VARA HF & NVIS Antenna - A Happy Couple

When nothing else works, Amateur Radio does

01

Station hardware

02

NVIS

03

Field / EOC setups

04

Practical Application

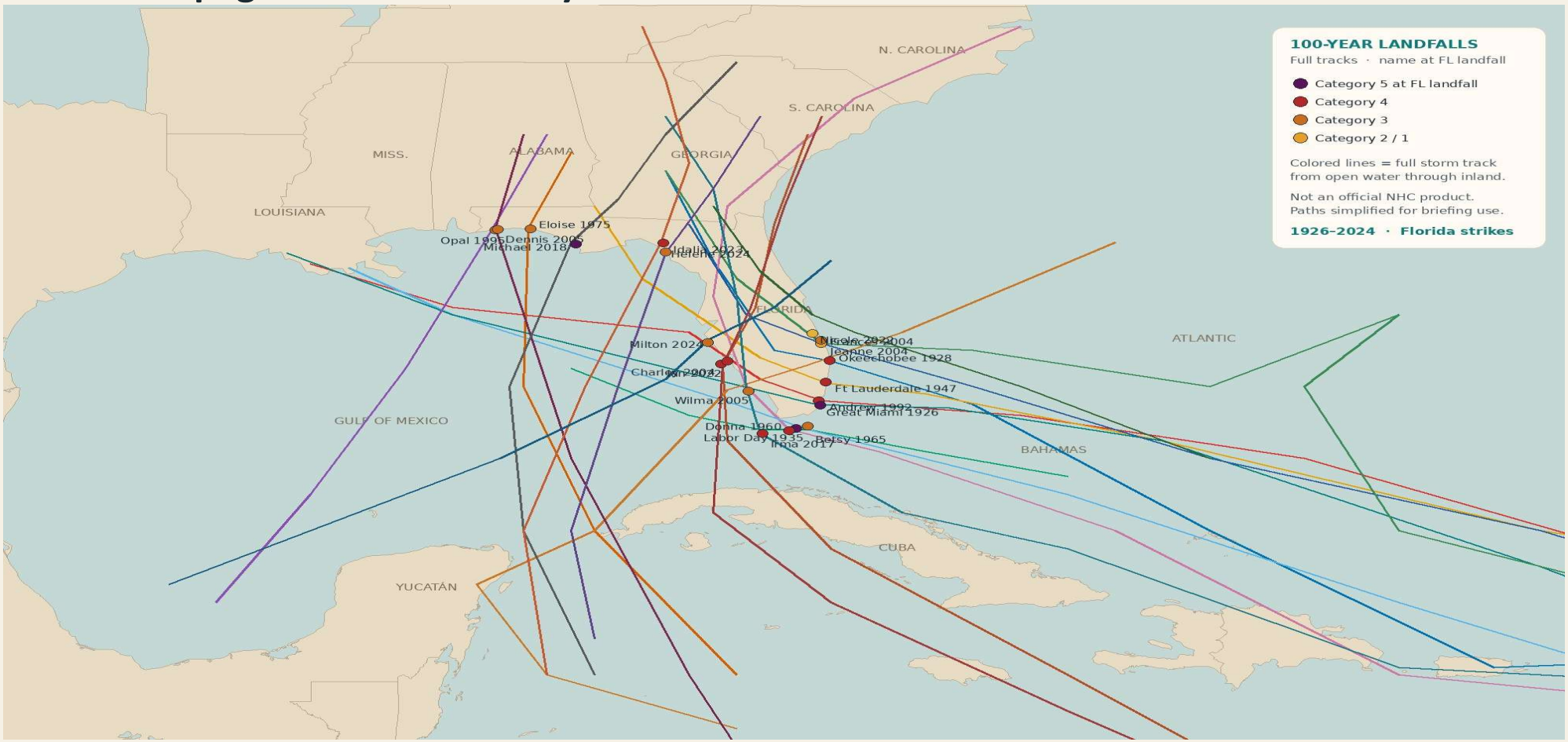
J. Stephen Grant - KB4YKC - Duval County AEC - 10/2026

Florida landfalls, 1926–2024 (100 years)

This is why towers and phones fail — and why HF email still matters.

Year	Storm	FL landfall	Where it hit Florida
1926	Great Miami	Cat 4	Perrine / Miami; boom-era city flattened
1928	**Okeechobee**	**Cat 4**	**Palm Beach then Lake Okeechobee; ~2,500 dead**
1935	**Labor Day**	**Cat 5**	**Craig Key; Keys railroad destroyed**
1960	Donna	Cat 4	Conch Key; Keys-to-Panhandle statewide track
1992	Andrew	Cat 5	Elliott Key / Homestead; South Dade rebuilt
2004	Charley / Frances / Jeanne	Cat 4 / 2 / 3	Punta Gorda; Treasure Coast; four-storm year
2005	**Wilma / Dennis**	**Cat 3 / Cat 3**	**Cape Romano; Santa Rosa Island Panhandle**
2017	Irma	Cat 4	Cudjoe Key then Marco Island; statewide outage
2018	**Michael**	**Cat 5**	**Mexico Beach; first Cat 5 Panhandle landfall**
2022	Ian	Cat 4	Cayo Costa / Punta Gorda; SW FL surge
2024	Helene / Milton	Cat 4 / Cat 3	Perry / Big Bend inland; Siesta Key two weeks later

Full-run spaghetti · names stay at Florida landfall




ESF 19 - Emergency Fuels
ESF 13 - Military Support
ESF 7 - Resource Support
Plans - Resource Management
ESF 5 - Information & Reporting


DUVAL COUNTY ARES

What VARA HF is for when the phones die

Winlink Express moves error-corrected email and ICS forms over SSB to a gateway that still has internet, or radio-to-radio (P2P) when nothing else is left.

Not a net replacement

SARNET, NFL/SFL emergency nets, and shelter voice still run the talk. VARA carries the written record.

Winlink RMS path

Reach a gateway outside the outage. Used toward State Watch Office paths (KA4EOC / SHARES NNA4FL) when so directed.

Peer-to-peer fallback

Two licensed stations exchange Winlink traffic with no gateway. Georgia and Florida both published P2P channels in Helene.

Form traffic

ICS-213 (General Message Form), ICS-214 (Activity Log), shelter logs (generally ARC forms), Health and Welfare traffic. All these forms are already in Winlink but need to kept updated.

The chain that must stay intact

01

Operator

General or Extra tickets are preferred. However, Technician class can work under a General or Extra class.

02

Windows PC

VARA is a Windows modem. Laptops are preferred. Have a thumb drive/external drive with installation files as a backup.

03

Interface



Built-in USB codec or isolated box (DigiRig or Signalink.



04

HF SSB radio

USB-DATA / DIGI. Wide IF. ***Duty-cycle aware***. 50–100 W is enough with a real NVIS wire.

05

Power

Clean 13.8 V. LiFePO4 + generator/solar. Fuse at the source. Plan 12 hours operational day. Have solar available if possible.

06

Antenna system

Wire + feedline + choke + match + radio.

What the transceiver has to do

(don’t get caught up in this, every radio has its quirks with these settings. It is very much individual)

Mode	USB-DATA / DIGU. Compression off. Speech processor off. TX bandwidth 2.4–3.0 kHz even if you later run 500 Hz VARA.
Audio path	Data/USB codec, not the hand mic. SignaLink, Digirig, or built-in USB (IC-7300, FT-991A, FT-891*, FT-857*, etc. class).
Drive / ALC	Raise VARA drive until ALC just flickers, then back off. Note: Some literature states 1/3.
Duty cycle	Long key-downs. 100 W into high SWR cooks finals. Fold power if the radio runs hot.
CAT control	Winlink must set to the published dial frequency. Wrong CAT = wrong RMS channel.

The parts people forget until the shelter lights flicker

Computer

Windows 10/11 laptop. Install VARA first, then Winlink Express. Notebook with screen shots, comm plans, etc.

Power budget



Radio + laptop + interface. Enough amp-hours for a 12-hour operational period. 20Ah or better with solar backup if possible.

RF hygiene

Ferrites on USB and DC. Laptop off the feedline. Sound card issues is usually common-mode-current coming back into your circuit. Suppress it with Mix 31 ferrite chokes.

Go-kit extras

Printed P.A.C.E. card, RMS favorites, spare USB cables, adapters, headlamp, tape, rain cover. Several 2-foot sections of split garden hose for door closures. What is in your go box?

Amplifier?

Not needed. A good antenna setup beats additional power any day of the week.

Heat and rain

What is your plan?

Match geometry to the mission, not to DX habit

IN-STATE / NVIS

SEOC First

County EOC to SEOC, 0–400 miles. High-angle radiation. Horizontal wire off the ground 15 to 25 feet.

80 m night / early morning · 40 m day

Height about 0.1–0.25 λ (40 m dipole ~15–25 ft)

Horizontal. ***A vertical is the wrong first in-state tool.***

Fills the skip zone a high DX antenna creates.

LEAVE-THE-STATE RMS

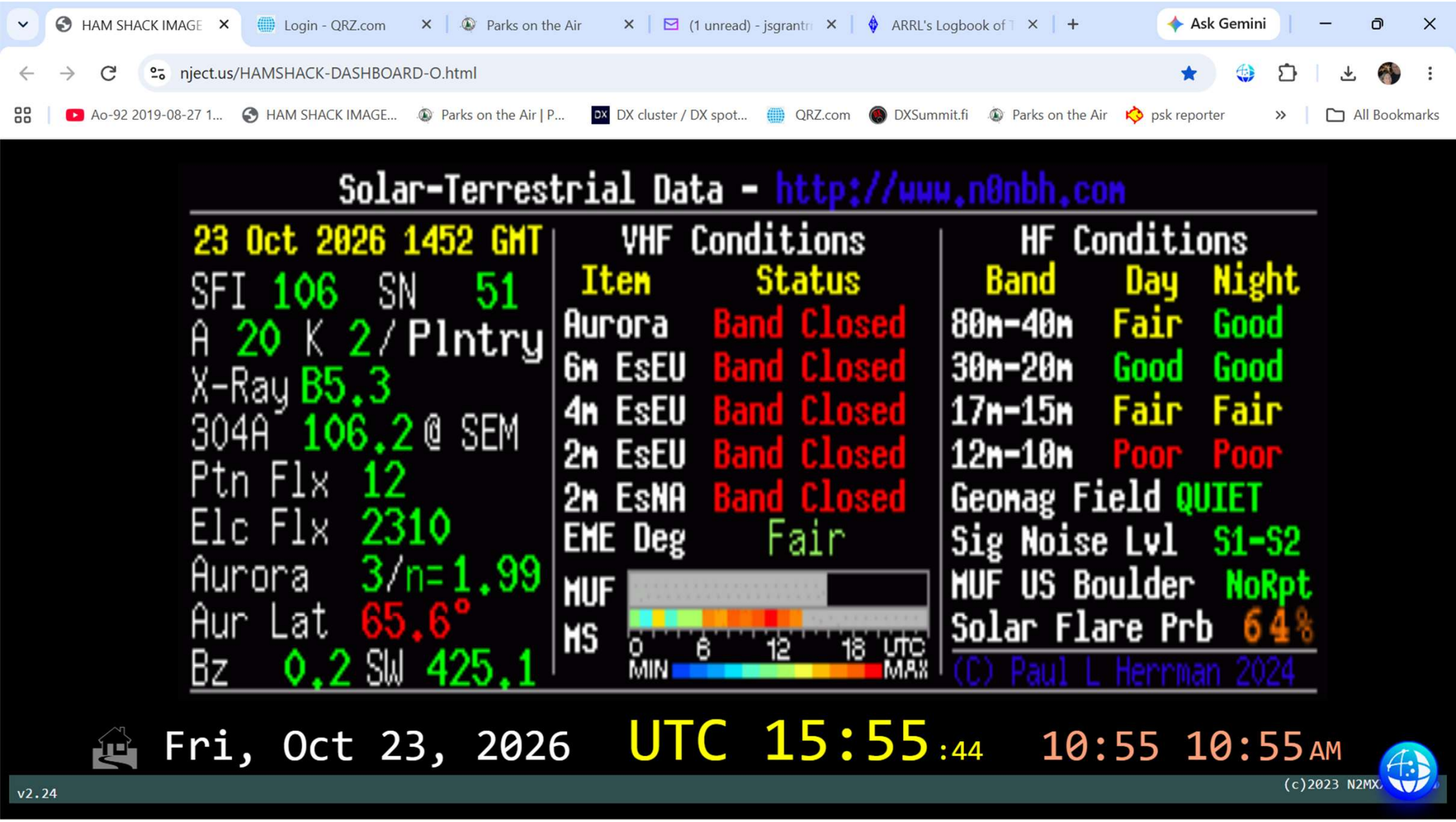
Low-angle second

Hit a gateway in Georgia, the Carolinas, or the Midwest when every Florida RMS is dark or slammed.

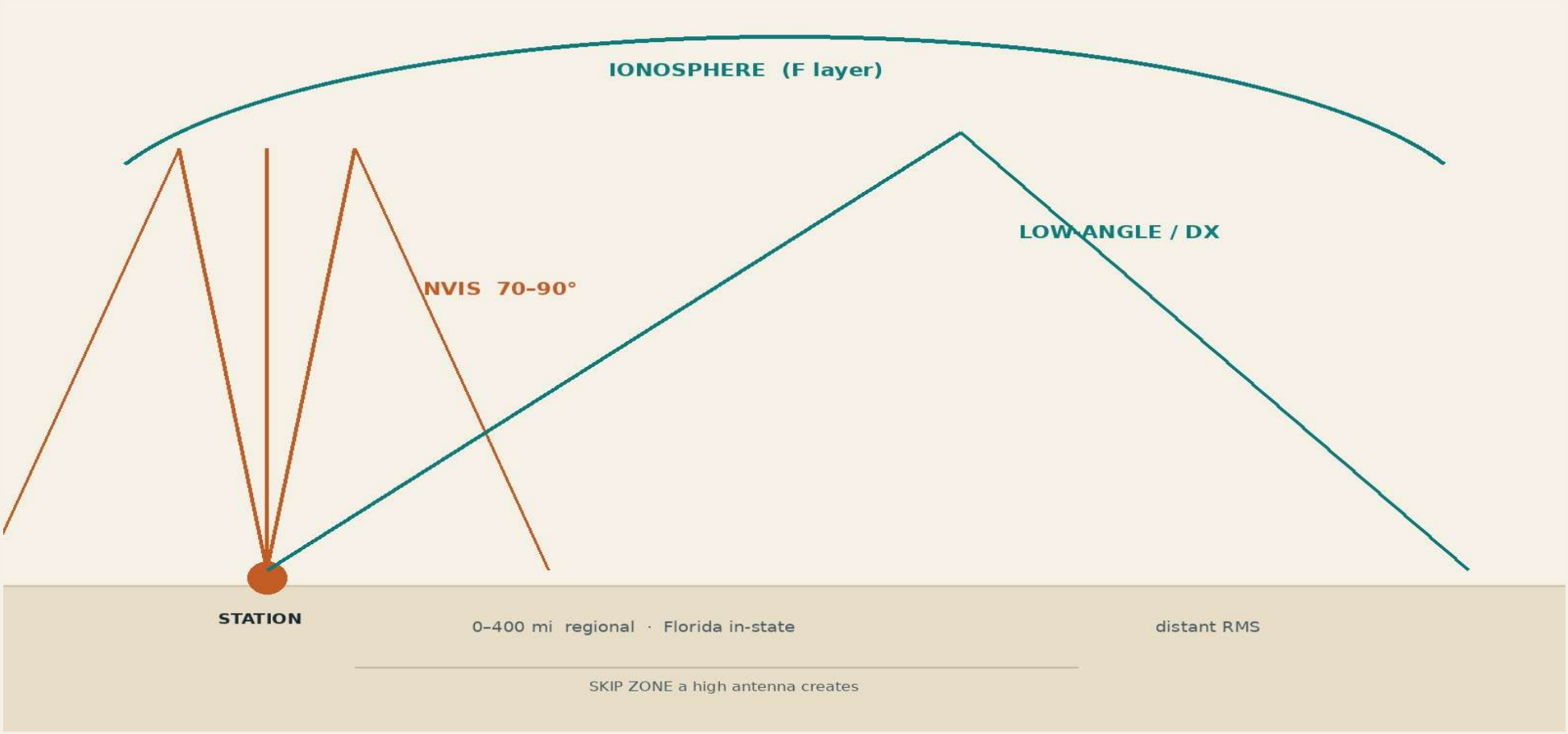
40 / 30 / 20 m as the MUF allows.

Higher dipole, inverted-V, or a vertical with radials.

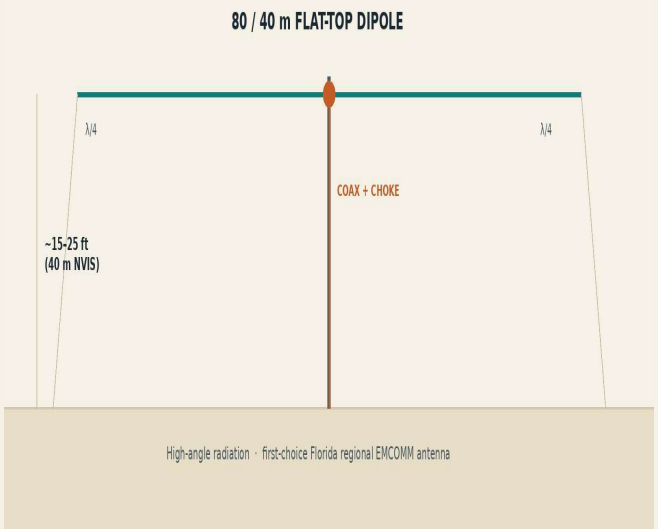
Do not make this the only antenna you bring. Have several options available.


HAM SHACK IMAGE
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Parks on the Air
(1 unread) - jsgrantr
ARRL's Logbook of
Ask Gemini
nject.us/HAMSHACK-DASHBOARD-O.html
Ao-92 2019-08-27 1...
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DX cluster / DX spot...
QRZ.com
DXSummit.fi
Parks on the Air
psk reporter
All Bookmarks
Solar-Terrestrial Data - http://www.n0nbh.com
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SFI 106 SN 51
A 20 K 2/ Plntry
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Ptn Flx 12
Elc Flx 2310
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30m-20m Good Good
17m-15m Fair Fair
12m-10m Poor Poor
Geomag Field QUIET
Sig Noise Lvl S1-S2
MUF US Boulder NoRpt
Solar Flare Prb 64%
(C) Paul L Herrman 2024
Fri, Oct 23, 2026 UTC 15:55:44 10:55 10:55 AM
v2.24
(c)2023 N2MX

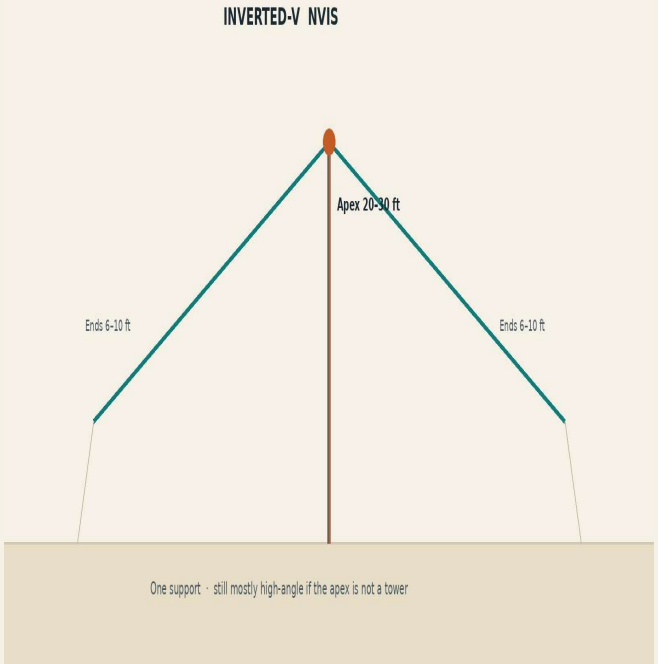
Why a low wire beats a tall vertical in-state



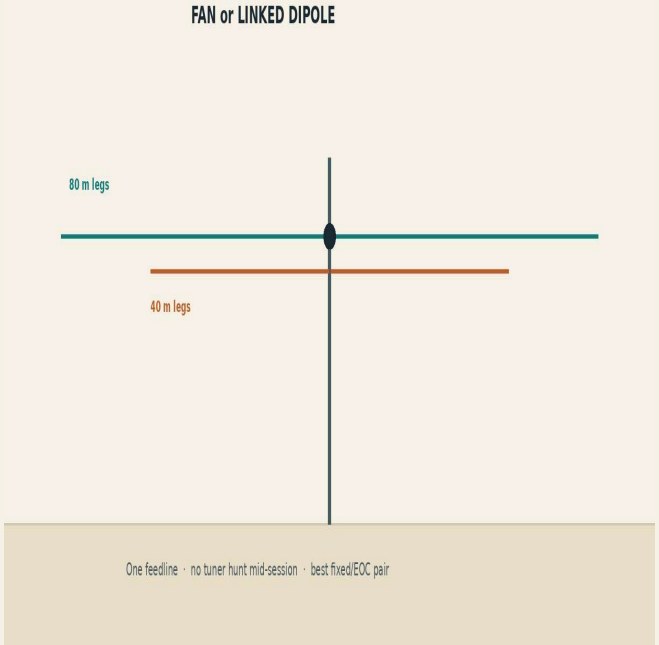
Three dipole setups that actually produce NVIS



Flat-top · 15–25 ft



Inverted-V · one mast



Fan / linked 80 + 40

Best home or EOC configuration

PRIMARY

80/40 NVIS dipole

Fan or linked dipole, flattop or gentle inverted-V. Modest height.

SECONDARY

40–20 m higher wire or vertical

For RMS outside the NVIS bubble. Vertical needs radials.

FEEDLINE

Low-loss coax + choke

RS-8x - 0.85 dB per 100 feet on 40 meters
LMR-400 - 0.3 dB per 100 feet on 80 meters

Cost is a factor for low loss cable

MATCH

Resonant first, tuner second

Low SWR on the VARA channel before the tuner.

SPARE

EFHW ready to hoist

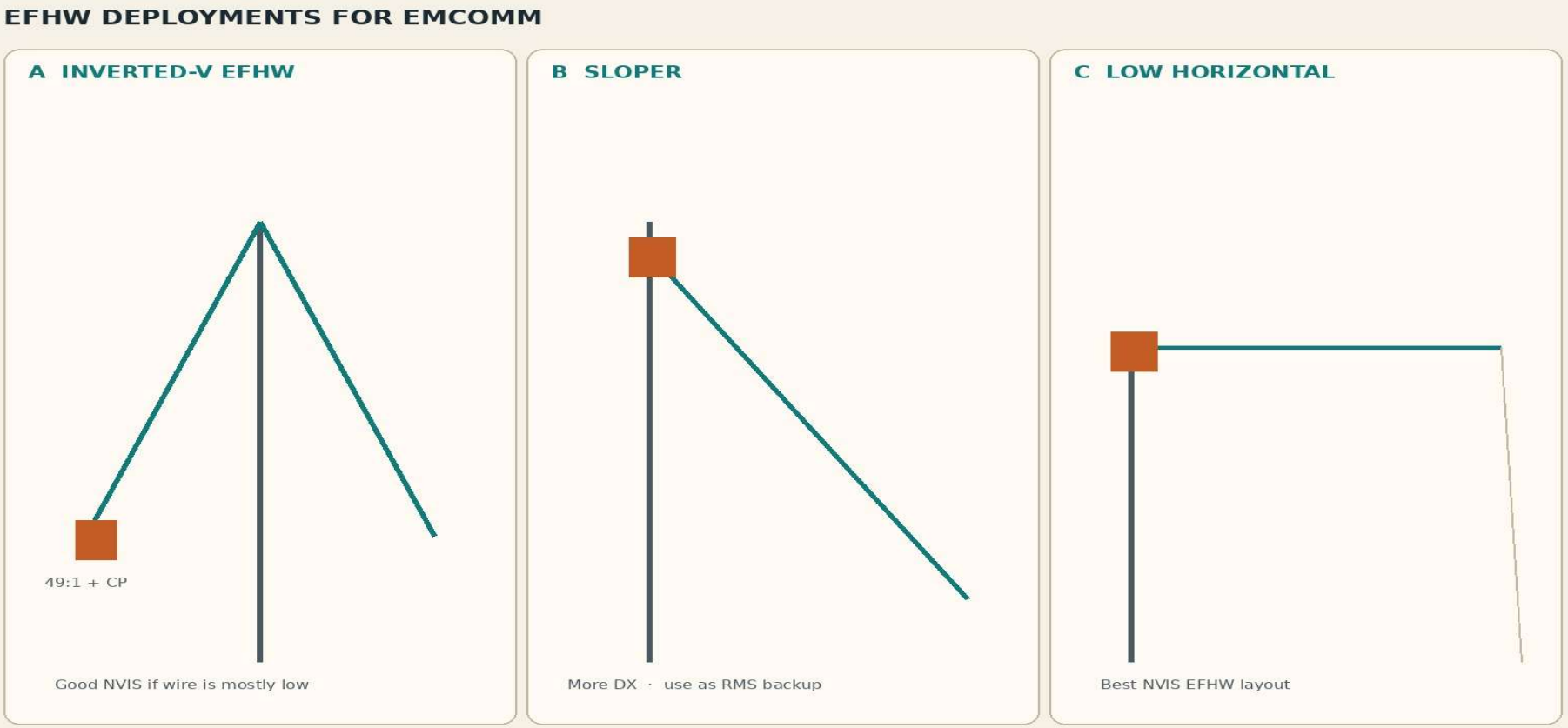
49:1 and a counterpoise when a tree or mast fails.

GROUND

Single-point shack ground

Bond radio, interface, and PC before the next named storm.

Same end-fed wire, three radiation patterns



Best portable configuration that still works at 0200

1st choice	**Linked or fan dipole**	Tree + 15–25 ft mast (push up or painters' pole). Cut or link for 80 and 40.
2nd choice	**EFHW + unun + counterpoise**	One support. Lay out the counterpoise of at least 25 feet. Do not skip the choke.
3rd choice	**Loaded vertical / whip (17 feet)**	Vehicle footprint. Accept the NVIS hole on 80.
Support	**Mast, line, weight**	Painter pole or tree. Extra paracord. Arborist bag or baseball with an eye-hook.
Coax	**Short is better**	25–50 ft of quality coax. Have 100 ft sections as well.
Weather	**Insulators and drip loops**	Wet wire works. Have a plastic bag for your unum if not well sealed. Wrap all connectors with electrical or weather tape.



Photo Credit: Paul Locke KB4PML at EM84

Trees as supports, station on a short coax run



Mistakes that look like software bugs

High SWR + long key-down

Sessions last minutes. A good tuner is important.

No common-mode choke

Shield current into your radio will shut the Vara HF session down.

No counterpoise on an EFHW

It is needed. We could spend another day on this…but then I will ask you which is a better antenna – vertical or horizontal…and the circle continues. Minimum of 25 feet of good coax with minimal loss.

Tuner hunting mid-session

Tune before every transmission, even if you haven't changed frequencies. Many things affect SWR.

Vertical-only EOC – Go Horizontal

Fine for a far RMS. Deaf to the shelter 80 miles away on 40 m NVIS.

Noise / ALC / Everything Else

Chokes on power and transmission line. ALC adjusted.



Which band carries Florida traffic the Best

Band	When	Mission fit	Antenna note
80 m	Night, early morning	In-state NVIS, P2P, nearby RMS	Low dipole. NFL/SFL voice nets live here too.
60 m	Day/night mix	Regional if channels are available	Channelized. Confirm current privileges.
40 m	Day into evening	Peninsula plus medium-haul RMS	Low for NVIS, higher for a distant gate.
30 m	Day/night	Quiet long-haul RMS	Vertical or higher wire.
20 m	Daytime	Leave-the-theater RMS	Not the shelter-net band.

Winlink lists center frequencies. Dial is USB suppressed-carrier. Trust CAT plus the published dial column.

How VARA HF sits in a Florida PACE plan

P	**Primary**	Commercial email, cell, FirstNet, landline. Use it while it lasts.
A	**Alternate**	Winlink Telnet from a still-up site. SARNET. VARA FM / packet if local VHF is alive.
C	**Contingency**	VARA HF to a live RMS — in-state if it exists, out-of-state if the peninsula is dark.
E	**Emergency**	VARA HF peer-to-peer on pre-published frequencies. Two stations. No internet in the path.

VARA / Winlink showed up and stood out

Winlink is the application. VARA HF is the modem most HF stations use. (moment of silence for WINMOR, please)

Ian	2022	Cat 4, SW Florida. ARES in shelters and EOCs. Out-of-state Health & Welfare via Winlink RMS outside Florida. W1AW opened Winlink/SHARES. Alachua IAP put VHF P2P and HF Winlink on the ICS 205 (Communications Plan).
Idalia	2023	Big Bend. SARNET for voice, Winlink for formal traffic to State Watch Office addresses when directed.
Helene	2024	Big Bend landfall, then inland disaster. K4NWX RMS emergency mode for FL / NC / SC. Georgia ARES published P2P on 80/40. ARRL: Winlink digital messages in the affected area.
Milton	2024	Cross-state strike two weeks later. Florida ARES still spun up from Helene. Operators asked to clear automatic Winlink channels for real traffic.

What operators did — not folklore

K4NWX (Anderson SC) emergency-mode RMS

Helene recovery. Gateway in emergency mode for Florida, North Carolina, and South Carolina traffic. Routine users asked to stand down. Few forms were sent, mostly message traffic.

Georgia ARES P2P channels

Helene ICS 205: Winlink P2P 80 m dial 3.583 and 40 m dial 7.078.5, to WX4PTC / GAARES-P2P.

Florida State Watch Office path

ARRL Helene notes: formal Winlink to KA4EOC (SEOC) or NNA4FL (SEOC call sign on SHARES), auto-forward toward the State Watch Office.

Alachua County Ian / Helene

EOC and shelters staffed. Ian: out-of-state welfare via RMS outside Florida. Helene AAR: P2P Winlink stayed up at the EOC.

WX4NHC at NHC Miami

Accepts Winlink reports at wx4nhc@winlink.org (subject must start //WL2K). 14.325 / 7.268 Hurricane Watch Net.

Clear the auto channels

Oct 2024: operators asked to postpone nets on several frequencies so Helene/Milton traffic could use the space.

Before the next named storm

01 Confirm you have a current IC-205 plan in your radio or hard copy printout

02 VARA HF installed on your laptop and updated; key stored offline if you move real files

03 Winlink account live; test message sent while the internet works. Check into the Winlink Wednesday net

04 Radio USB-DATA profile saved: wide filter, no processor, known ALC

05 CAT radio control verified: session dial frequency matches the radio

06 NVIS dipole or EFHW packed with choke, adapters, throw line

07 SWR known on 80 and 40 at actual VARA channels

08 Battery math for radio + laptop for a full operational period. RF power management

09 Printed PACE card: P2P freqs, two RMS calls, KA4EOC / WX4NHC

10 One successful P2P drill with another Florida station this quarter