

Chasing DX
an introduction to
“the thrill of the hunt”



Tech Net #18 5/5/25

Jim Thomas AI5EG
somewhere near Harwood, TX

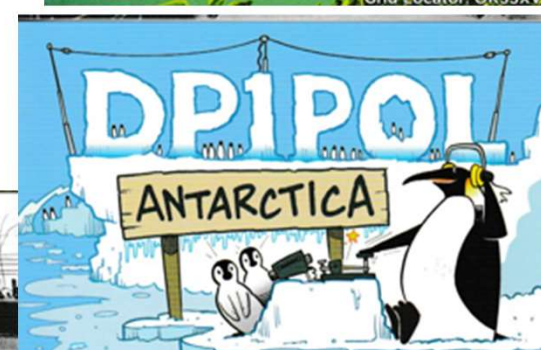
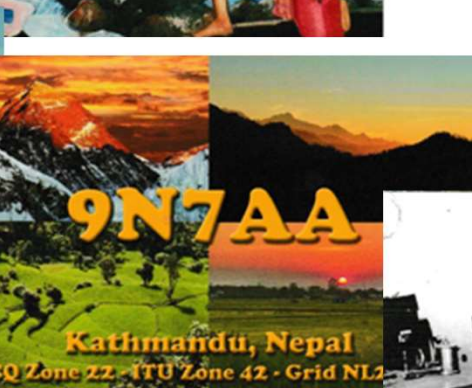
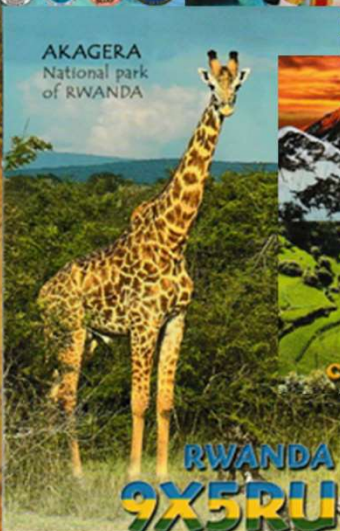
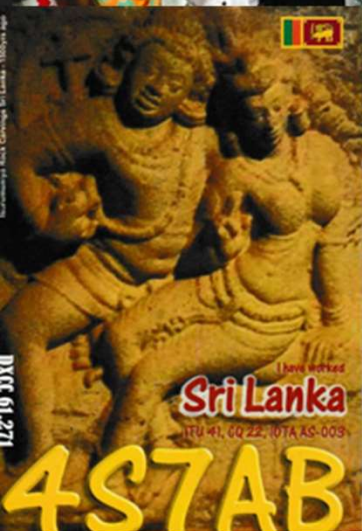
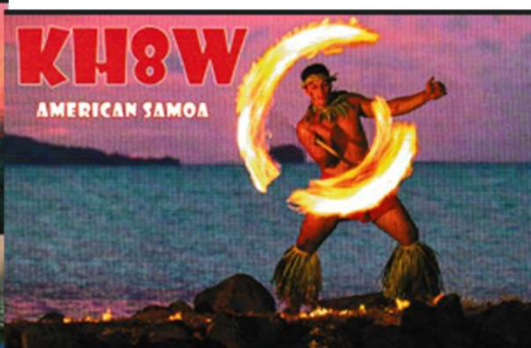
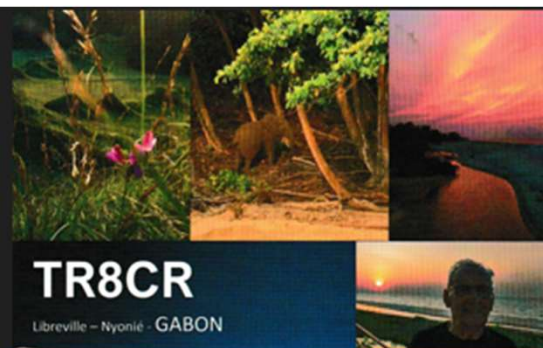
What is DX? (HF bands)

- There is something for everyone in ham radio.....
chasing DX is one of those things
- General and Extra Class is your ticket to join the chase!
- DX means *distance*
 - There is no precise definition
 - For us in the US, generally any 'entity' outside the lower 48 states is DX
- The thrill of the hunt – Chasing DX
 - Fishing/hunting/birding analogy
 - Getting that ATNO (all time new one) is a kick!
- Awards for goals reached
- Right now, HF band skywave propagation can reach around the globe.
 - Btw...HF Skywave signal propagation is way different from VHF & UHF
- *Transcontinental communication: your station to their station*
 - No internet
 - No repeaters
 - No 'all start nodes' No 'echo clink'
 - No cellular systems
 - No wires, fiber optic or satellites
- Zombie Apocalypse proof

ARRL country list

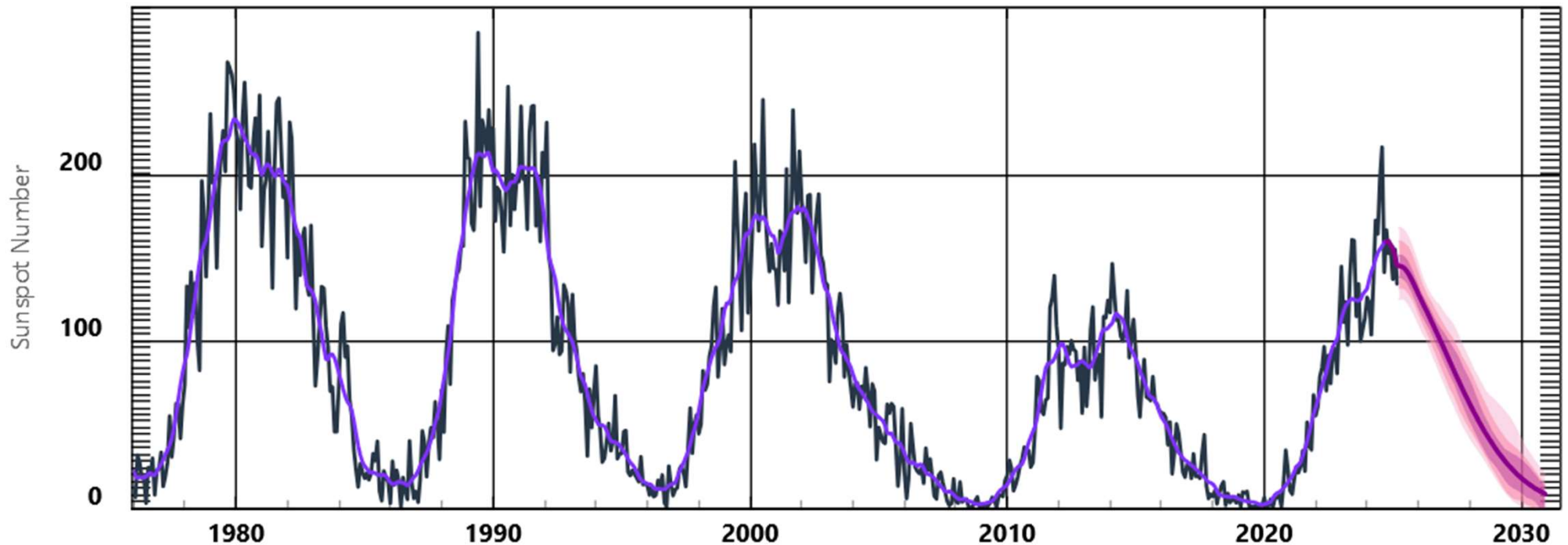
- The DX quarry
- 340 ‘entities’ = countries
- ClubLog.com “Most Wanted” list
 - DPRK #1
 - USA #340
- “Most Wanted” are uninhabited islands or countries with limited/no ham activity
- #11 ZS8W is active right NOW!!
- #10 3Y0K DXpedition planned winter 2026

1	P5	DPRK (NORTH KOREA)
2	BS7H	SCARBOROUGH REEF
3	CE0X	SAN FELIX ISLANDS
4	BV9P	PRATAS ISLAND
5	KH7K	KURE ISLAND
6	KH3	JOHNSTON ISLAND
7	3Y/P	PETER 1 ISLAND
8	FT5/X	KERGUELEN ISLAND
9	YV0	AVES ISLAND
10	3Y/B	BOUVET ISLAND
11	ZS8	PRINCE EDWARD & MARION ISLANDS
12	KH4	MIDWAY ISLAND
13	VK0M	MACQUARIE ISLAND
14	PY0S	SAINT PETER AND PAUL ROCKS
15	KP5	DESECHEO ISLAND
16	VP0S	SOUTH SANDWICH ISLANDS
17	ZL9	NEW ZEALAND SUBANTARCTIC ISLANDS
18	FK/C	CHESTERFIELD ISLANDS
19	VK0H	HEARD ISLAND
20	FT/T	TROMELIN ISLAND
21	EZ	TURKMENISTAN
22	ZL8	KERMADEC ISLAND
23	YK	SYRIA
24	VP0G	SOUTH GEORGIA ISLAND
25	XF4	REVILLAGIGEDO
26	KH1	BAKER HOWLAND ISLANDS
27	SV/A	MOUNT ATHOS
28	KH9	WAKE ISLAND
29	FT5/W	CROZET ISLAND
...		
340	K	UNITED STATES OF AMERICA

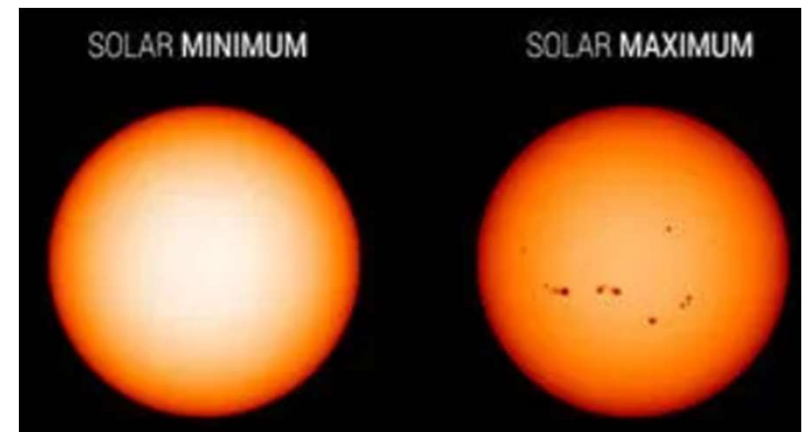


Solar Cycle 25 is peaking NOW!!

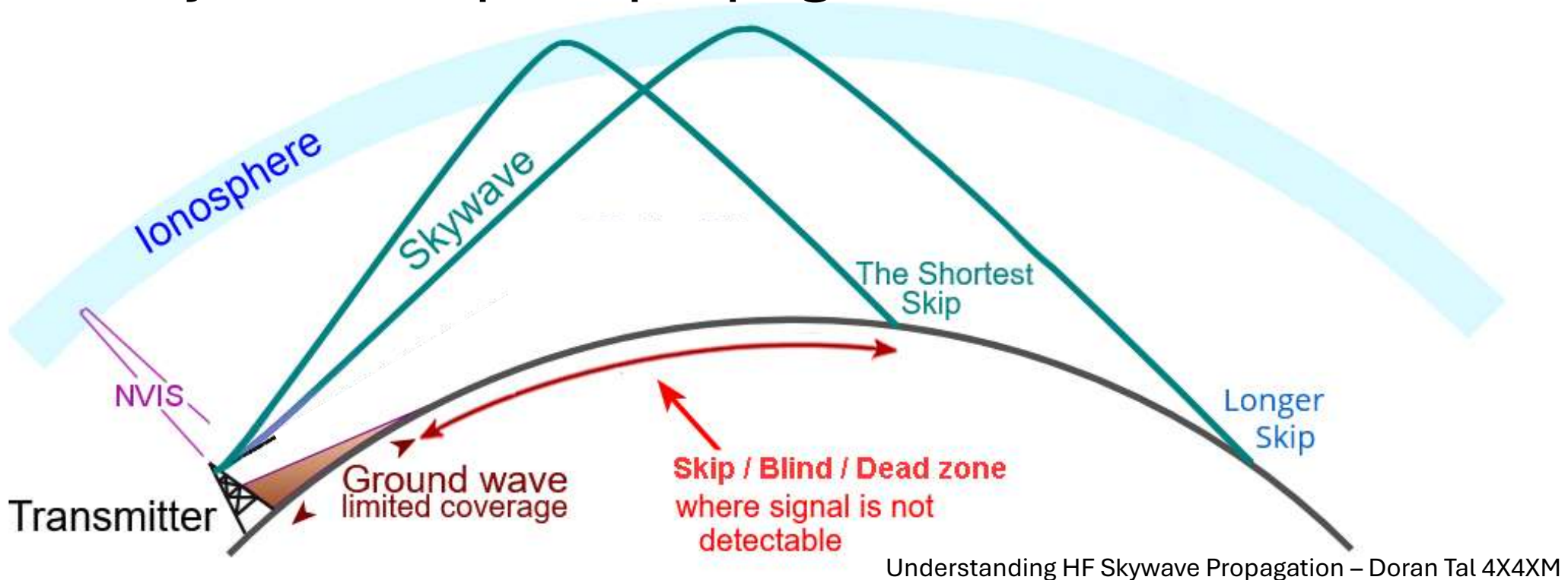
Solar Cycle Sunspot Number Progression



- The number of sunspots varies in a roughly 11year “Solar Cycle”
- **Sunspots emit Extreme UV radiation**
 - wavelength = 10nm to 124nm
- EUV is the main cause of **ionization in the earth’s ionosphere** that enables long distance ‘skip’ HF propagation



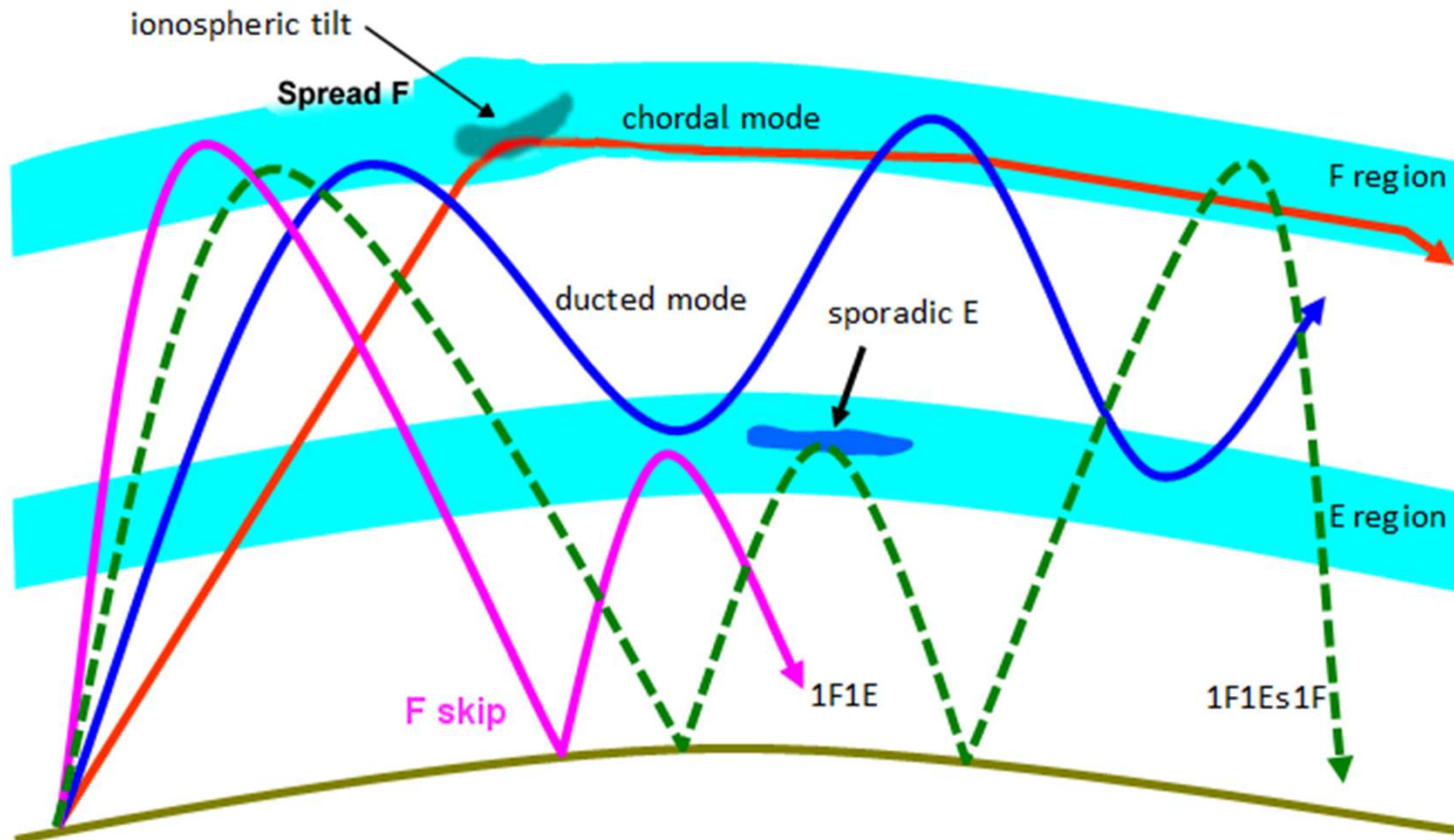
Skywave Skip HF propagation



- Extreme UV radiation from the sun creates the ionosphere
 - EUV splits electrons from air molecules creating *free electrons*
- Ionosphere is located above the stratosphere: 30 to 400 miles up
- most important for long distance HF communication
- The free electrons in the ionosphere reflect (refract) HF radio waves well beyond the horizon
- ***more sunspots → higher EUV solar flux → better HF communication.***

Multiple hop propagation

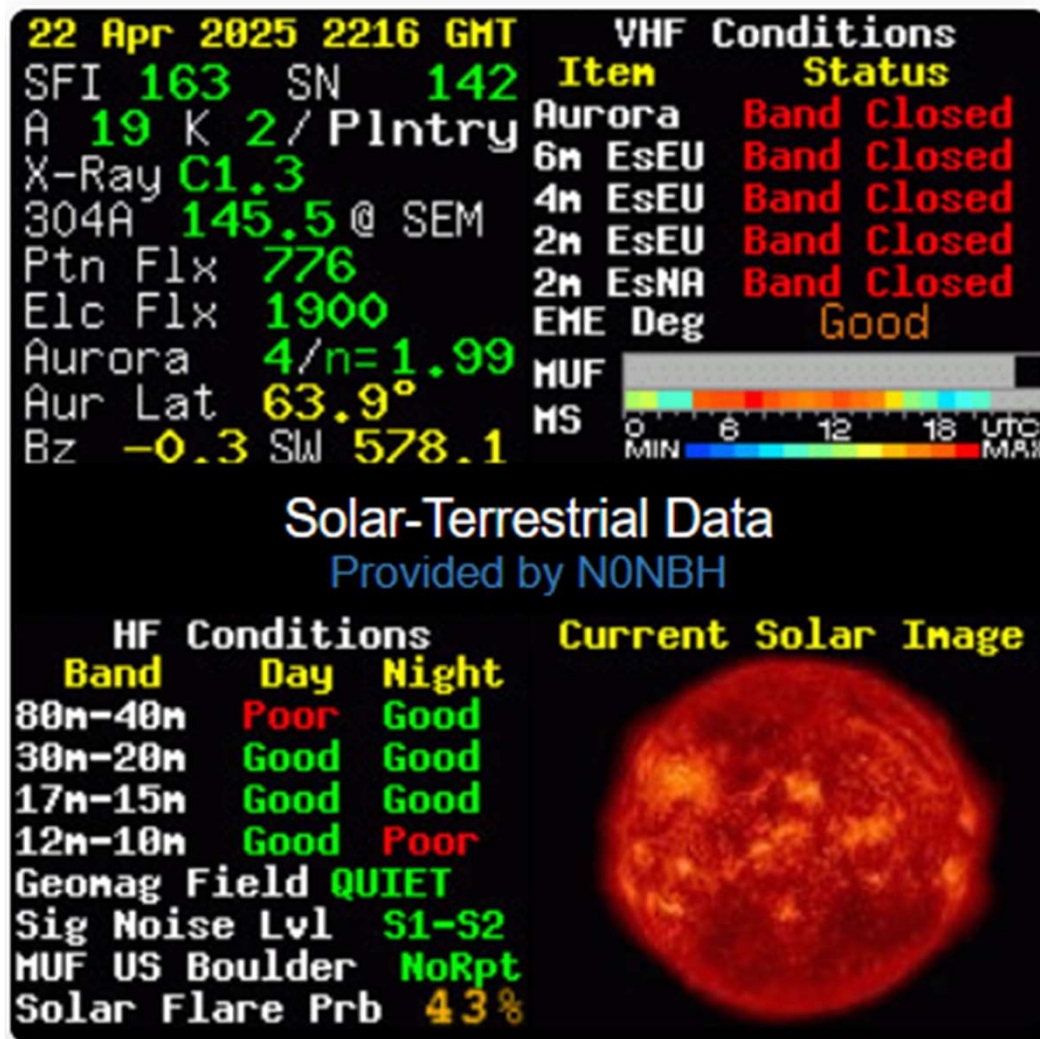
- The maximum skip distance for F-layer propagation can reach up to 3,000 miles for a single hop. With multiple hops, it's possible to achieve distances of over 11,000 miles



Learn more about Skywave propagation

- Radio Waves and the Ionosphere – Ian Poole G3YWX
Three pages.
Must read for any ham and General & Extra Class exam prep
 - <https://www.arrl.org/files/file/Technology/pdf/119962.pdf>
- Understanding HF Skywave Propagation – Doran Tal 4X4XM
This site is excellent and kept up to date.
Tons of detailed and interactive information
 - <https://www.qsl.net/4x4xm/HF-Propagation.htm>

The bands – “It’s always 5 o’clock somewhere”



- Typically, 40&80 closed in local daylight hours, 10&12 closed at local night
- Real time solar and band conditions as shown on QRZ.com
- Solar storms & flares can wipe out the bands occasionally

How to find the DX

- Spotting websites – other hams post spots or automated ‘skimmers’ will alert you to callsigns and frequencies.
- World-Wide contests are the fastest way to rack up new countries
 - You don’t have to be a contester to get in there and make contacts
 - Several big contests occur annually ARRL WW, ARRL 10m, CQ WW DX, CQ WW WPX
 - But there are contests practically every weekend
 - WB7BNM contest calendar www.contestcalendar.com
- DXpeditions where ham operators go to rare places and make thousands of rapid-fire contacts over a few weeks.
- Special event stations
- Listen, listen, listen – “put miles on the dials”
- Try calling CQ DX
- Team up with like-minded buddies. Spot for each other by texting or using local repeaters

Making the 'rare' DX or Contest contact

Phone & CW

- Opportunities occur for extended QSO's with Hams in other countries...
- But most 'rare' DX QSO's and contest QSO's are very brief.
- Listen to what's going on before you jump in.
 - Make sure of his callsign...Don't trust the spot website
 - Make sure he's not calling for a specific region other than you
- Determine where he is listening....
 - Simplex: on the same frequency
 - Split: he is listening at a higher frequency
- When DX station calls CQ or finishes with previous contact...
- Give your call phonetically where he will be listening
- Hopefully, he answers with your call
 - "AI5EG you are 59" (phone) or "AI5EG 5NN" (cw)
 - if not keep trying
- You say, "you are 59 thank you" (phone) or "TU 5NN" (cw)
 - Don't give his call sign
 - Don't give your callsign again unless he got it wrong
- Put him in your log correctly! Make sure correct callsign, date, **time(Z)** , band, & mode

Making the 'rare' DX or Contest contact

FT8

- You can work tons of DX on the normal FT8 frequencies and basic mode
- Many rare countries & DXpeditions are not on the standard FT8 & FT4 frequencies
 - They publish planned frequencies and planned modes on their QRZ.com page
- DXpeditions can work multiple QSOs simultaneously
 - MSHV mode
 - Fox & Hound mode
 - Superfox mode
- For the rarest of the rare, FT8 may be the only contact you can get!

160m	1.840
80m	3.573
60m	5.357
40m	7.074
30m	10.136
20m	14.074
17m	18.100
15m	21.074
12m	24.915
10m	28.074
6m	50.313

Standard FT8 frequencies

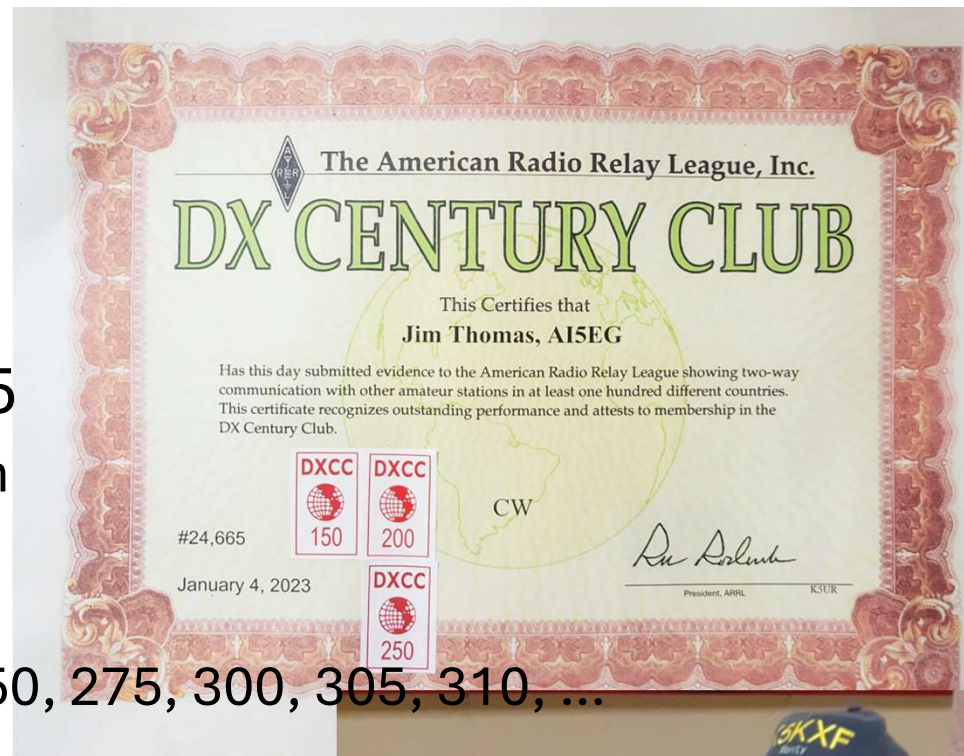
How much station do you need?

- Even with a modest setup you can successfully work DX
 - Knowledge, skill, patience, persistence and luck
- Modes: Phone, Digital (FT8, FT4, RTTY), CW
- Band conditions are key
- FT8 is a powerful weak signal communication mode and a popular digital mode for DXing for some.
- More power & better antenna always helps



DX Awards

- DXCC – DX Century Club est. 1935
 - DXCC award for *confirmed* QSOs with 100 different countries.
 - Awards by band, mode, mixed
 - Endorsement stickers for 150, 200, 250, 275, 300, 305, 310, ...
- Five Band DXCC Plaque
 - 100 *confirmed* QSOs on each of 80m, 40m, 20m, 15m, 10m
- DXCC Honor Roll
 - 331 *confirmed* of the 340 total entities
- Other Awards
 - WAZ – worked all 40 CQ magazine zones
 - IOTA – Islands on the Air
 - QRZ.com: log & awards



Don't be a LID

A *Lid* is a poor operator who uses very poor operating techniques. Examples of poor operating practice:

- Tuning up your amp or tuner on the DX calling frequency
- Calling a DX station on his calling frequency when he is operating split
- “*Up police*”: *QRM* - *Continuously* and rudely xmitting on the DX calling frequency telling other lids to listen ‘up’
- Calling a DX station when he is asking for a different geographical location
- Calling CQ, without asking “Is the frequency is in use?”
- “10-4 good buddy” ??you might be a LID
- *DX Code of Conduct* can be found at:
<https://dx-code.com/>


Get Going!

“Even if you are not interested in chasing DX now and only make occasional DX contacts, start logging and tracking those QSOs now. If you become a rabid DXer 10 years from now, you will be glad you did.”

- Rick WB8FVB
CRHRC Director of Elmer



WB8FVB DXCC account totals



DXCC Award	New LoTW QSLs	LoTW QSLs in Process	DXCC Credits Awarded	Total (All)	Total (Current)
Mixed *	34	0	276	310	310
CW *	55	0	161	216	216
Phone	22	0	246	268	268
Digital *	114	0	177	291	291
160M	36	0	7	43	43
80M	76	0	25	101	101
40M	99	0	101	200	200
30M	118	0	77	195	195
20M	60	0	215	275	275
17M	92	0	111	203	203
15M	73	0	200	273	273
12M	80	0	55	135	135
10M	80	0	147	227	227
6M	5	0	3	8	8
Challenge	719	0	941	---	1660

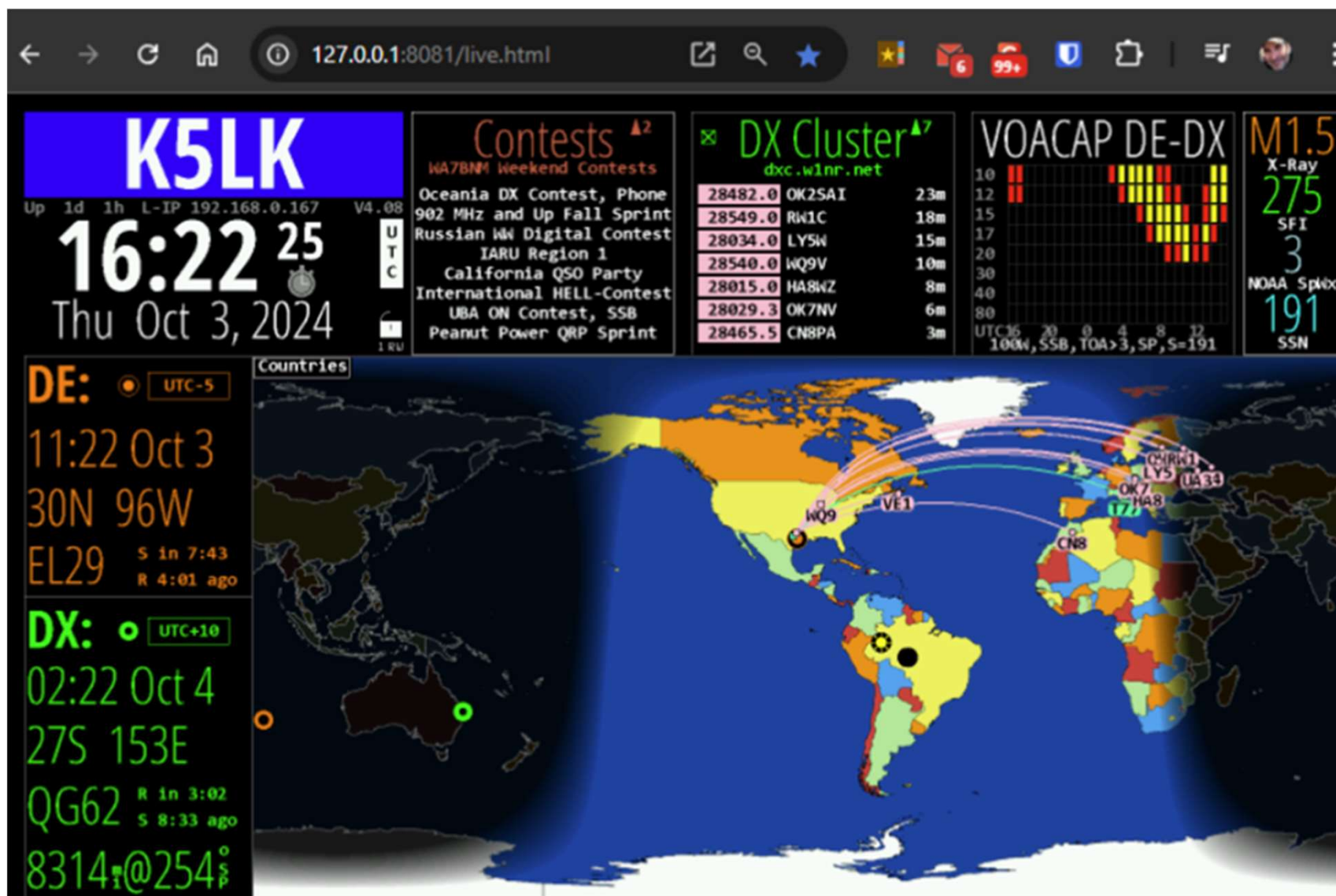
www.zoom.crhrc.org

- Continue Technet #18 on Zoom at this time
 - How to find the DX on the bands
 - QSO Confirmation
 - Applying for your awards
 - Going on a DXpedition
 - Station software
- Future Zoom only roundtable May 12, 8:00pm
 - Roundtable W5CPO, WB8FVB, AI5EG...
 - Share & Dive into tips and tricks to catch that rare DX contact
 - Answer DXing questions

Spotting Websites

- DXWatch www.dxwatch.com
 - Hams around the world spot dx contacts. You can filter spots by region, mode and bands.
- www.DXsummit.fi
 - Spots by hams, DX news
- www.dxheat.com/dxc/
- www.dxcluster/ha8tk.s.hu
 - Good FT8 spotting website
- Reverse Beacon Network www.reversebeacon.net
 - Automated listening stations 'skimmers' report CW, beacon, RTTY & PSK activity in real time.

HamClock: Technet #11



<https://technet.crhrc.org/wp-content/uploads/2025/01/CRHRC-Tech-Net-11-Overview-of-HamClock-Oct-7-2024-K5LK-Final-1.pdf>₉

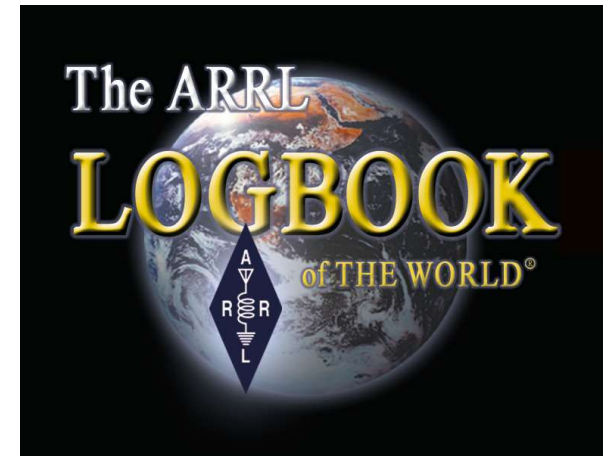
Confirmation for your QSO

- Many DX stations will confirm on LoTW automatically
- Some DX and Dxpeditions will use OQRS – Online QSL Request System to get a card & LoTW confirmation:
 - *Check their QRZ.com page for specific directions*
 - Clublog www.clublog.org
 - They may use QSL managers like: M0OXO or M0URX, etc
- Direct QSL exchange of cards
 - QRZ.com for address
 - For non-US, Send your card, an SAE (C6 size recommended), and 3-4 ‘greenstamps’ (\$)
 - For U.S. Your Card, SASE

Confirmations for DXCC awards – ARRL

There are only two accepted methods

- Logbook of The World (LoTW) – *the quick easy way*
 - You and the other station must both submit QSO information into LoTW system
 - QSO Date, Time, Band, and Mode *must agree* to achieve successful confirmation
 - Times must match within 30minutes of each other
 - This can all be uploaded from your log (like N3FJP)
 - **If the there is a match, your QSO is confirmed in LoTW & your DXCC account and can be applied toward an award.**
 - DXCC, VUCC, WAS, WAZ or WPX
- QSL cards for confirmation – not as quick or easy
 - Some DX hams don't like or use LoTW.
 - A physical QSL card from them is confirmation your contact.
 - Login to ARRL account then go to <https://easydxcc.org/records.php>
 - Follow directions to enter QSO info from your QSL cards. Be accurate!!
 - Submit the form, print it and mail cards and the form to a card checker or ARRL
 - Some weeks later, your DXCC account will receive the credits
 - Note: The QSO does not get marked as confirmed in LoTW with the card method.



DXpeditions

- DXpeditions = expedition to exotic island or country for ham radio
 - Remoteness
 - Access restrictions
 - Few radio amateurs active
 - Some are serious endeavors. Some are Holiday Style – “Hamcation”
- DX Newsletters & websites
 - <https://www.dx-world.net> – news & calendar of DXpeditions“
 - The weekly DX” & “The daily DX” subscription newsletter
<https://www.dailydx.com/>
 - ARRL publishes a calendar
- DX Organizations that provide sponsorships to DXpeditions
 - Texas DX Society (Houston)
 - Lone Star DX Association
 - Northern California DX Foundation

DXpeditions

- Remote uninhabited entities sometimes require years of planning before a team can arrive and begin operation – very expensive.
 - As an example, the 2023 Bouvet Island Expedition had an initial budget of \$705,000 US (3Y0J: A DXpedition to the Most Remote Uninhabited Island on Earth)
 - 2026 3Y0K DXpedition to Bouvet Island planned : budget \$1.65M



Station software

- Must set up ARRL Logbook of The World “LoTW”
 - <https://lotw.arrl.org/lotw-help/getting-started/?lang=en>
- Logging software
 - For me...N3FJP handles everything www.n3fjp.com
 - LoTW upload/download confirmations directly
 - QRZ.com upload/download directly
 - QRZ lookup
 - Award status by band and/or mode for DXCC, WAZ, WAS, Counties etc.
 - Rig control and much more
 - Versions for major contest log submissions i.e. **CRHRC Field Day**
 - N1MM Logger+ supports log submission for more diverse contests
- WSJTX
 - Handles normal, f/h & super fox modes that DX stations may use
 - Integrates with modern rigs, & N3FJB logging software

References & Sources

- <https://www.swpc.noaa.gov/products/solar-cycle-progression>
- Radio Waves and the Ionosphere – Ian Poole G3YWX
 - <https://www.arrl.org/files/file/Technology/pdf/119962.pdf>
- Understanding HF Skywave Propagation – Doran Tal 4X4XM
 - <https://www.qsl.net/4x4xm/HF-Propagation.htm>
- Clublog most wanted list: <https://clublog.org/mostwanted.php>
- How to tell if DX is using MSHV vs. F/H mode
 - https://www.dxmaps.com/FT8_How.html
- DX Nets
 - Southern Cross DX Net 20m 14.238 MHz 1100 UTC
Net control facilitates phone contacts with Australia/New Zealand/Oceania

“Make sure his callsign. Don’t trust the spot website.” -- Example

Then this popped up on DXwatch while I was working on the presentation....
Spotter, W8FJ, corrected it this time – RP80LET, LOL

The screenshot shows a DXwatch interface with a list of callsigns on the left and a detailed information popup on the right. A yellow hand cursor points to the 'RP80LET' entry in the list.

Callsign	Country	Frequency	Other
W8FJ	RP80LET	14037	
W8FJ	RP80LET	14037	U
KA8JIL	WA2		
KA8JIL	K3E		
N9PKL	N9P		
WO4O	WO4		
KY6AA	WB8		
KY6AA	RP80		
KG8P	WB8		
WO4O	WO4		
KY6AA	RP80		
KY6AA	RP80		
K5LJ	OQ1		

P80LET

DPR of Korea

CONT: AS
ITU ZONE: 44 / CQ ZONE: 25

P80LET: sunrise: 2035z / sunset: 1028z

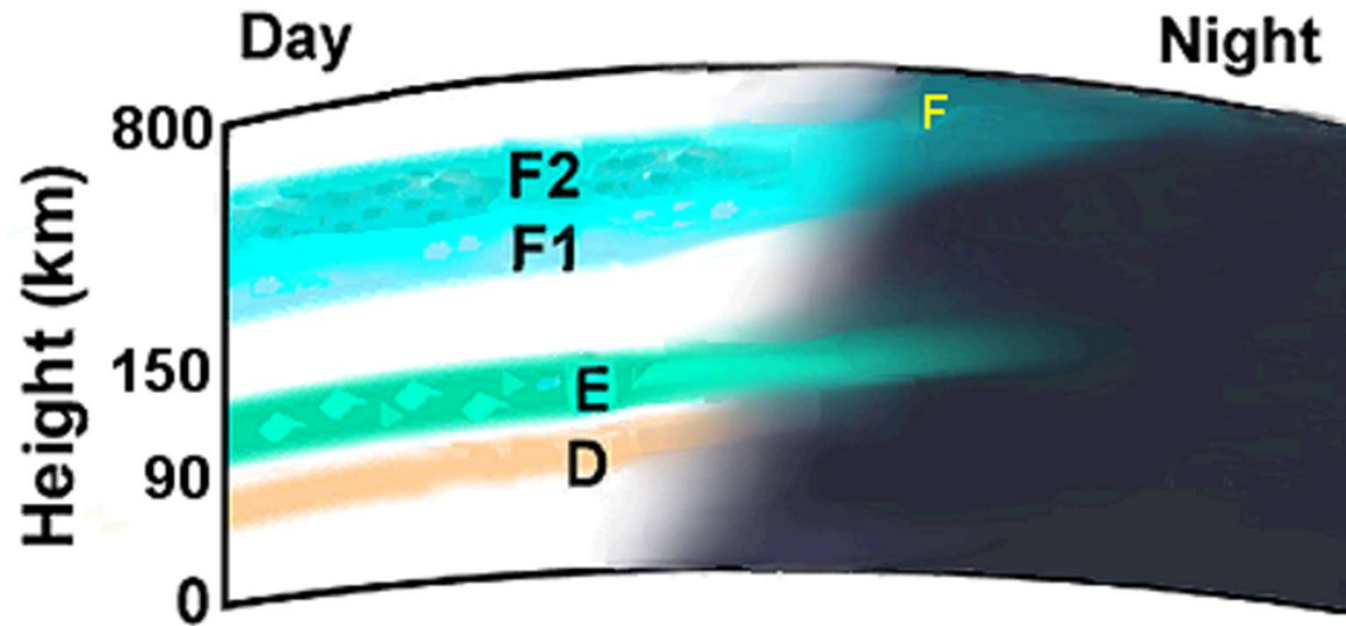
AI5EG: sunrise: 1147z / sunset: 0106z

Distance & bearing from AI5EG (EI19gs):
11058km / 6871mi
327°/147°

Direction, bearing and sun data might not be precise, as they are calculated based on a sample point for this DXCC entity.

click to perform QRZ lookup

Ionized regions: “layers” of the ionosphere



Understanding HF Skywave Propagation – Doran Tal 4X4XM

- E & F layers reflect HF signals and enable skip propagation
- During the daylight hours, D region acts as an attenuator especially at low frequencies below 10Mhz. i.e. 40m and 80m are dead for DX
- D layer forms at sunrise and dissipates at sundown enabling E & F skip on 40m 80m.
- The ‘grey line’ the twilight zone that stretches around the earth, propagation is enhanced.