



# Cherokee County ARES Application of Technologies

10 February 2024

W1JKU-ROB



# Purpose

The purpose of this presentation is to cover the most-common technologies we leverage within ARES. Provide you an overview of these items so that you have a better appreciation of the tool, how we may leverage that tool, and allow you to increase the assets in your toolbox.

In the end, we are communicators. We need to leverage the appropriate tool to accomplish the mission and deliver the message as required.

Modes have been identified in this presentation if they are a Priority for Cherokee ARES, or being Tested by Cherokee ARES.



# References

- [Cherokee County ARES Operations Manual](#)
- [ARRL ARES – Field Resource Manual](#)
- [Field Operating Guides, including AUXFOG](#)
- [GA ARES Website](#)
- [hamradioschool.com](#)



# Welcome

## **Welcome to the Cherokee County, Georgia Amateur Radio Emergency Service®**

- While amateur radio is a hobby, we encourage you to participate in our weekly nets, various drills/exercises throughout the year, and be prepared to answer the call from our community when emergency communications are needed.
- We are NOT storm-chasers, nor are we First-Responders.
- We are a dedicated group of amateur radio operators that follow the chain of command.
- We deploy only when requested by our served agency, and only when approved by your Emergency Coordinator of Cherokee County, or one of the delegated Assistant Emergency Coordinators.
- We encourage you to participate and give back to your community and remain prepared to answer the call to service when requested.



# Mission

Cherokee County ARES supports our primary served agency, Cherokee County EMA- Emergency Management Agency and when requested other agencies in our area or NW GA District.

We annually support the following activities:

1. [Field Day along with our Club-WX4CAR.ORG](http://WX4CAR.ORG)
2. [The Georgia Death Race \(PT Bravo and Nimblewill Gap\)](#)
3. [The Georgia Jewel](#)
4. [NW GA District ARES](#)
5. **The Annual ARRL Simulated Emergency Test (SET)**
6. As needed [SKYWARN](#) nets



# ARES Organization

The American Radio Relay League's Amateur Radio Emergency Service is divided into four levels, national, section, district and local.

- There are 71 sections in the USA.
- The Georgia section is broken into 8 districts that are illustrated below
- Our group is part of the Georgia Section, Northwest District.
- Each of Georgia's 159 counties has an Emergency Coordinator.



## Georgia Section Northwest District

Bartow
Catoosa
Chattooga
Cherokee
Dade
Fannin
Floyd
Gilmer
Gordon
Murray
Pickens
Polk
Walker
Whitfield



# Technology and Methods

- Phone/Voice (Simplex, Duplex “Repeaters”, HF)
- Phone/Voice via DSTAR (REF30B)
- Winlink (Telnet, Packet, VARA-HF, VARA-FM, ARDOP, P2P, Radio-Only)
- DRATS
- APRS
- FLDIGI (MT63-1KS)
- VARAC
- JS8CALL



Phone/Voice (Simplex, Duplex, HF)





# Phone/Voice (Simplex, Duplex, HF)

- We must be able to Listen and Talk Real-Time with other stations.
- You must get comfortable with clicking the TX button on your radio and letting your voice be heard, while following proper radio procedures.
- Your radio needs to be loaded with our Frequencies from our [ICS-217](#) that covers all Simplex, Duplex (Repeaters), and HF we leverage in Cherokee County, Northwest GA, and State ARES.
- **For Directed NETS, You must listen to Net Control, following all instructions from NET Control. NET Control is in Charge!!!**



# Phone/Voice (Simplex, Duplex, HF)

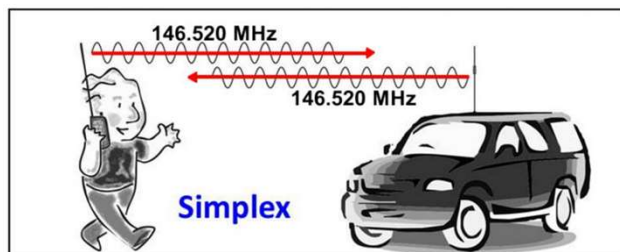
Simplex- Radio to Radio without the Aid of a Repeater.

What is Simplex?

- In the amateur radio context, *simplex operation* means the radio stations are communicating with each other directly, on the same frequency. Both stations take turns transmitting and receiving on the same frequency with no repeater or other device in between.

Why Simplex?

- Repeater may be offline due to power issues, interference, infrastructure issues, etc.
- We may be operating close by, where we do not need a repeater to communicate.





# Phone/Voice (Simplex, Duplex, HF)

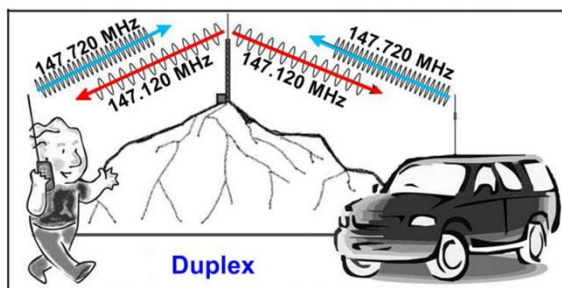
Duplex- Radio to Radio with the Aid of a Repeater.

What is Duplex?

- In the amateur radio context, *duplex operation* means the radio stations transmit on one frequency, a repeater intercepts that signal, may increase power of signal, and send signal out on a different receive frequency.

Why Duplex?

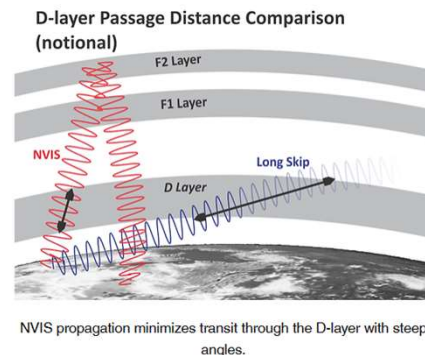
- Leverage a Repeater on high-ground (Mountain or Elevated Antenna) that has ability to increase signal coverage to more personnel that normally would not have been able to communicate in simplex mode due to terrain, distance, or power.



# Phone/Voice (Simplex, Duplex, HF)

## HF- Radio to Radio using HF 6 Meters – 80 Meters

- With HF we can communicate further than Simplex or Duplex (VHF/UHF).
- With the proper antenna (NVIS), we have the ability to talk within our District, Region, State, 50 – 600 miles.
- With non-NVIS Antenna, we have ability to talk around the World.
- We typically use NVIS Antennas for 40Meters through 80 Meters for ARES.

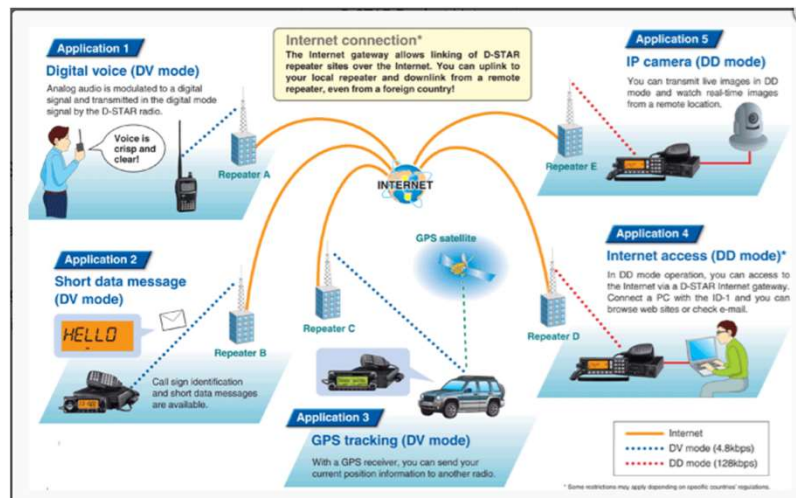


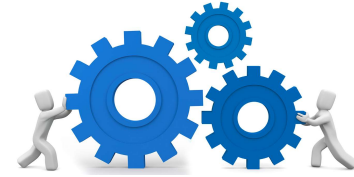
# Phone/Voice via DSTAR (REF030B)

- DSTAR Repeaters link to other DSTAR repeaters via the Internet.
- DSTAR Repeaters give you the ability to communicate thorough the State, Country, and the World.
- At the State Level DSTAR is used very frequently for State Nets, Hospital Nets, etc.
- DSTAR is not pushed at the Cherokee County Level as we have other tools to communicate within the county without asking each of you to buy additional DSTAR Capable radios and Hotspots. **BUT DSTAR is a valuable GA ARES Tool.**
- DSTAR Reflectors used by ARES:
  - REF030B is typically used for GA AREES
  - REF030C is used for RAGCHEW around the World
  - REF030D is used for DRATS

# Phone/Voice via DSTAR (REF030B)

- K9APD is in process of standing up a DSTAR Repeater on Pine-Log. This would allow you, if you had a DSTAR Capable radio, of taking advantage of DSTAR over RF.
- You can also link your DSTAR Capable radio to a DSTAR Hotspot allowing you to connect to any Ratreflector or DSTAR capable repeater of your choosing.





# Phone/Voice (Simplex, Duplex, HF, DSTAR)

## IMPLEMENTATION

- A. Cherokee ARES NET Primary WX4AUX Repeater, Alternate KG4VUB Repeater, 3<sup>rd</sup> Alternate WA4EOC Repeater.
- B. Cherokee ARES Simplex 147.585 and 439.600 (We use for NETS, FieldDay, GA DeathRace, GA Jewel, and anytime we want a local talk-about Frequency)
- C. NWGA ARES NET Primary: KC4QAS Repeater, Alternate 144.830-K4SJR)
- D. NWGA ARES Simplex: 145.595 & 147.955
- E. NWGA ARES: 10M-28.430 USB and 6M- 50.130 USB
- F. AUXCOM/MARS/Regional Coverage: 60M USB (Find available Channel)
  - Channel 1: 5330.5 kHz
  - Channel 2: 5346.5 kHz
  - Channel 3: 5357.0 kHz
  - Channel 4: 5371.5 kHz
  - Channel 5: 5403.5 kHz
- G. GA ARES NET HF 80M (Evening)- 3.975 LSB & 40M (Day)- 7.2875 LSB (+/-) Find available Freq
- H. GA ARES DSTAR NET REF030B

Winlink



# Winlink

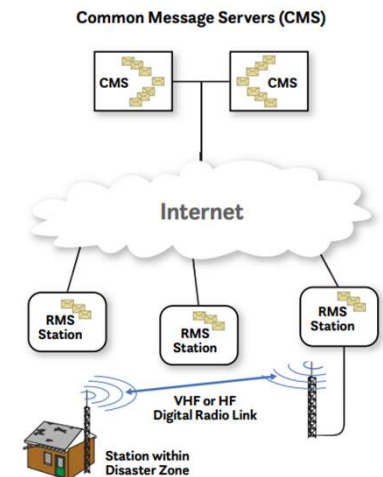


Winlink is an application that allows Amateur Radio Operators to send Non-Encrypted Emails over the Internet or over RF using your radio.

Winlink support multiple modes of RF Capability including:

- Packet, VARA-FM, VARA-HF, ARDOP, P2P, & Radio Only
  - All modes except P2P and Radio Only relies on the Internet/CMS Servers for sending and receiving emails with the RMS Station you connect to.
  - The CMS Servers are used to store your email in the cloud. This allows you to send/receive your email regardless if you use TELNET-INTERNET or connect to one of the many RMS Stations over RF. The RMS Station must be connected to the internet.

**\*\* If the RMS Station lose internet, you cannot send or received standard Winlink messages via that station. You must find another station and consider getting outside of your region...**



# Winlink



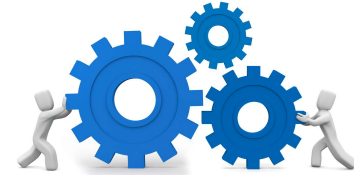
## 2. P2P/Radio-Only

- P2P allows two stations that are online at the same time & on the same frequency & they have radio-line of site to each other, to transmit/receive emails without using the internet.
- Radio Only allows two stations to send/receive emails without the use of the Internet and without both stations having to be online at the same time. This is a great vehicle if you have HF Capability, but you must setup 3 MPS- Message Pickup Stations in Advance before you can take advantage of this feature.

## 3. Key Winlink Features:

- A. Built in ICS and Miscellaneous Forms
- B. Automatic Updates for Application, Forms, and RMS stations for RF Communications
- C. Ability to send SMS/Text Messages

# Winlink



## IMPLEMENTATION

- A. Weekly Cherokee ARES Winlink Exercise by 8pm on Monday, send Winlink Check-In form to CCARES-NET.
- B. Weekly NWGA ARES Winlink Exercise by 8pm on Tuesday, send requested form to W4NWG.
- C. Weekly GA ARES Winlink Exercises send on Sundays between 00:01 and 16:00 to GAARES-NET.
- D. Practice sending Radio-Only message once you configured your MPS Stations. Send to W1JKU or KO4IFY as we practice this mode weekly.
- E. Keep Eye out for NWGA P2P Exercises as this is conducted on a regular basis.
- F. If you're not a Winlink user, please consider adding this tool to your toolkit!, this is a critical tool for Cherokee ARES and easy to install and configure.

DRATS



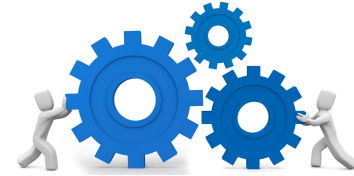
# DRATS

Windows Based Application that allows for Amateur Radio Operators to perform Keyboard to Keyboard real-time chatting over the Internet. While RF Capability does exist, it is not widely used due to complexity and instability.

- We utilize the NWGA RATFLECTOR (NWGAARES.RATFLECTOR.COM) on Channel CCARES
- DSTAR has several ICS Forms built in and a few additional advanced features. Our primary use for Cherokee ARES is the simple Chat function.

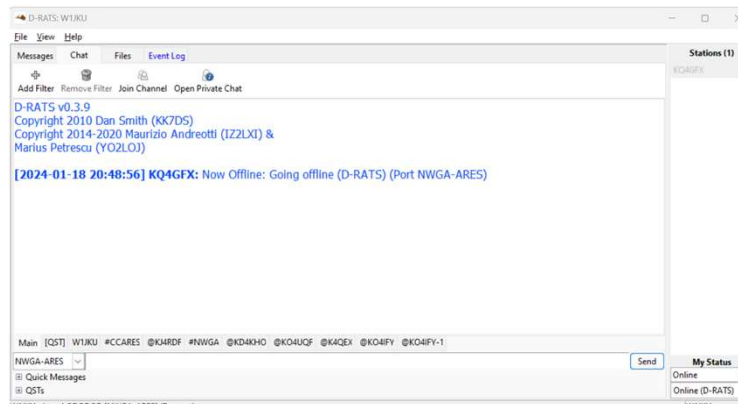


# DRATS



## IMPLEMENTATION

- A. Cherokee County utilizes DRATS on virtually every net we perform utilizing the internet and the NWGA ARES Ratflector (nwgaares.Ratflector.com) and Channel **CCARES** to perform **CHAT**.
- B. This is a great tool for communications between NCS and all other personnel.
- C. If you're not a DRATS user, please consider adding this tool to your toolkit!, this is a critical tool for Cherokee ARES.



APRS



# APRS

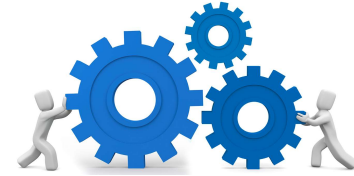
- **Automatic Packet Reporting System (APRS)** is an [amateur radio](#)-based system for real time digital communications of information of immediate value in the local area.
- Data can include object [Global Positioning System](#) (GPS) coordinates, [weather station](#) telemetry, text messages, announcements, queries, and other [telemetry](#).
- APRS data can be displayed on a map, which can show stations, objects, tracks of moving objects, weather stations, search and rescue data, and direction finding data.
- APRS can be used to obtain Weather reports



# APRS

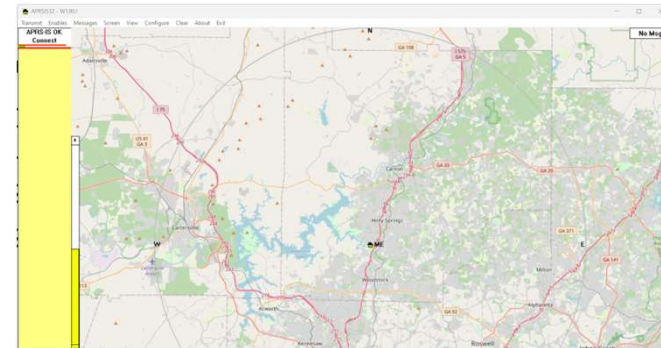
- APRS can be used over the Internet.
- APRS can be used over RF using Packet Frequency: 144.390.
- Applications to perform APRS:
  - APRSIS32
  - YAAC
  - <http://aprs.fi> (Used for monitoring from your webbrowser)

# APRS



## IMPLEMENTATION

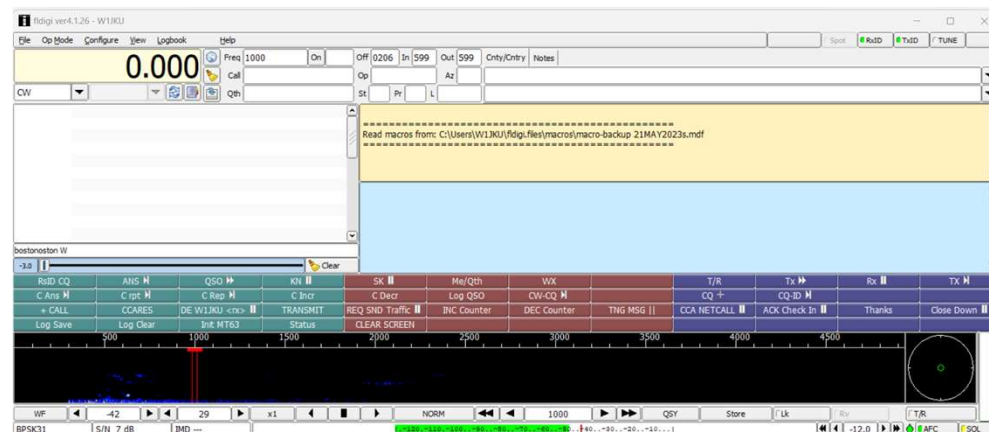
- A. Cherokee County utilizes APRS to communicate short messages to our teams. Look for messages from W1JKU, WA4EOC, and or our other AEC's/ members.
- B. Send Keyboard to Keyboard Messages to another station.
- C. See Map of where users are, overlaid with terrain and weather map.
- D. When Deploying great tool to show real-time status and location.



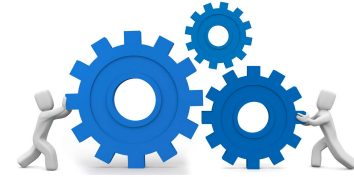
FLDIGI

# FLDIGI (MT63-1KS)

- FLDGI is an application that allows Keyboard to Keyboard communication across multiple modes. Can also be used to listen/decode CW.
- FLDGI allows ICS Forms to be sent over RF.
- FLDGI can be used to download Weather Maps over RF.



# FLDIGI (MT63-1KS)



## **IMPLEMENTATION**

- A. Cherokee ARES does not leverage this mode within the county due to complexity for our users, but you are encouraged to learn and support GA ARES.
  
- B. GA ARES use FLDIGI at the State Level with Mode MT63-1KS. FLDIGI exercise every Sunday at 16:00hours if your interested in learning and practicing.
  
- C. Using FLDGI Mode CW, you can capture the Field Day Bulletin!

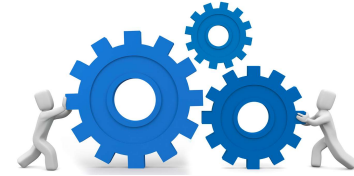
VARAC

# VARAC



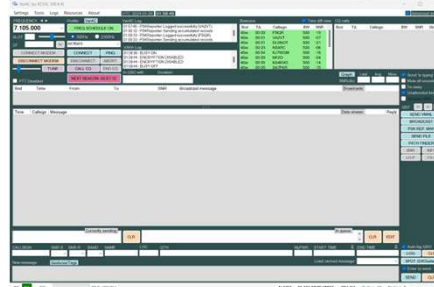
- VARAC is a free Chatting Application that can be used over VARA-HF, or VARA-FM allowing users to communicate with other Amateur Radio Operators leveraging the Vara protocol using RF.
- VARAC is designed to be used without any Internet Backbone, pure RF between stations.
- VARAC can be used with VARA-FM or VARA-HF
- VARAC Supports **Broadcasts**. Broadcasts is a feature allows an operator to send a 91byte message to a Specific Station or "**ALL**" stations on Frequency. This is a primary method of being able to deliver short messages to multiple stations at the same time that you cannot do in a one-on-one standard Vara-Chat. Broadcasts is a feature we will leverage on our Cherokee-ARES NETS to allow mass RF communication between all listening members running VARAC at the same time.
- VARAC Supports **VMAIL**. VMAIL is a feature allows composing and sending larger messages or can be store as an offline message on your machine that is picked up and received by the recipient when they are online.

# VARAC



## IMPLEMENTATION

- A. Cherokee ARES will use VARA-FM when using this mode.
- B. Prior to the NET all stations with VARAC capability can set their station to point to our Cherokee ARES Repeater and manually send a **Beacon** to let all other stations know they are on Frequency with VARAC capability. Again this is the same Frequency used by the Voice NET.
- C. During NET, NET Control may make a Net Call giving additional instructions that VARAC users may re-Beacon.
- D. When NET Control has digital traffic it would like to Broadcast via VARAC to all Listening stations on Frequency, then Net Control would make a NET Call to alert stations that Digital traffic is about to be sent so if you must make a quick change to your rig to put in Digital Mode briefly, you can.
- E. Watch APRS for W1JKU Messages as I publish when I am on Frequency. Or During Day Check 20m and Night 40m.
- F. VARA-FM, on the RIG Control Settings within VARAC, check the box “Skip slot selector” as we DO NOT want to change frequencies on our repeater or other published Simplex Freqs we use for Cherokee ARES.





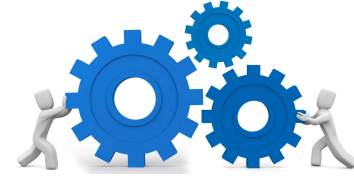
JS8CALL

# JS8CALL



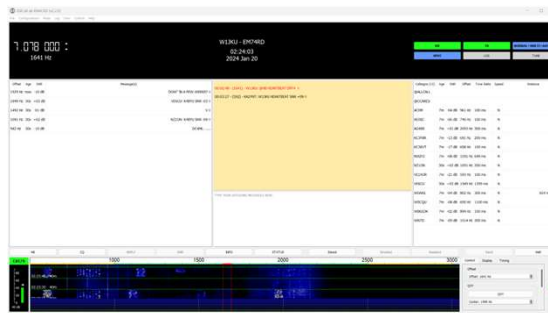
- JSCALL is a free Chatting Application that can be used to communicate with other Armature Radio Operators for weak propagation communications. Unlike FT8, you can actually carry on a QSO very simply with this tool.
- JS8CALL is designed to be used without any Internet Backbone, pure RF between stations.
- JS8CALL can be another good tool to communicate with distant stations and share information.
- Currently GA ARES is not using JS8CALL, but you should consider experimenting with this tool. If we were to lose Internet, cell, and core infrastructure. Getting information into and out of the region will be important. Consider adding this tool to your tool kit.

# JS8CALL



## IMPLEMENTATION

- When configuring your station, add @CCARES to “Callsign Groups”. This will allow messages to be directed to @CCARES and only those stations that has this configured will receive the message.
- Consider using 20M during day and 40M at night.
- Practice using tool with intent of communicating outside our region to receive or pass traffic.
- Consider using for Field Day, Winter Field Day, and any other opportunity you have...





# Training References

1. Phone/Voice
  - A. [Cherokee Basic NET Training 14JAN2023](#)
  - B. [CARS Intro to VHF / UHF and ARES/RACES-FEB 2022](#)
  
2. Winlink (Telnet, Packet, VARA-HF, VARA-FM, ARDOP, P2P, Radio-Only)
  - A. [W1JKU-CARS Winlink Basics](#)
  - B. [W1JKU-Cherokee ARES-Winlink GPS Mapping and Reporting](#)
  - C. [W1JKU FLDIGI and Winlink Discussion 21May2023](#)
  
3. DRATS
  - A. Adjust Installation instructions, PDF Below must be updated.
  - B. To install DRATS go to the DRATS Groups.IO Program Files Page: <https://groups.io/g/d-rats/files/D-RATS%20Program%20Files>
  - C. When installing, do not install or attempt to run from your Windows Desktop or any other Microsoft Assigned Folder. There are known issues and conflicts using Microsoft Assigned Folders including One-Drive Folders. You may have inconsistent behavior. You are best to install to your C: in folder DRATS. Example: C:\DRATS
  - D. [Cherokee ARES DRATS Installation-30MAY2022](#)
  
4. APRS
  - A. [APRS-YAAC Client. This client can be used on Windows/Linux/etc. Click on this hyperlink for details and download. Its a Java based application, personally I like it a little better than APRSIS32. Download and unzip the contents to a folder. In my case I put all the contents in the following folder: "C:\Ham Software\YAAC". Then you can create a shortcut from windows, here is the launch command: "C:\Ham Software\YAAC\YAAC.jar"](#)
  - B. [Cherokee ARES APRS Announcement 3SEP2023](#)
  - C. [W1JKU-APRS Training for NWGA District 6SEPT2022](#)
  - D. [Using APRS to send SMS Messages. See News Page 21DEC2023](#)
  
5. FLDIGI (MT63-1KS)
  - [W1JKU FLDIGI and Winlink Discussion 21May2023](#)
  
6. VARAC
  - A. [Training Video](#)
  - B. [W1JKU VARAC Primer 9JAN2024](#)
  - C. [References VARAC for EmComm](#)
  
7. JS8CALL
  - [JS8Call by KN4CRD](#)



Participate

Give Back to the Community

Have Fun and Advance your Skills



Thank you!