



# THE STORY OF DX—ITS HISTORY AND TIPS FOR SUCCESS

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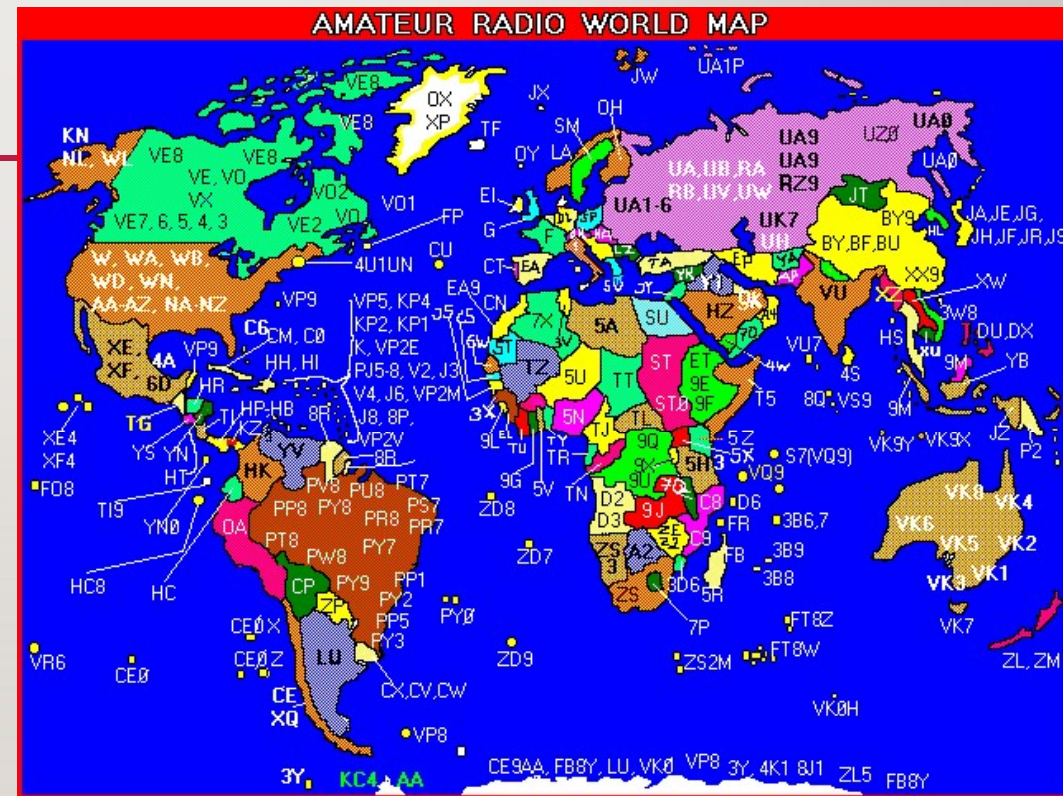
# OUTLINE

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- What is DX?
- A little history
- DXCC “entities”—what are they, how to identify
- DXing beyond DXCC
- Getting Started--Tips for Beginners
- Working the rare ones: More advanced DXing skills

# WHAT IS DX?

- “**DX**” is from the old telegraph abbreviation for “distance”
  - Like “WX” Weather, “RX” Receiver, “TX” Transmitter
  - Now it means **a station in another country**
- A “**DXer**” is a ham who enjoys working distant stations, and/or attempting to contact as many countries as possible



# A LITTLE HISTORY

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# DXing Has Been Part of the Hobby from the Beginning

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From day 1, it was exciting to “work” distant stations.

It was also inevitable that hams would want to see how many countries they could contact

- Hams would logically want to “Work All States” and “Work All Countries”
- QSL cards provided the “proof” — tho’ these didn’t exist until about 1920!

Both these aspects are still a big part of “DXing”—talking to hams around the world, and counting countries.



# ARRL CREATED THE “DX CENTURY CLUB” FOR WORKING 100 COUNTRIES IN 1937

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- Immediately the question was raised: What counts as a “Country” or “Entity” for DXCC?
  - Clinton B. DeSota in a 1937 QST article pointed out the difficulty of making the list, but stated: “The basic rule is simple and direct: *Each discrete geographical or political entity is considered to be a country.*” The original list had 231 entries. Over the years the rules have been modified
- Currently, there are five parts to the criteria, as follows:
  1. Political Entities
  2. Geographical Entities
  3. Special Areas
  4. Ineligible Areas
  5. Deletion Criteria



# DXCC ENTITIES

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# POLITICAL ENTITY IF IT MEETS ONE OF MORE OF THE FOLLOWING CRITERIA

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- UN Member State
- Assigned a prefix bloc by the ITU
- Permanent population, is administered by a local government, and at least 800 km from its parent
  - E.g.: Hawaii, American Samoa
- Has an IARU Member Society AND on U.S. State Dept Independent States of the World
  - E.g., Z6, Kosovo





# GEOGRAPHICAL ENTITY

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- If land area, it must be separated from parent by 100 km or more of land of another DXCC entity (E.g., Alaska)



# WHICH ISLANDS ARE DXCC ENTITIES?

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- What is an Island?
  - 100 meter line must be above high tide
- To Qualify, an Island Must Be:
  - Separated from parent by intervening entity or separated from other islands of the Parent by 350 km
  - Separated from its Parent by 350 kilometers or more, and from any other island attached to that Parent in the same or a different island group by 800 kilometers or more
  - Separated from its Parent by intervening land or islands that are part of another DXCC entity,

# SPECIAL AREAS

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- Areas given special recognition as entities, and areas which cannot be further divided into separate entities
  - United Nations Building in NYC, and the ITU in Geneva are given special recognition
  - The Antarctic Treaty Zone cannot be divided into separate entities
  - Because control of Western Sahara (S0) and The Spratly Islands (IS) is disputed, they are designated “Special Entities” with rules for how authorized operation is established
- Any entity on the list in 1998 is grandfathered, even though rules have changed a bit
  - E.G., UN Building, Scarborough Reef

# INELIGIBLE AREAS AND DELETION

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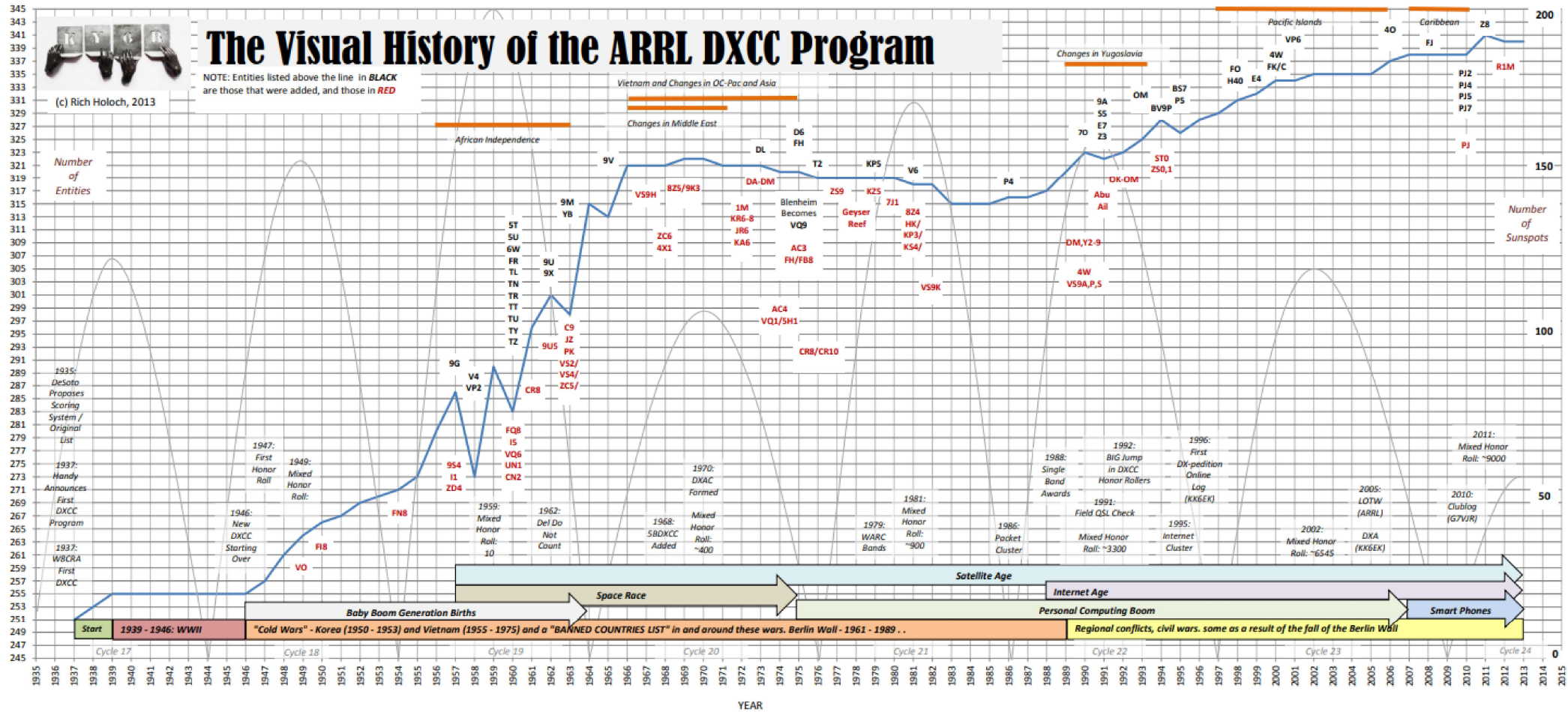
- Monuments and embassies of other countries, neutral zones, unclaimed territories, and the like are ineligible to be DXCC entities
- An entity is deleted if it no longer meets the the criteria under which it was originally put on the list



# The Visual History of the ARRL DXCC Program

NOTE: Entities listed above the line in **BLACK** are those that were added, and those in **RED** are those that were removed.

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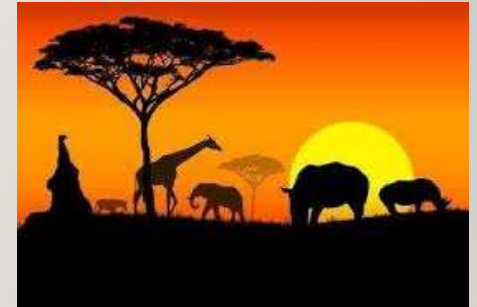


• <http://ebarc.org/pdf/dx-entity-history.pdf>

# THE CURRENT DXCC LIST

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- 340 Entities
- Lists are available from:
  - Purchase from ARRL Store
  - ARRL Operating Manual
  - On Line—easy to search for
    - E.g., NG3K's site: <https://www.ng3k.com/Dxcc/dxcc.html>
  - Imbedded in virtually all logging programs



# HOW TO IDENTITY A COUNTRY

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- Not trivial, because:
  - There are many prefixes assigned by ITU (UN), and hams sometimes use unusual ones for special events and activating rare countries
  - A prefix from the ITU doesn't always define a DXCC entity
    - E.g., K1N was Navassa Island
- CTY.DAT file from ADIC is the “industry standard” list that many logging programs use

# BEYOND DXCC

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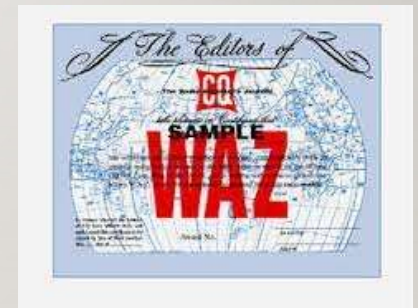




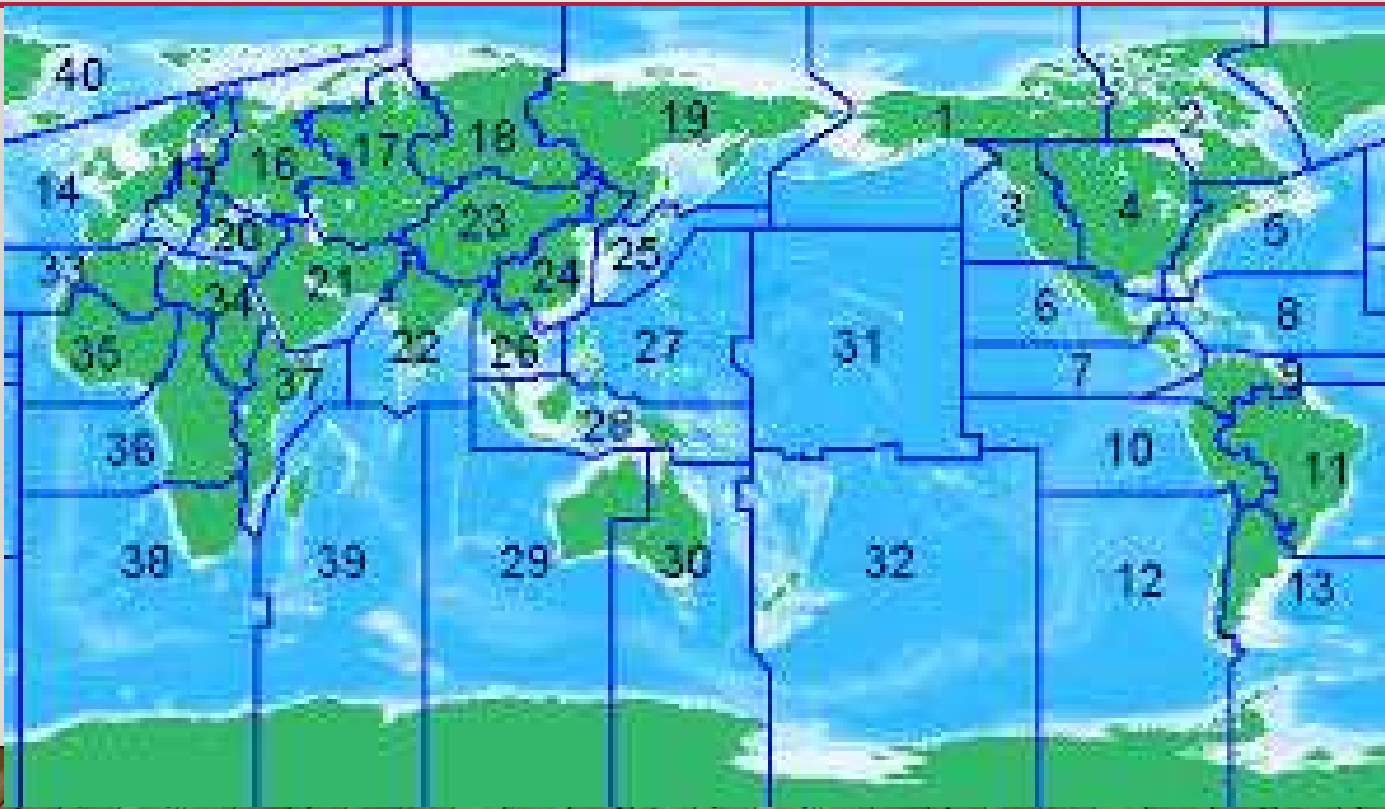
# DX'ING BEYOND DXCC

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- Folks work countries by band (E.g., 9 Band DXCC), and by mode (SSB, CW, RTTY, etc.)
- Working a totally new country is called an “**ATNO**” or “All Time New One”
  - This is a country you have never worked before on any band or mode
- Special “chases”:
  - “DXCC Challenge”: work as many “band-countries” as possible
  - “DX Marathon” work as many entities in a year (Includes 6 recognized by CQ Magazine and not DXCC—Bear Island, Italian Africa, Shetlands, Sicily, Eu Turkey, UN in Vienna Austria)
  - Islands on the Air (IOTA's)
  - Worked All Zones: CQ divided world into 40 Zones



# WORKED ALL ZONES MAP



# GETTING STARTED: TIPS FOR NEW DX'ERS

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(AND NOT SO NEW DX'ERS, TOO!)



# GETTING STARTED

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- There are lots of “easy” entities to work
  - You can work DXCC by working populous countries in NA, Central America, South America, and EU
  - You don’t need high power and big antennas (tho’ they obviously help 😊 )
- You don’t need special skills to work these “common” DX entities
- Learn FT8—Working DX there is relatively easy
  - BUT, “graduate” from FT8 to SSB and CW (and other digital modes)

# HOW TO CONDUCT A DX QSO

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- Be aware of whether the DX station is making “casual” contacts, or “running”
  - If he is “running” all he wants is “59 Thanks”
  - If he is casual, he might want to exchange names and QTH’s (locations)
  - You can try to strike up a conversation with a casual DX station, especially if he apparently speaks English well
- When answering a DX CQ, sign your full call, but only your call, and on once or twice
- You may want to call CQ occasionally...sometimes everyone is listening, nobody is calling!

# STATIONS TAKING “LISTS”

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- Occasionally a DX station will take a bunch of calls in the pileup, then work through the list exchanging reports
- You can tell this is happening when you hear a station working many calls without standing by for more
- DON'T call until he takes a new list



# DX NETS

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- Some folks disdain these, but they are a way to add to you totals
- Typically, one (or two) stations take “DX Check-ins” from DX station, then ask if anyone wants to call a station on the list
- Often the Net Control will ask for “last two” letters of the call to avoid relaying your callsign
- When your turn comes, you call the station you want, sign your call once or twice and give a report
- Don’t call stations you can’t hear
- Net control should NOT relay information
  - “QSOs” can be PRETTY DARN MARGINAL, thus the disdain

# SOME DX NETS THAT ARE ACTIVE

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- 247 DX net
  - 14.247 at 20Z
- 252 DX net
  - 14.252 at 20Z Mon-Sat (subtract 1 hours during DST)
- ANZA (Australia, New Zealand, Africa)—great for some rare Pacific stations—if you can hear it
  - 20m Net: 14.183 MHz, 0515 UTC, daily
  - 15m Net: 21.205 MHz, 0445 UTC, Saturday
- Southern Cross DX: 14226.5 11Z daily, 14238.5 1230-1300 Daily
- Pacific Island Net: 14315 08Z Daily
- 7163 DX Group 7163 1000-1115Z (standard time—subtract one hour during DST)





# YOUR STATION AND SKILLS

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- Big antennas and high power are great--BUT, you can do a lot if you are skilled, patient, and have mode flexibility
  - Many entities are represented on phone only, CW only, or digital (FT8 very important)
- Learn to use your radio
  - Split, or dual RX
  - Filters – Sometimes very, very narrow will work on weak or QRM'ed station
  - Special processing on some radios
  - Two VFO's (or better, radio with two receivers) help when working "split" (more on that later)
- An Extra Class License helps
  - Many DX stations are on in the Extra Class Portions of the Bands
- Get a logging program
  - Helps in identifying countries, and in keeping track of who you have worked
  - Connect to internet spotting to see who's on (next slide)

# CONTESTS ARE A GREAT WAY TO ADD TO YOUR TOTAL

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- As a DXer, remember you can just pick and choose the stations you want to work—you don't have to “enter the contest”
- Contesters likely to put logs on LOTW (Logbook of the World) but are less likely to QSL by paper
- What contests are coming up, what are the rules?
  - The ARRL Contest Update is published every other Wednesday
  - Describes contests scheduled for the following two-week period, plus time-sensitive news items and links to rules
  - <http://www.arrl.org/contest-update-issues>

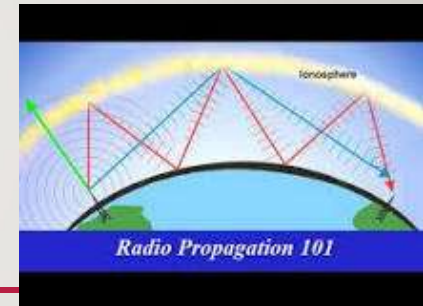


# FINDING THE DX

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# LEARN THE BANDS

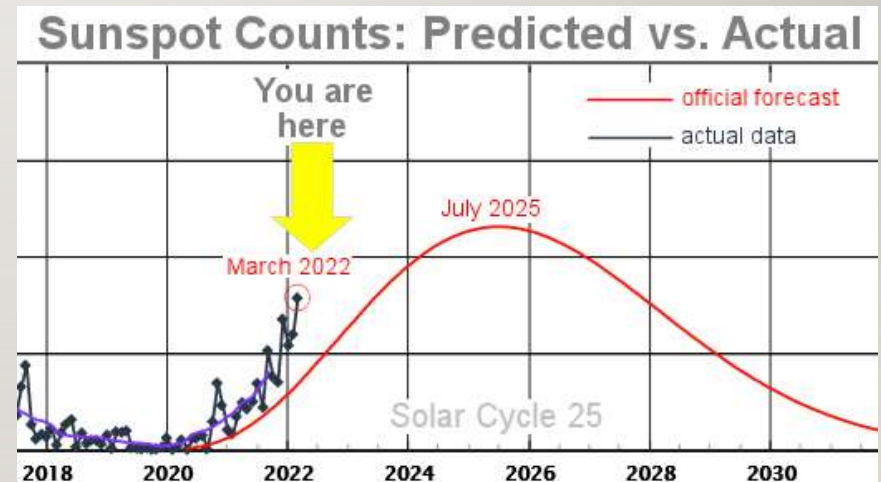


- The first 3 rules of DXing are Listen, Listen, Listen
- The more you listen, the more familiar you'll become with when the bands are “open” and to what part of the world. For instance
  - Higher frequency bands are generally daytime bands and lower frequencies, night time
  - Sunrise and sunset are often a very good time for DX
- Propagation changes from hour to hour, day to day, and month to month
- Learn how the Solar Flux Index and K index affect the bands.
  - These can be found online, for instance: <http://dx.qsl.net/propagation> and <http://www.solarham.net>
- There are now many tools to help you know where to listen!

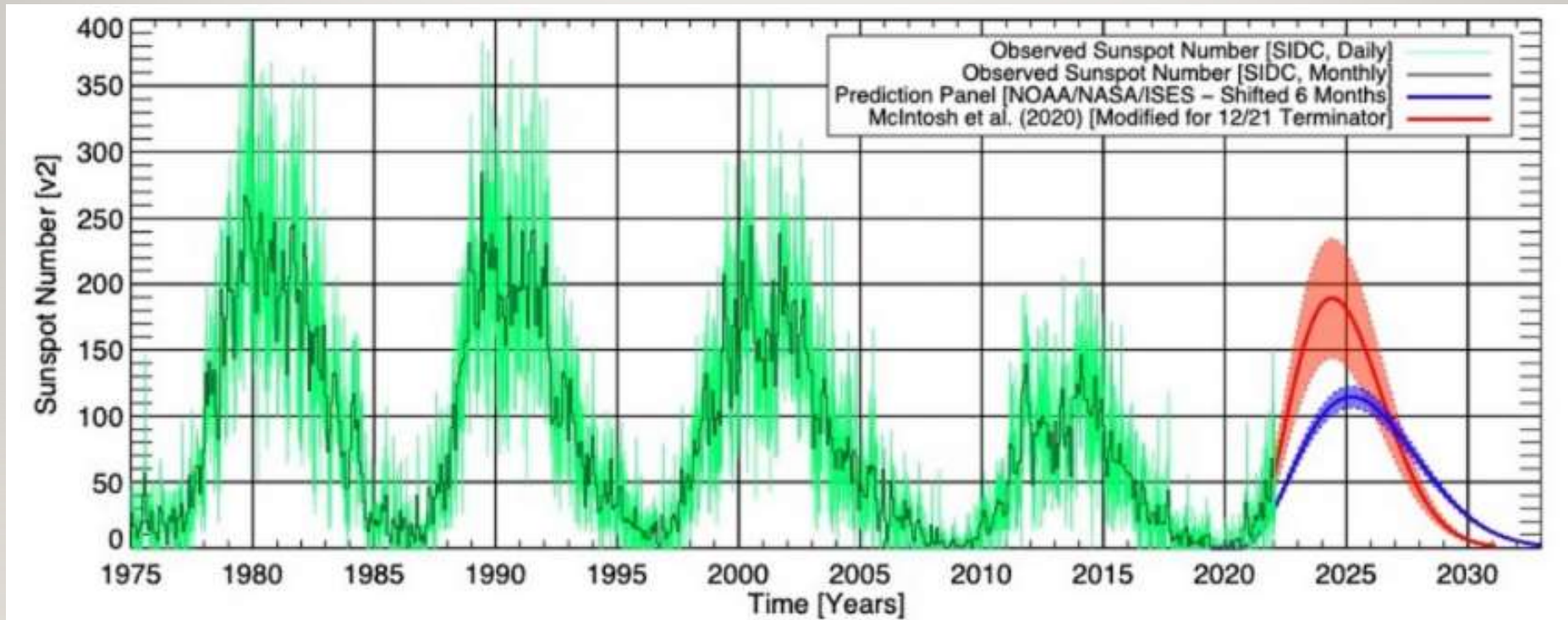
# BEST DX BANDS AT THIS TIME OF YEAR AND SUNSPOT CYCLE

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- We are at the early part of Sunspot Cycle 25—exceeding predictions?
- 20 meters is still “work horse” band—open from Sunrise until well past sunset
- 18 meters opening a bit later than 20 and closing a bit sooner
- 15 meters good most days, long haul around sunrise and sunset (and later)
- 10 and 12 meters have many possibilities during the day
  - Techs have privileges on 10 meters
    - CW, Digital (including FT8) 28.000 to 28,300 MHz
    - SSB 28.300 to 28.500 MHz
- 30 meters is great for beginner, but you need CW or FT8.
  - Usually open to somewhere. Shorter during daylight, longer at night
  - Power is limited to 200 watts and fewer people are on to compete with you
- 40 Good from few hours before sunset to a few hours after sunrise
- 80 and 160 getting noisy as we approach summer, new cycle will dampen them a bit



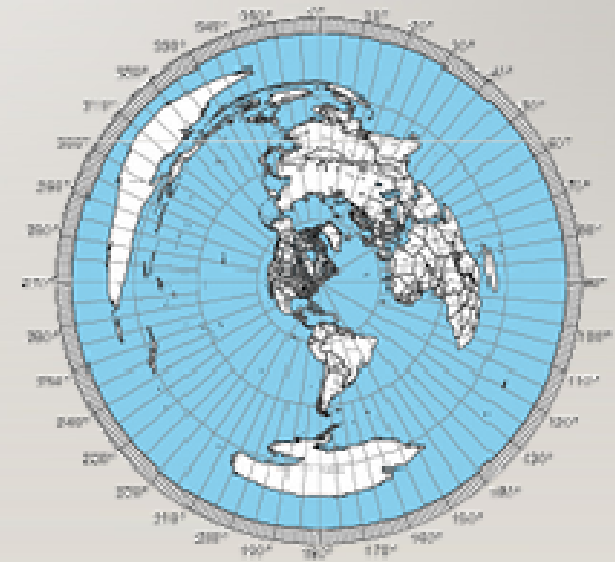
# ANOTHER VIEW OF CYCLE 25 VS PAST CYCLES



# KNOW THE GREAT CIRCLE

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- If you're fortunate to have a directional antenna, knowing the great circle azimuths is very important.
- Must be centered on you QTH
  - Logging programs generally display azimuths from your QTH
- Long Path can be good—esp. Pacific in the afternoon on 20/40



# DX SPOTS

- When DX stations are heard, hams around the world “spot” them on the internet
  - Telnet” through your logging program to specific sites
    - VE7CC, W3LPL for instance
  - DXSummit <http://www.dxsummit.fi/#/>
  - DXWatch <https://www.dxwatch.com/>
- Make sure you’ve worked the right station—they don’t always sign their call every time!
  - Hear them sign before you call, or at least make sure you listen until you hear it

DX Summit - Microsoft Internet Explorer

Address: <http://oh2aq.kolumbus.com/dxs/>

**NO FRAMES**

Spot Database Search

**DX SPOTS**  
25, 50 HF, 50 VHF  
HF/CW, HF/PHONE  
VHF/CW, VHF/PHONE  
250, 1,000  
or 10,000 pieces.  
Most Wanted  
SEND your own!

**ANNOUNCEMENTS**  
25, 250, 1,000  
or 10,000 pieces.  
SEND your own!

**WWW's**  
25, 250, 1,000  
or 10,000 pieces

**CUSTOM SPOTS**  
137MHz, 1.8MHz,  
3.5MHz, 7MHz, 10MHz,  
14MHz, 18MHz, 21MHz,  
24MHz, 28MHz, 50MHz,  
70MHz, 144MHz,  
430MHz, 1.2GHz.

Call Sign	Freq	Time	Date	
JH4VDP	14004.0	YI9ZF	YI1420 19 Mar	
W3ASA-8	14072.1	OB60T	T1420 19 Mar	
OK1BRQ	24935.0	P49MR	VY STRONG	1420 19 Mar
LX3SKY	21230.0	ET3AA	Daru, QSL G4ZVJ	1420 19 Mar
W6TA	18129.9	HB9JB	CALL CORR.	1420 19 Mar
U43RAW	14004.1	YI9ZF		1421 19 Mar
9K2QA	21230.0	ET3AA	big sig	1420 19 Mar
4ZSMO	21026.2	J6/G3XAQ	57 in Israel, up 1.25	1419 19 Mar
DL3APO	21245.1	XV2A	cq	1419 19 Mar
OE2SNL	14003.3	YI9ZF	not xZ4ih	1418 19 Mar
W6TA	18129.9	HB9KB		1418 19 Mar
ON4ANN	24935.0	P49MR	martin	1418 19 Mar
W4GBU	14185.0	R00AAH	Yuri - Loud	1418 19 Mar
1K1YHF	28487.0	VU2XO	Fate! strong here! 59+	1418 19 Mar
W0BV	14082.3	HS0ZBS	Kurt - RTTY	1417 19 Mar
BO2O-8	14000.0	EUROPEANS	REALLY WOUND UP TODAY...	1417 19 Mar
SV2GNC	21026.3	J6/G3XAQ	WRK 27.5	1413 19 Mar
DL7BGV-8	14195.0	IT9RYH	0922817531 pse call	1417 19 Mar
W6TA	18125.9	S58MU	LOOKING FOR US COUNTIES	1416 19 Mar
SWL-8	14195.0	IT9RYH	provocator comments!	1414 19 Mar
SB4AGC	14195.0	XF4IH	NOT XF4IH it is IT9RYH	1415 19 Mar
PE2BVH	14195.0	IT9RYH	PSE IGNORE THE IDIOT	1413 19 Mar
OE6SFG	14195.0	ID10T		1413 19 Mar

DX SUMMIT IS SPONSORED BY

**OH2AQ - OH0AAQ**  
CU in the Contest!

**Kolumbus**

16 Mar ja3gqi (18) I=101, A= 20, K= 3, R= 49 No storms=)No storms  
16 Mar ja3gqi (15) I=101, A= 20, K= 3, R= 49 No storms=)No storms  
16 Mar ja3gqi (12) I=101, A= 20, K= 3, R= 49 No storms=)No storms



# GETTING THE CONFIRMATION

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- To receive DX Awards, need proof of the contact
- Two basic ways to get confirmation
  - Paper QSL cards
    - Make sure you have SASEs on file with the ARRL Incoming Bureau
    - <http://www.arrl.org/incoming-qsl-service>
  - Logbook of the World on-line
    - <http://www.arrl.org/logbook-of-the-world>
- Many rare stations have a QSL manager
  - Many in US—Saves on postage \$\$
  - <https://www.ik3qar.it/manager/>



# WORKING THE RARE ONES

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# WHAT MAKES A “RARE” ONE?

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- Have a reasonable number of hams, but propagation is not favorable
  - The better you know propagation, the more likely you are to have a long DXCC list
  - The more “DX Effective” your station is the better
- Are represented by only a few stations operating on limited bands or modes
  - The more bands and modes you can operate on, the better
- On the air at unpredictable times (E.g., Monk at Mt Athos)
  - Keeping up with the habits of the DX stations is important
  - Monitor for DX “spots” on the internet
- Only on the air when “DXpeditions” go there
  - Know about the upcoming DXpeditions and their operating plans
  - Big “pileups” of people calling—breaking through is a skill

# THE REALLY RARE ONES

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1. P5 DPRK (NORTH KOREA)
2. 3Y/B BOUVET ISLAND
3. FT5/W CROZET ISLAND
4. BS7H SCARBOROUGH REEF
5. CE0X SAN FELIX ISLANDS
6. BV9P PRATAS ISLAND
7. KH7K KURE ISLAND
8. KH3 JOHNSTON ISLAND
9. 3Y/P PETER 1 ISLAND
10. FT5/X KERGUELEN ISLAND
11. FT/G GLORIOSO ISLAND
12. VK0M MACQUARIE ISLAND
13. YV0 AVES ISLAND
14. KH4 MIDWAY ISLAND
15. ZS8 PRINCE EDWARD & MARION ISLANDS
16. PY0S SAINT PETER AND PAUL ROCKS
17. PY0T TRINDADE & MARTIM VAZ ISLANDS
18. KP5 DESECHEO ISLAND
19. VP8S SOUTH SANDWICH ISLANDS
20. KH5 PALMYRA & JARVIS ISLANDS

# YOU GOTTA KNOW WHEN THEY'RE ON!

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- Subscribe to a DX Bulletin to see what “rare” ones are going to be on
  - Bernie’s Daily (or Weekly) DX by email <http://www.dailydx.com/>
  - ON9CFG Free Weekly DX Bulletin available from DX-world.net <https://dxnews.com/>
  - ARRL DX Bulletins—weekly by email <http://www.arrl.org/bulletins>
  - OPDX Bulletin—Northern Ohio DX Association <https://www.papays.com/opdx.html>
  - 425 DX News <https://www.425dxn.org/>
- DX Website
  - DX-World <https://dx-world.net/>

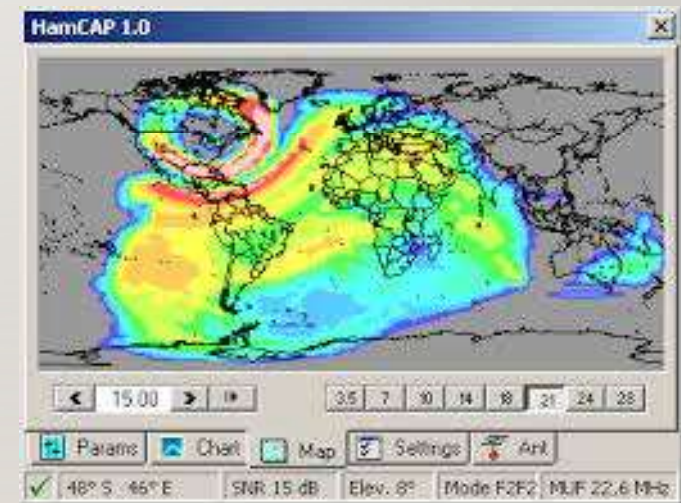


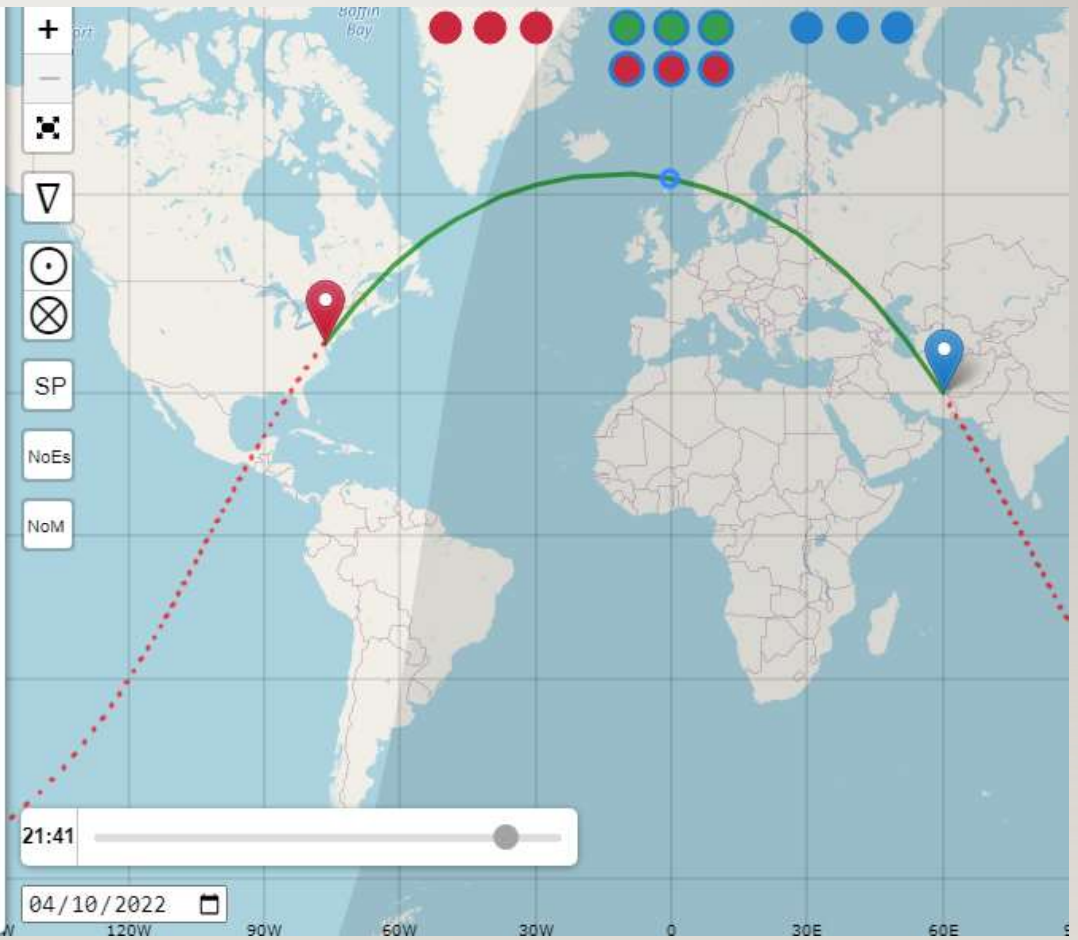
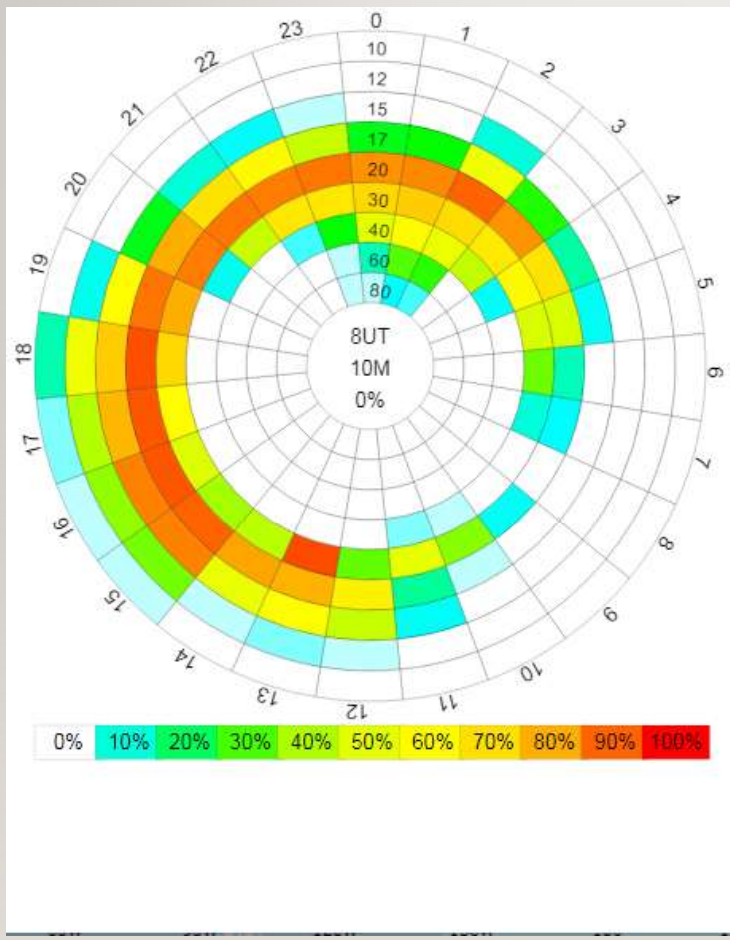
# KNOW WHEN THE BANDS ARE OPEN TO THE ONES YOU NEED

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- VOACAP propagation modelling provides probability of propagation between points on a specific band, time of day, and factoring in sun activity
- On-line at <http://www.voacap.com/hf/>
- Or download application at <https://www.voacap.com/> and use with HamCap <http://www.dxatlas.com/hamcap/> to display window with your logger
- Many different capabilities
  - Point-to-point MUF plots for 24 hours
  - Maps by frequency for specified hour
  - And much more

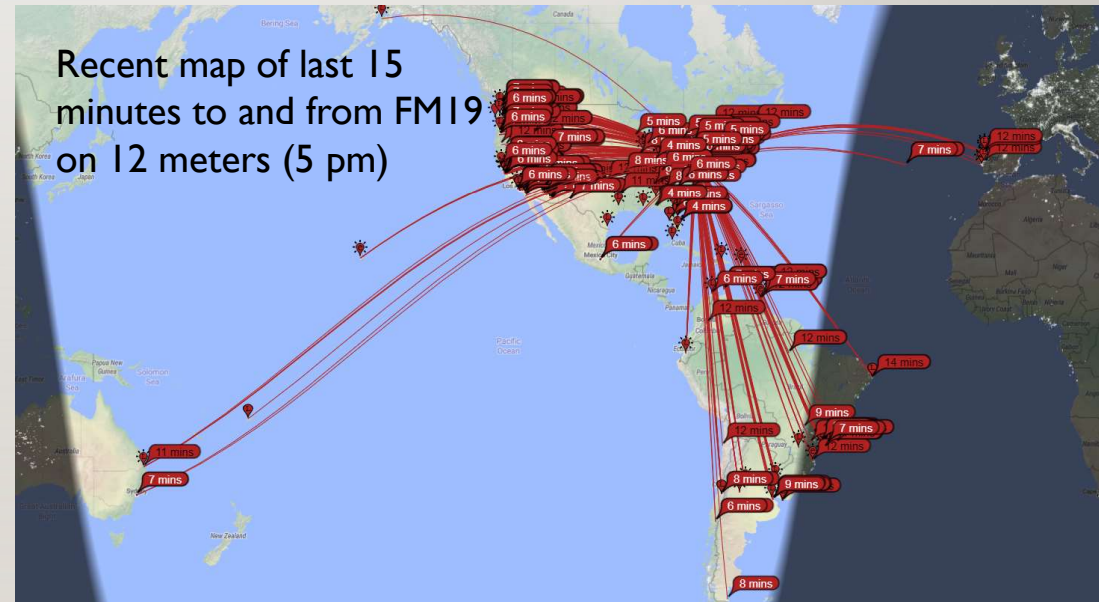
On-line Prop wheel especially useful when seeking a specific entity (see next slide)





# HOW TO KNOW THE PROPAGATION NOW

- Get FT8 and check the frequency for DX activity
  - Often DX on this mode when band sounds empty
- PSKReporter Maps <https://pskreporter.info/pskmap.html>
  - Takes advantage of Automatic spotting feature of FT8
  - Shows who's hearing who around the world
    - By band/mode
    - Search for specific stations
    - See what people in your grid are hearing and vice versa
- Also informative: check the NCDXF HF Beacons
  - <http://www.ncdxf.org/beacon/index.html>
  - 14.100, 18.110, 21.150, 24.930, and 28.200 MHz





# REVERSE BEACON NETWORK LET'S YOU SEE WHO'S HEARING YOU

- “Reverse Beacon Network” of software defined radios around the world is constantly listening for CW stations and “spotting” them on the internet
- Sign “TEST de <your call>” (or call CQ) on CW and go to the website to see where you’re being heard  
<http://reversebeacon.net/>
- Also Provides FT8 Spots like PSKReporter



The screenshot shows the Reverse Beacon Network website interface. At the top, there's a navigation menu with links for 'welcome', 'main', 'dx spots', 'skimmers', 'downloads', 'about', and 'contact us'. Below the navigation is a world map with various colored lines representing signal paths between continents. To the right of the map is a sidebar with 'options: show/hide', 'news', and 'skimmers online' listing various call signs and their listening capabilities. Below the map is a search results table with columns for 'de', 'dx', 'freq', 'cq/dx', 'snr', 'speed', and 'time'.

de	dx	freq	cq/dx	snr	speed	time
N7TR	W1FJ	7004.8	CW CQ [LoTW]	24 dB	20 wpm	1142z 19 Dec
DKSP	RL110RAEM	21034.9	CW CQ	34 dB	24 wpm	1142z 19 Dec
SVORV	UN7RBF	14035.9	CW CQ	10 dB	22 wpm	1142z 19 Dec
PY1KN	EAB-DJ9BN	21023.0	CW CQ	8 dB	22 wpm	1142z 19 Dec
SK3W	UN7RBF	14035.9	CW CQ	39 dB	23 wpm	1142z 19 Dec
DL1EM	RL110RAEM	21034.9	CW CQ	38 dB	28 wpm	1142z 19 Dec
DHAMA	IHTDRP	14035.9	CW CQ	47 dB	24 wpm	1143z 19 Dec

# “HAM ALERT” WILL LET YOU KNOW WHEN THE ONES YOU NEED ARE ON

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- You can receive alerts via Email, Push notification, SMS (text) or URL GET/POST.
- Filter spots by various criteria, including:
  - DXCC entity
  - Callsign
  - IOTA group reference
  - Band
  - Mode
  - Time and days of week
- For more info and to register: <https://hamalert.org/>

# DXPEDITIONS

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- Many “holiday style” operations from resort areas can add to your totals
- BUT, Many DX entities have very few or no hams (or no population at all!), and virtually no tourism
  - To activate these entities, hams organize “DXpeditions”, often at great expense and some real danger.
- Stations are on the air for usually a week, sometimes more
- Often activate many bands and modes
- This may be your only chance to work some of these entities for many years.
  - Bouvet last activated in 2008, and to a limited extent
- The pileups can be incredible



Scarborough Reef BS7H

# How to Work a Pileup

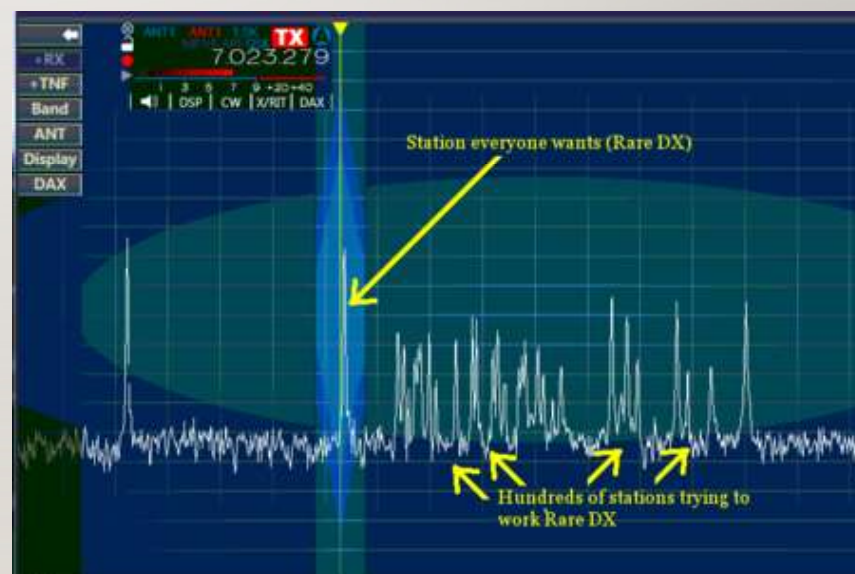
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# WHAT IS A PILEUP

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- Literally thousands of stations can be calling a rare DX station at the same time
- Even “semi-rare” countries can generate a pileup at times
- Often the station is working “Split”
  - Gets stations off his frequency so they don’t QRM him
  - Spreads out the callers so he can hear them better
- The DX station (if he’s experienced) will give instructions
  - Try these if he isn’t saying
    - “Up 1” (or more if very rare) on CW
    - “UP 5” (or “UP 5 to 10 or more” if rare) on phone
    - These are approximate—**working the edges** can be productive
  - May be working “By The Numbers”: “3’s only”



# SOME HINTS TO GETTING THROUGH THE PILEUPS

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- Be patient, it may take hours
- The pileup can be enormous on the first days of a Dxpedition—  
may want to wait until the big guns have all worked them
- Listen to the DX stations instructions
  - The station may be calling specific areas, (“Europe Only” on voice, or “EU” on CW)—honor those restrictions
- Only answer when you are reasonably sure he’s calling you
- Sign your full call, and only your call, timing is important



# MORE PILE UP TIPS

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- Use standard phonetics
  - The International “Alfa, Bravo, Charlie, Delta”
  - Countries commonly used (more syllables are better)
    - America, Boston, Canada, Denmark, England, France, Germany, Honolulu, Italy, Japan, Kilowatt, London, Mexico, Norway, Ontario, Portugal, Quebec, Radio, Santiago, Tokyo, United, Victoria, Washington, X-Ray, Yokohama, Zanzibar
- The DX station may get part of a call
  - “Romeo Alfa? Romeo Alfa”
  - Don’t answer if it doesn’t match, BUT
  - If only one letter is wrong, it is likely you...come back
    - “Kilo 3 Romeo Delta, 59,” you answer repeating your call only “Kilo 3 Romeo ALFA”
- Listen to the pileup itself—can you tell a pattern in how he is tuning?

# STILL MORE PILEUP BUSTING TIPS

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- If you have a big signal, you may want to call on or near the frequency of the last station worked...or you may want to move to the edge of the pileup
  - A band scope (“Panadapter”) is a tremendous help
- If station says “QRX 5” (taking a pit stop) start calling before the 5 minutes are up...you may be the only one calling. (Ignore the policeman telling you “he’s gone”)
- “Tail Ending”—signing your call as the station the DX is working is ending his QSO
  - Can work, may be ignored
- If he has your callsign correct, don’t repeat it, that just makes him think he may have had it wrong
- Don’t call if you can’t hear the station





# QUESTIONS?

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# SOME VIDEOS

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- Scarborough Reef <https://www.youtube.com/watch?v=2Z7bSIGpMo0>
- “Routine” DX contacts
  - A few casual DX contacts <https://www.youtube.com/watch?v=KZrhjfKY-9g>
  - K3RA working Austria <https://www.youtube.com/watch?v=tdPIyuOpj5A>
- Pileups
  - Vanuatu SSB DX pileup from the DX end <https://www.youtube.com/watch?v=MOQO6PZsEKc>
  - Vanuatu CW DX pileup from the DX end <https://www.youtube.com/watch?v=SdHtqLPkXFo>
  - FT5ZM CW pileup on band scope <https://www.youtube.com/watch?v=Asz0hK6FBEw>
- Holiday Style (V26B, Antigua) <https://vimeo.com/240348619>

**SEE YOU IN THE PILEUPS**

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