LEO OSCAR passes
- Telemetry capture and decode
- CW keyboards and readers
- Digital modes are S....L.....O.....W
- Automating RTTY/CW QSOs
 - Smart brag tapes (text files)
 - On floppy disks, or 10MByte Hard disks
 - Macro keys



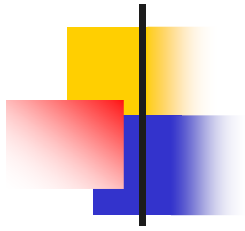
1981 4X/G3ZCZ

- 50 MHz DX TV
- Low balanced wires on hilltop
- Multi-band dipole on roof of block of flats
- PK23Com which became LanLink
- Automating QSOs
 - Computer worked DX in countries I never heard
 - Asynchronous QSOs with many countries
 - Especially HP and VU



Lessons learned in 4X

- DX is relative
- Location counts
- Automatic QSOs rack up points without wasting operator's time
- Programming is fun
- Turing test – look out!
- Propagation is not the only factor upon which a QSO depends

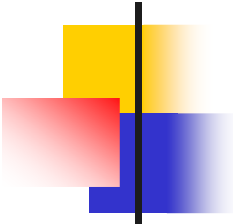


1989 W3/G3ZCZ

- Focus on applying PCs to catching DX
 - Predicting probability of contact
 - Conventional HF and
 - VHF using packet via wormholes
- AMSAT
- Packetcluster
- Automating contest QSO's
- Automating QSO's

Logbook (DOS: create your own windows)

ENTRY	DATE	TIME	BND	CALL	TX	RX	MODE	PWR	S	R	COMMENTS
7128	92/03/23	0103	20	FC4FI	599	599	RTTY	100	-	-	057-158
7129	92/03/23	0112	15	HK3CAL	599	599	RTTY	100	-	-	058-085
7130	92/03/23	0113	15	W6XD	599	599	RTTY	100	-	-	059-075
7131	92/03/23	0125	20	W6/CORZT	599	599	RTTY	100	-	-	060-158
7132	92/03/23	0128	20	K6W2/0	599	599	RTTY	100	-	-	061-356
7133	92/03/24	0006	20	SU1SK	57	58	SSB	400	-	-	14.256 Net
7134	92/03/24	0007	20	JY3ZH	59	59	SSB	400	-	-	Net Control
7135	92/03/24	0104	20	PY2BDY	599	509	AMTR	100	-	-	Pedro QRM'd#QSB'd
7136	92/03/25	0301	15	XE2SOC-5	599	599	PCKT	100	-	-	
7137	92/03/25	0304	15	XE3UT	599	599	PCKT	100	-	-	USA Nose
7138	92/03/25	0330	20	CP6RP	58	58	SSB	400	-	-	
7139	92/03/26	0052	15	H10AX	599	599	AMTR	100	-	-	
7140	92/03/26	0106	15	NSCTC	599	599	AMTR	100	-	-	Irwin, Arkansas
7141	92/03/26	0125	15	HP4CW	599	599	AMTR	100	-	-	Modesto LAN-LINK
7142	92/03/26	0200	15	ZP6XD	599	599	AMTR	100	-	-	LAN-LINK
7143	92/03/26	0205	15	CE3GDN	599	599	AMTR	100	-	-	APLINK
7144	92/03/26	2339	15	TY1PS	599	599	AMTR	100	-	-	APLINK
7145	92/03/26	2347	15	NK4X	599	599	AMTR	100	-	-	Arnold
7146	92/03/27	0016	20	N4LIH	599	599	RTTY	100	-	-	Barbara



Partial list of Nodes available via the WA3NAN Node circa 1993

BLWNDE:VK3BLW-2

BRADIP:WB9UUS

CNBBPQ:F6CNB

DXWHO:VE7CC-3

EHQBBS:VK2EHQ

EZF:KC4ASF-3

GIN48:VK1RGI

GLSBPQ:KG5RG-3

HAISIP:VK3ERM-3

HNL:KJ9U

HOLD2:VK3RPS

BOWR48:VK2XDM-2

CHAVER:N3BBF

DCA1:K3AF-1

EDUBBS:PP5UF-8

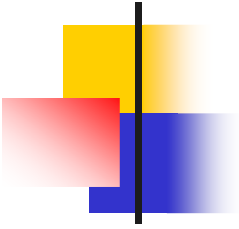
EWABBS:KB3RM

EZFBB:KC4ASF-1

HGN:W3BRZ-9

HOCOBB:NB3P

HOLD70:VK3RPS-7



AMSAT

- DX via satellites



STS-35 pile up over ZS

- Phase 3A



GB1MIR

- SAREX



AO-6 G3ZCZ/W3



Phase 3 A lift off



AO-6 TLM



Problem on one engine



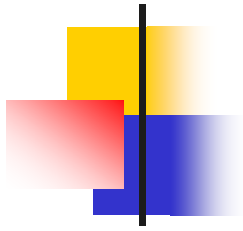
AO-6 JA1ANG



Going down

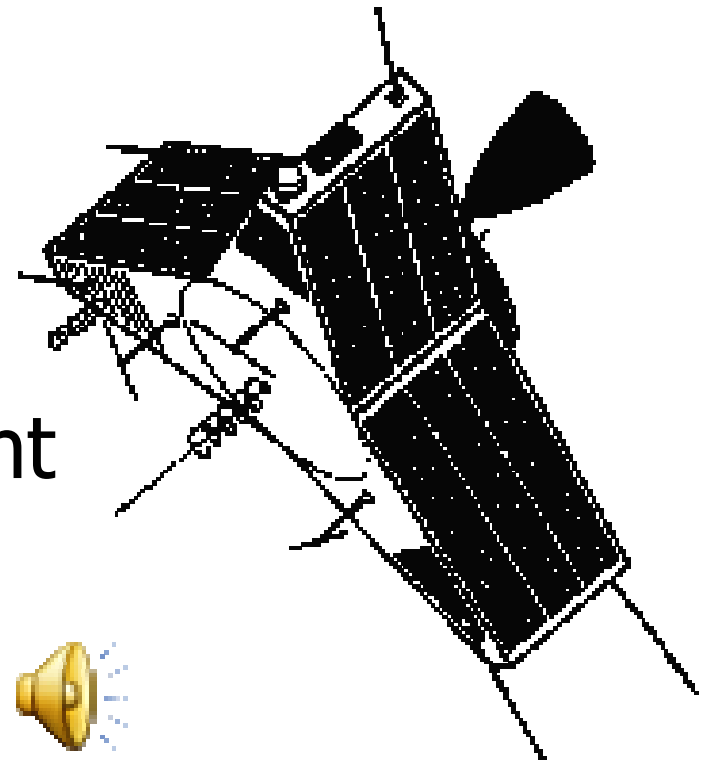


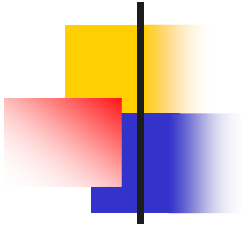
AO-8 launch net



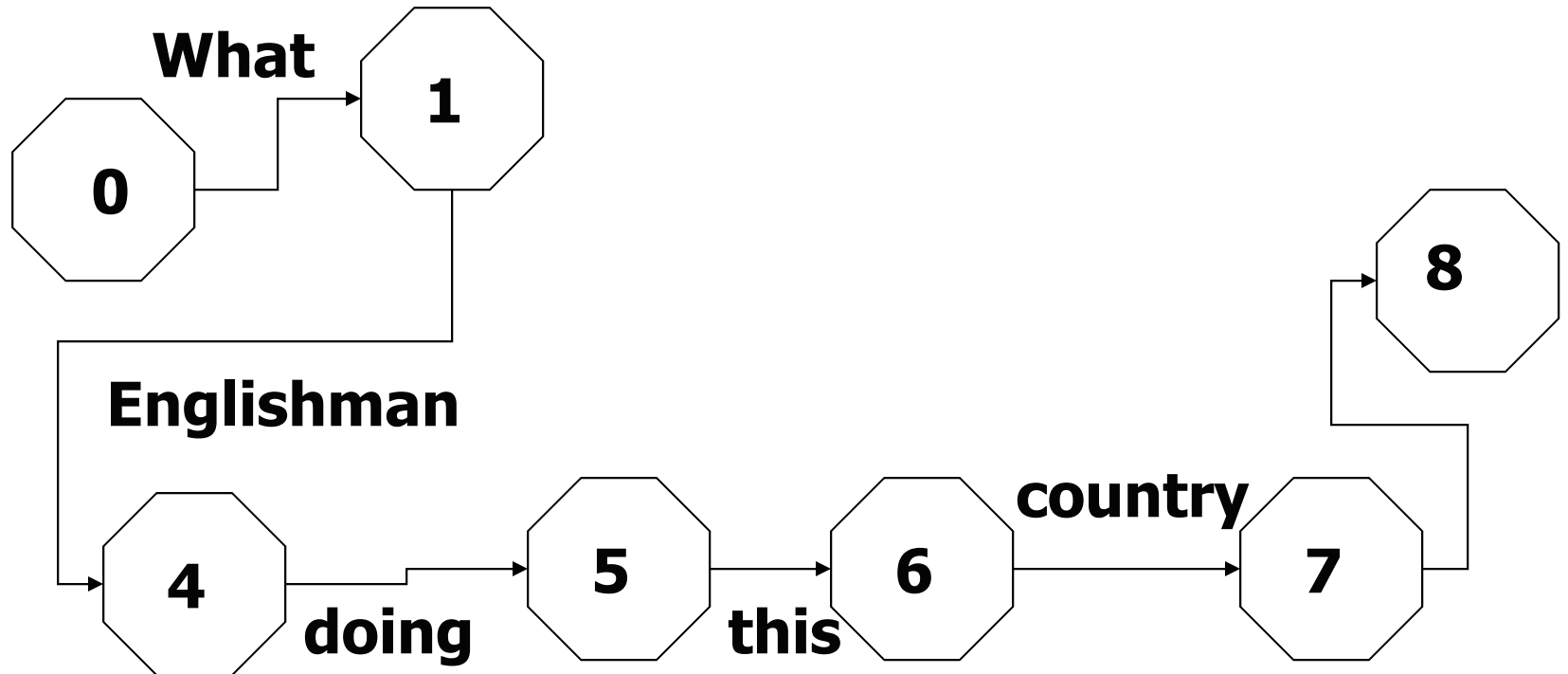
AMSAT-OSCAR-10

- Elliptical orbit
- DX - 25,000km
- Beams and low power
- 2-TV rotator AZ-EL mount
- Reliable propagation
- Time delay on signals

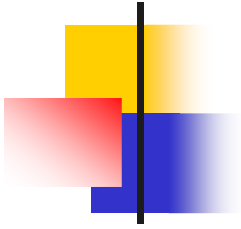




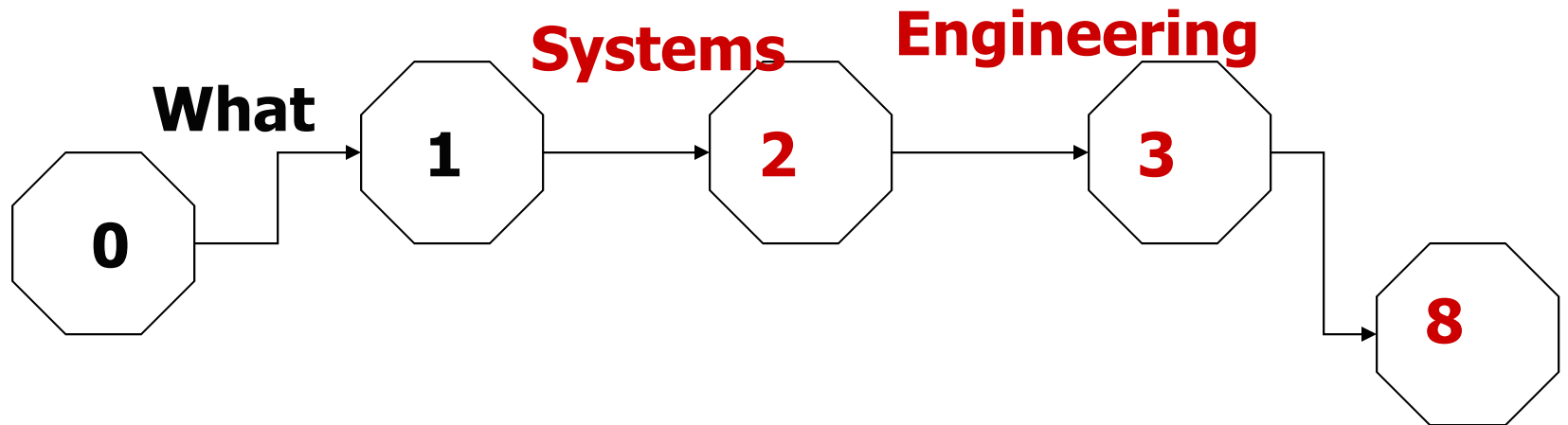
Automating QSOs

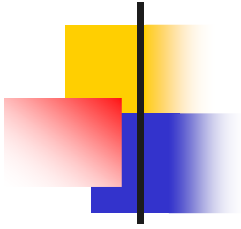


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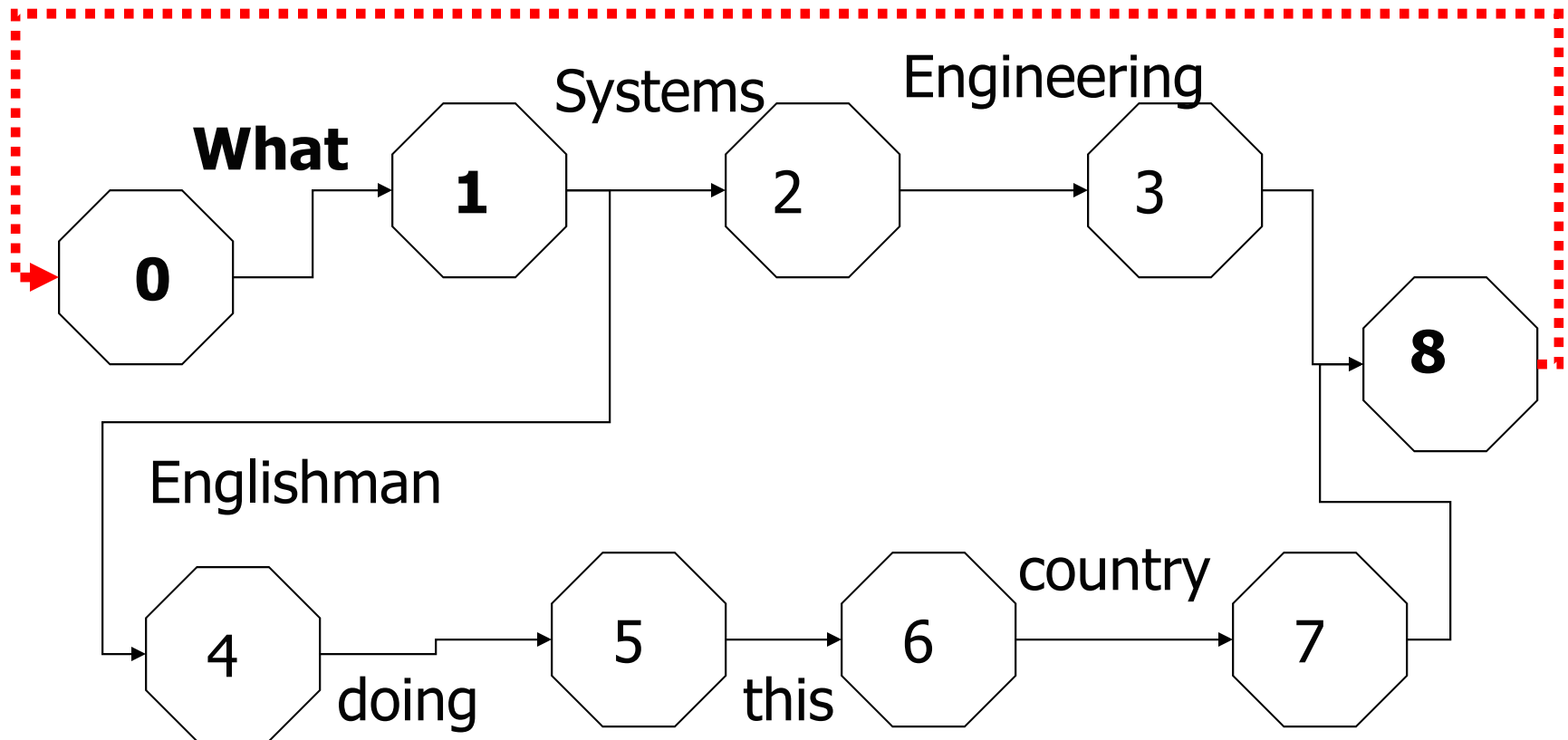


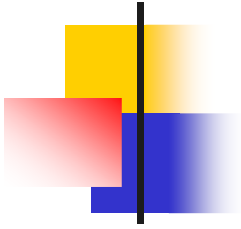
Automating QSOs



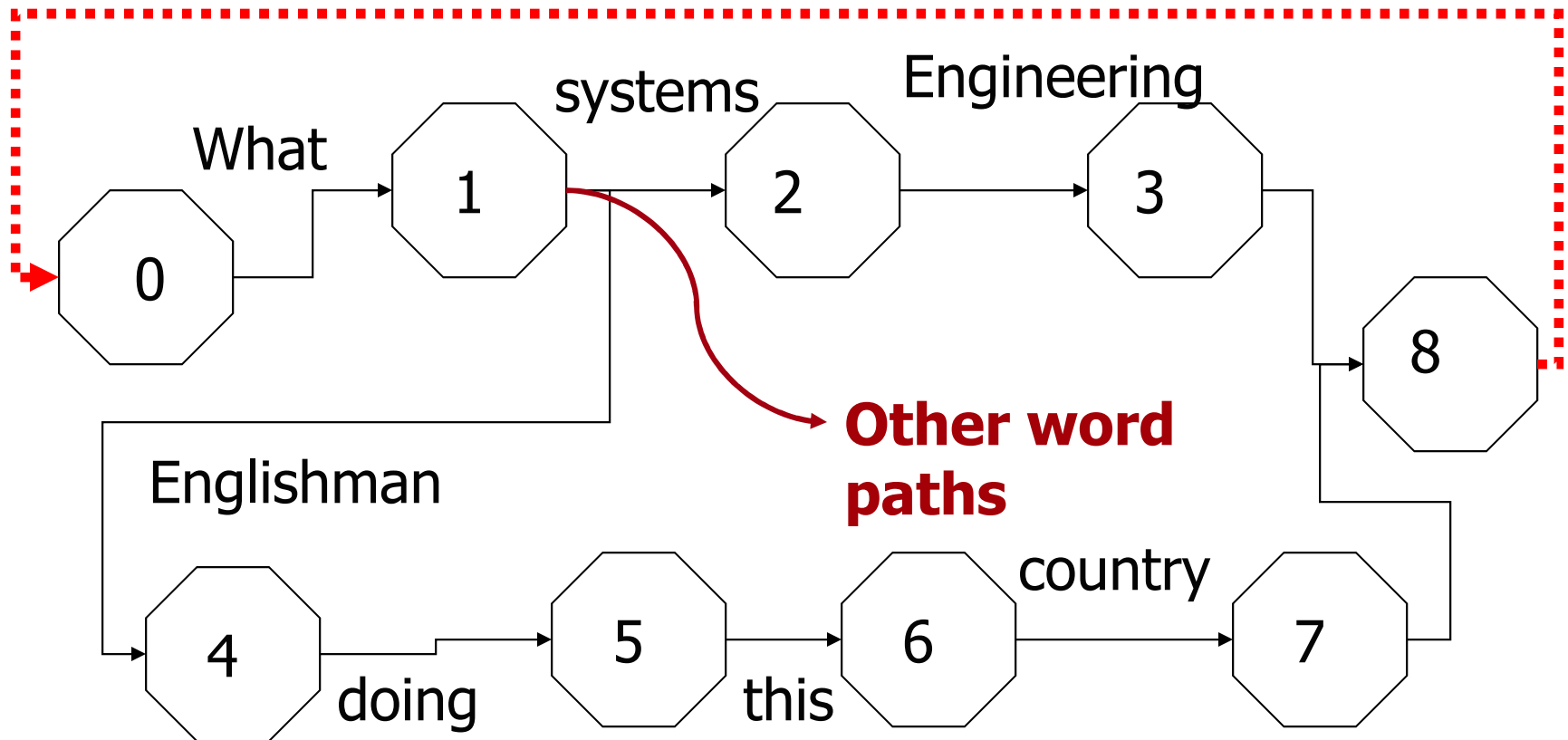


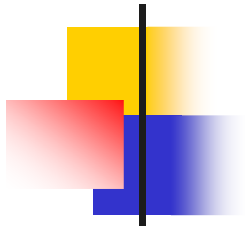
Automating QSOs





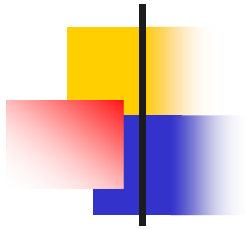
Automating QSOs





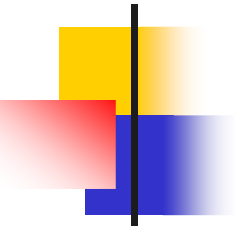
State functions

- Do nothing/ wait for another word
- Send a file
- Turn transmitter on and send a file
- Send a file, then turn transmitter off
- Execute a program
- Overlay new state table



State table - section

State	Word	Function	Next state	File	Repeat
0	What	nothing	1	N/a	Yes
1	systems	nothing	2	N/a	No
1	Englishman	Nothing	4	N/a	No
6	country	Send file	7	Country.txt	No



Elmer

Settings

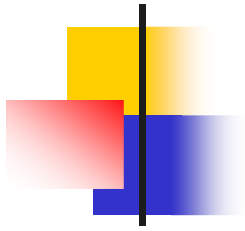
BBS Zapp | PacketCluster | Sounds | Colours | Serial Ports | **Elmer** | TNC/Interface | Files

State	String to Match	File	Next State	Command Type
1	73	73.TXT	1	0
1	WHAT	*	2	0
2	ENGLISHMAN	*	3	0
2	SYSTEMS	*	100	0
3	DOING	*	4	0
4	COUNTRY	ME-USA.TXT	1	0
1	EQUIPMENT	PK232COM.TXT	1	0

Load ELMER Active
 Ignore Case

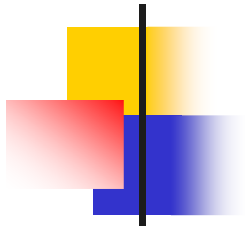
Current ELMER State 0

Close Save Settings Load Settings Edit Lanlink.ini



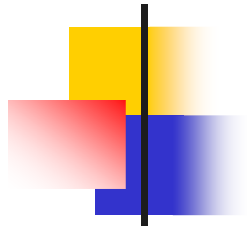
The QSO machine

- Good news
 - Holds a QSO in its own
 - Useful for Dx-pedition as extra station
 - Automatic contest operation
- Bad news
 - AMTOR and HF packet went out of favour!
 - Pactor took over at HF
 - AMTOR/Pactor is better at passing information in marginal conditions
 - Baudot RTTY remains
 - PSK 31 works



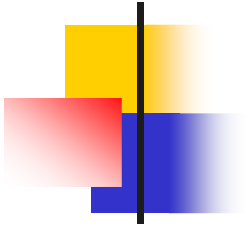
More automated DX contacts

- HF/VHF Lurker for packet CQ's and auto attempt contact
 - Download BBS mail when call was in BBS beacon
- SAREX "Attack" mode
- Worked MIR on 2M
 - I was on travel in Texas at the time
- HF Beacon with real-time information on propagation (Active fishing)
 - Auto cq'er with one transmission

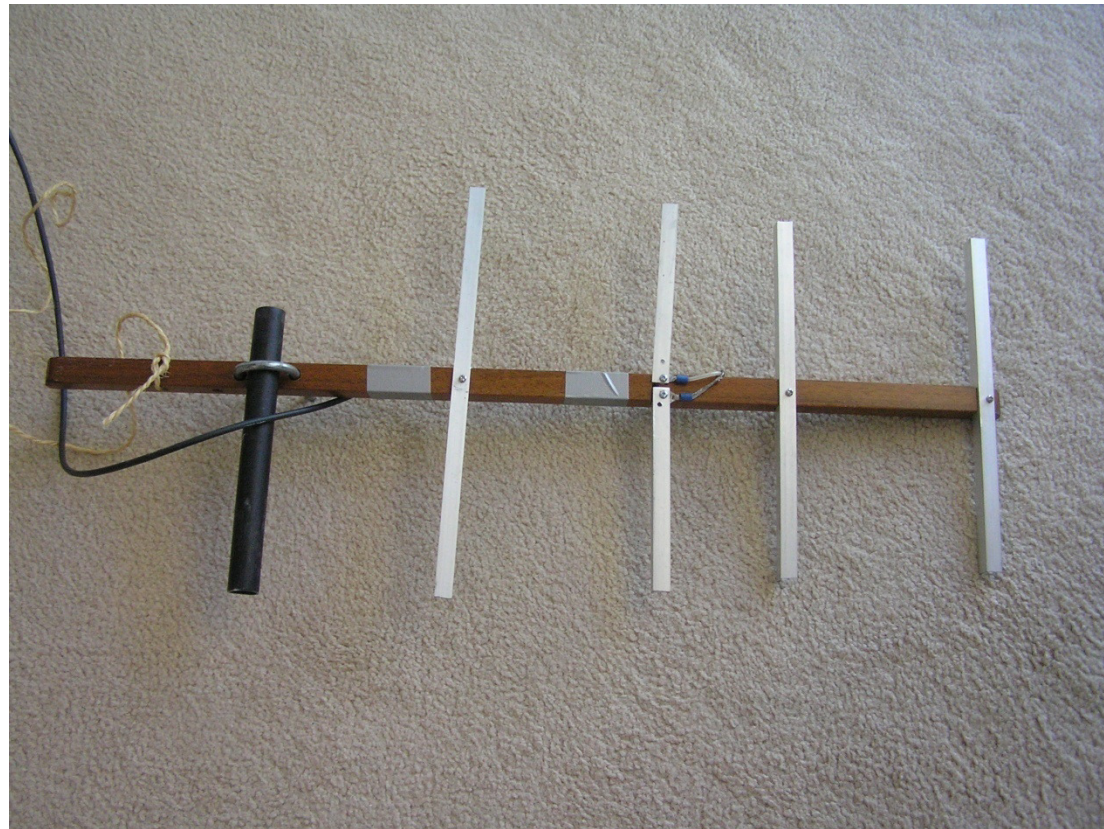


1999 VK5WU

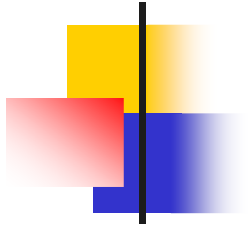
- \$20,000 Yagi
- 80M Delta Loop – sloped on side of hill
- DX is relative
- Radio Amateur Population is major factor for enabling the DX QSO
- QSO probability moves from east to west as the day progresses
- Propagation is selective
- Bands are quiet even when open



AU\$20,000 Yagi



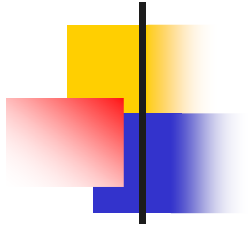
Copyright Joseph Kasser, G3ZCZ, 2008



Left over wood



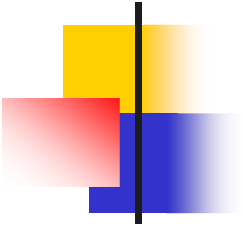
Copyright Joseph Kasser, G3ZCZ, 2008



80M loop



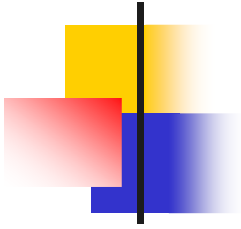
Copyright Joseph Kasser, G3ZCZ, 2008



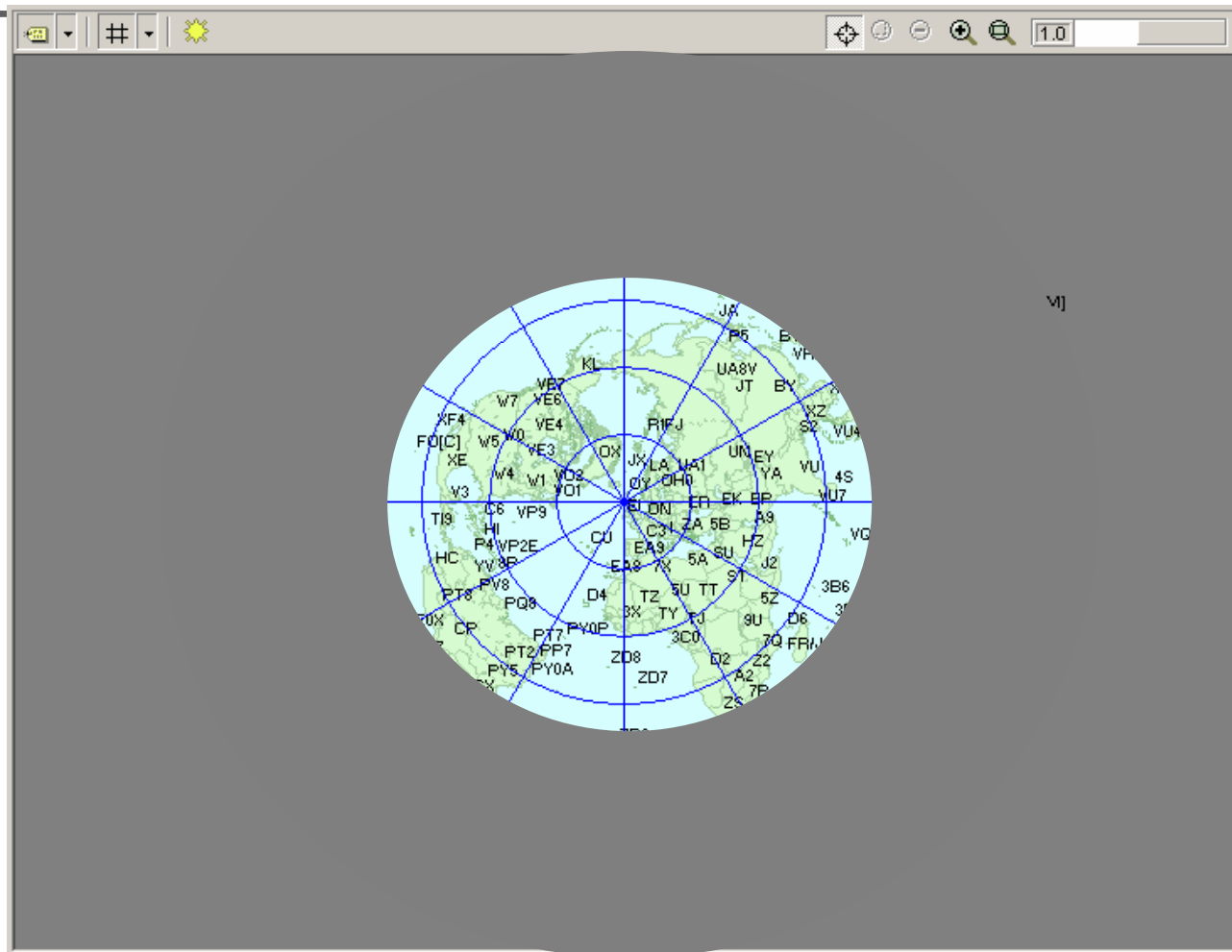
Lurkers



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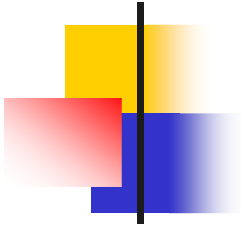


DX from the UK?

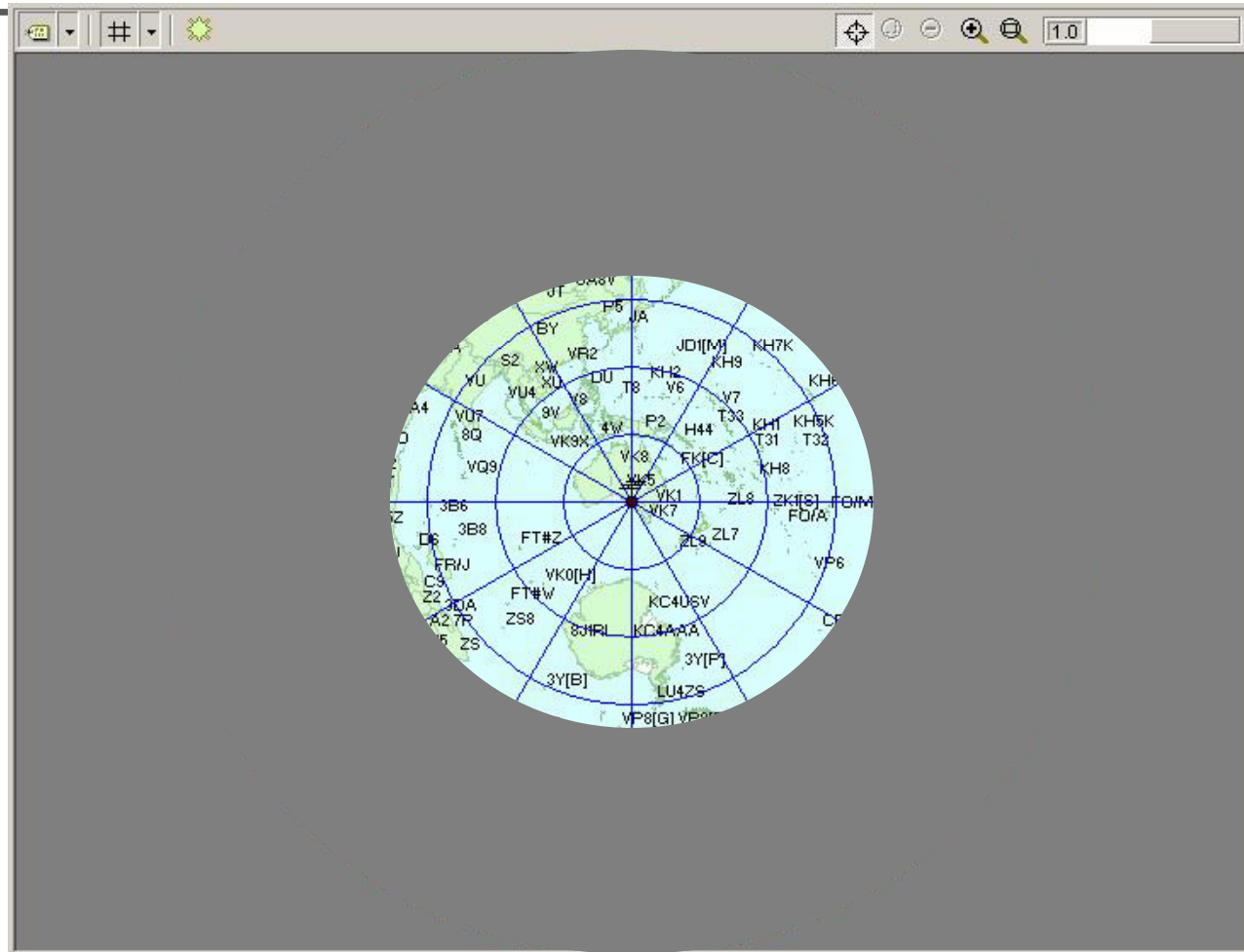


DX
Atlas

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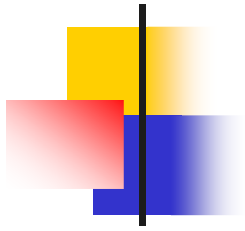


DX from VK5?



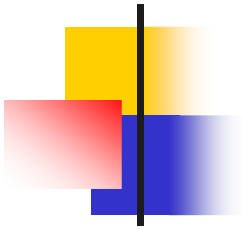
DX
Atlas

Copyright Joseph Kasser, G3ZCZ, 2008

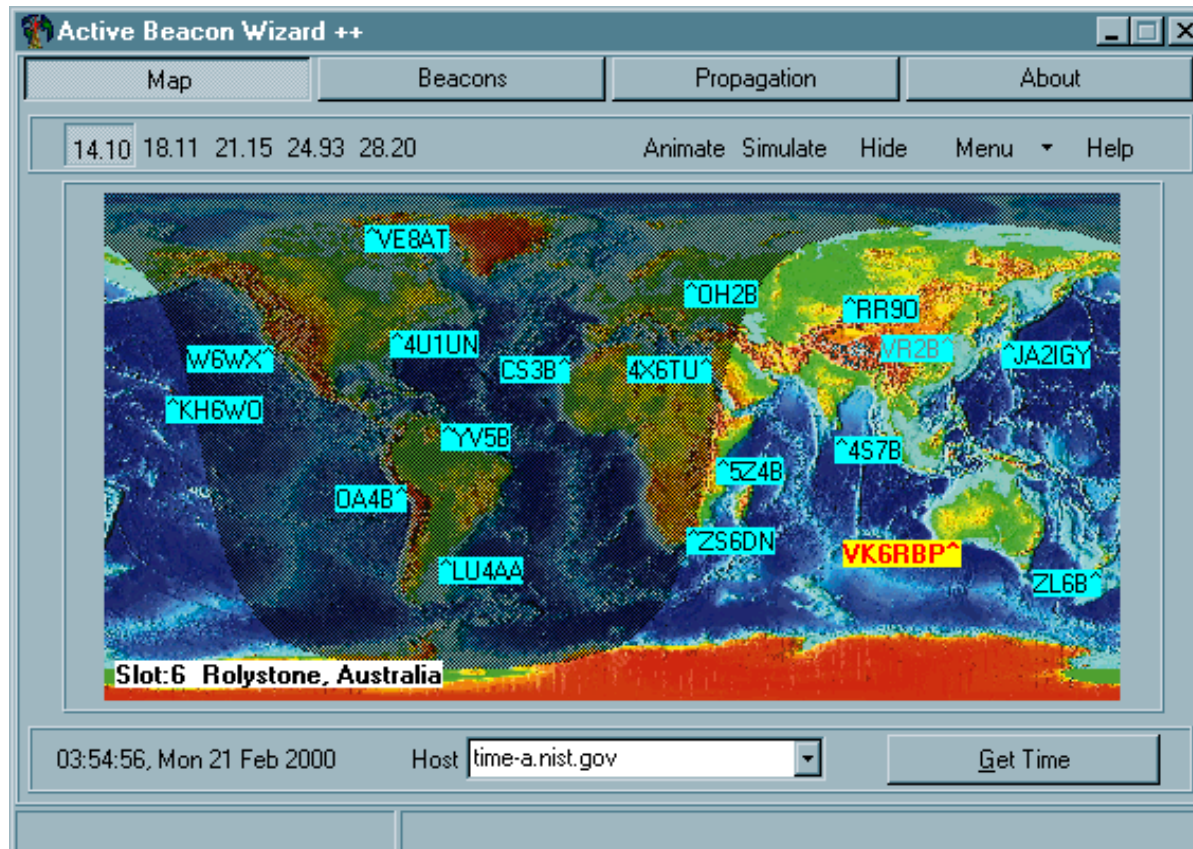


Finding the DX

- ARRL DX bulletin
- Propagation predictions
- NCDX Beacons on 14.099 MHz
- Internet DXcluster
- Self announcing to get DX to look for you
 - Getting noticed
- ILRP
- Being DX via remote HF stations
- Predicting satellite passes

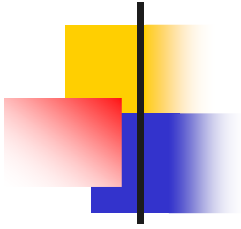


Propagation predictions-1

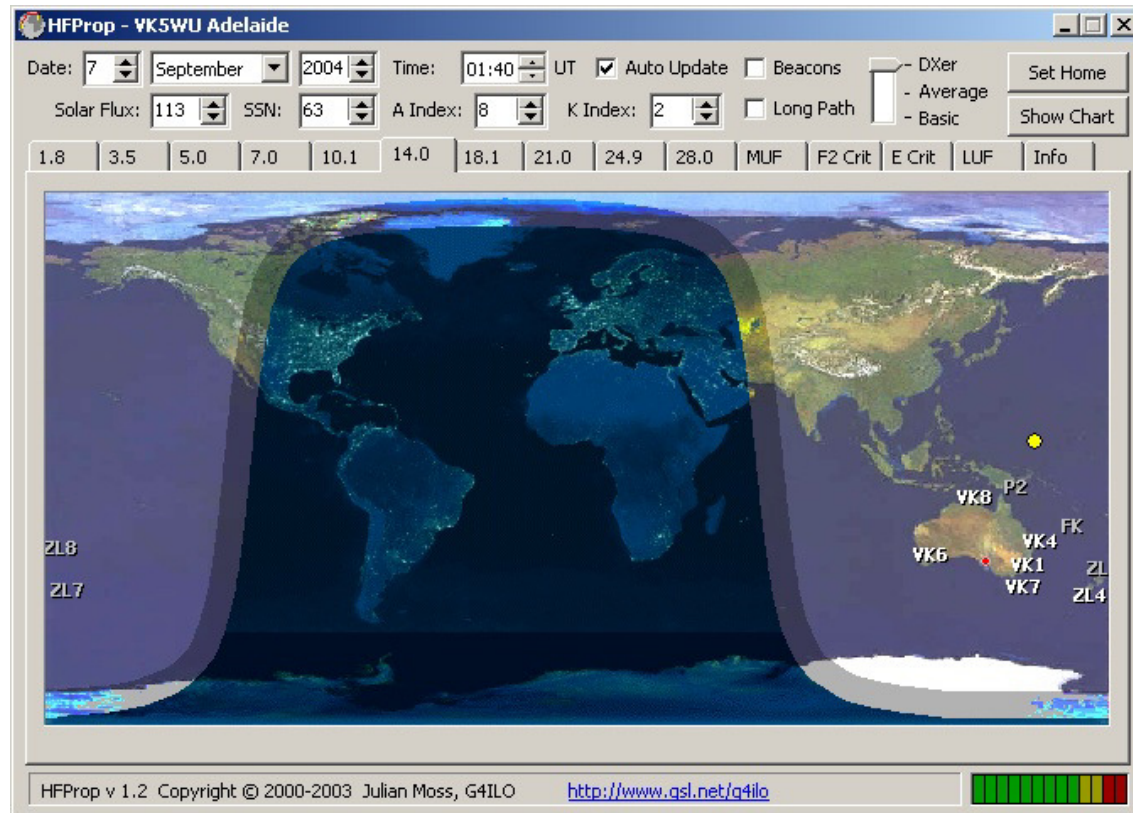


Source: [HTTP://www.taborsoft.com/abw/](http://www.taborsoft.com/abw/)

Copyright Joseph Kasser, G3ZCZ, 2008



Propagation predictions-2

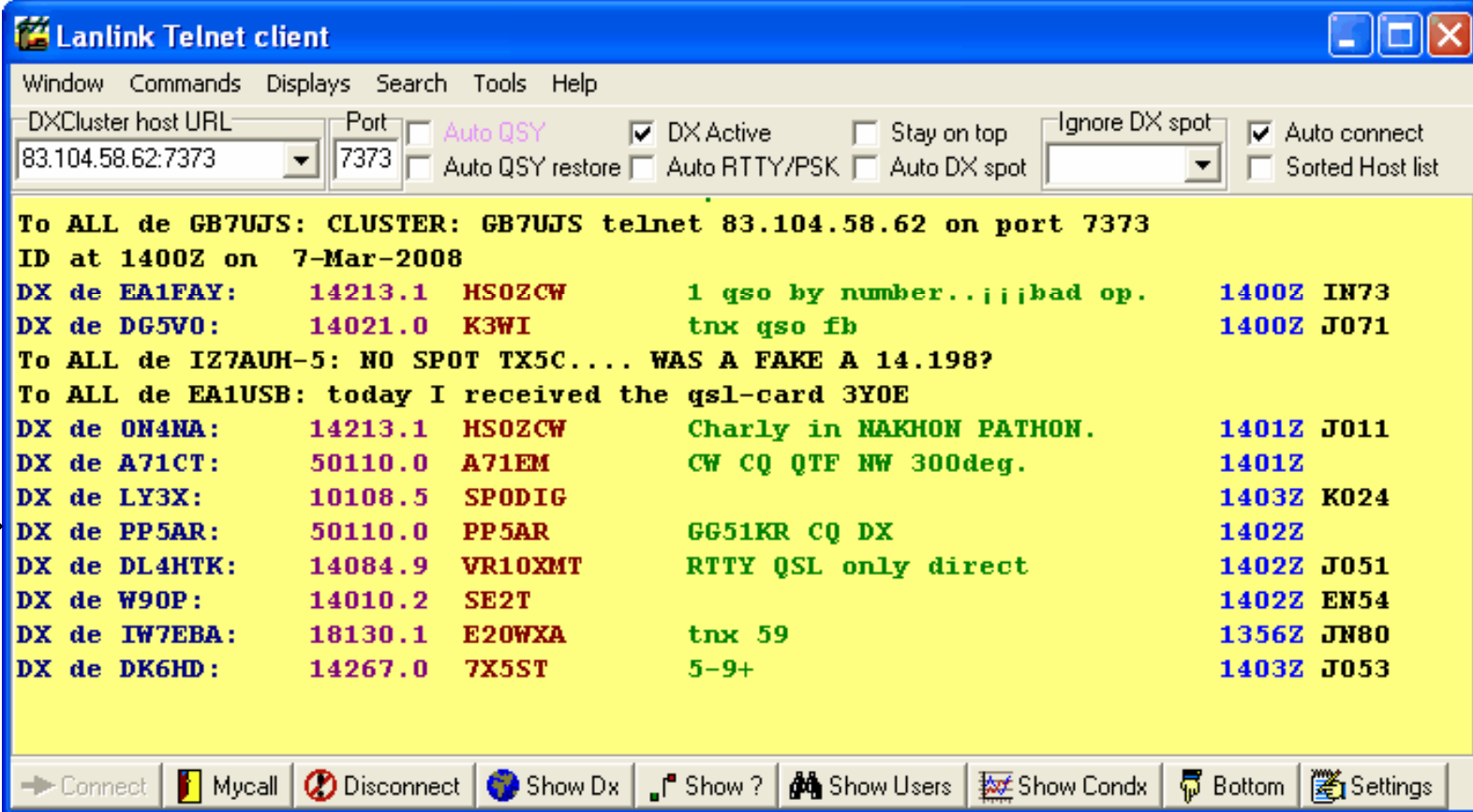


Source: [HTTP://www.qsl.net/g4ilo](http://www.qsl.net/g4ilo)

DX alerts

```
DX de N70N:      10114.6  KL7J                      0419Z00
WCY de DKOWCY-3 <4> : K=2 expK=3 A=10 R=228 SFI=235 SA=act GMF=act Au=no00
DX de UA6JY:    24893.0  FR5FD                      0421Z00
DX de N6KD:     10105.9  ZK1QMA      up 1          0421Z00
DX de WA2JQK:   3793.0   MOKKW                      0423Z00
DX de JE1NCP:   24893.0  ZL7/G3TXF    up2 FB SIG          0425Z00
DX de ND8L:     14070.0  W6I           PSK Route 66 Special Events St 0429Z EN9100
DX de UA6JY:    24898.0  FR5FD          CQ                   0429Z00
DX de SP8HQQ:   14004.9  3D2AG         599 qsx up          0432Z00
DX de K2VCO:    21023.0  ZL7/G3SXW    up 1                  0434Z00
DX de JA6TMU:   24898.0  FR5FD                      0435Z00
DX de WA7BOD:   14005.0  3D2AG          UP                   0437Z00
DX de N7HIY:    24893.0  ZL7/G3TFX    up 1                  0437Z00
DX de N4SU:     1834.4   DF2PY         wolf--big sig poor band 0439Z00
DX de N7HIY:    24893.0  ZL7/G3TXF    corr call            0439Z00
DX de OK1FM:    10105.2  ZK1QMA         MY GREYLINE START-HE IS QRT 0443Z00
DX de K6UT:     14195.0  FOOFLA        Dave                 0439Z00
DX de UA6LGR:   14005.0  3D2AG         QSX UP 1             0443Z KN9700
DX de 9A5ST:    14005.0  2D2AG         up via CBA           0443Z JN8300
DX de 9A5ST:    14005.0  3D2AG         sry call             0444Z JN8300
DX de LA6CHA:   14004.9  3D2AG                      0440Z00
DX de UA6LGR:   14015.0  3D2AG                      0440Z JN8300
```

Getting noticed

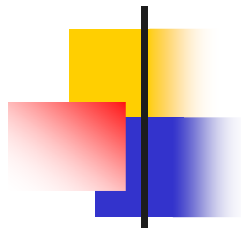


The screenshot shows the Lanlink Telnet client interface. The window title is "Lanlink Telnet client". The menu bar includes "Window", "Commands", "Displays", "Search", "Tools", and "Help". The main area displays a list of DX stations and their call signs, along with their frequencies and other details. The list is as follows:

DX de	Frequency	Call Sign	Message	Time	Call Sign
EA1FAY:	14213.1	HS0ZCW	1 gso by number...ijbad op.	1400Z	IN73
DG5V0:	14021.0	K3WI	tnx gso fb	1400Z	J071
ON4NA:	14213.1	HS0ZCW	Charly in NAKHON PATHON.	1401Z	J011
A71CT:	50110.0	A71EM	CW CQ QTF NW 300deg.	1401Z	
LY3X:	10108.5	SPODIG		1403Z	K024
PP5AR:	50110.0	PP5AR	GG51KR CQ DX	1402Z	
DL4HTK:	14084.9	VR10XMT	RTTY QSL only direct	1402Z	J051
W90P:	14010.2	SE2T		1402Z	EN54
IW7EBA:	18130.1	E20WXA	tnx 59	1356Z	JN80
DK6HD:	14267.0	7X5ST	5-9+	1403Z	J053

Two yellow arrows point to the "A71CT" and "LY3X" entries in the list.

The bottom of the window features a toolbar with the following buttons: Connect, Mycall, Disconnect, Show Dx, Show ?, Show Users, Show Condx, Bottom, and Settings.



Getting noticed - the LanLink way

The screenshot shows a software window titled "N XU7ACY on 1828.0 @1405 by W...". The window has a menu bar with "Display", "PX check", "Records", "State", "Settings", and "Help". Below the menu bar are several checkboxes: "PX Check" (checked), "DX Active" (checked), "Clear at show" (checked), "Stay on top" (unchecked), "Chk 2nd Lg" (unchecked), "Auto QSY" (unchecked), "Auto DX spot" (unchecked), and "Show DX spot" (unchecked).

DXFreq	DXcall	Time	Heard by	Status
14,028.9	VP5/G3TXF	1357	RX3AGD	
1,848.0	BU2AQ	1358	BU2AQ	N
14,210.0	WD0DX	1359	Y02MHD	
14,021.0	K3WI	1400	DG5VO	
50,110.0	A71EM	1401	A71CT	
50,110.0	PP5AR	1402	PP5AR	
14,084.9	VR10XMT	1402	DL4HTK	
14,010.2	SE2T	1402	W90P	
14,267.0	7X5ST	1403	DK6HD	N
18,135.0	A92HB	1404	F5PON	W
10,108.5	SP0DIG	1404	IK1UGX	q
14,041.2	EW8AO	1404	W9ILY	W
144,433.0	IZ3DVW/B	1405	OE2LCM	w
14,213.1	HS0ZCW	1405	K8BJ	N
1,828.0	XU7ACY	1405	W7TVF	N
14,213.0	HS0ZCW	1406	KE1F	N

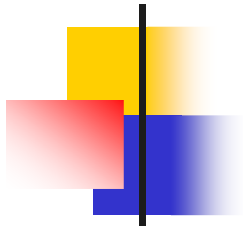
Below the table is a control panel with buttons for "DX", "Help", and "Settings". There are also navigation arrows and a "DX spot filter" section with radio buttons for "All", "Hot", "Warm", "Cold", "Freq", "Px/Hb", and "Hb". The "DX spot filter" section also includes a "Freq" dropdown set to "18", a "Px/Hb" dropdown set to "XU", and a "DX Alert Call" field containing "TX5C".

At the bottom, there is a "Last DX Alert" section with a table showing the last alert details:

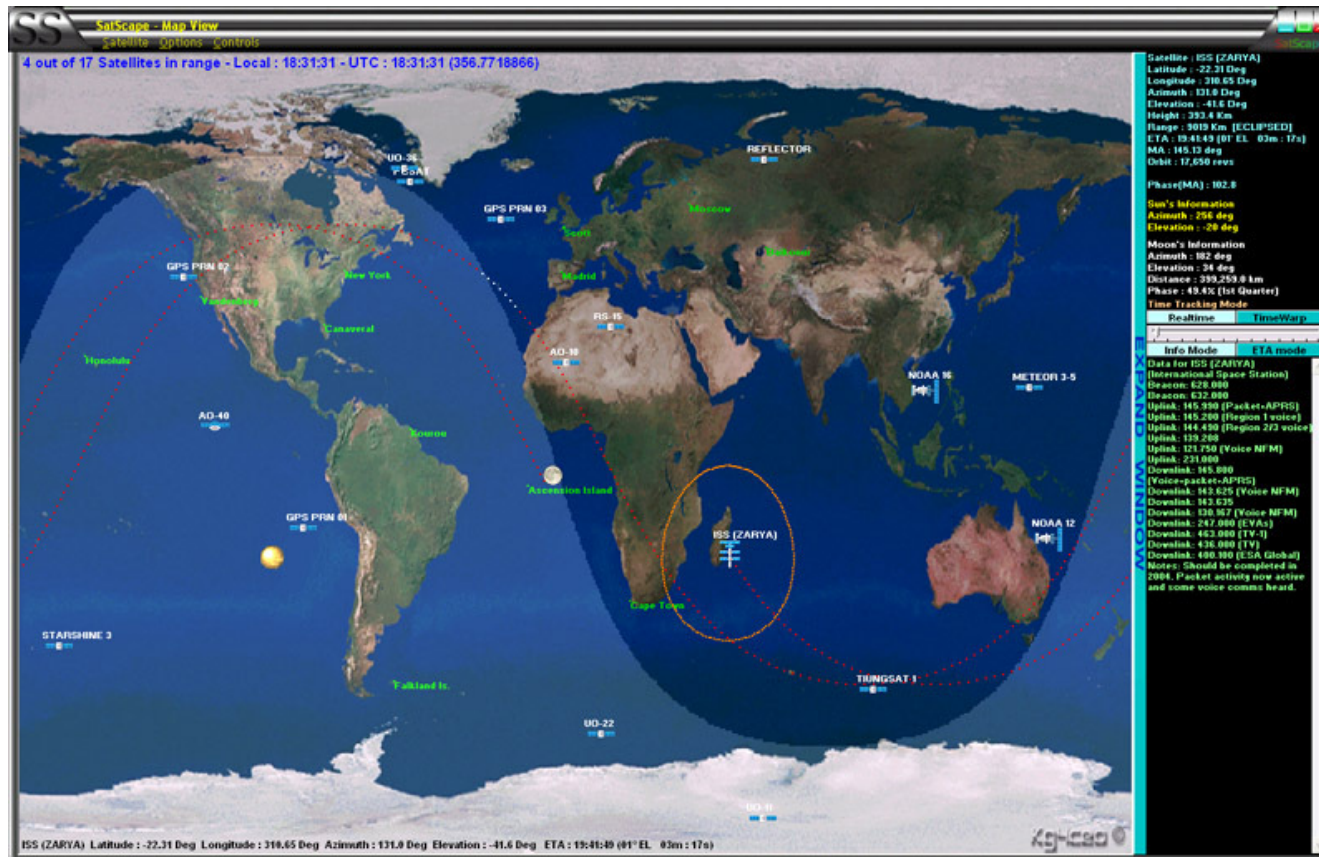
DX_Call	Freq.	Time	State
XU7ACY	1828.0	1405	DX XU

Next to the "Last DX Alert" table is a "Fade times" section with three spinners for "Hot" (set to 3), "Warm" (set to 10), and "Cold" (set to 30).

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2008



Satscape



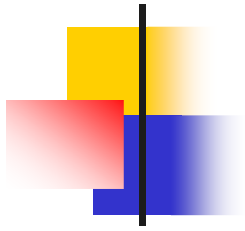
<http://www.satscape.co.uk/images/ss-screen1.jpg>

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W4MQ and W7DXX/1

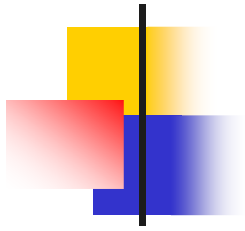
- Regular QSOs
 - Internet delays
- Sweepstakes contest
 - W4/G3ZCZ from VK5
- Thunderstorm at G3IOR
- Work yourself in many places?
 - DXCC with a difference





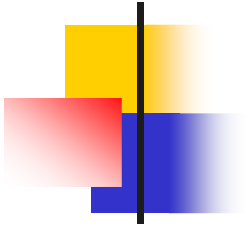
DX is relative

- Distances are large
- Population small
 - Adelaide to Melbourne 400 miles
- VHF/UHF Tropo can be good
- Band 1 TV DX is a problem



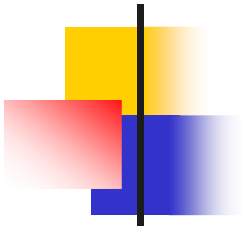
2007 G3ZCZ

- V aerial in back yard
- 3M at apex, down to 2M at ends
 - Pipeline to Italy
- Tuneable 40-6M
- 7M at apex
 - 40M – Signals are louder
 - DX never heard before
 - ZL2JQI, VK2PS and VU2PAI
 - 20M – laptop goes crazy



Holding the aerial up





Propagation predictions

VOAProp - G3ZCZ ((England: London)) - Wednesday, February 27, 2008 20:31

Date: February 2008 Time: 20 UT Auto Update

SSN: 12 SF: 71 A: 4 K: 3

High Medium Low

1.8 3.5 5.0 7.0 10.1 14.0 18.1 21.0 24.9 28.0 About

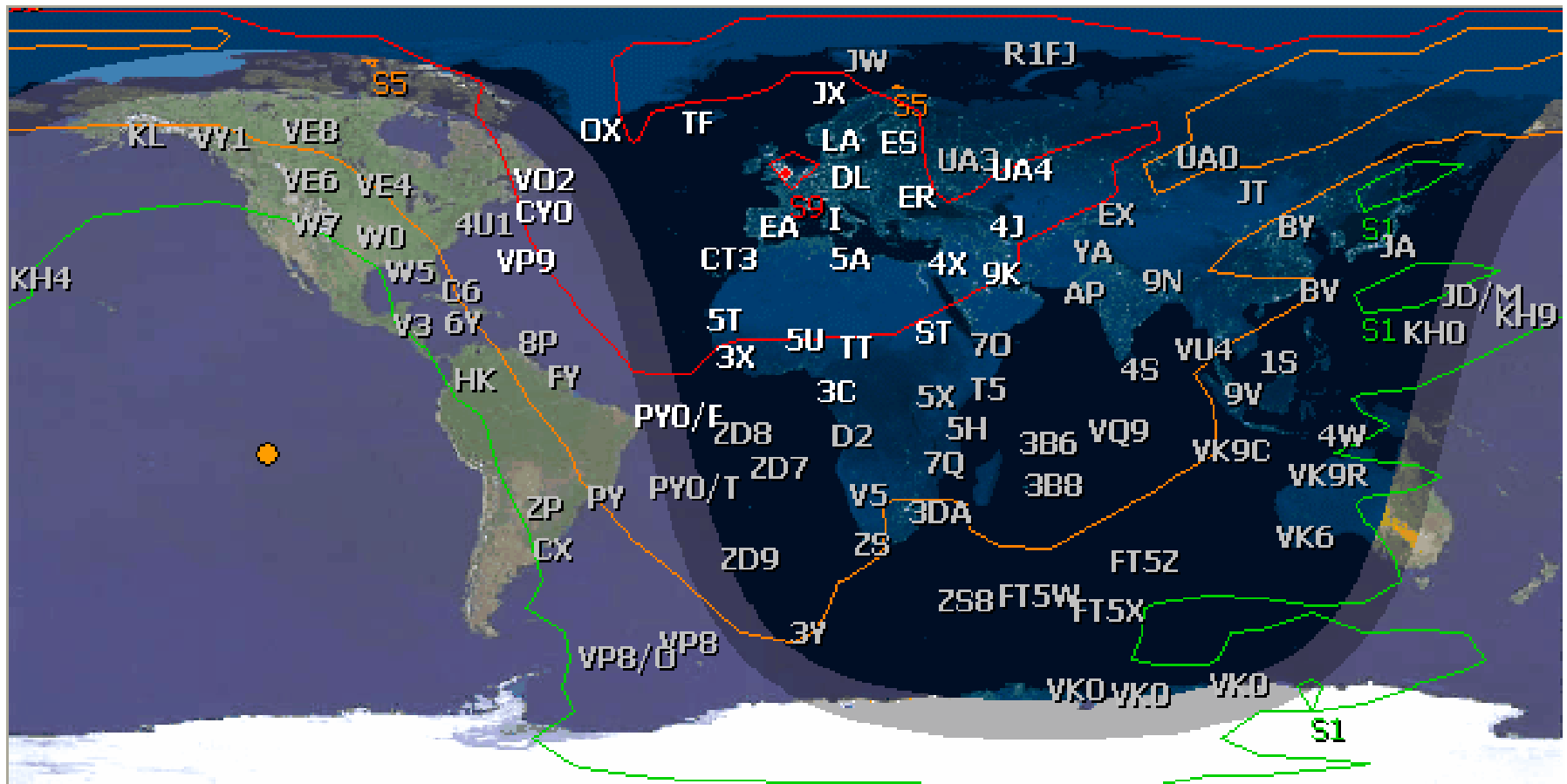
Position: -72.57°W 88.28°N Locator: MR68gg Long path

VOAProp v1.1 Copyright © 2000-2008 Julian Moss, G4ILO www.g4ilo.com

Copyright Joseph Kasser, G3ZCZ, 2008



Goal for improvement?





Dxpedition online logs

QSOs with: **G3ZCZ**

[Call searched 3 times, 138.250.72.247 has made 1 searches so far]

You have worked 3B7C on 3 out of 28 band slots!

The best time to work 3B7C from [England](#) or from CQzone [14](#)

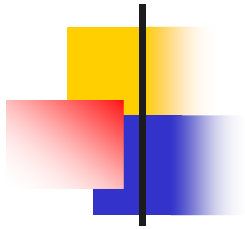
	6m	10m	12m	15m	17m	20m	30m	40m	80m	160m
CW	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SSB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RTTY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

More leaderboards? The top 100 band/slots stations in CQ zone [14](#) or [England](#)

450593 searches so far!

NB To see who was the operator you worked, just place your mouse button over ther band/mode square above.

Search returned in 0.065896987915039s

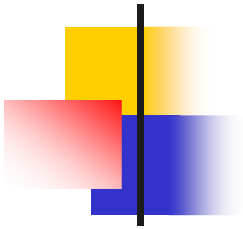


Fishing for VP6DX

- Listen a few days
- Watch Dxcluster
- Establish habits
- Work out when you can hear them
- Check expedition web site

Frequencies

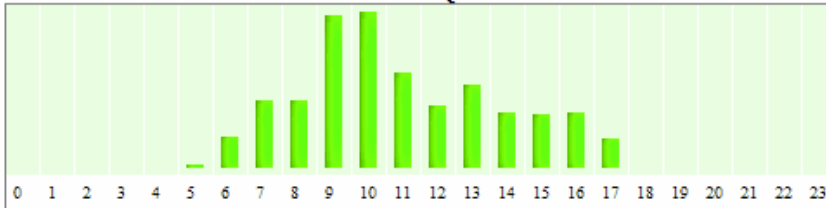
	CW	SSB	RTTY
160m	1827.3 (1)	1843.3 +15	---
80m	3502.5 +25	3781 (2)	---
40m	7002.5 +25	7095 (3)	---
30m	10106.5 +7	---	10149 -7
20m	14002.5 +25	14190 +55	14089 -7
17m	18072.5 +7	18165 -15	---
15m	21002.5 +25	21295 +15	---
12m	24892.5 +7	24987 -15	---
10m	28002.5 +25	28470 +15	---
6m	50105 +7	50145 +15	---



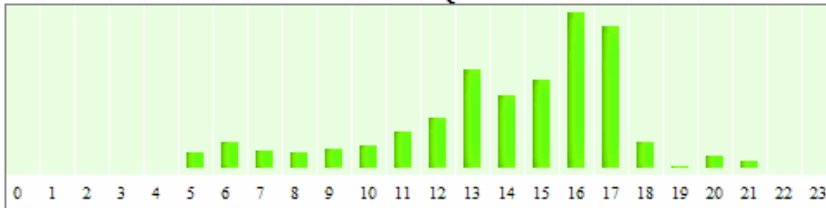
Best time to work them

3B7C

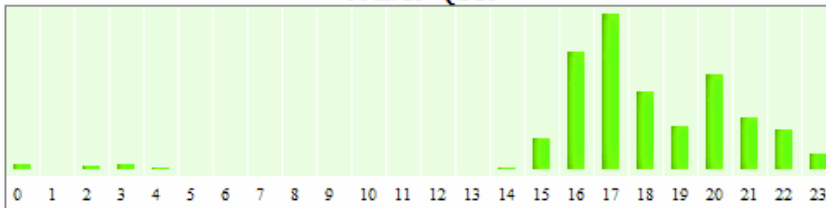
17 m: 510 QSOs



20 m: 668 QSOs

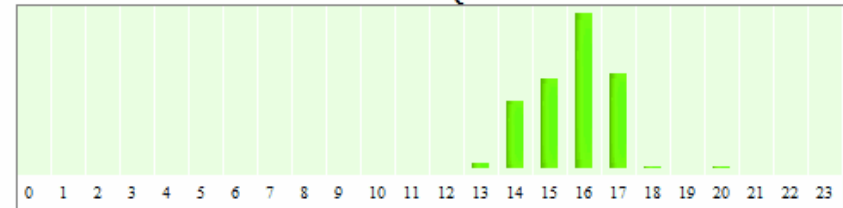


30 m: 287 QSOs

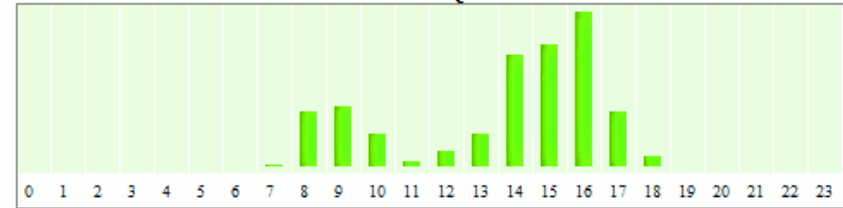


VP6DX

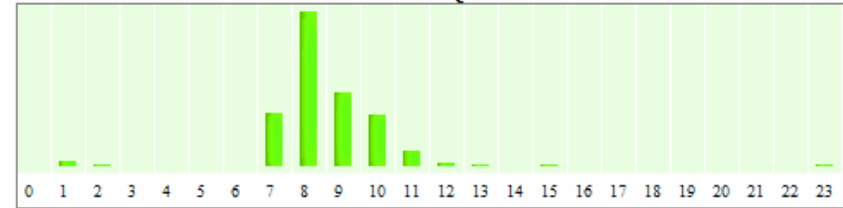
17 m: 374 QSOs

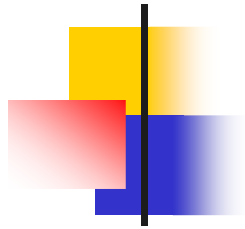


20 m: 253 QSOs



30 m: 164 QSOs





In the log

- 0800-0900 on 7002kHz
- Call, 15 minutes wait for QSO

QSOs with: G3ZCZ
[Call searched 3 times, 84.69.143.94 has made 1 searches so far]

You have worked VP6DX on 1 out of 22 band slots!
The best time to work VP6DX from England or from CQzone 14

	6m	10m	12m	15m	17m	20m	30m	40m	80m	160m
CW	Red	Red	Red	Red	Red	Red	Red	Green ✓	Red	Red
PH	Red	Red	Red	Red	Red	Red	Blue	Red	Red	Red
RTTY	Blue	Blue	Blue	Blue	Red	Red	Red	Blue	Blue	Blue

More leaderboards?
The top 100 band/slots stations in CQ zone 14 or England

894417 searches so far!
NB To see who was the operator you worked, just place your mouse button over their band/mode square above.
Search returned in 0.047s



VHF/UHF

- Moonraker 2M, Icom T-9000
 - Best DX 1605 KM, worked SM, SP, OK, HB9, ON, D, F, GW, GU, and PD
- J pole 2M
 - Repeaters on most channels
- 4 Element 70cM (\$20,000 Yagi)
 - FM repeaters
- Moonraker 70cM Yagi – horizontal
 - Only DX was DG1KJG (JO30)
- 6M – $\frac{1}{4}\lambda$ vertical in the attic
 - Sporadic E to EA, CT, SM, UA, I, and HA

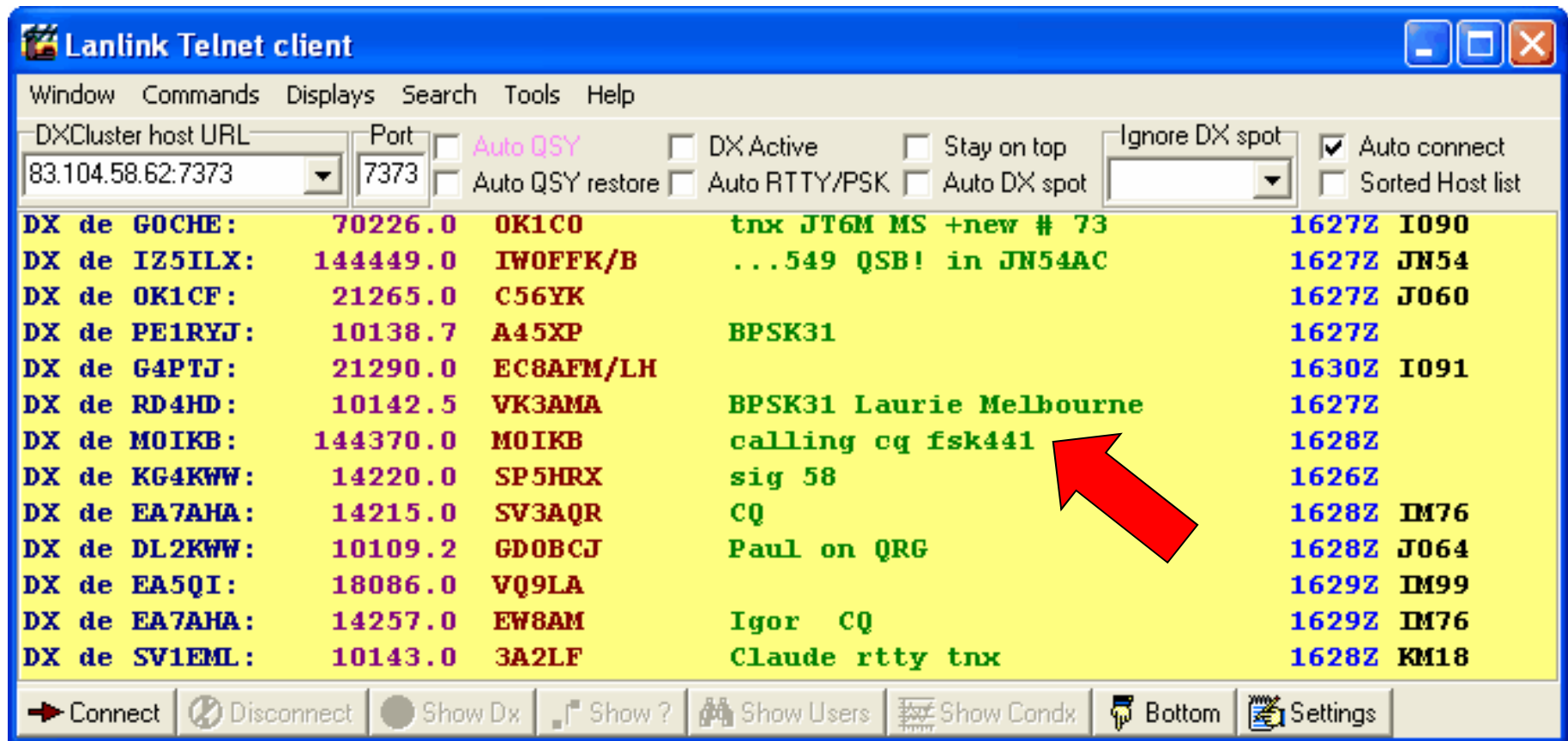


Project: Meteor scatter – hard 20th Century way

- Short duration ionisation at vhf
- Range out to about 2400km
- Morse code or SSB
- Calling frequency
- Random meteors
- Meteor showers
- Call and wait



Meteor scatter – easy 21st Century way



The screenshot shows the Lanlink Telnet client interface. The window title is "Lanlink Telnet client". The menu bar includes "Window", "Commands", "Displays", "Search", "Tools", and "Help". The interface has several controls: "DXCluster host URL" (83.104.58.62:7373), "Port" (7373), "Auto QSY" (checked), "DX Active" (unchecked), "Stay on top" (unchecked), "Ignore DX spot" (dropdown), "Auto connect" (checked), "Auto QSY restore" (unchecked), "Auto RTTY/PSK" (unchecked), "Auto DX spot" (unchecked), and "Sorted Host list" (unchecked).

DX	de	Call	Freq	Info	Spot	Host
DX	de	GOCHE:	70226.0	OK1CO	tnx JT6M MS +new # 73	1627Z I090
DX	de	IZ5ILX:	144449.0	IW0FFK/B	...549 QSB! in JN54AC	1627Z JN54
DX	de	OK1CF:	21265.0	C56YK		1627Z J060
DX	de	PE1RYJ:	10138.7	A45XP	BPSK31	1627Z
DX	de	G4PTJ:	21290.0	EC8AFM/LH		1630Z I091
DX	de	RD4HD:	10142.5	VK3AMA	BPSK31 Laurie Melbourne	1627Z
DX	de	MOIKB:	144370.0	MOIKB	calling cq fsk441	1628Z
DX	de	KG4KWW:	14220.0	SP5HRX	sig 58	1626Z
DX	de	EA7AHA:	14215.0	SV3AQR	CQ	1628Z IM76
DX	de	DL2KWW:	10109.2	GD0BCJ	Paul on QRG	1628Z J064
DX	de	EA5QI:	18086.0	VQ9LA		1629Z IM99
DX	de	EA7AHA:	14257.0	EW8AM	Igor CQ	1629Z IM76
DX	de	SV1EML:	10143.0	3A2LF	Claude rtty tnx	1628Z KM18

The bottom toolbar contains icons for "Connect", "Disconnect", "Show Dx", "Show ?", "Show Users", "Show Condx", "Bottom", and "Settings".



Meteor Scatter FSK441

WSJT 6 by K1JT

File Setup View Mode Decode Save Band Help

11:47:00

15.1 Time (s) Mon_080217_114700

FileID	T	Width	dB	Rpt	DF		Freq (kHz)
114230	21.4	60	8	16	-365	CMD1 5 ?S	
114300	10.8	20	-1	00	119	73	3
114300	14.8	160	19	28	65	21C B ? C5I T\$8485S	
114300	16.1	20	0	00	109	R26	3
114700	4.9	20	0	00	-51	73	2
114700	9.8	20	-1	00	120	73	2
114700	14.2	20	0	00	-51	73	3
114700	26.6	20	-1	00	120	73	3

Log QSO Stop Monitor Save Decode Erase Clear Avg Include Exclude TxStop

To radio: [] Lookup
Grid: [] Add

2008 Feb 28
16:46:57

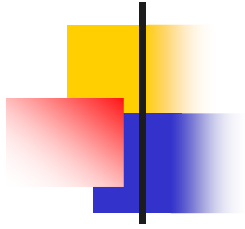
S 2 [] Zap
Clip 0 [] NB
Tol 400 [] Freeze
Defaults [] AFC
Dsec 0.0 Shift 0.0

Tx First G3ZCZ Tx1
26 Rpt G3ZCZ 26 26 Tx2
 Sh Msg G3ZCZ R26 R26 Tx3
TxDF = 0 RRRR RRRR G3ZCZ Tx4
GenStdMsgs 73 G3ZCZ Tx5
Auto is Off CQ G3ZCZ Tx6

1.0000 1.0067 FSK441 Freeze DF: 0 Rx noise: 0 dB TR Period: 30 s Receiving



Sample burst



2008 9V1CZ

- Mobile whip on balcony
- Long end fed wire at university
- Simulations

2014 Radio Simulation

HamSphere 3.0 - Copyright (C) Kelly Lindman - 5B4AIT

HAMSPHERE LIVE CLUSTER

UTC	Adm	Callsign	Band	QRG	Mode	Country
05:28:50		9HS3971	40m	7055	DSB	CANADA (ON)
05:28:40		VU3PPL	40m	7055	DSB	INDIA
05:28:23		58HS2230	15m	21335	DSB	MALAYSIA
05:27:08		57HS4876	40m	7055	DSB	INDIA
05:26:19		VU3EBJ	40m	7055	DSB	INDIA
05:24:47		9W2VBC	15m	21335	DSB	MALAYSIA
05:23:14		15HS632	11m	27555	DSB	SWITZERLAND
05:22:33		14HS3193	15m	21335	DSB	FRANCE
05:13:18		VU3VQU	15m	21335	DSB	INDIA
05:12:41		YC2DWL	15m	21335	DSB	INDONESIA
05:03:54		F5SSN	15m	21358	DSB	FRANCE
04:56:16		57HS5546	15m	21335	DSB	INDIA
04:55:12		1HS5856	17m	18180	DSB	ITALY
04:47:46		TB2COY	10m	28415	DSB	TURKEY
04:44:20		50HS6385	40m	7072	DSB	RUSSIAN FEDERATION
04:42:33		VK6DJL	10m	28450	DSB	AUSTRALIA

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Callsign:

Password:

Login

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31 Aug 2015: Welcome to the HamSphere
24 Aug 2015: Join the new exciting RDF
12 Aug 2015: Welcome to the Independence
30 Jul 2015: India DX Net - Newsletter In
27 Jul 2015: Attention all users....New fe:
12 Jul 2015: Results HamSphere 4th of
01 Jul 2015: Welcome to the HamSphere
22 Jun 2015: How to load HS 4.009 to yo
21 Jun 2015: IOHS/EU120 Isle of Wight

v. 3.0.3.2 RELOAD POWER

- No propagation model, all bands open to everywhere at any time

2015 realistic is worse

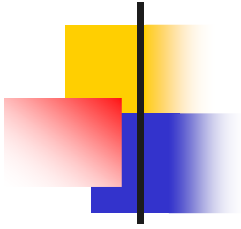


- Propagation model – nobody to talk to on HF
- Repeaters are not very busy
- Need a Phase 3 satellite band as well

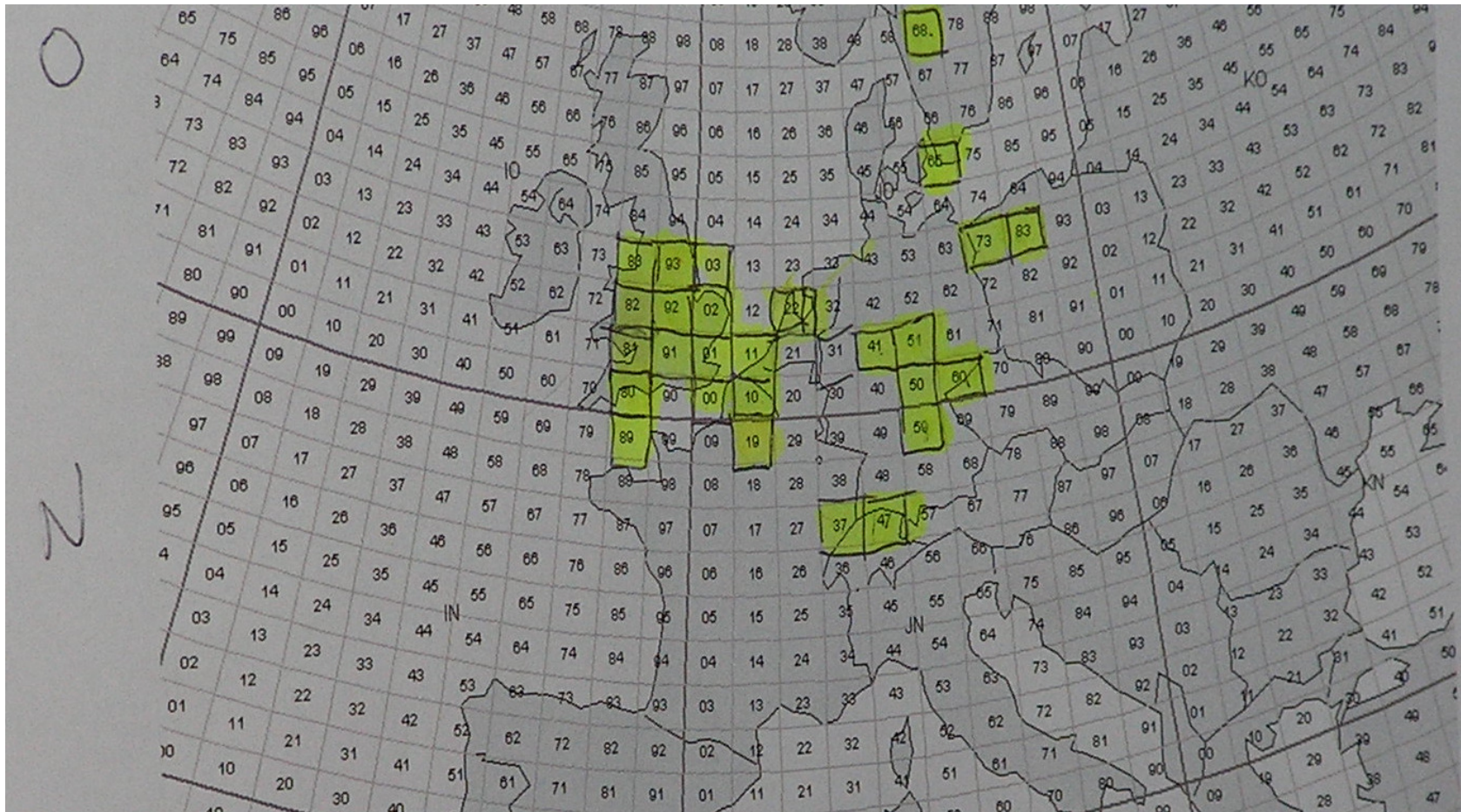
Reflections

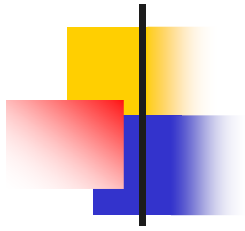


Copyright Joseph Kasser, G3ZCZ, 2008



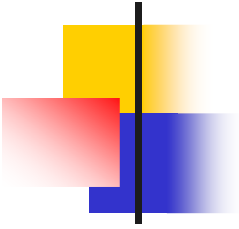
Computers are just a tool





Factors enabling working DX

- Activity – station has to be there
- Propagation
- QRM
 - May be different at each end of the link
- Signal strength
 - May be different at each end of the link



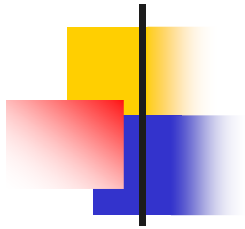
Activity

- Number of licensed hams in DX location
- Number actually on the air
 - In general
 - Outside working hours
 - Outside sleeping hours
 - Except
 - Contest
 - Dxpeditions



The DX link

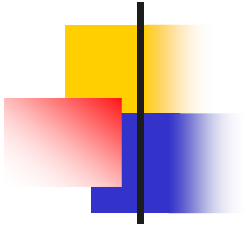
- **Receiver** – displays the signal
 - Visual or audible
 - Sensitivity and bandwidth
- **Aerial** – captures the signal
 - Gain or loss
- **Path loss**
 - Depends on distance
- **Aerial** – launches the signal
- **Transmitter** – generates the signal



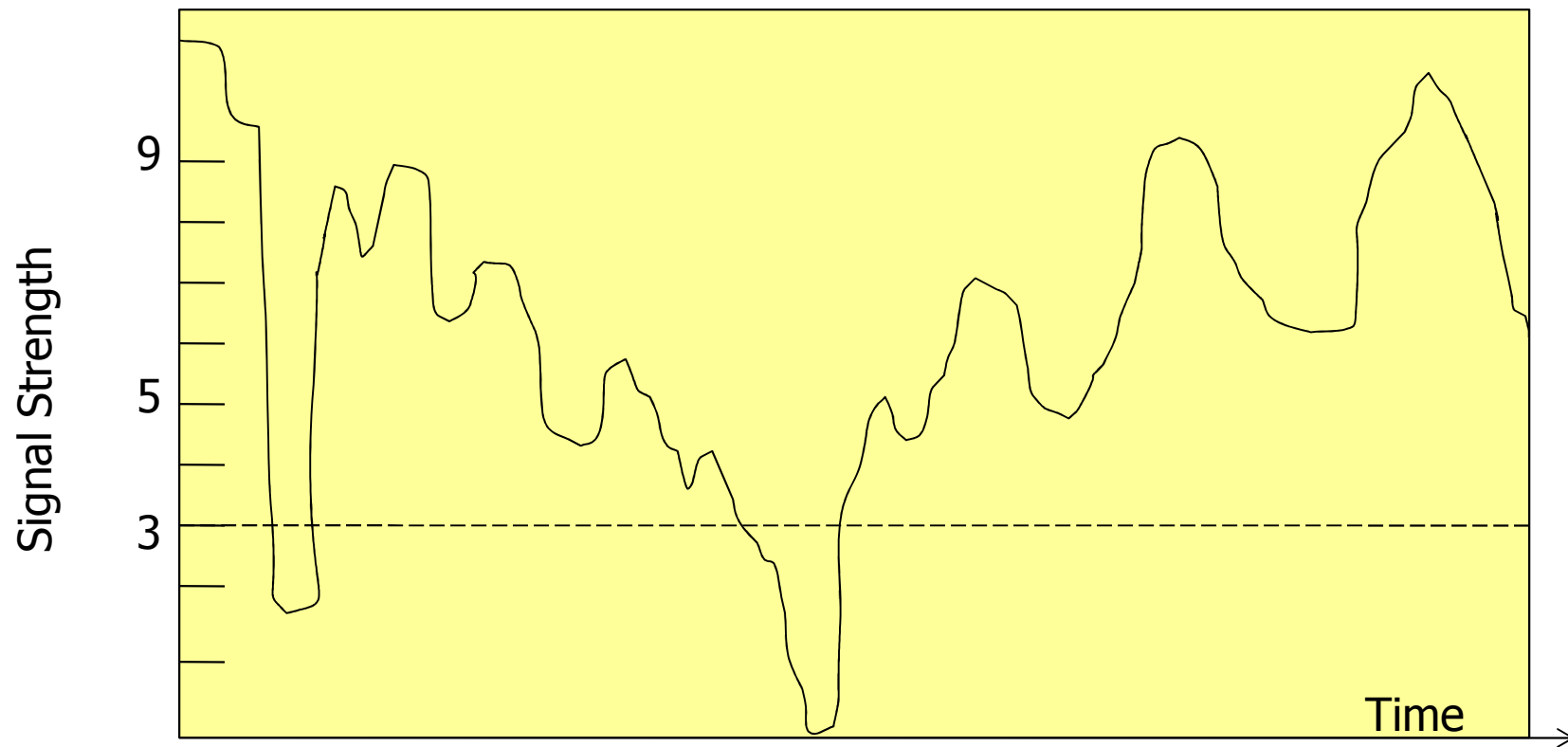
How strong a signal?

- 3 dB = 2 x power
 - 6 dB = 4 x power (1 S unit)
 - 9 dB = 8 x power
 - 10dB = 10 x Power
 - 12dB = 16 x Power (2 S units)
 - 15dB = 32 x Power
 - 18dB = 64 x Power (3 S units)
 - 20dB = 100x Power
 - 21dB = 128x Power
 - 24dB = 256x Power (4 S units)
- 1024 Watts = S9
256 Watts = S8
64 Watts = S7
16 Watts = S6
4 Watts = S5
1 Watt = S4
0.25Watt = S3

Minimum report 3/3



Signal Levels



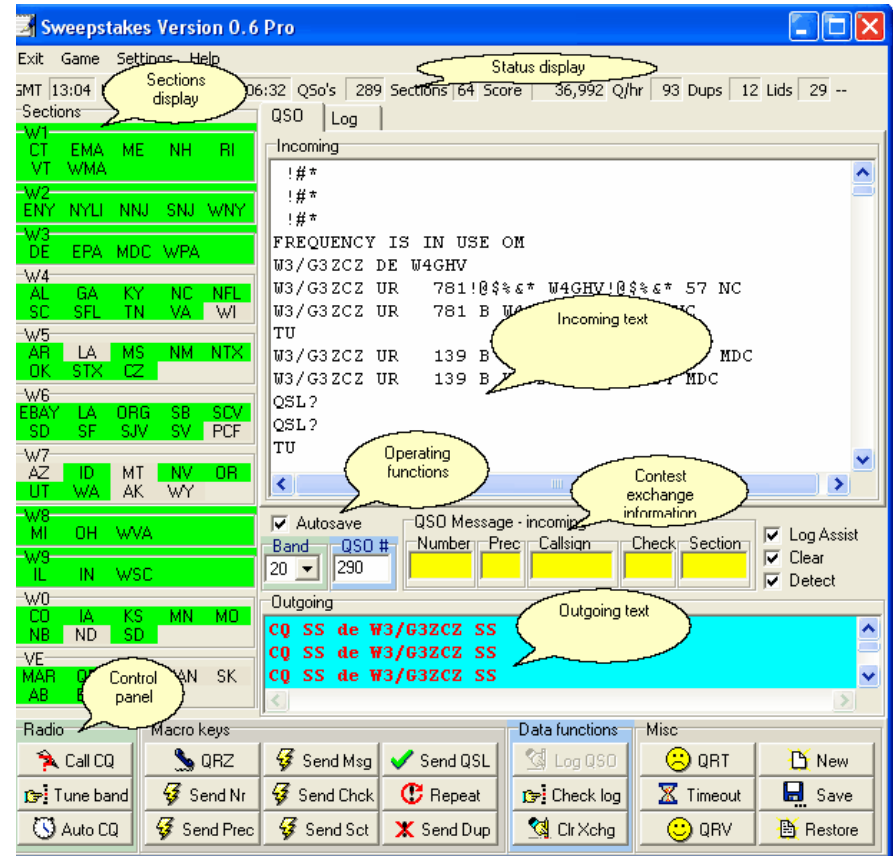


Contests

- Go Morse code, you don't need the incoming report unless you are sending in an entry
- Use memory and both vfo's – scan
- Better probability of contact towards end of contest
- If you don't speak up, you won't work anybody
- The serious contester needs you more than you need him/her

Predicting probability of contact

- ARRL Sweepstakes contest interactive model
- Predictions
 - Time of day in 4 hour blocks
 - Frequency
 - Call area
 - QRM

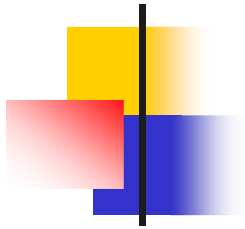




Lessons learned

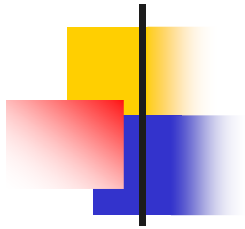
- Aerials
 - High is good, but not always
 - Resonance is not required
 - 15+ year old RG213 makes a good attenuator
- Standards
 - For interoperability
 - For focussing on what you do best
- Writing software is educational
 - Fun and frustrating
 - Plan for distributed intelligence
- Internet
 - Need a connection in the shack
- **Good enough is the enemy of 'outstanding'**





Tunnels in the sky?

- Ionosphere is not a flat reflecting surface
- If it was we should be able to hear signals from a wide area
 - Dxcluster/packetcluster shows they are there
- Ionosphere contains tunnels, ducts, or wormholes
 - Similar to tropospheric ducts at VHF/UHF
- HF sky wave radio signals propagate through the tunnels
- Tunnels in the sky?, Amateur Radio (Australia), February 2012
 - Suggest some experiments



Idea :future DXpeditions

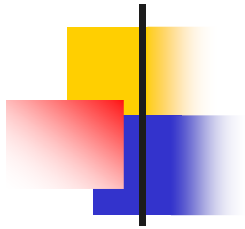
- **Cut out time wasted sorting calls from QRM**
 - Connect to web site on Internet
 - Request appointment slot based on propagation and band
 - DX station calls you and the contact is made
 - Logbook (database) goes to LOTW



Summary

- Extracts from fun over the years in different locations and aspects of amateur radio





Questions and comments

4X/G3ZCZ **Amateur Radio**
Bringing the World Together in Peace

Joe Kasser
Ramot 9/6
Jerusalem
Israel
Zone39
TS 140S
Rotable Dipole on top of apartment block
Lan-Link for Windows, Version 3.09

Remembering the World Trade Center Disaster
11 September 2001

To: SA1MPL - This confirms our 2-way SSB QSO
Date: Oct 19, 2000 Time: 10:05 UTC
Band: 20m UR Sigs: 59+
TNX FER FB QSO OM ES PSE QSL VIA EQSL.CC