

# APRS: State of the Union



## APRS Foundation Inc.

- Jeff Hochberg - W4JEW  
President (co-founder)
- John Tarbox - WA1KLI  
Vice President (co-founder)

# H3110 w0rld!

## JEFF HOCHBERG W4JEW

- Atlanta, Georgia
- Co-Founder & President of APRS Foundation
- Appalachian Trail Golden Packet - Coordinator/Event Lead



# H3110 w0rld!

## JOHN TARBOX - WA1KLI

- Phillips, Maine
- Co-Founder & Vice President of APRS Foundation
- Phillips, ME (FN44tt)
- Quarter Century Wireless Club Member
- AT Golden Packet member since 2009



Operating from  
Sugarloaf Mountain  
for ATGP

# Agenda

- What is APRS?
- What can you do with APRS?
- Getting started with APRS
- APRS Foundation
- Getting involved!



# An APRS Story - Craig - KM6LYW

- Avid backpacker - frequents High Sierra Mountains (8000' + ASL)
- No cell coverage! Ham radio or bust!
- Relies on APRS regularly to communicate with family members while out in the wilderness!
- Led to the development of DigiPi
  - <https://digipi.org>
  - Low-cost turnkey image for the Raspberry Pi
  - Based on DireWolf - a software-based TNC





**1**

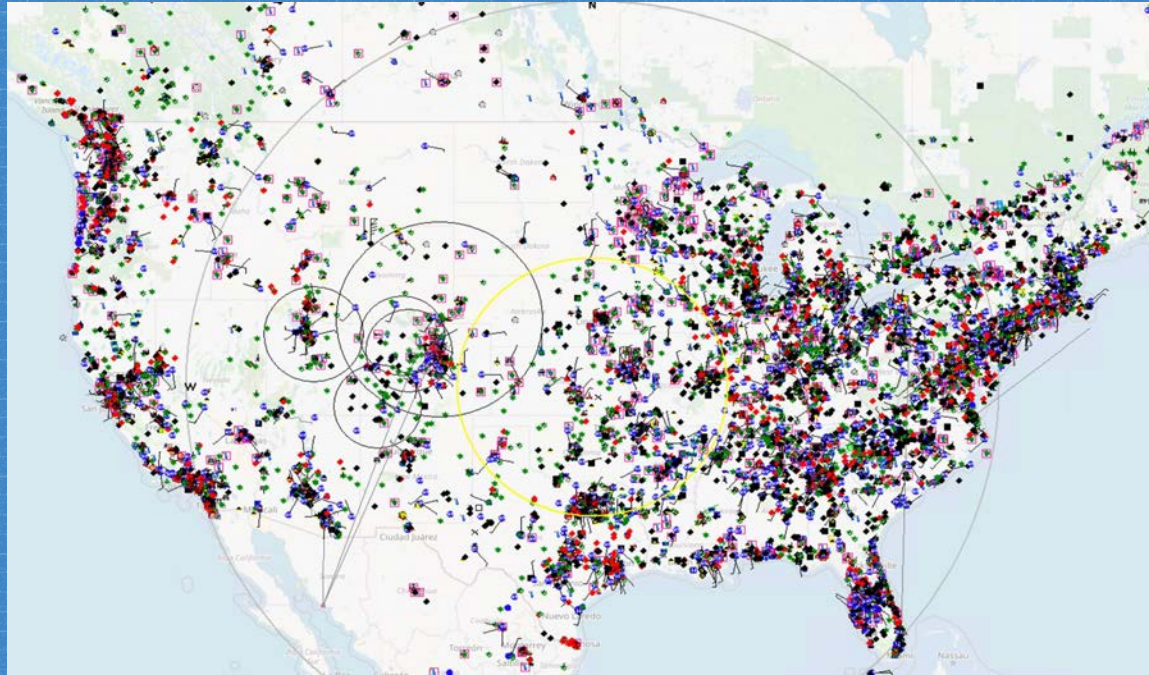
# What is APRS?



# APRS = Automatic Packet Reporting System

- APRS is a protocol based on AX.25
- Provides transport-layer connectivity
- Minimal bandwidth requirements
- Facilitates sharing messaging, telemetry, metadata, and more...in REAL-TIME!
- Position tracking, messaging, even weather reports
- NO reliance on infrastructure (for local communications)
- All through ham radio!!!

# Widely Adopted Around the World!

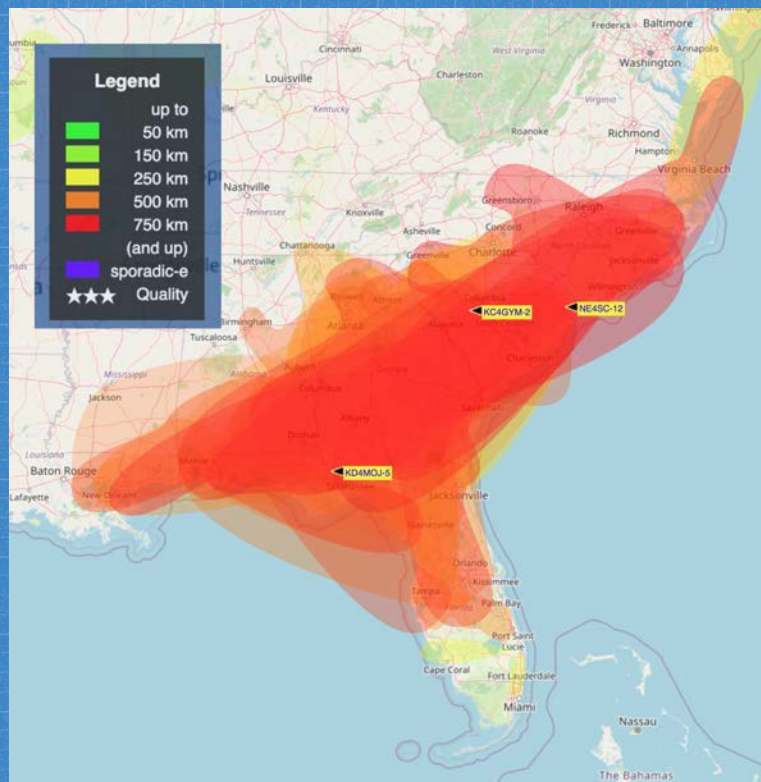


Screenshot (North America only) 02/04/2025 at 00:22 GMT

*~50,000 nodes actively connected to the APRS-IS globally (both RF & Internet-enabled devices)*



# “Local” isn’t just next door...



- VHF Propagation Map <https://vhf.dxview.org>
- Tropospheric ducting (500+ km!)
- Real-time radio propagation from stations operated near 144 MHz (144.390 MHz)
- Uses data gathered by APRS-IS

**KJ4YNR-1**

**EM82oi (32.3663, -82.7649)**

First heard: 2024-10-08 15:17:14, 4 months ago  
 Last heard: 2025-02-04 04:47:39, 1 minute ago  
 Position updated: 2025-01-07 11:00:01, 28 days ago  
 Station frequency: [VHF] status: [valid]  
 Quality: active for 3 days.  
 Show packets ...; go to ...

174	507
253	429
169	507

Destination	Raw packet	Location	Bearing	Distance	First heard	Last heard	Frequency
KT4CW-3		EM61rh	252	371	about 2 hours ago	less than a minute ago	[VHF]
KM4SMU-2	raw ...	EM80it	195	180		less than a minute ago	VHF
W4LHS-10	raw ...	EM92kc	100	155	about 1 hour ago	1 minutes ago	VHF
NH4CE-11	raw ...	EL87ut	174	507		1 minutes ago	[VHF]
KT4CW-1		EM61ke	253	429	about 2 hours ago	1 minutes ago	[VHF]
WC4PEM-10	raw ...	EL97cv	169	507	19 minutes ago	1 minutes ago	[VHF]
KA4CID-1		EM91gs	117	140	about 2 hours ago	9 minutes ago	VHF

# Digipeaters: Extending Local Area

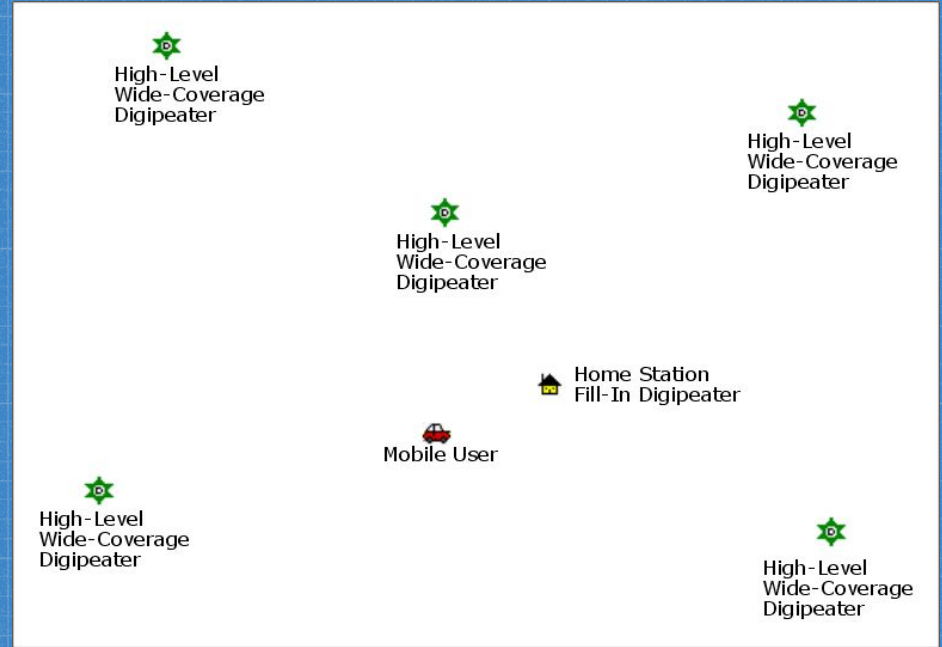
- “Digipeater” = Digital Repeater
- Get it? 🕶️
- Extends APRS coverage within a local area...  
*without tropospheric ducting* 🐱



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# APRS-IS: (IS = Internet Service)

- Internet-based APRS network
- Interconnect RF-based APRS networks around the globe!
- Internet Gateways (iGate) bridge RF to the Internet
  - RX-only iGates
  - TX/RX iGates
- Ham radio nodes ONLY!



# APRS-IS Statistics

Distinct Callsign+SSIDs (Including Objects and Items)

Past 24 Hours	60896
Past 30 Days	127535
Past 60 Days	162108
Past 90 Days	195918

*Effective 02/05/2025*

*Statistics provided by Hessu - owner/developer of <https://aprs.fi> & <https://github.com/hessu/aprsc>*

# Firenet

- APRS-IS Network **PLUS** Third Party Feeds
- Targeted at Emergency Responders
- Contains APRS-IS and
  - Fires (shocking!)
  - METAR reports
  - Earthquakes
  - Volcano activity
- Connect with any APRS-IS enabled application via `firenet.us:14580`





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What can you do with  
APRS?

# APRS Day Out

## Try It At Orlando Hamcation with DBARA!!!

- Event originally by Bob Bruninga (WB4APR) - father of APRS
- Create ad-hoc networks with APRS
- Useful for simulating events and disaster response
- Try it at Orlando Hamcation!
- Hosted by our friends at Daytona Beach Amateur Radio Association (DBARA)
- Campground/RV park
- Grab a burger and a bottle of water!  
*(while supplies last)*



# Weather Stations

- APRS is awesome for weather!
- Because we care about the weather *NOW!* Not hours ago...



## Software-based solutions

- Weather Display  
<https://www.weather-display.com>
- MeteoBridge  
<https://www.meteobridge.com>
- Weewx  
<https://weewx.com/>

APRS-enabled weather stations

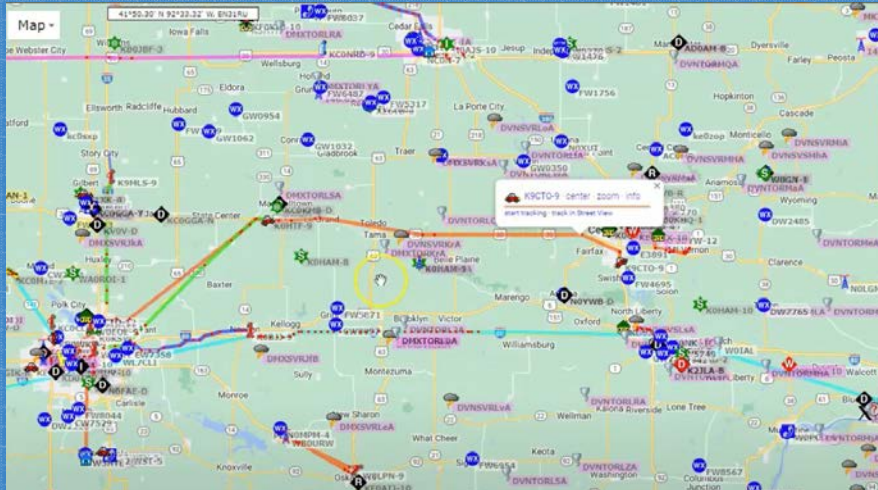




# Tracking Storms & Storm Chasers

Using APRS to Track Storm Chasers  
<https://bit.ly/aprs-storm-chasers>

- Real-time position tracking and situational awareness
- Can/does make the difference between life and death!



# APRS: It JUST Works (*without infrastructure*)!

- March 2020
- Downtown Nashville, TN
- Tornado causes damage to critical cellular infrastructure
- Guess what becomes more valuable than gold?
  - APRS!



*"You don't know what you've got until its gone!"*

# Search and Rescue

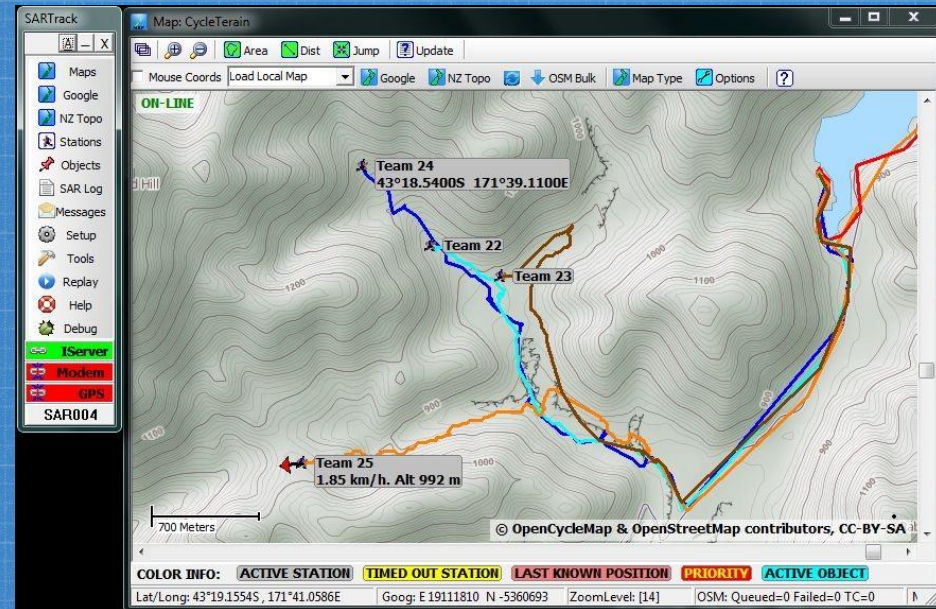
- APRS is IDEAL for Search and Rescue!
- Low bandwidth & power requirements
- GPS provides position data in REAL-TIME
- Displays waypoints, hazards, etc for fixed position status
- Tracks show areas already searched



# SARTrack Limited



- <https://www.sartrack.co.nz/>
- Search & Rescue and Emergency Management System
- Can run standalone APRS (HAM mode) or as a full Operational Management System (SAR mode)
- FREE for non-commercial use



# Bots, Bots, Bots...

APRS-connected systems to perform specific tasks...

**ANSRVR**: group messaging

**APSPOT**: self-spotting

**CQSRVR**: similar to ANSRVR

**DAGA**: SOTA spotting

**MPAD**: WX/METAR/TAF/CWOP, sats, nearest repeater to my position, and more!

**NTSGTE**: send a radiogram to the National Traffic System (NTS)

**WHO-IS**, **WHO-15**: callsign lookup

**WTSAPP**: APRS to WhatsApp gateway



APRS Information Services: <https://how.aprs.works/aprs-information-services/>

# Race Support

- Real-Time tracking of race officials and support vehicles
- Tracking runners/cyclists
- Emergency response coordination
- Course management logistics
- Cellular network backup
  - Locate and communicate with loved ones



# High Altitude Balloons (HABs)



- Ham balloons often circle the world (80,000' to 120,000' ASL)!
- Supporting scientific experiments, weather research and student projects!
- APRS provides telemetry & sensor data...
- Temperature, air pressure, humidity, radiation levels
- Burst altitude (POP!) & Decent path (recovery)



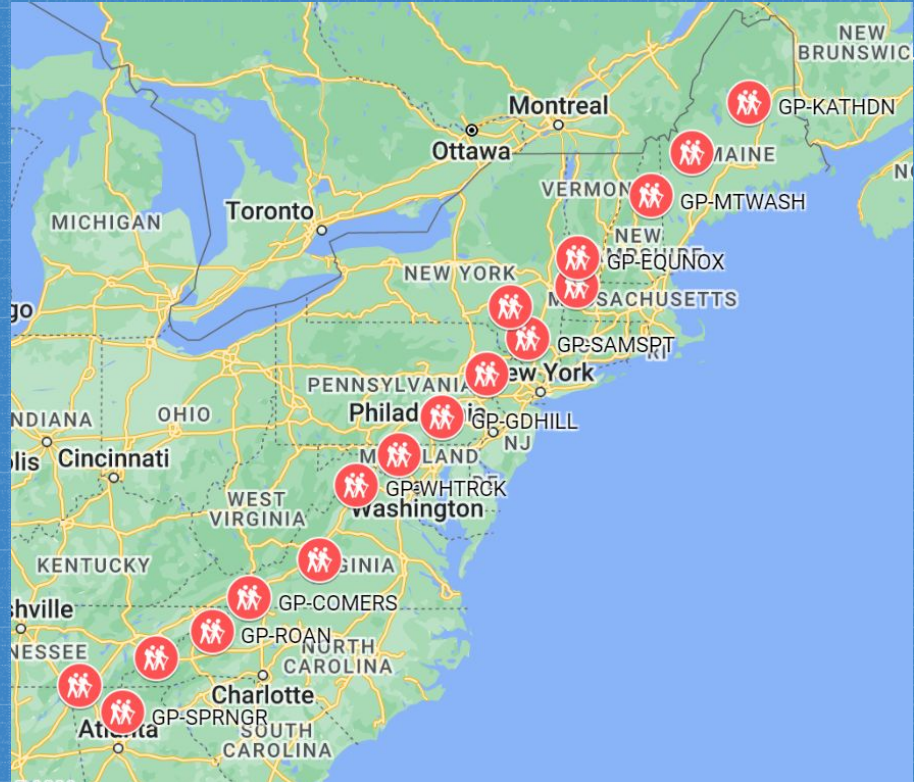
Tracksoar  
open source  
software & hardware  
<https://www.tracksoar.com/>

# Appalachian Trail Golden Packet (ATGP)

- What is *THE* “Golden Packet?”
- 16+ digipeaters across 2200+ miles!
- Proof of concept for “BEAR Net”
- A Bob Bruninga (WB4APR/sk) Event
- Originated in 2009
- An INCREDIBLY rewarding experience!
- Always the third Saturday in July

<https://atgoldenpacket.net>

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# Getting Started with APRS



# Getting Started with APRS Is Easy!

- APRS is ideal for beginners and tinkerers! It's easy to get started!
- Don't focus on the technology!
- Focus on what *YOU* want to do with it
- Network with other hams - what are *they* doing with APRS
- Emulate others - nothing wrong with it!
- Find an APRS "Elmer"



# Build It or Buy It?



- There's no one right answer!
- It doesn't have to be expensive - get started for \$30!
  - A. Radio
  - B. Audio Interface
  - C. DireWolf (software-based TNC)

<https://bit.ly/aprsfor30bucks>

## APRS-enabled Radios

- Kenwood - The "gold standard" in APRS
- Yaesu - Excellent APRS support!



# APRS-IS - Getting Connected

- Getting connected to APRS-IS does NOT require a radio!
- APRS Passcode is required
- Internet connection
- APRS-enabled application

**APRSISCE/32 The future of Amateur Radio APRS**  
**APRS client for windows 32/64 and CE**

**PinPoint APRS**

**QTH.app**



Xastir



# https://how.aprs.works

- The NEW home for APRS enablement and information!
- Current information
- Authored by APRS-savvy hams around the world!
- You can contribute too!

The screenshot shows the website 'How APRS Works' with a navigation menu (HOME, BLOG, FUNDAMENTALS, ABOUT, Q) and a main article titled 'APRS Demystified: The Versatile Tool for Modern Amateur Radio'. The article text states it was taken from a presentation at an amateur radio club meeting in Cebu, Philippines, on December 6, 2024. Below the article, there are sections for 'MORE ISSUES' (including 'APRS Device Identification Database (aka tocalls)') and 'ABOUT' (with a logo and tagline 'The authoritative resource for all things APRS'). A 'FEATURED' section also highlights the main article. The page footer includes 'TOPICS' and a copyright notice for 2025.



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# APRS Foundation

# Who is the APRS Foundation?



Jeff Hochberg  
W4JEW  
President



John Tarbox  
WA1KLI  
Vice President



John Langner  
WB20SZ  
Vice President



Jason Rausch  
K4APR  
Director



John Barr  
Secretary

<https://www.aprsfoundation.org>

# APRS Foundation Contributions

- APRS Protocol Specification - Working Group no longer exists
- How APRS Works - <https://how.aprs.works>
- APRS.org - <https://www.aprs.org>
- APRS-IS Tier 1 Server - <http://seventh.aprs.net:14501>
  - Re-introduced JavAPRSSrvr - server diversity
- Host key APRS Services
  - ANSRVR
  - CQSRVR
- Advocates of APRS at events like Orlando Hamcation 2025!





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## Getting Involved!

# APRS Foundation Membership and Donations

- APRS Foundation is dedicated to advancing innovation and supporting education in amateur radio!
- Your contribution helps to ensure the growth and sustainability of APRS and the APRS community around the globe!
- Be a part of something NOBODY else is doing!

## Membership

Become a member for \$20.00 USD (annual fee)

<https://www.aprsfoundation.org/membership>

## Donate!

<https://www.aprsfoundation.org/donations>

# APRS Summit 2025

- You heard it *FIRST* at Orlando Hamcation 2025!
- Save the date - May 10, 2025
- APRS Foundation's first-ever *online* education summit!
- Bringing together radio enthusiasts, innovators, educators, and technologists
- Empower, educate, and inspire anyone interested in Automatic Packet Reporting System (APRS)—from beginners to seasoned operators
- Price
  - **FREE** for APRS Foundation Members!
  - \$15.00 USD for non-members
    - *Become a member and get in at no additional charge for an additional \$5.00 USD!*

<https://www.aprsfoundation.org/events/>

# Thanks!

## ANY QUESTIONS?

<https://www.aprsfoundation.org>

<https://groups.io/aprsfoundation>

[contactus@aprsfoundation.org](mailto:contactus@aprsfoundation.org)

Download a copy of this presentation:

<https://www.aprsfoundation.org/hamcation-2025>