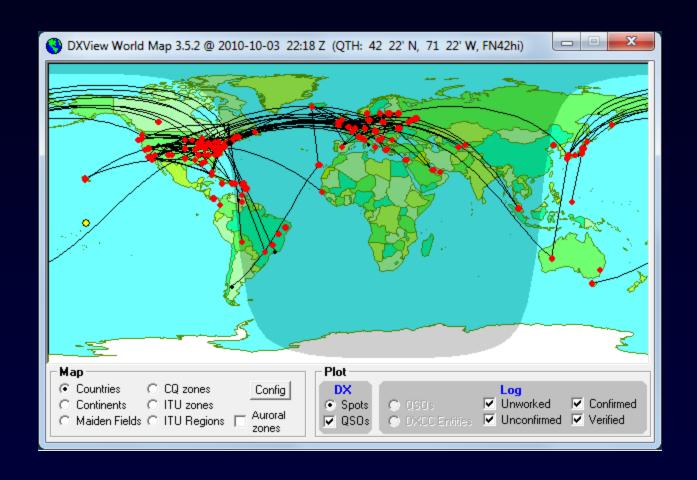
DXing with DXLab



Better DXing Through Software

DXing

The art and science
of making two-way contacts
with distant amateur radio stations
using phone, CW, or digital modes

DXLab: Better DXing Through Software

- 1. Automates QSL wrangling and award submissions to liberate more time for DXing
- Makes time spent DXing more productive by helping you
 - Find the DX you need
 - Work the DX you need

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Wrangling Electronic and Hardcopy QSLs

- Submit QSOs to LotW & eQSL, and download QSLs
- Request QSLs by sending outgoing QSL cards
 - Find QSL routes
 - Track responses
- Update DXing objectives as QSLs are received
- Submit QSLs for Award Credit

Electronic QSL Automation

eQSL.cc

- Database of known Authenticity Guaranteed (AG) participants
- Optional automatic upload as QSOs are logged
- One-click download of new confirmations and award progress update

LotW

- Database of known participants with date of last submission
- Optional automatic upload as QSOs are logged
- One-click download of new confirmations and award progress update
- Show QSOs that should be confirmed via LoTW, but aren't

Identifying Missing LoTW QSLs

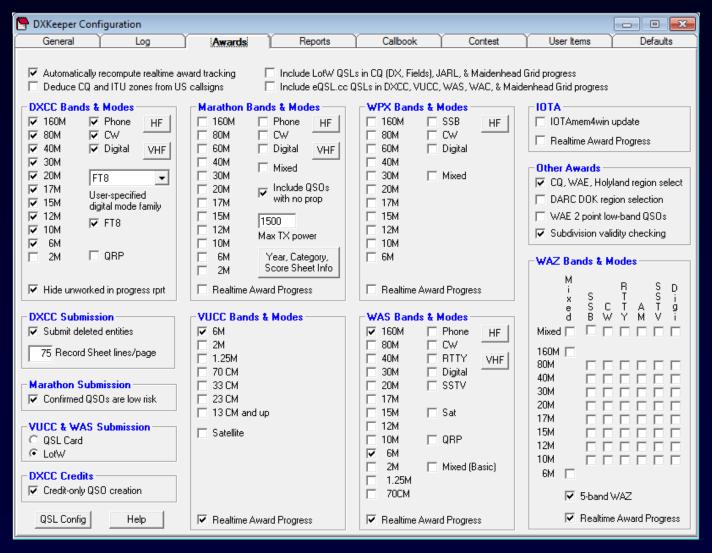
- DXLab's LoTW database contains all stations known to participate in LoTW, and the date at which each last submitted QSOs to LoTW
- You can identify all unconfirmed QSOs with stations known to participate in LoTW that have submitted QSOs to LoTW after the QSO date
 - contact your QSO partner
 - Ask them to submit your QSO, or correct the mismatch and resubmit

Hardcopy QSL Automation

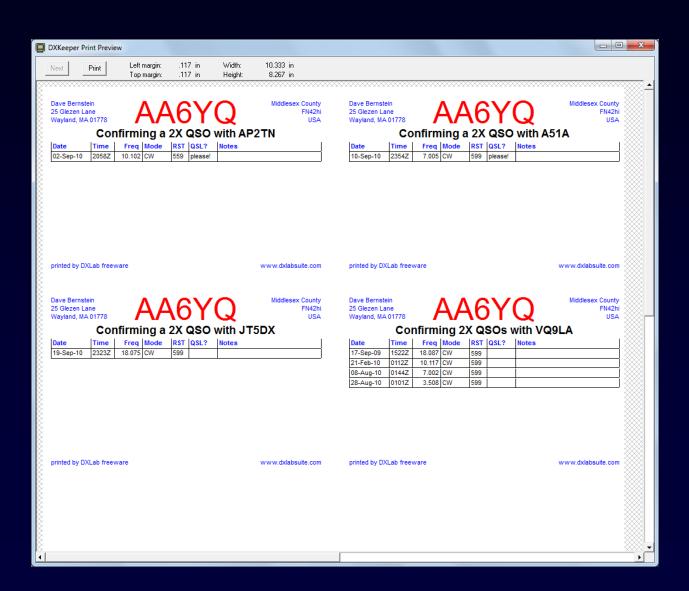
- Generate QSL cards or Labels requesting confirmations needed for DXCC, IOTA, Marathon, VUCC, WAS, WAZ, and WPX
- Locate QSL routes from more than 80 web-accessible sources
- Generate address labels or print envelopes
- Use full-page printers and individual label printers

DXing Objectives Drive Automation

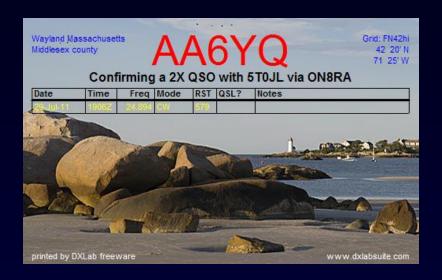
You can specify the bands and modes you are pursuing for each of DXCC, IOTA, Marathon, VUCC, WAS, WAZ, and WPX



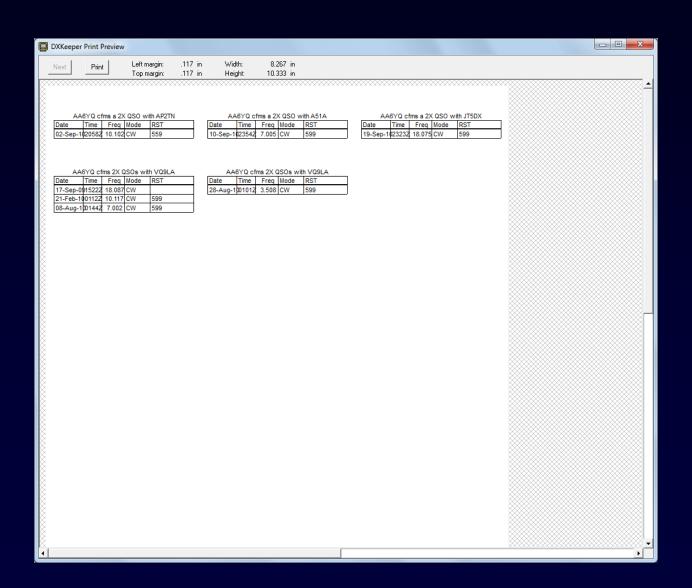
QSL Card Printing



QSL Card Printing



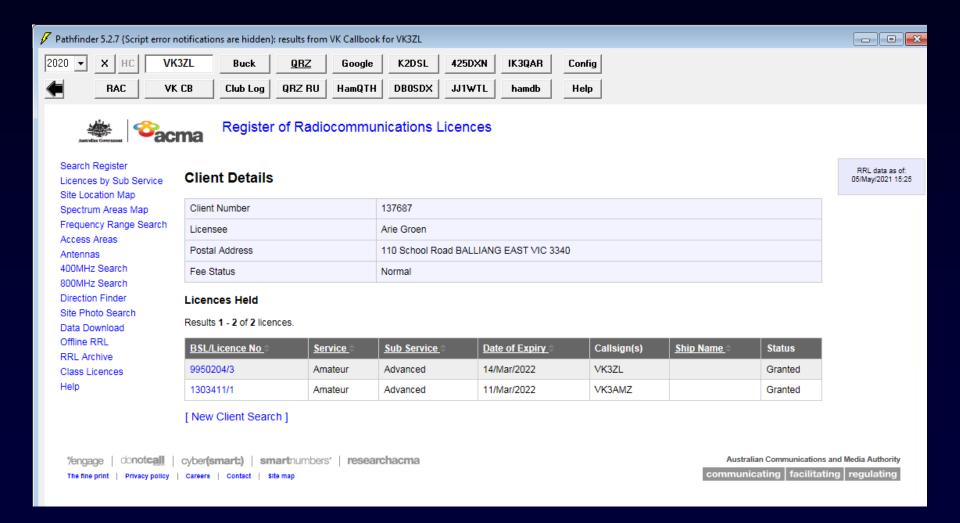
QSL Label Printing



Hardcopy QSL Automation

- Generate QSL cards or Labels requesting confirmations needed for DXCC, IOTA, Marathon, VUCC, WAS, WAZ, and WPX
- Locate QSL routes from more than 80 web-accessible sources
- Generate address labels or print envelopes
- Use full-page printers and individual label printers
- Keep track of requested QSLs not yet received

QSL Route Discovery



Hardcopy QSL Automation

- Generate QSL cards or Labels requesting confirmations needed for DXCC, IOTA, Marathon, VUCC, WAS, WAZ, and WPX
- Locate QSL routes from more than 80 web-accessible sources
- Generate address labels or print envelopes
- Use full-page printers and individual label printers
- Keep track of requested QSLs not yet received

Hardcopy QSL Automation

- Generate QSL cards or Labels requesting confirmations needed for DXCC, IOTA, Marathon, VUCC, WAS, WAZ, and WPX
- Locate QSL routes from more than 80 web-accessible sources
- Generate address labels or print envelopes
- Use full-page printers and individual label printers
- Keep track of requested QSLs not yet received

QSLs Requested But Not Received

```
AA6YQ QSL aging analysis @ 05-May-2021
   missing DXCC entities:
   missing DXCC entity-bands:
                                   1
   missing DXCC entity-modes:
   missing IOTA groups:
   missing VUCC grid-bands:
   missing WAS states:
                                   0
   missing WAS state-bands:
   missing WAS state-modes:
   missing WAZ zones:
   missing WAZ zone-bands:
   missing WAZ zone-modes:
   missing WAZ zone-band-modes
Call
                                      QSO Date
                                                  DXCC
                                                          IOTA Grid1 Grid2 Grid3 Grid4 State
                                                                                                     CQ
                                                                                                                                         QSL_SENT_VIA
                    Band
                            Mode
                                                                                                             QSL Date Weeks Expired
                                                                                                          24-Nov-2001
LA6SL
                                   21-Nov-2001
                                                    LA
                                                                 JP50
                                                                                                     14
                                                                                                                                                       VUCC
CE4WJK
                                   19-Sep-2011
                                                    CE
                                                                 FF45
                                                                                                          05-0ct-2011
                                                                                                                         500
                                                                                                                                                      VUCC
                             SSB
                                                                                                     12
5B4/YL2RR
                                   02-May-2014
                                                    5B
                                                                                                          13-Jan-2021
                                                                                                                          16
                                                                                                                                                    D DXCC (entity-band)
```

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Award Submission Automation

- Generate Award Progress Reports
- Identify confirmed QSOs for which award credit would advance progress towards your DXing objectives, and generate the required submission files (DXCC, IOTA, Marathon, VUCC, WAS, WAZ, WPX)
- Update confirmed QSOs to reflect award credit granted (DXCC, IOTA)

Award Progress Reports

- DXCC & Challenge
- CQ DX
- CQ DX Marathon
- CQ Field
- Gridsquares
- IOTA
- TOPLIST
- VUCC
- Worked All Continents
- Worked All CQ Zones
- Worked All Europe
- Worked All ITU Zones
- Worked All Prefixes
- Worked All US States

- Worked All Belgian Provinces
- Worked All British Areas
- Worked All Canadian Provinces
- Worked All French Departments
- Worked All DARC DOKs
- Worked All Holyland Areas
- Worked All Hungarian Counties
- Worked All Italian Provinces
- Worked All Japanese Cities
- Worked All Japanese Guns
- Worked All Japanese Prefectures
- Worked All Korean Districts
- Worked All Russian Oblasts
- Worked All Russian Districts
- Worked All Summits on the Air (SOTA)
- Worked All Swiss Cantons
- Worked All US Counties
- Worked All US Gridsquares (FFMA)
- Worked All User-defined Counters

DXCC Progress Report

```
Confirmed DXCC Countries (excludes deleted countries)
    mixed
    phone
              339
    digi
              336
    FT8
              222
    160m
              258
    80m
              312
    40m
              333
    30m
    20m
              339
    17m
    15m
              338
              331
              331
    10m
              111
    2m
              002
              003
Top (9 HF Bands, Phone, CW, Digital, excludes deleted countries)
    topmode
              2903
    topband
    toplist
Entity
                                Prefix Deleted Mixed
                                                                       DIGI
                                                                                                                                         2M Card LotW Sat
                                                                               FT8 160M
                                                                                                        20M 17M 15M 12M
Sov. Military Order Of Malta
                                                                   ٧
                                                                          ٧
Spratly Islands
                                    3A
Agalega & St Brandon Islands
                                   3B6
Mauritius Island
                                   3B8
Rodriguez Island
                                   3B9
Equatorial Guinea
                                   3C0
Annobon
Conway Reef
                                 3D2-C
Fiji Islands
                                 3D2-F
Rotuma
                                 3D2-R
Swaziland
                                   3DA
Tunisia
                                    3V
Viet Nam
                                    3W
                                    3X
Guinea
Bouvet Island
                                  3Y-B
Peter 1 Island
                                  3Y-P
```

Award Submission Automation

- Generate Award Progress Reports
- Identify confirmed QSOs for which award credit would advance progress towards your DXing objectives, and generate the required submission files (DXCC, IOTA, Marathon, VUCC, WAS, WAZ, WPX)
- Update confirmed QSOs to reflect award credit granted (DXCC, IOTA)

Generated DXCC Record Sheet

AA6YQ DXCC LotW Record Sheet 30-Dec-2020					
	Call	QSO Date	Band	Mode	Entity
0001	YE3WIL	27-11-2020	30M	FT8	Indonesia
0002	E44RU	11-01-2020	160M	FT8	Palestine
0003	HL5BLI	26-11-2020	30M	FT8	Republic of Korea

Award Submission Automation

- Generate Award Progress Reports
- Identify confirmed QSOs for which award credit would advance progress towards your DXing objectives, and generate the required submission files (DXCC, IOTA, Marathon, VUCC, WAS, WAZ, WPX)
- Update confirmed QSOs to reflect award credit granted (DXCC, IOTA)

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DXing With DXLab

- Introduction to the DXLab Suite
 - Drivers
 - Architecture
 - Multiple Views of Active DX
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Drivers

1. User-driven iterative development

- Online group with 4700+ participants
- Defect repairs get highest priority; goal is < 24 hours
- Public enhancement lists
- Frequent releases (several per month)

2. Powerful and Easy to Use

- Primarily for DXers
- Secondarily for casual operators

3. Runs on Windows NT, 2000, XP, Vista, 7, 8, and 10

- and Mac in a virtual machine
- and Linux in a virtual machine

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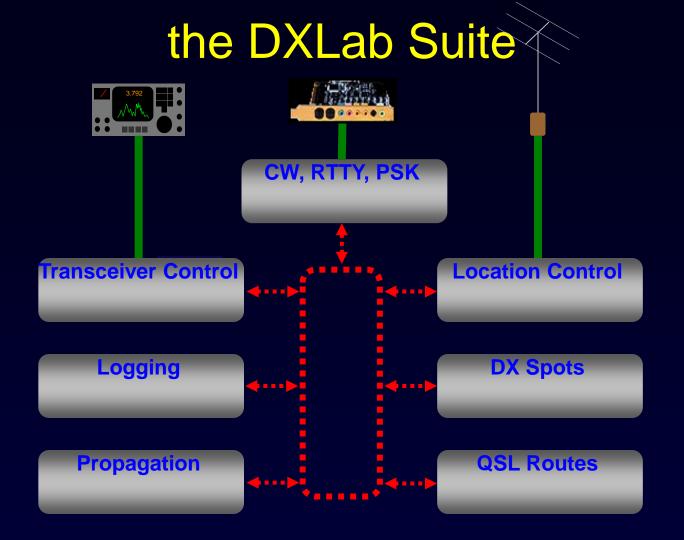
the DXLab Suite

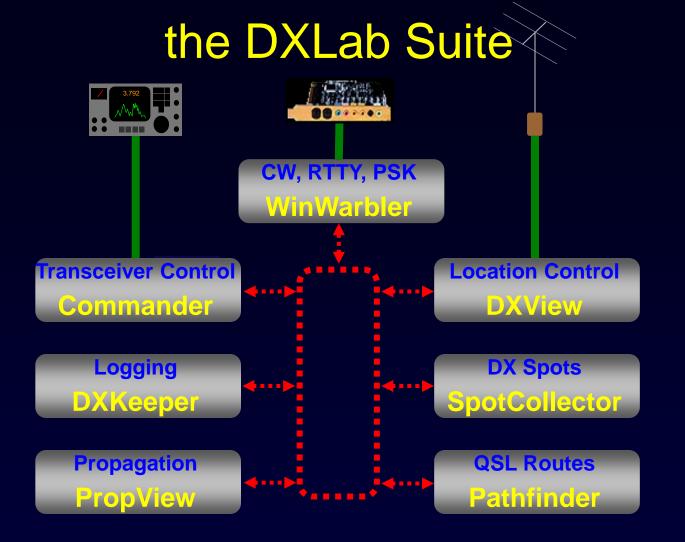
Eight free applications that run individually but

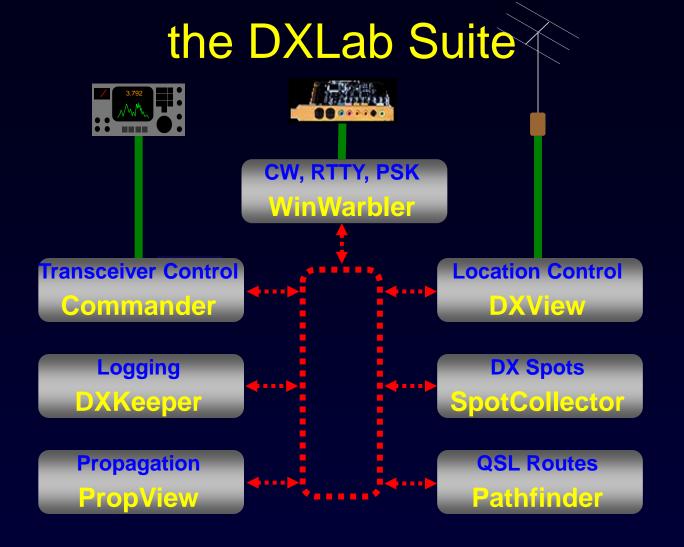
when run simultaneously sense each other's presence

and

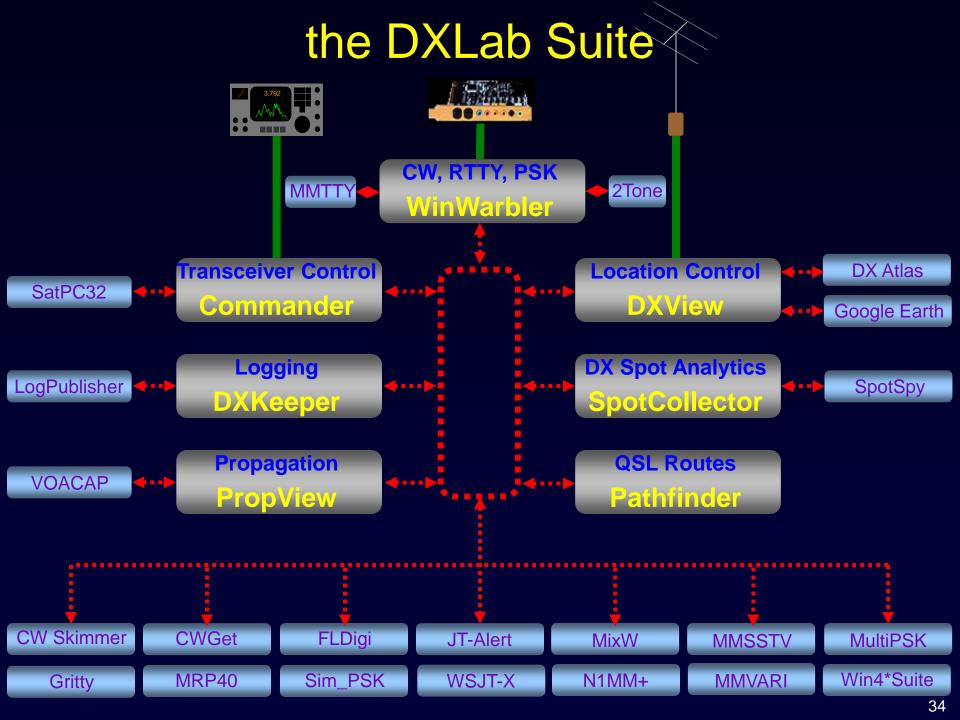
interoperate automatically



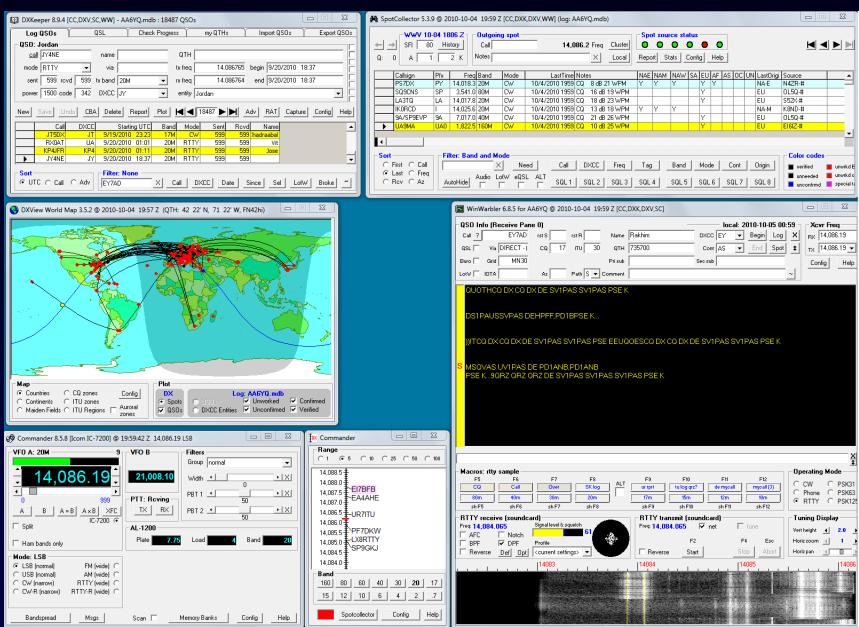




- Modular
- Loosely-coupled



A Suite of DXing Applications



Single Point of Control: DXLab Launcher

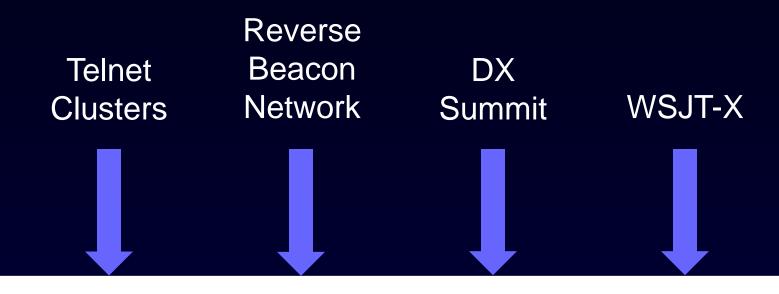


- Installation
- Upgrade
- Startup
- Shutdown

DXing With DXLab

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Active DX Database



Call	Freq	QSX	Mode	First	Last	EU	AF	SA	NA-E	NA-M	NA-W	OC	
P5DX	14.005	14.007	CW	0117Z	0341Z	Y					Y	Y	
KP1RY	21.080	21.085	RTTY	0245Z	0356Z	Y	Y	Y	Y	Y			

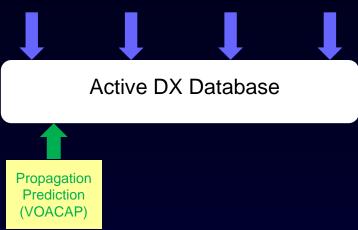
Active DX Database

DX Spot Sources

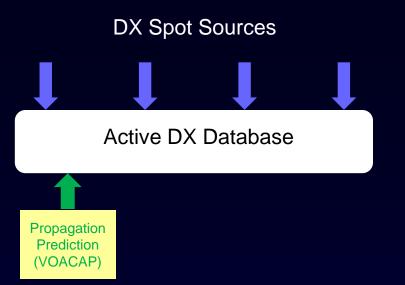


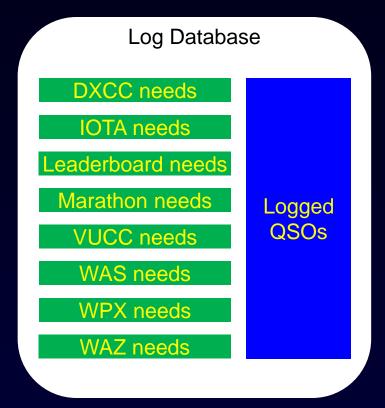
What DX stations are QRV?

DX Spot Sources

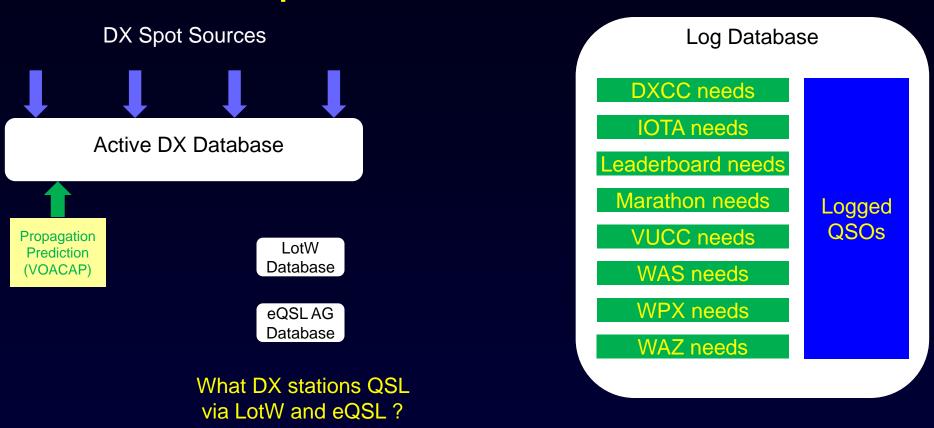


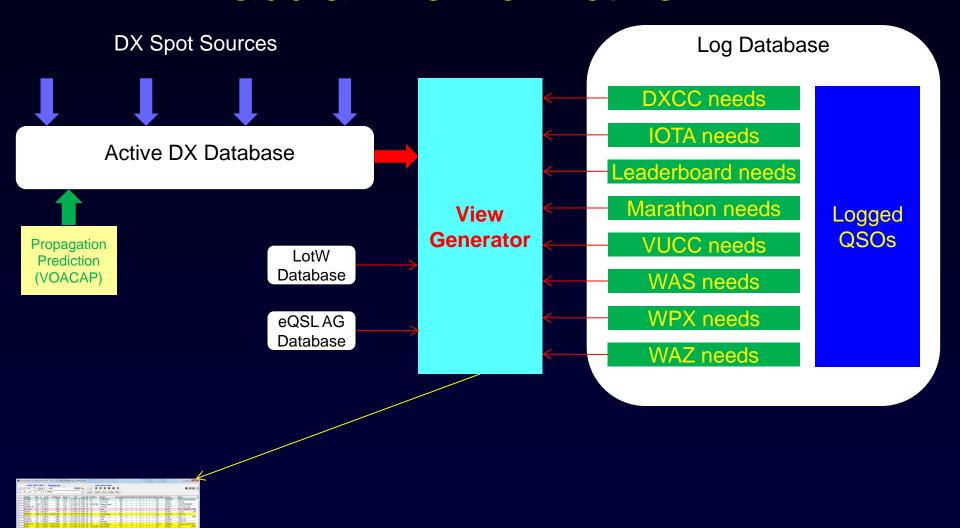
Which DX stations can I likely copy?





What QSOs and QSLs are "Needed" for the awards I'm pursuing on the bands and modes I've specified?





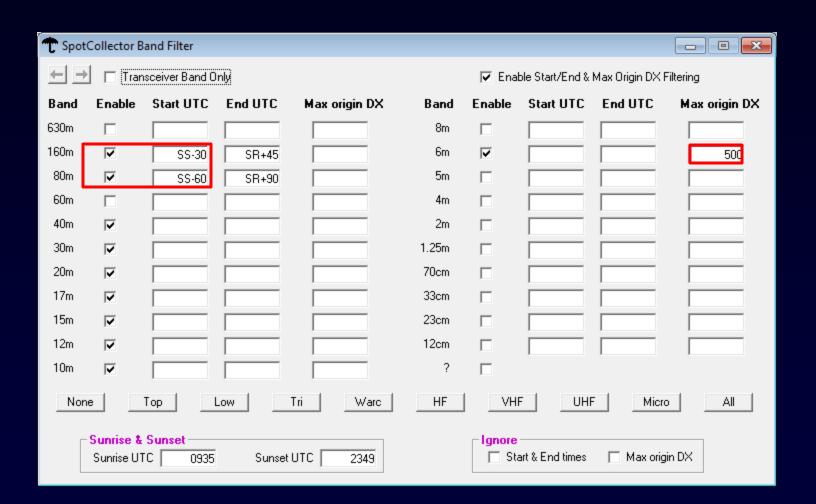
Selected Bands and Modes



Font color indicates "needed" DX stations

Background color indicates LotW and eQSL participation

Band Filter



Mode Filter



Propagation Forecasting



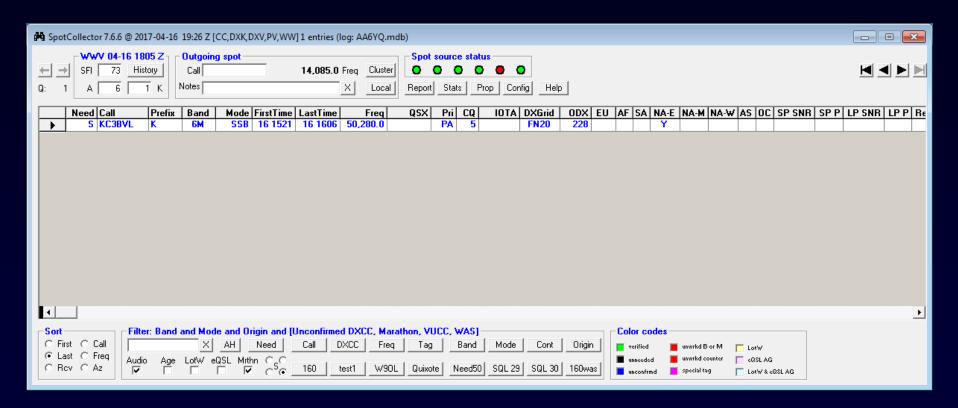
On 80m through 10m, PropView's VOACAP engine computes

- Short path SNR and probability
- Long path SNR and probability

Needed DX on Selected Bands and Modes



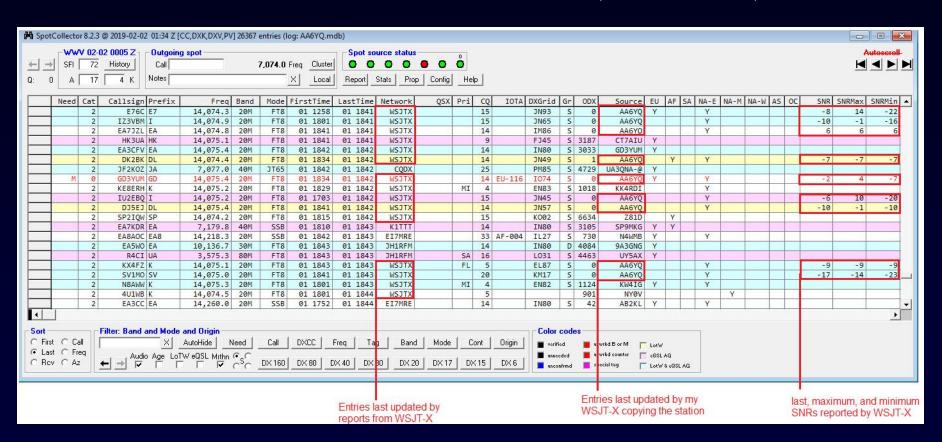
Needed DX on Selected Bands and Modes spotted from NA-E



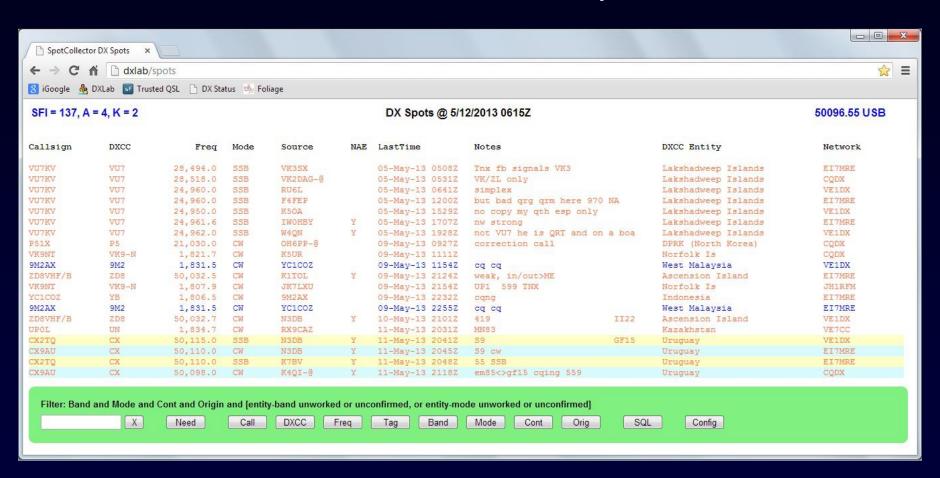
Needed DX on Selected Bands & Modes with SP Prob > 50%



Entries for K1JT modes show last SNR, max SNR, min SNR



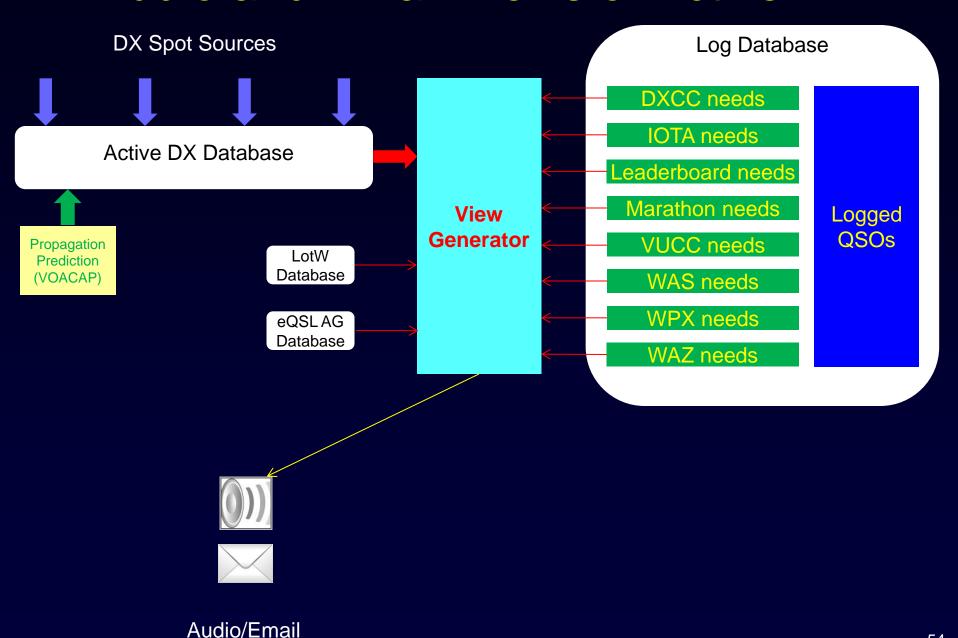
in a web browser from anywhere



in a web browser from anywhere



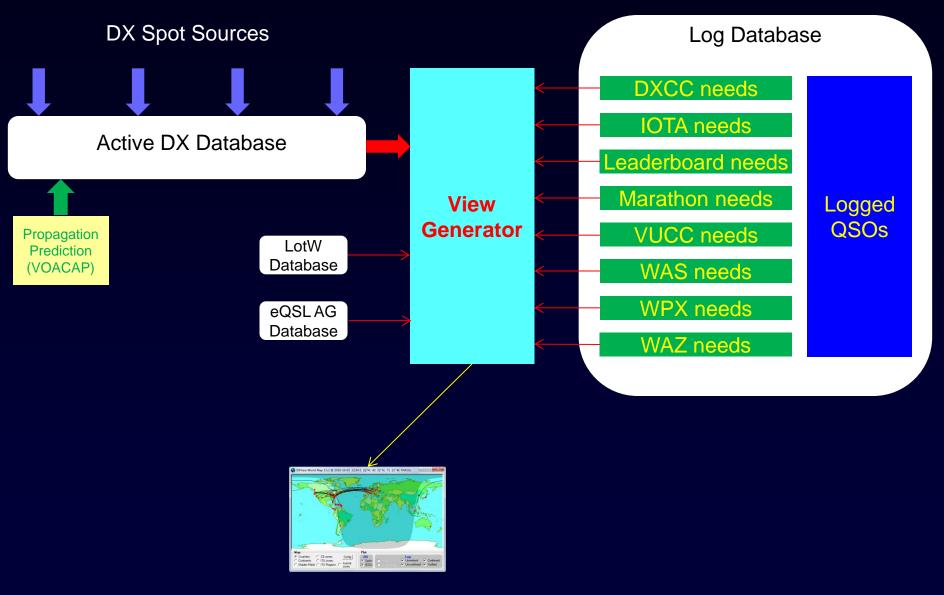
Audio and Email Views of Active DX



Audio and Email Views of Active DX

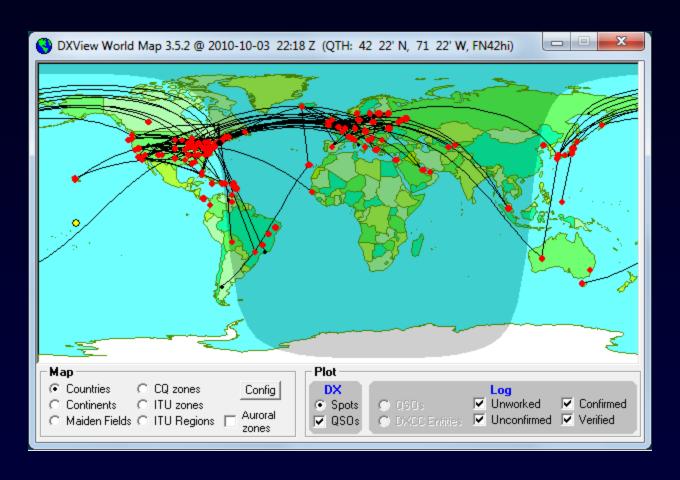
Creation of a new Active DX Database Entry for a needed DX station can trigger

- an audio announcement (callsign, "counter", band, mode)
- an outgoing email message (which can initiate a text message)

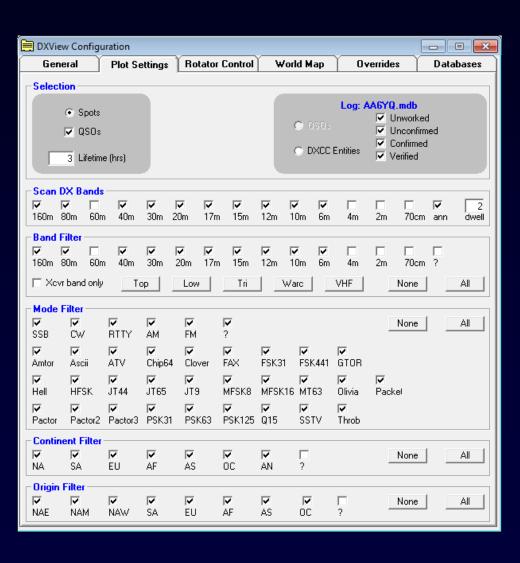


World Map

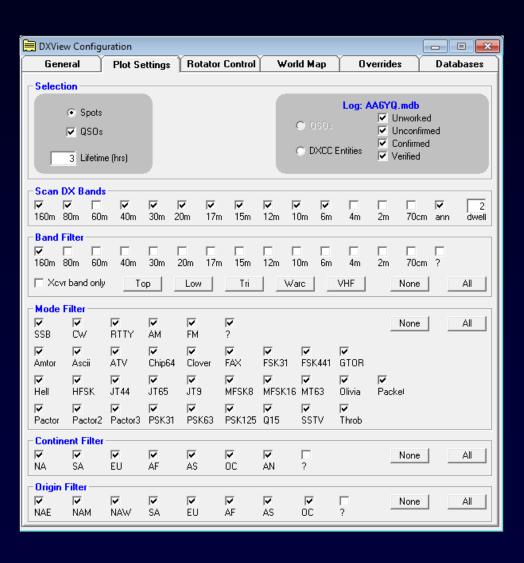
"Active DX on Selected Bands"



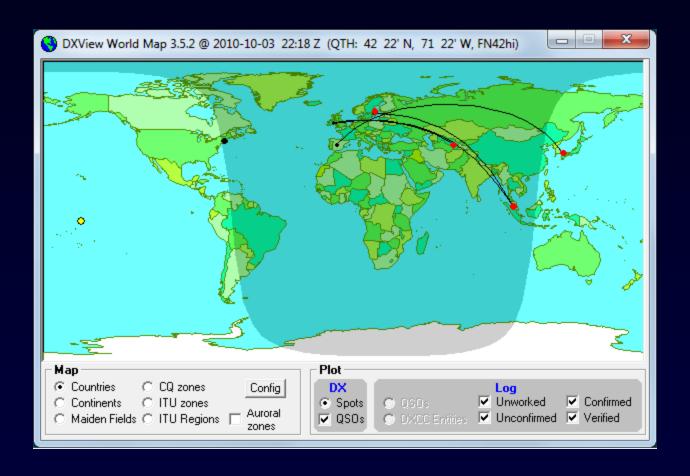
Controlling the Map View



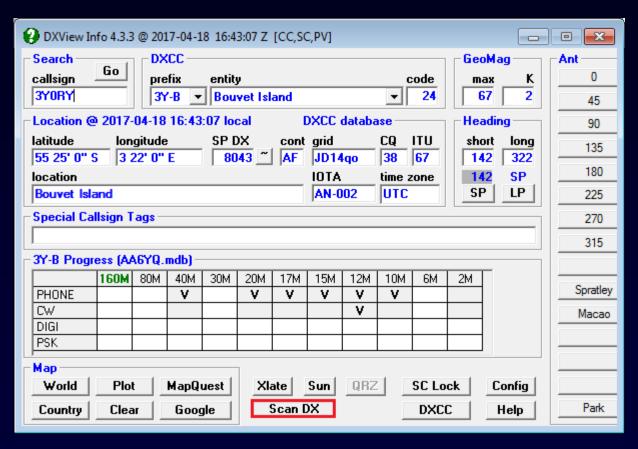
Controlling the Map View



"160m"



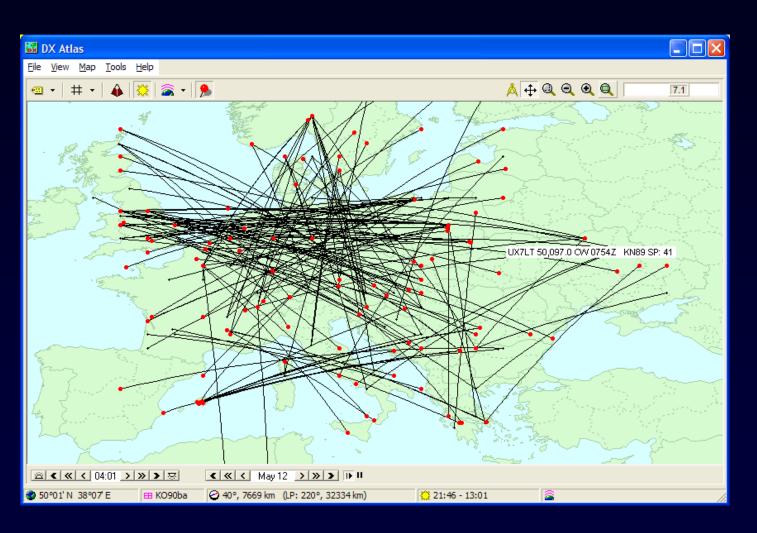
ScanDX



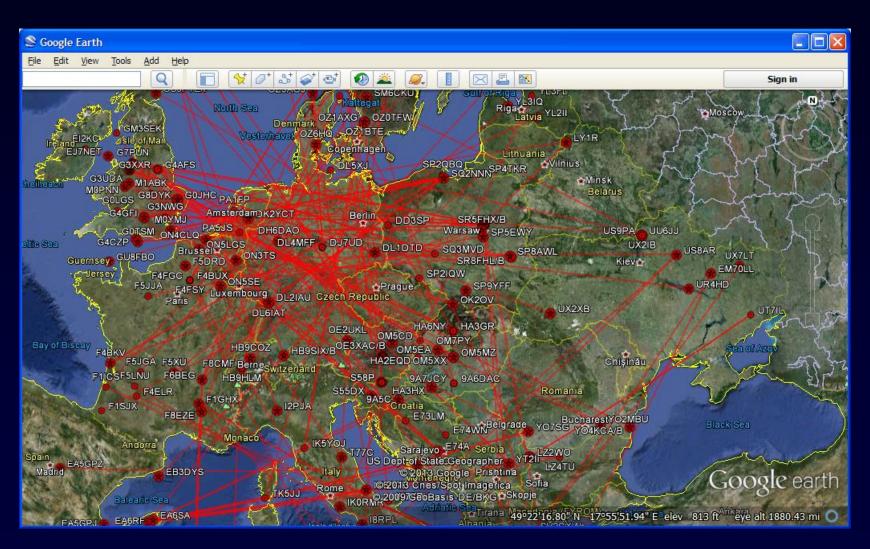
ScanDX



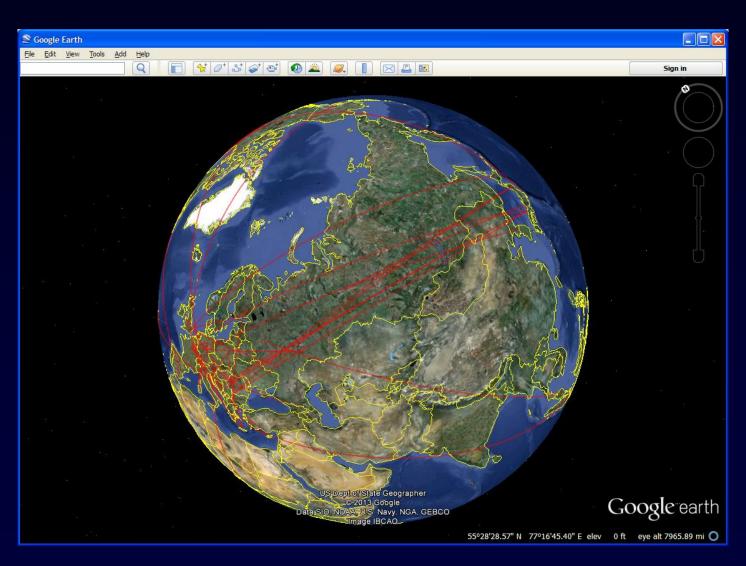
"6m" on DX Atlas



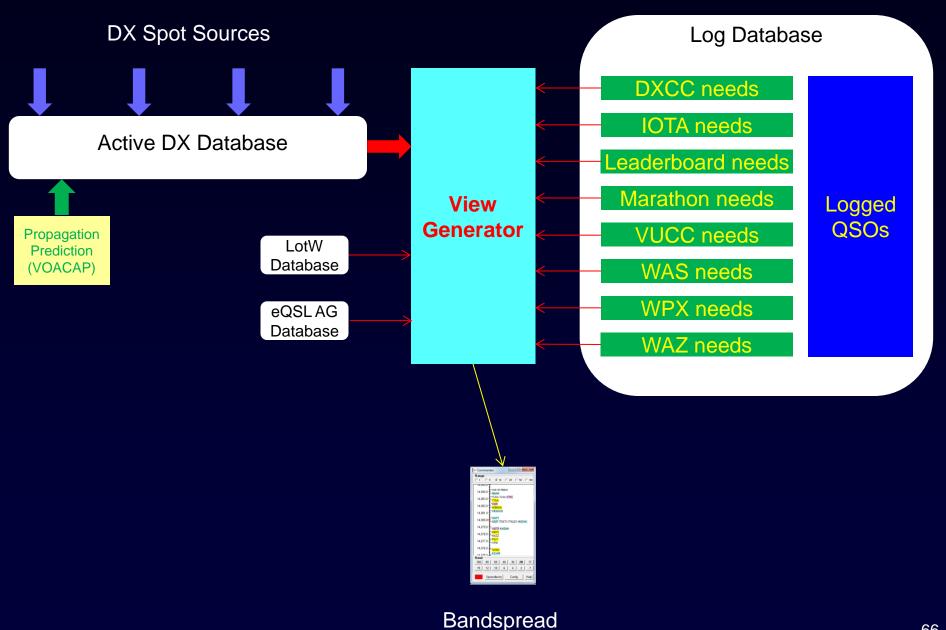
"6m" on Google Earth



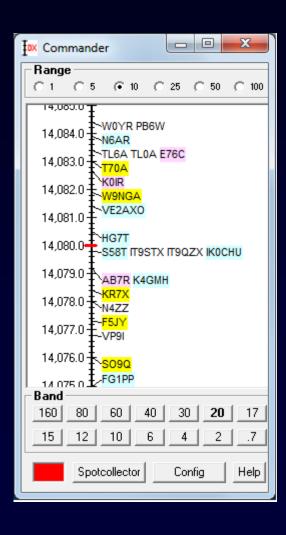
"12m" on Google Earth

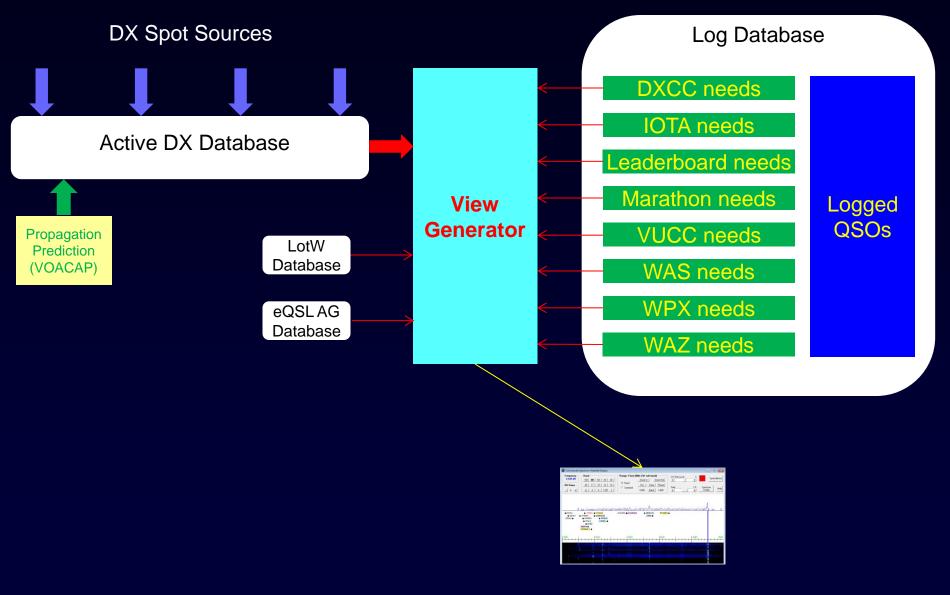


Bandspread View of Active DX

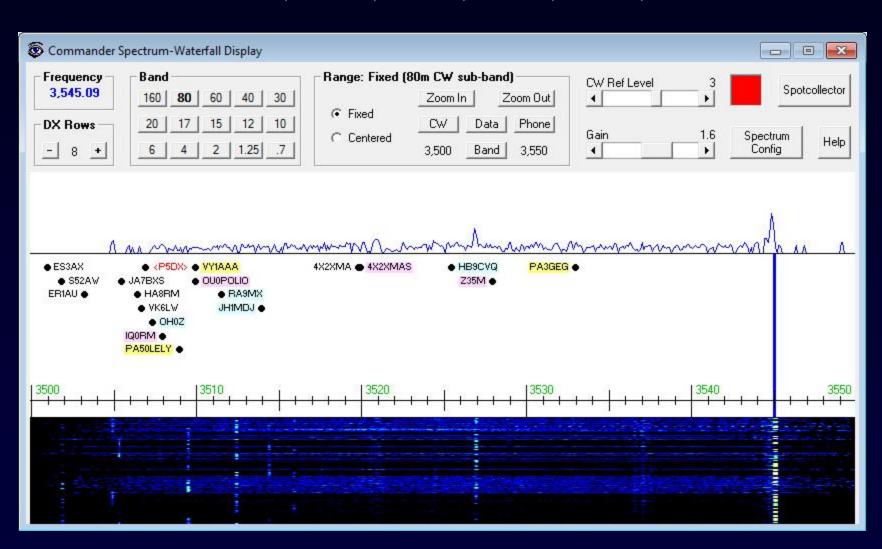


Bandspread View of Active DX





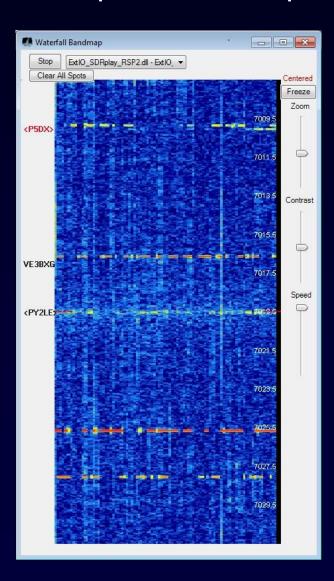
Icom 705, 7300, 7610, 7850, 7851, 9700



Flex Signature Radios

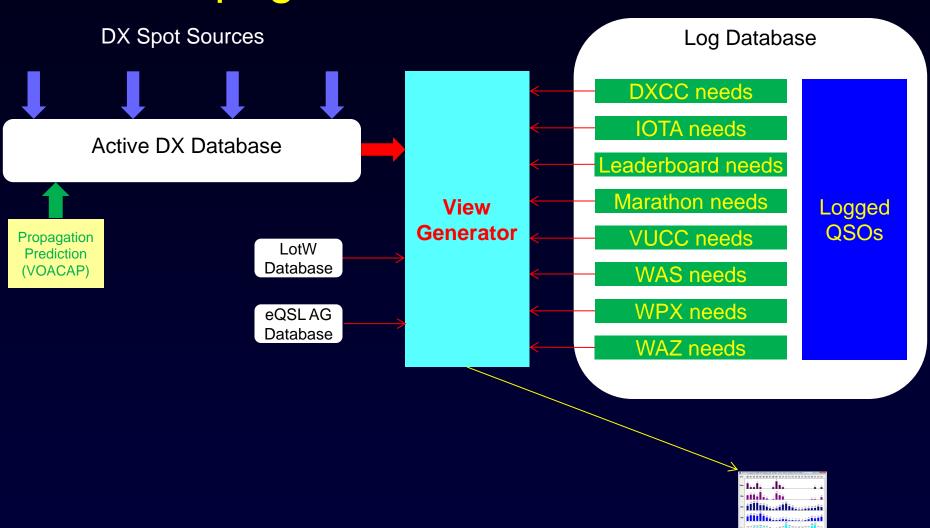


In Development: Interoperation with N2IC's Waterfall Bandmap



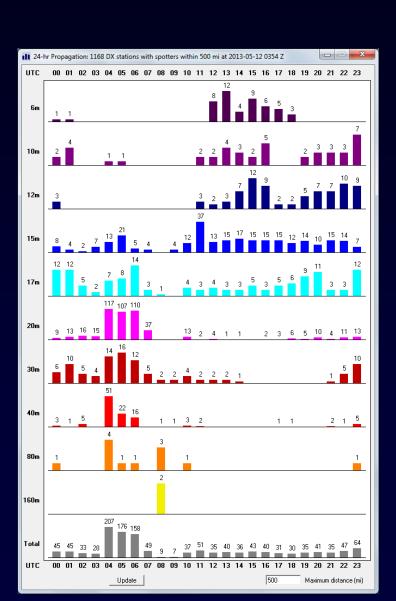
- Supports most SDRs
- RF or IF input

Propagation View of Active DX

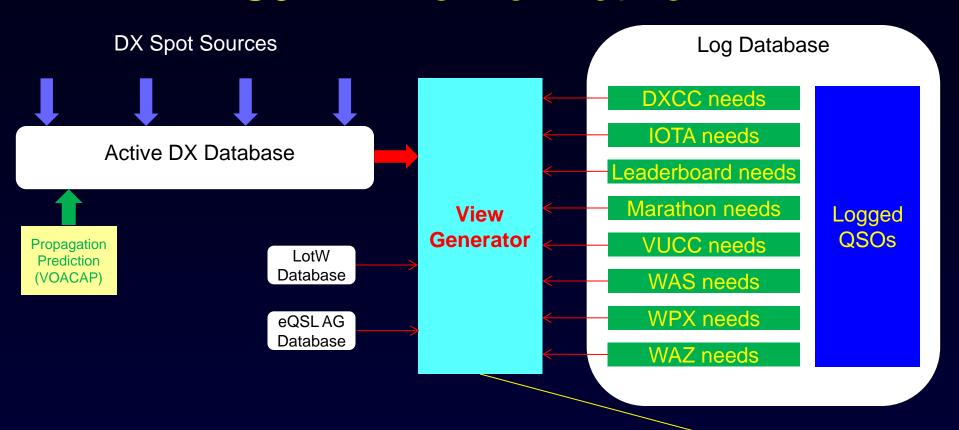


in aldii lilil lli aliitiililli la alaasatil mmmaaaallimmillii

Propagation View of Active DX



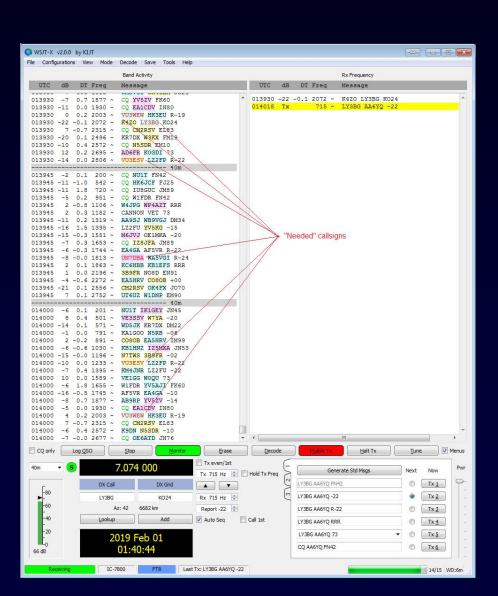
WSJT-X View of Active DX



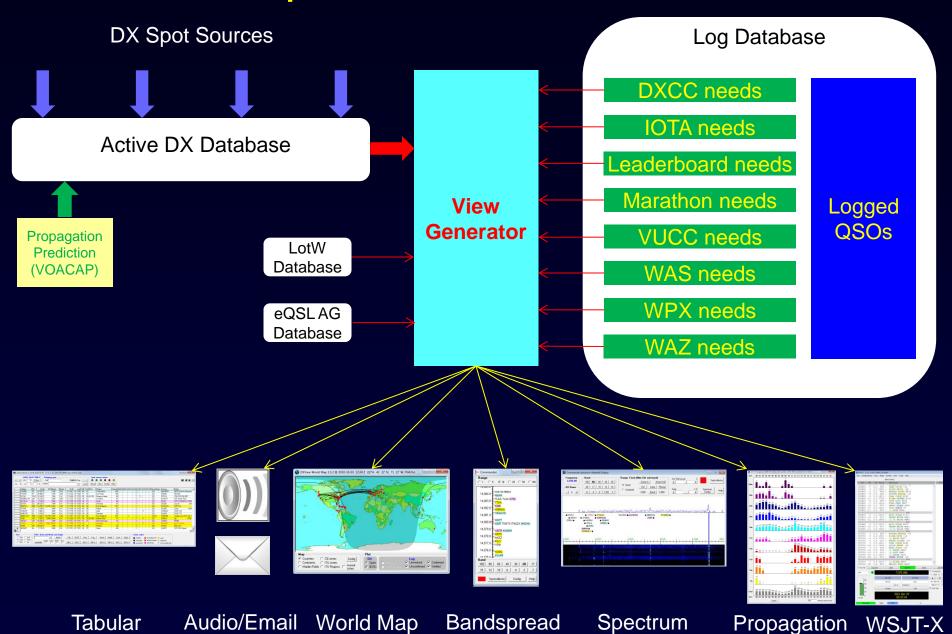


WSJT-X View of Active DX

Log Database



Multiple Views of Active DX

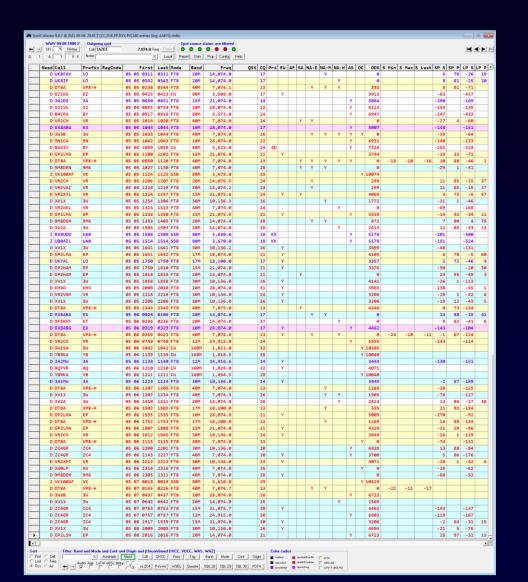


DXing With DXLab

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- Working the DX You Need

Finding and Working Needed DX

What is QRV that I Need?

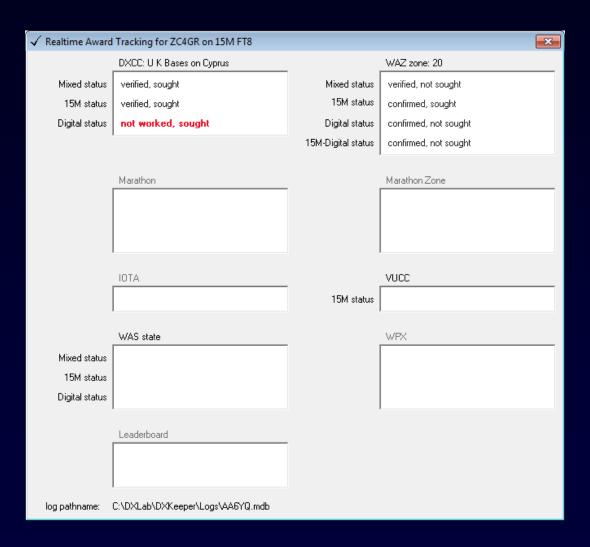


Interesting Targets

- •3W
- •5W
- •9M8
- •9N
- •BA
- •EP2LMA
- •KH3O
- •VP8-H
- VR
- •XV
- •YB
- •ZC4

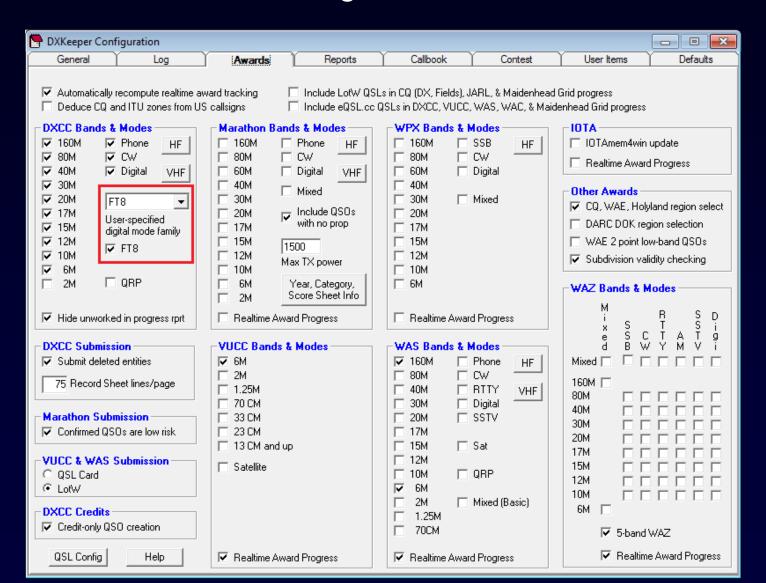
Almost All FT8!

Award Tracking for ZC4GR on 15m FT8

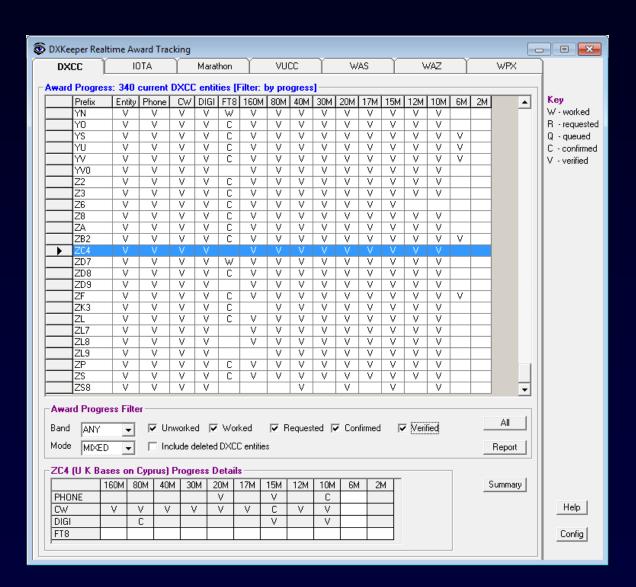


Finding and Working Needed DX

Because I'm Pursuing all DXCC Entities in FT8!



DXCC Award Tracking for ZC4GR



Finding and Working Needed DX

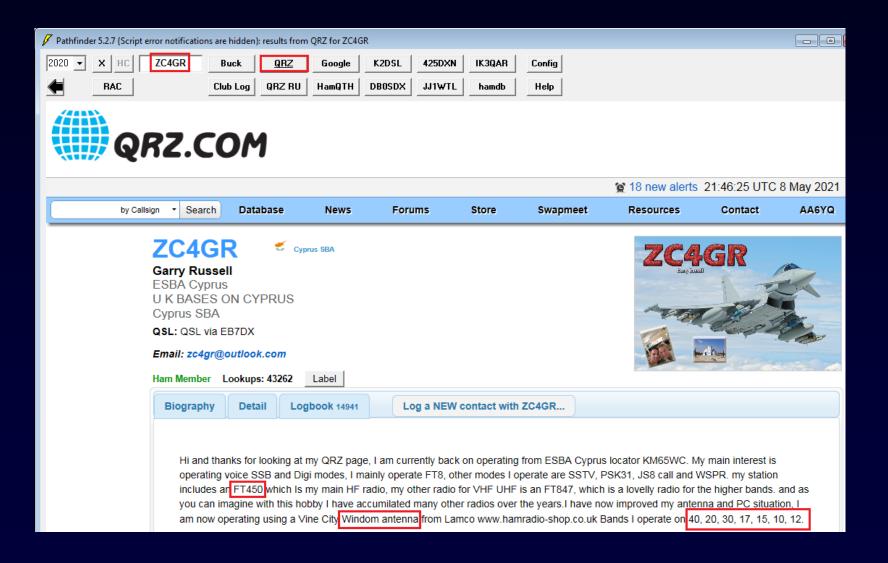
What is QRV in other than FT8 that I Need?





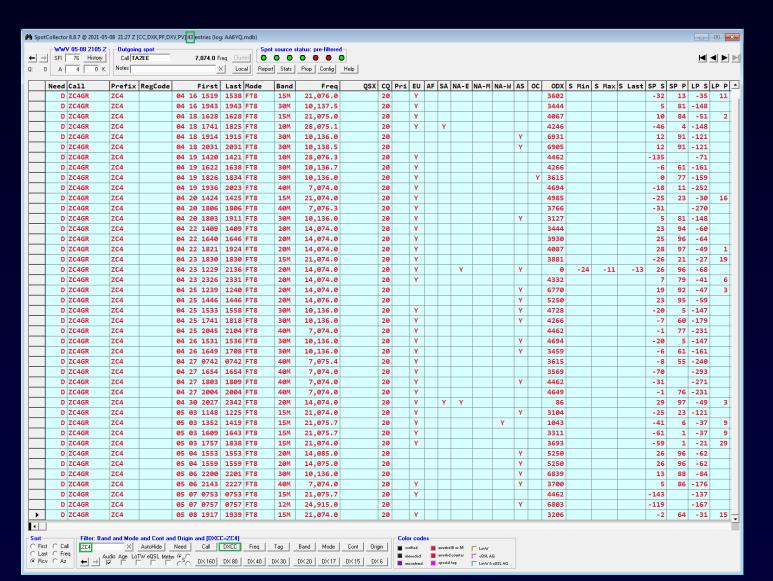
- Stations on 160m and 80m
 - EZ1WS not valid for DXCC
 - VK1000AF is in SSB, and is only needed for WAZ
 - The rest were spotted after my 1030Z sunrise

ZC4GR on FT8 Looks Challenging



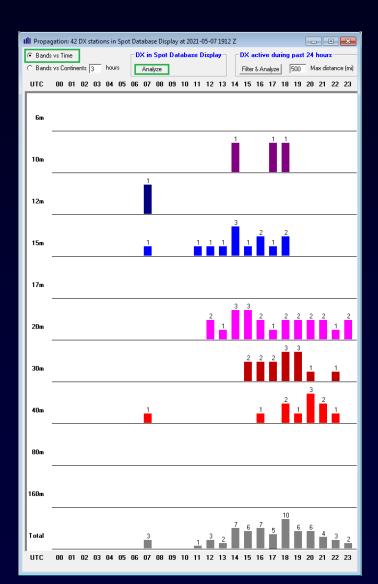
ZC4GR on FT8 Looks Challenging

Check for Recent Activity



Working ZC4GR on FT8

Band vs. Time-of-Day Analysis of Recent Activity



When QRV?

15m: 11Z to 18Z

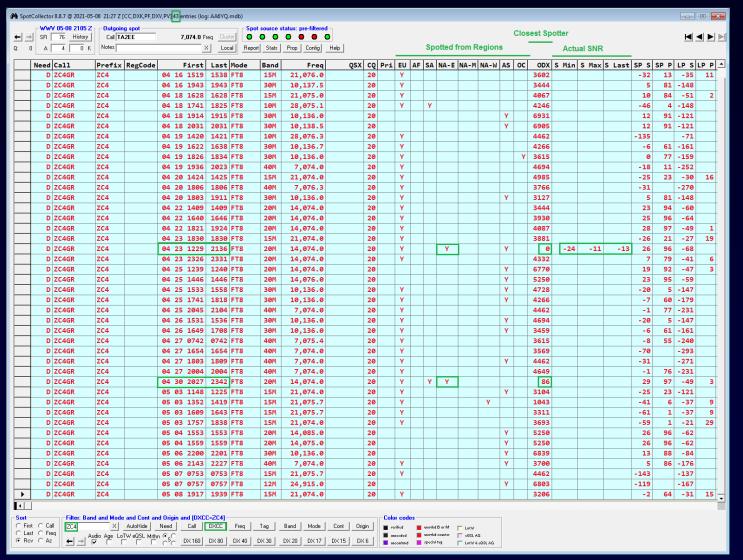
20m: 12Z to 23Z

• 30m: 15Z to 20Z

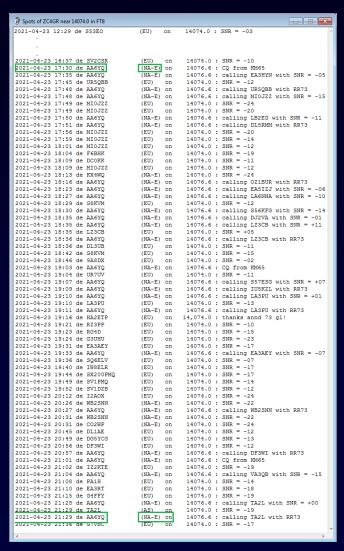
40m: 16Z to 21Z

Working ZC4GR on FT8

- No "Fox/Hound" frequencies
- Spotted from NA-E on 4/23 and 4/30
- Copied on 4/23



20m ZC4GR Spots on 4/23 @ 1229Z

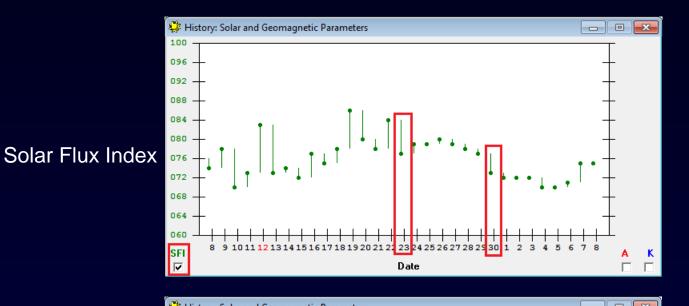


- QRV from 1229Z to 2136Z
- WSJT-X copied from 1730Z to 2129Z

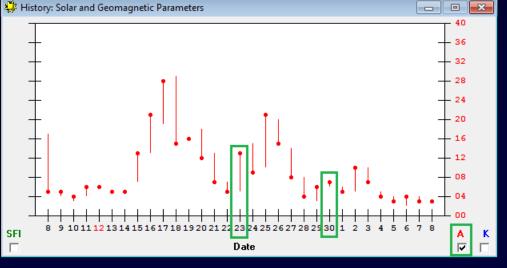
20m ZC4GR Spots on 4/30 @ 2027Z

```
Spots of ZC4GR near 14074.0 in FT8
                                                                   _ _ X
2021-04-30 20:27 de DL4ZBY
                                     (EU)
                                                  14074.0 : SNR = -16
                                           on
                                                  14074.0 : SNR = -20
2021-04-30 20:43 de PY4WL
                                     (SA)
2021-04-30 21:27 de DD5ZZ
                                                  14074.0 : SNR = -10
                                     (EU)
                                           on
2021-04-30 21:40 de ON4CJU
                                     (EU)
                                                 14,074.0 : FT8 - TNX QSO...
                                           on
2021-04-30 22:27 de SV9CVY
                                     (EU)
                                           on
                                                  14074.0 : SNR = -18
2021-04-30 22:39 de K1JX
                                    (NA-E
                                                  14074.0 : SNR = -21
                                           on
2021-04-30 22:44 de K1JX
                                     (NA-E) on
                                                  14074.0 : SNR = -21
2021-04-30 22:48 de EA5HRW
                                     (EU)
                                                  14074.0 : SNR = -17
2021-04-30 23:10 de W4IL
                                    (NA-E) on
                                                  14074.0 : SNR = -15
                                                  14074.0 : SNR = -10
2021-04-30 23:14 de W4IL
                                     (NA-E) on
2021-04-30 23:32 de W4IL
                                     (NA-E) on
                                                  14074.0 : SNR = -18
2021-04-30 23:40 de W4IL
                                     (NA-E)
                                                  14074.0 : SNR = -13
```

Propagation Conditions



Geogmagnetic A Index



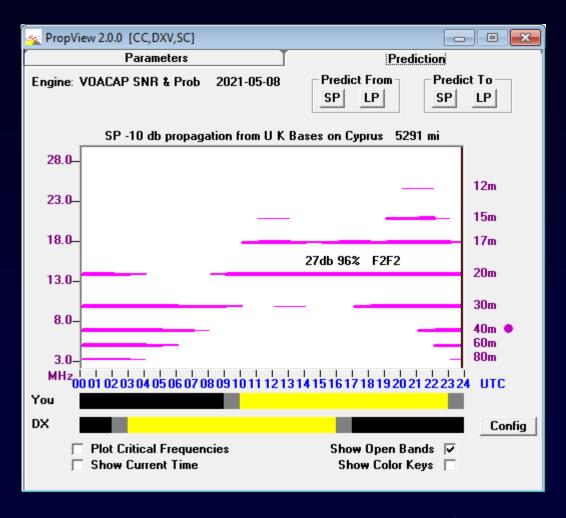
Check for Gray-Line Enhancement

DXView Sunrise/Sunset @ 19:24:12 Z					
DX: Cyprus (UK Military Bases 🔲 Auto update					
Calculate		34 35' 59"	N 32 58' 58" E	2021-04-01	Date Sunset GL St. X
○ Sun rise & set		Latitude	Longitude	Starting Date	Selected Time
Gray-Line		QTH-DX Gray-line (GL) Paths			
Date Sunris		se GL Start	Sunrise GL End S	unset GL Start	Sunset GL End

None!

20m Propagation Forecast to ZC4

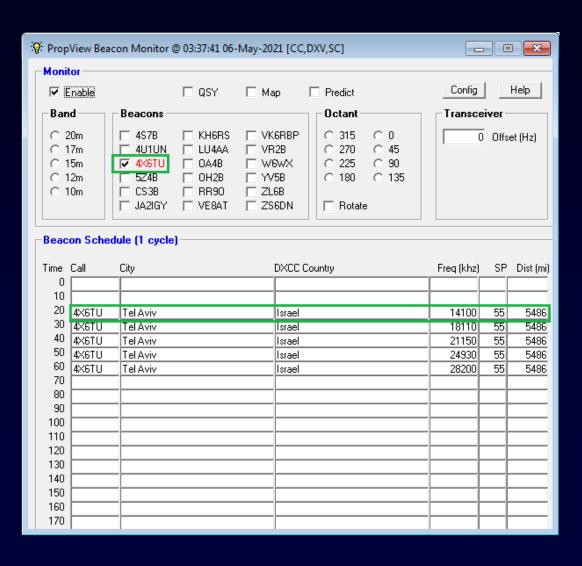
Solar Flux Index = 75, DX running 100 watts



17m, 20m, 30m, and 40m look feasible

Check "Actual" Propagation

NCDXF 4X6TU Beacon is ~230 miles from ZC4

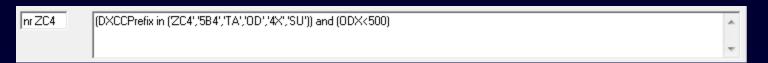


Check "Actual" Propagation

Who Near Me has been Spotting Stations Near ZC4?

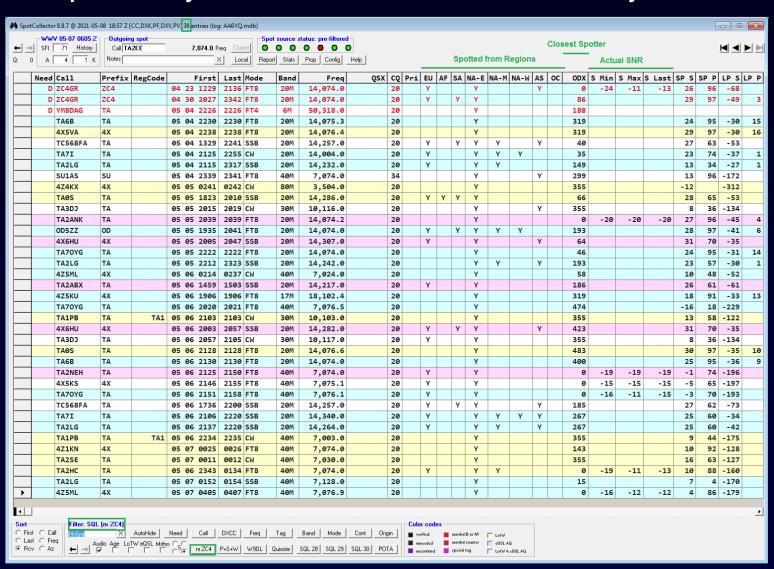
Define a "near ZC4" filter to show stations

- In ZC4, 5B4, TA, OD, 4X, SU
- spotted by stations less than 500 miles from my QTH

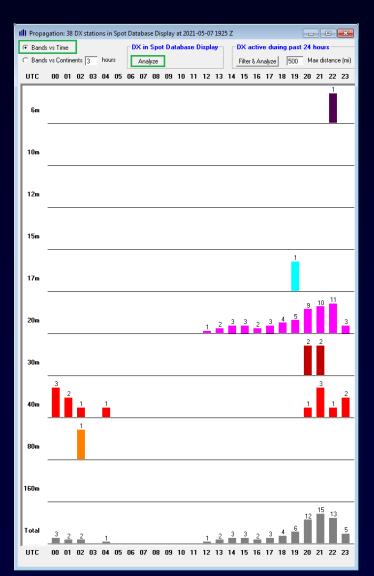


Propagation from "Near Me" to "Near ZC4"

Stations in ZC4, 5B4, TA, OD, 4X, SU spotted by stations within 500 miles of my QTH



Propagation from "Near Me" to "Near ZC4"



Propagation Openings?

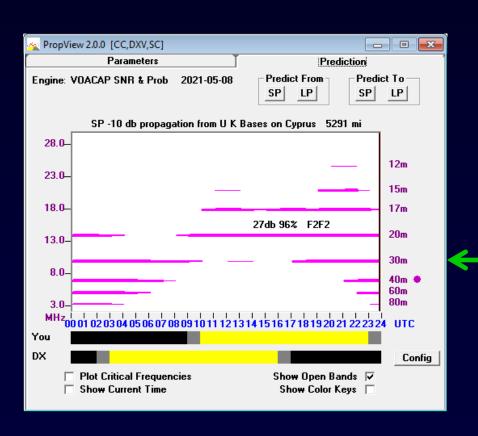
20m: 12Z to 23Z

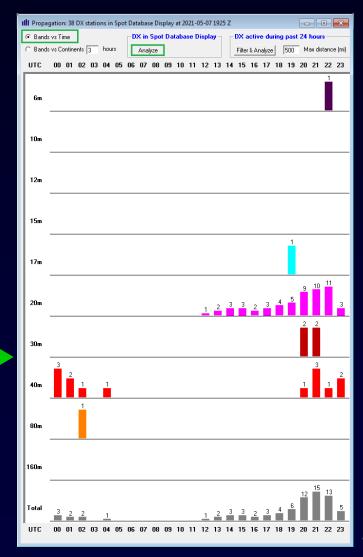
• 30m: 20Z to 21Z

• 40m: 20Z to 23Z

Compare Actual & Forecast Propagation

Solar Flux Index = 80, DX running 100 watts





ZC4GR: The Plan

- 1. Monitor the 20m FT8 sub-band from 12Z to 23Z, especially
 - when the Solar Flux Index is 75 or above
 - when the NCDXF 4X Beacon can be copied

When QRV?

15m: 11Z to 18Z

• 20m: 12Z to 23Z

• 30m: 15Z to 20Z

40m: 16Z to 21Z

Propagation Openings?

20m: 12Z to 23Z

30m: 20Z to 21Z

• 40m: 20Z to 23Z

- 2. Employ a European DX Cluster as a Spot Source
- 3. Rapidly QSY if ZC4GR is spotted on another band
 - Enable audio announcements
 - Exploit Frequency-dependent Amplifier and Tuner settings

ZC4GR: The Plan

- 1. Monitor the 20m FT8 sub-band from 12Z to 23Z, especially
 - when the Solar Flux Index is 75 or above
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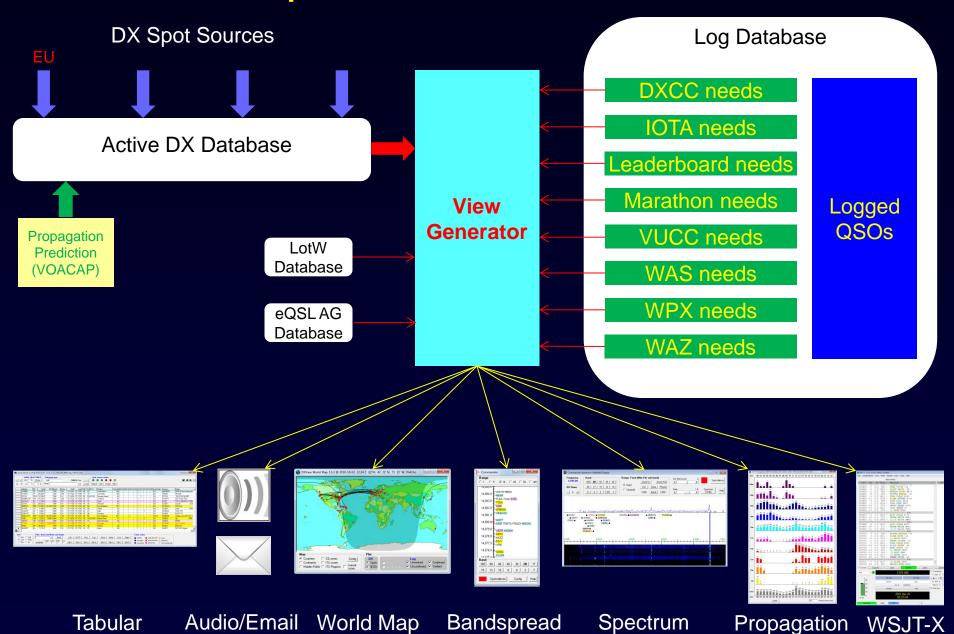
When QRV?

- 15m: 11Z to 18Z
- 20m: 12Z to 23Z
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- 40m: 16Z to 21Z

Propagation Openings?

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Multiple Views of Active DX



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Propagation Openings?

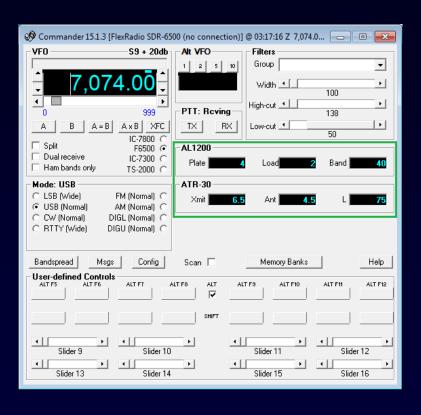
• 20m: 12Z to 23Z

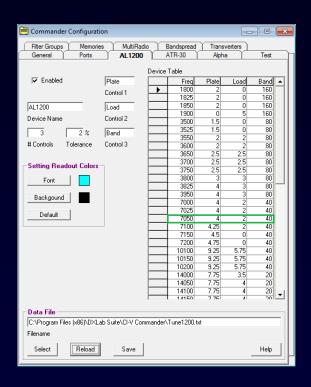
• 30m: 20Z to 21Z

• 40m: 20Z to 23Z

- 2. Employ a European DX Cluster as a Spot Source
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 - Enable audio announcements
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Rapidly Setup Amplifier After QSY





ZC4GR: The Plan

1. Monitor the 20m FT8 sub-band from 12Z to 23Z

When QRV?

• 15m: 11Z to 18Z

• 20m: 12Z to 23Z

• 30m: 15Z to 20Z

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Propagation Openings?

20m: 12Z to 23Z

• 30m: 20Z to 21Z

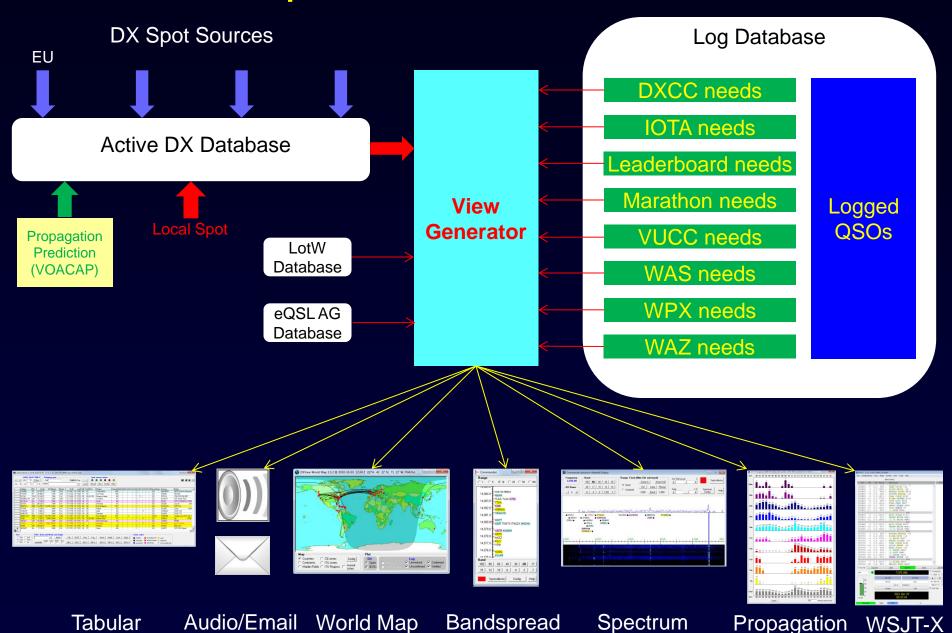
40m: 20Z to 23Z

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- 3. Rapidly QSY if ZC4GR is spotted on another band
 - Enable audio announcements
 - Exploit Frequency-dependent Amplifier and Tuner settings

Working ZC4GR in CW, RTTY, or SSB

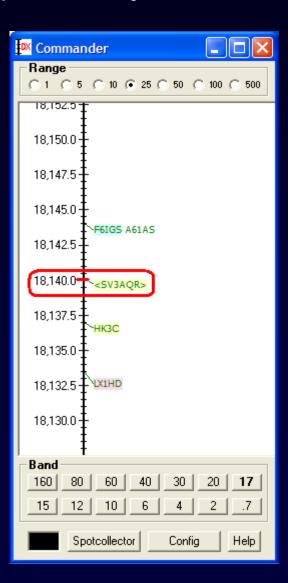
- 1. "Blueprint" the band with local spots
- 2. If ZC4GR is spotted, double-click to QSY and set split
- 3. Use dual receivers and a panadaptor to rapidly locate ZC4GR's listening frequency

Multiple Views of Active DX



Blueprinting the Band

"Locally Spot" Every Station You Identify



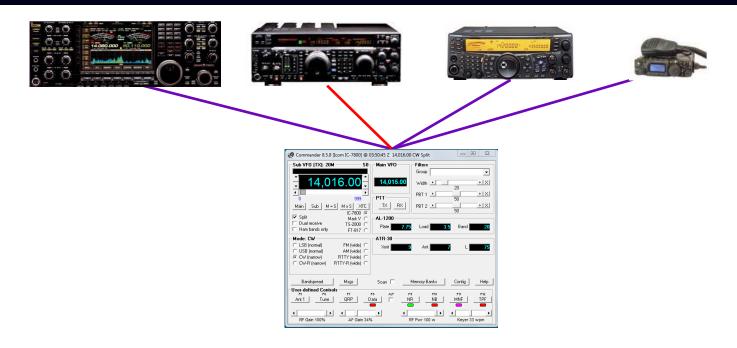
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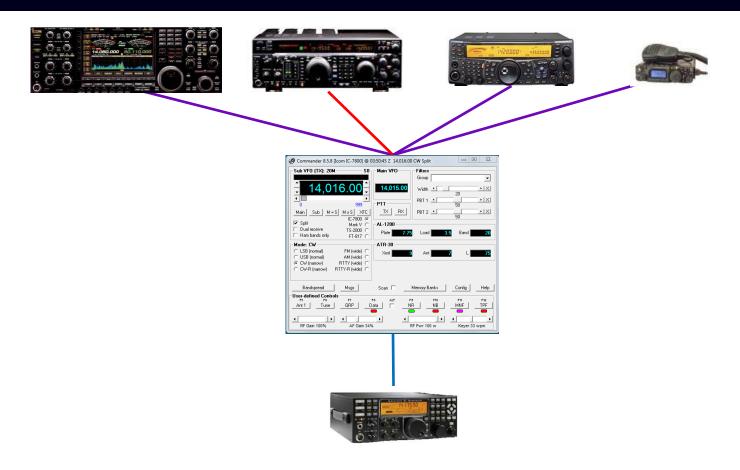
Commander: Multiple Radio Support



Select one of four *primary* radios

- By button click
- Automatically as a function of frequency

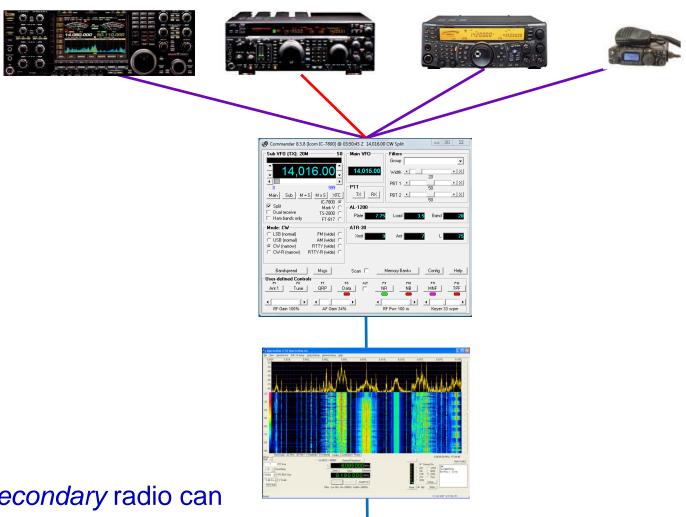
Commander: Multiple Radio Support



The Secondary radio can

- Follow the active primary radio Main or Sub VFO
- Lead the active primary radio

Commander: Multiple Radio Support



The Secondary radio can

- Follow the active primary radio
- Lead the active primary radio

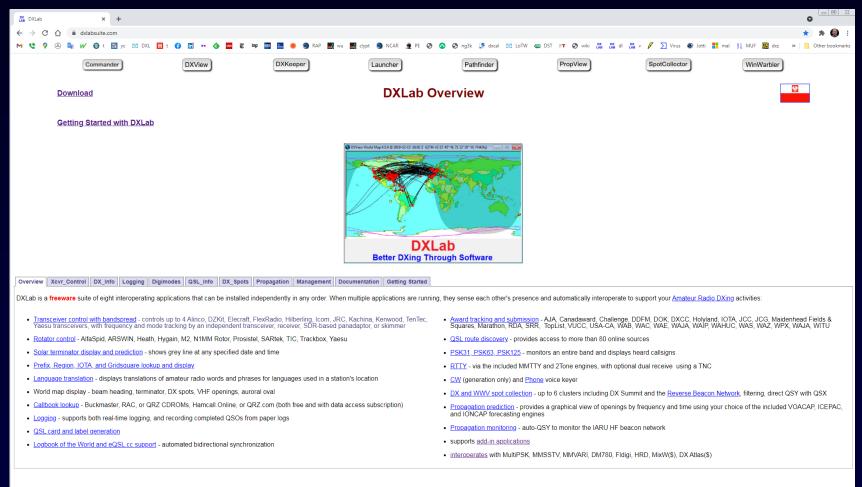
DXing With DXLab

- Introduction to the DXLab Suite
 - Architecture
 - Development Drivers
 - Multiple Views of Active DX
- Finding the DX You Need
- Working the DX You Need

DXLab Documentation

- Reference documentation
 - HTML: Online and local
 - PDF: Online
 - Updated with each version
- Task-oriented documentation
 - Step-by-step instructions for common actions
 - HTML: Online

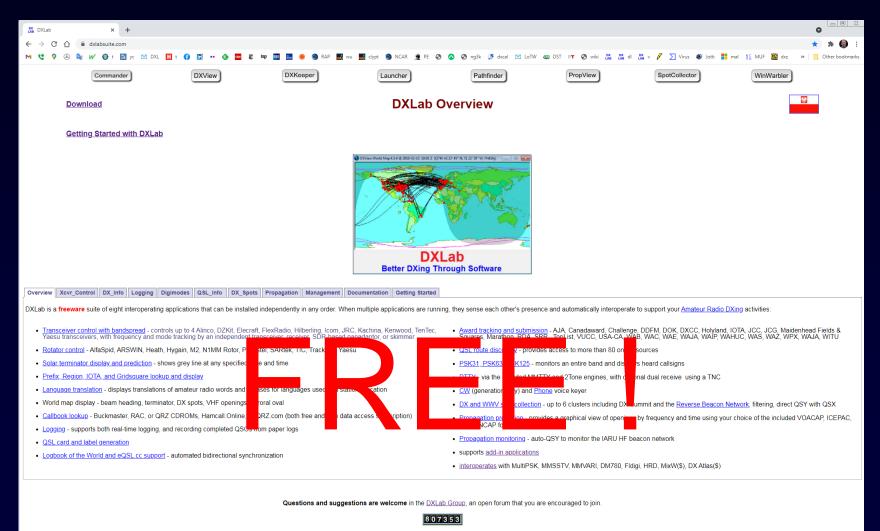
www.dxlabsuite.com



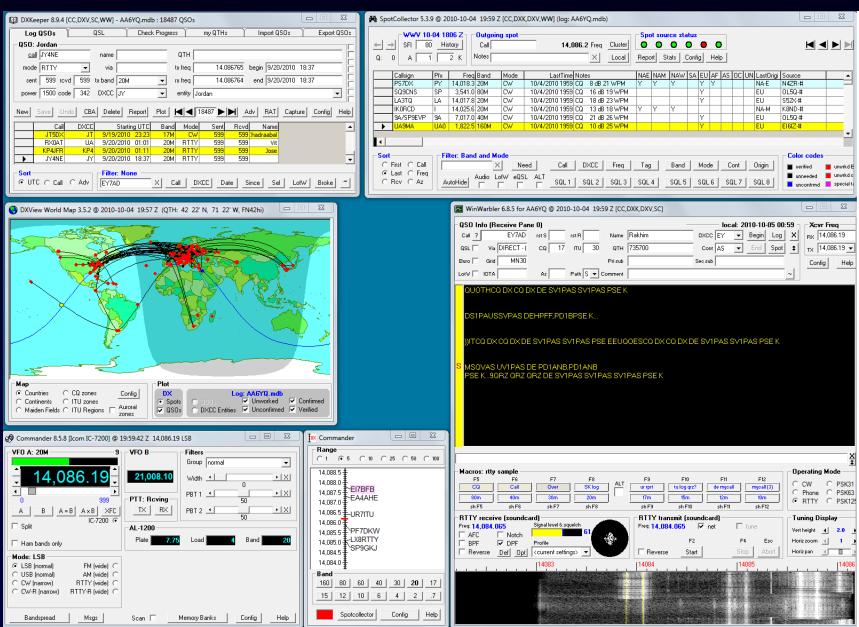
Questions and suggestions are welcome in the DXLab Group, an open forum that you are encouraged to join.

807353

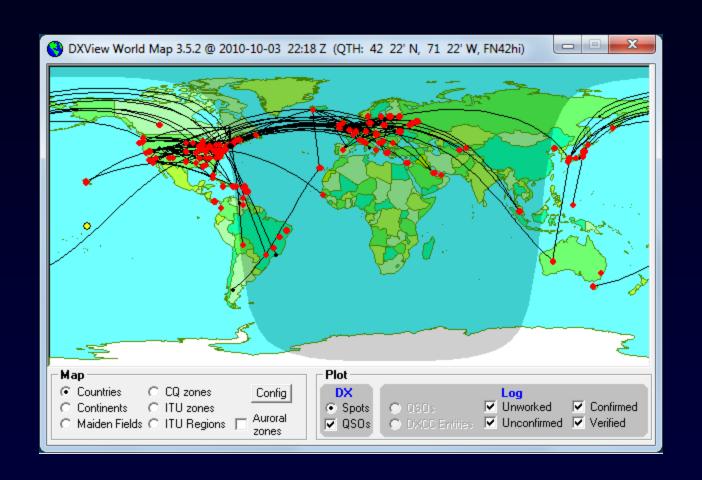
www.dxlabsuite.com



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