



VE3OP Studios
Presents

Amateur Radio 2026

What's Hot?

What's Not?

OUTLINE

- Introduction
- Brief History
- Current situation
- Current demographics
- What's 'Hot' and 'Not'
- Licensing and training aids
- How to get started
- Bonus: Upcoming TV special
- Summary



Ask Questions At Any Time



Craig Delmage

VE3OP



- **Licensed at 16 (VE3KKU)**
- **Founder of VE3UOG club**
- **Enjoy HF, CW, Digital, Contesting, Field Ops**
- **Former Director, Radio Amateurs of Canada (RAC)**
- **Oversaw recent new RAC HQ build, new VE3RHQ**
- **OARC Youth Equipment Coordinator**
- **Member of OVRC, OARC, OVMRC, RAC**

Craig Delmage - VE3OP



BRIEF HISTORY

Early Foundations (Late 1800s–1910s)

- 1888: Heinrich Hertz proves the existence of radio waves, laying the scientific groundwork for wireless communication.
- 1890s: Guglielmo Marconi adapts radio waves into a practical communication system, inspiring hobbyists to experiment with “wireless telegraphy.”
- Early 1900s: Magazines publish DIY wireless projects, enabling students and hobbyists to build simple transmitters and receivers. Examples include teenagers constructing stations with several-mile range by 1904–1906.
- 1908: The first known amateur radio club forms at Columbia University.

Regulation and Growth (1912–1940s)

- 1912: After the RMS Titanic disaster, the U.S. passes the Radio Act of 1912, requiring amateur licensing and restricting amateurs to shortwave frequencies—then considered nearly useless. This dramatically reduced the number of operators but ultimately pushes innovation.
- 1914: The American Radio Relay League (ARRL) forms, organizing message relays and strengthening the amateur community.
- 1920s: Amateurs prove the long-distance potential of shortwave radio

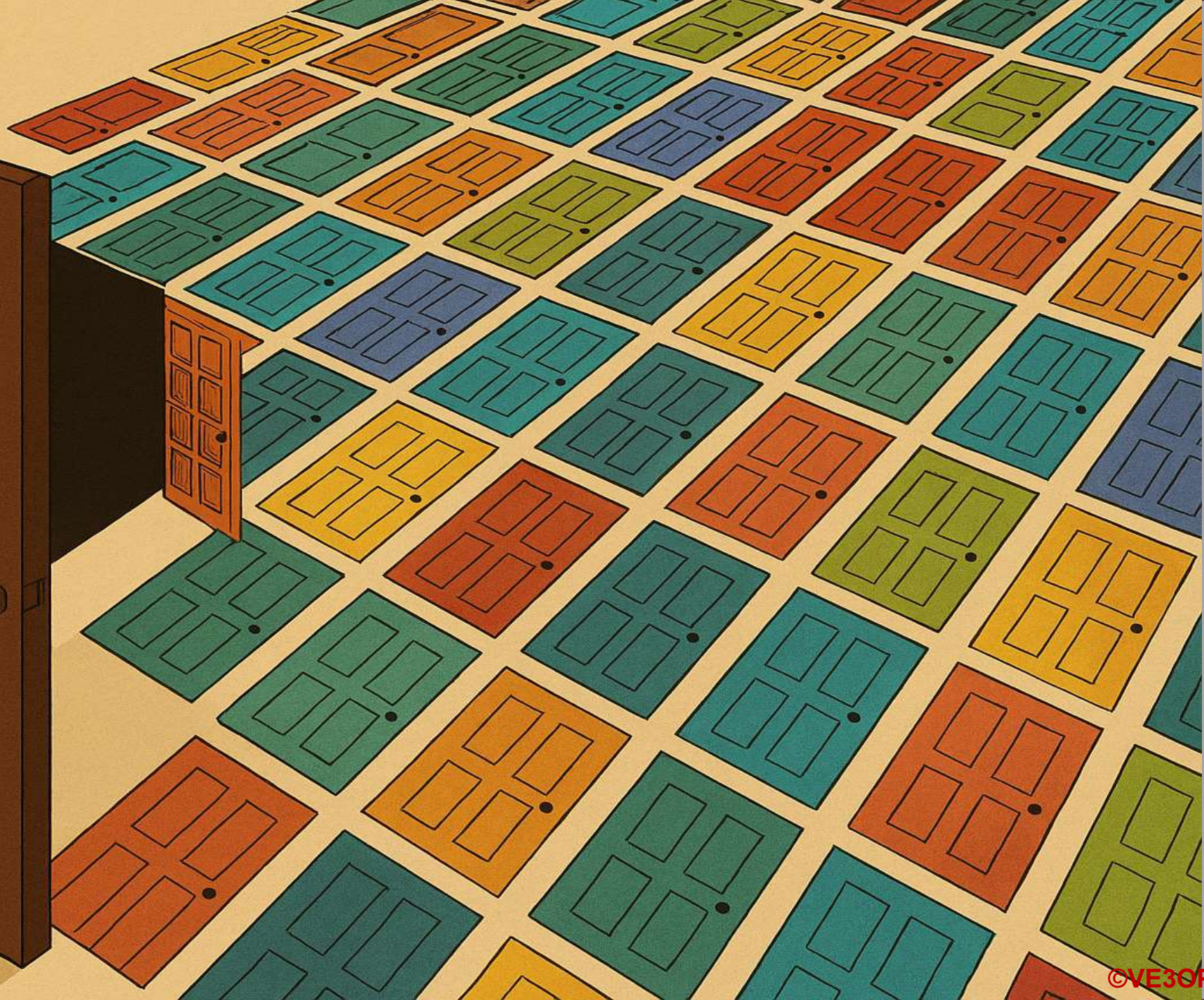
BRIEF HISTORY

Technological Advances (1940s–1970s)

- 1947: Invention of SSB, improving efficiency and audio clarity
- 1961: OSCAR-1, the first amateur radio satellite
- 1978: Invention of amateur packet radio, enabling digital data transmission over the air.

Modern Era (2000s–Present)

- 2000: Amateur radio becomes part of the International Space Station (ISS), allowing astronauts and students to communicate directly.
- 2010s: Digital modes such as DMR (2010) and FT-8 (2017) revolutionize communication with efficient, low-signal-strength operation.
- Today, amateur radio operators continue to contribute to emergency communications, scientific experimentation, and global friendship.



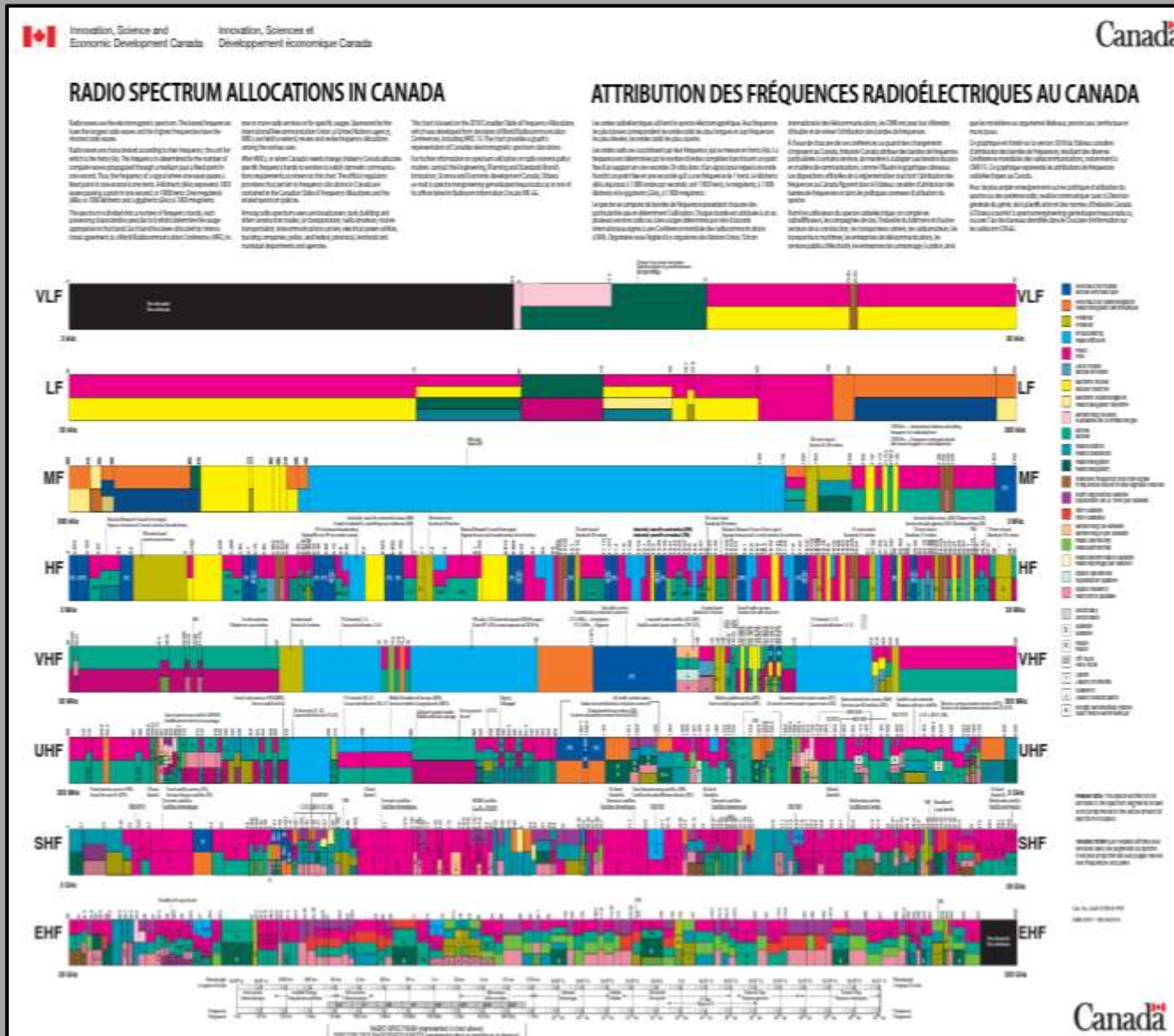
Current Situation

- Hobby *is* growing in popularity. *Why?*
 - Increased quality, in-person and online training (with Clubs, RAC)
 - Easier licensing. No mandatory Morse code requirement
 - Growing emergency communications interest
 - Growth of exciting modern technology (e.g. SDR, AI) and digital modes
 - Youth engagement (social) and maker culture (experimentation)
- Canadians particularly enjoy social aspects—local clubs, breakfasts, contests, POTA, experimentation, collaboration, and worldwide contacts



Canadian Amateur Bands

28 amateur radio bands, 24 GHz in total, 10% of all spectrum!



- **VLF: 9-30 kHz**
 - No Amateur allocation
 - Experiments at 8-9 kHz
- **LF: 30-300 kHz**
 - **2200 m** (135.7-137.8 kHz)
- **MF: 300-3000 kHz**
 - **472 kHz**, **1.8 MHz**
- **HF: 3 MHz – 30 MHz**
 - **80m, 60m, 40m, 30m, 20m, 17m, 15m, 12m and 10 m**
- **VHF: 30-300 MHz**
 - **50, 144, 222 MHz**
- **UHF: 300-3,000 MHz**
 - **430, 902, 1240, 2450 MHz**
- **SHF: 3-30 GHz (4%)**
 - 3.3, 5.65, **10**, 24 GHz
- **EHF: 30-275 GHz**
 - 47, 76, 122.25, 134, 241 GHz

Canadian Demographics

- 78,800 Canadian amateurs (2025)
 - 2023: +1.7%
 - 2024: +2.0%
 - 2025: +4.2% (*significant* increase)
- Growth rate is double the population growth rate
- Retirees are increasingly joining
- Increasing women and youth amateurs – *but not enough*
- The average age of a Canadian amateur is now 60+
- Operators under 50 are significantly under-represented compared to their share of the Canadian population
- New licenses are being issued, but the majority are adults 40–75, not youth
- “Silent Keys” are outpacing new youth amateurs
- *So, growing number of amateurs, but older and not enough younger*



Barriers to Youth Joining

- Competes with robotics, coding, drones, and gaming — all with easier entry
- The number of clubs is shrinking
 - 1,566 clubs in 2025, a 7.5% drop
- Many clubs report the average member age is 65–75
- Few schools have radio clubs and licensed teachers
- Younger amateurs often skip in-person clubs entirely, preferring online communities such as Discord groups, or digital-mode networks
- Clubs fail to modernize culture or outreach to attract new
- Licensing feels intimidating without a youth focus
- Hobby public image still feels “old-school” unless reframed



What *Does* Work For Youth

- Scouts and JOTA
- ARISS (Space Station) school contacts
- Digital radio
- Satellite radio
- High-altitude balloon projects
- Youth equipment-loan programs
- Parks on the Air (POTA) activations
- Contesting mentoring
- Building and trying antennas
- Maker-space projects



When youth are exposed to amateur radio through hands-on, modern, tech-forward activities, they respond extremely well

What's 'Not'

Technical

- Nothing seems to completely go away...
- Spark gap transmitters
- Modes with old technology (e.g. RTTY, SSTV)
- Analog VHF / UHF repeaters (move to digital)
- Boat anchors as the primary station
- Newer equipment repair – now board replacement



Operational

- Paper licensing and administration
- Manual message relay networks
- Mandatory Morse code (But still a resurgence...)
- Paper QSL cards. Move to online confirmation and card exchange (e.g. Logbook of the World, QRZ, QSL World)

What's 'Hot' - Technology

Ham universe is fast expanding...keeps reinventing itself

Experimentation, Communication and Community

- Inexpensive Chinese radios
- Radio assembly (e.g. Elecraft)
- Simple equipment building (QRP radio kits, antennas, homebrew accessories)
- VHF / UHF digital radio (e.g. DMR, D-Star, Fusion)
- HF Digital modes (e.g. FT-8, FT-4, JS8Call, Q65)
- Mesh networking (AREDN, HamWAN)
- Amateur software and mobile apps, radio integration

What's **'Hot'** - *Activities*

- Parks on the Air (POTA). Also, IOTA, SOTA, LOTA, COTA
- Emergency measures preparation (Ontario CORPS, RAC ACS)
- Online QSO confirmation, 'QSL card' exchange
- Radio 'contesting'
- Launching high altitude balloons with transponders
- YouTube amateur equipment reviews and other topics
- Award chasing
- Advanced club group activities (e.g. Field Day, Fox Hunting, 'A Day in the Park', soldering and assembly courses)
- Youth on the Air (YOTA) amateur camps

What's 'Hot'

Deeper Dives

Morse Code Anyone?

- No longer mandatory (except to become an examiner, some CEPT licenses)
- Now a “heritage” licensing endorsement
- Experiencing a rejuvenation
- Each OARC CW course is *full* of interested amateurs
- Functionality is built into most radios including CW decode
- Lots of CW activity on the bands – it isn’t going away!



Key



Bug



Paddles

Parks on the Air (POTA)



- Blends radio activity, outdoors and a friendly challenge
- Fun, simple, inexpensive, addictive and *fast growing*
- Beginner friendly, good excuse to enjoy the outdoors year-round
- Good way to test radios and antennas in the field
- Canada is extremely active in POTA because of huge numbers of accessible parks, strong portable-radio culture
- An *international* program that encourages amateur radio operators to set up and operate from designated parks and protected areas. These include national parks, provincial parks, conservation areas, wildlife reserves, historic sites
- “Activators” and “Hunters”
- QSOs are logged into the online system
- CA-0048 — Parc de la Gatineau (Gatineau Park)
- CA-5081 — Greenbelt (NCC)
- CA-5082 — Rideau Canal National Historic Site



Parks on the Air (POTA)

Rideau River Provincial Park

Search for Callsigns & Parks

SPOTS

ACTIVATIONS

DOCS

VE3OP

Rideau River Provincial Park

Reference:CA-0365

Entity:Canada

Location(s):CA-ON

Latitude / Longitude:45.0599, -75.6715 (FN25db)

Early Shift Award Times:7:00 UTC to 13:00 UTC

Late Shift Award Times:23:00 UTC to 7:00 UTC

Website:<https://www.ontarioparks.com/park/rideauriver>

Access Methods:

Automobile

Foot

Activation Methods:

Automobile

Campground

Pedestrian

Shelter

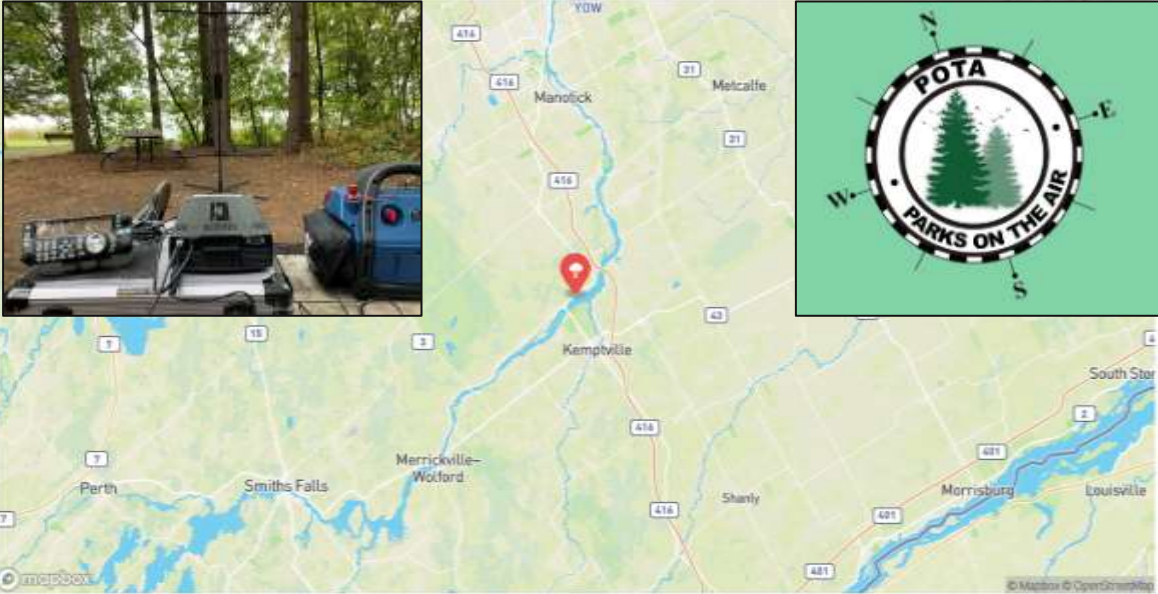
Is Active?ACTIVE

First Activation:N2CX/SK on 2017-07-27

Stats:73 activations / 82 attempts (3015 QSOs)

Park Leaders

	Activations	Activator QSOs	Hunter QSOs
1.	VF3FI	17	VE3OP 935
			VF2IMO 32



Activations

Date	Callsign	CW	Data	Phone	Total QSOs ↓
2023-06-21	VE3OP	164	0	36	200
2023-06-22	VE3OP	96	0	71	167
2023-06-20	VE3OP	117	0	35	152
2023-06-19	VE3OP	53	0	65	118
2023-09-07	KG8CO	108	0	0	108

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Satellite Communications

What can you do with it?

- Make QSOs across North America
- Work DX when the footprint overlaps distant regions
- Use satellites for POTA or SOTA activations, etc.
- Experiment with radios, antennas and tracking systems
- Work the ISS voice repeater when active. Also, ARISS program.

Why is it so appealing?

- It blends radio, orbital mechanics, and hands-on experimentation
- Only need a \$40 handheld radio and homemade antenna
- Do it in any backyard or field
- You can learn:
 - Antenna polarization
 - Doppler correction
 - Orbital prediction
 - Portable operating
 - Frequency coordination
 - Space communications basics
 - Amateur satellites and their characteristics



Emergency Measures

Climate driven disasters becoming more extreme

- Larger wildfires, more frequent floods, extreme heat events, winter and summer storms with long-duration power outages, tornados, severe, derechos. Expect more of this.
- Ottawa–Gatineau many tornadoes; 2019 & 2023 Ottawa floods; 2022 Ottawa derecho; 2023 intense forest fire smoke

Infrastructure is more complex and fragile

- Modern emergency response depends on cellular networks, IP-based dispatch systems, cloud-hosted services, digital public-safety radio systems
- When these fail, they fail hard
- Emergency managers now plan for “black sky” events

Ontario and Ottawa now keen to rejuvenate emergency measures

- Amateur radio is recognized as a key resource
- New Ontario ministry and “Ontario Corps”
- RAC is an official partner (\$500K in funding so far)
- Need more amateurs to become response volunteers
- Free training is available



VHF/UHF Digital Communications

- Increasingly popular digital voice and data modes
- Uses the internet between nodes (Internet gateways, devices, repeaters, servers)
- Clear audio, efficient spectrum use, and worldwide connectivity
- Communicate locally or long distance (Globally)
- Manufacturers use their own standards
 - Chinese radios – DMR (Open standard)
 - Kenwood – DMR / NXDN in commercial radios
 - ICOM – Proprietary D-Star (GMSK). Strictly digital. ‘Reflectors’.
 - Yaesu – Proprietary System Fusion (C4FM). Can switch back and forth between analog and digital. Wires-X linking. ‘Nodes’ and ‘Rooms’.

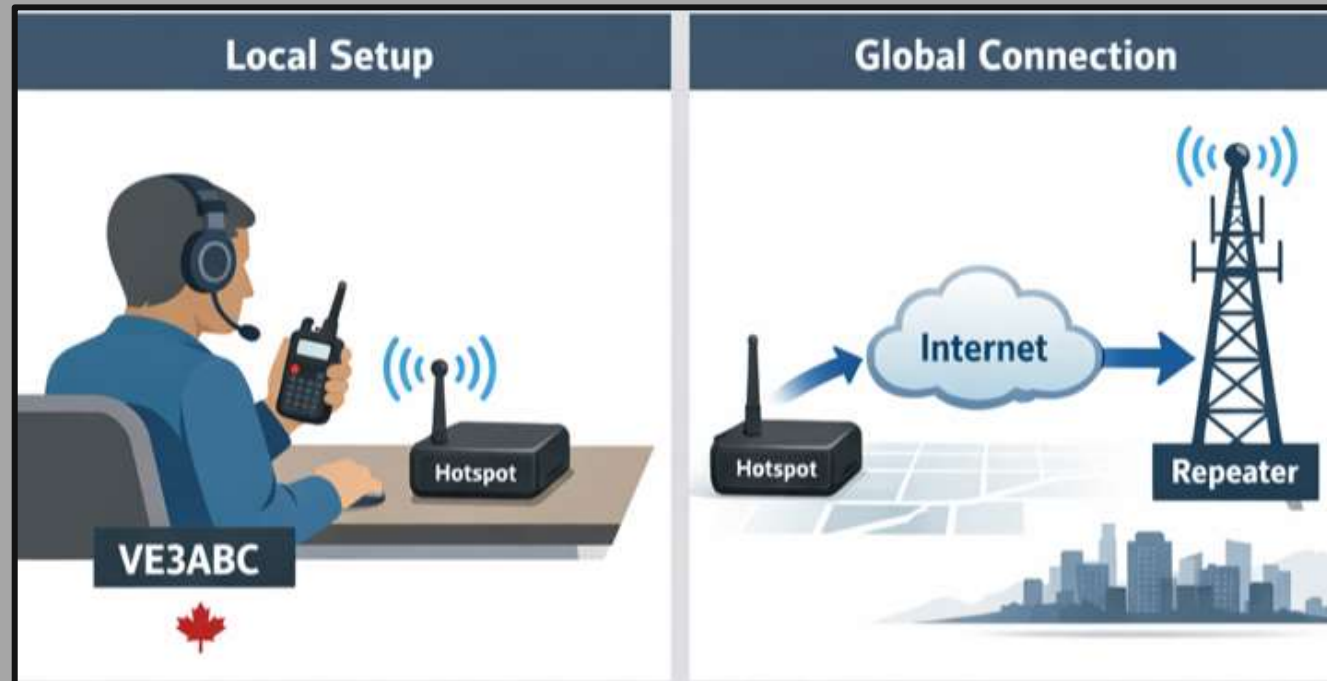
Digital Mobile Radio (DMR)

- Low cost of entry, but a bit more work to set up
- Talkgroups (chat rooms). Local, regional, global
- ‘Brandmeister’ global networking
- Need a 7-digit ID (RadioID.net), Codeplug (radio settings), ‘Color Code’ (repeater access)



Digital Networking – Simple to Complex

1. No radio (e.g. Echolink app on mobile phone or PC, to user or repeater)
2. Radio to radio (simplex RF)
3. Radio to Repeater (no Internet)
4. Radio to Repeater (with Internet. Brandmeister, DMR-Marc and Talkgroups)
5. 'Hotspots' (Radio to hotspot > Internet > other devices)
6. Cross-mode and Multi-network access
7. Advanced networking including mode translators



Automatic Packet Reporting System (APRS)

What is it?

- A service built into some radios
- 144.390 MHz, 1200 baud AFSK
- e.g. Car-to-car data transfer

What can you do with it?

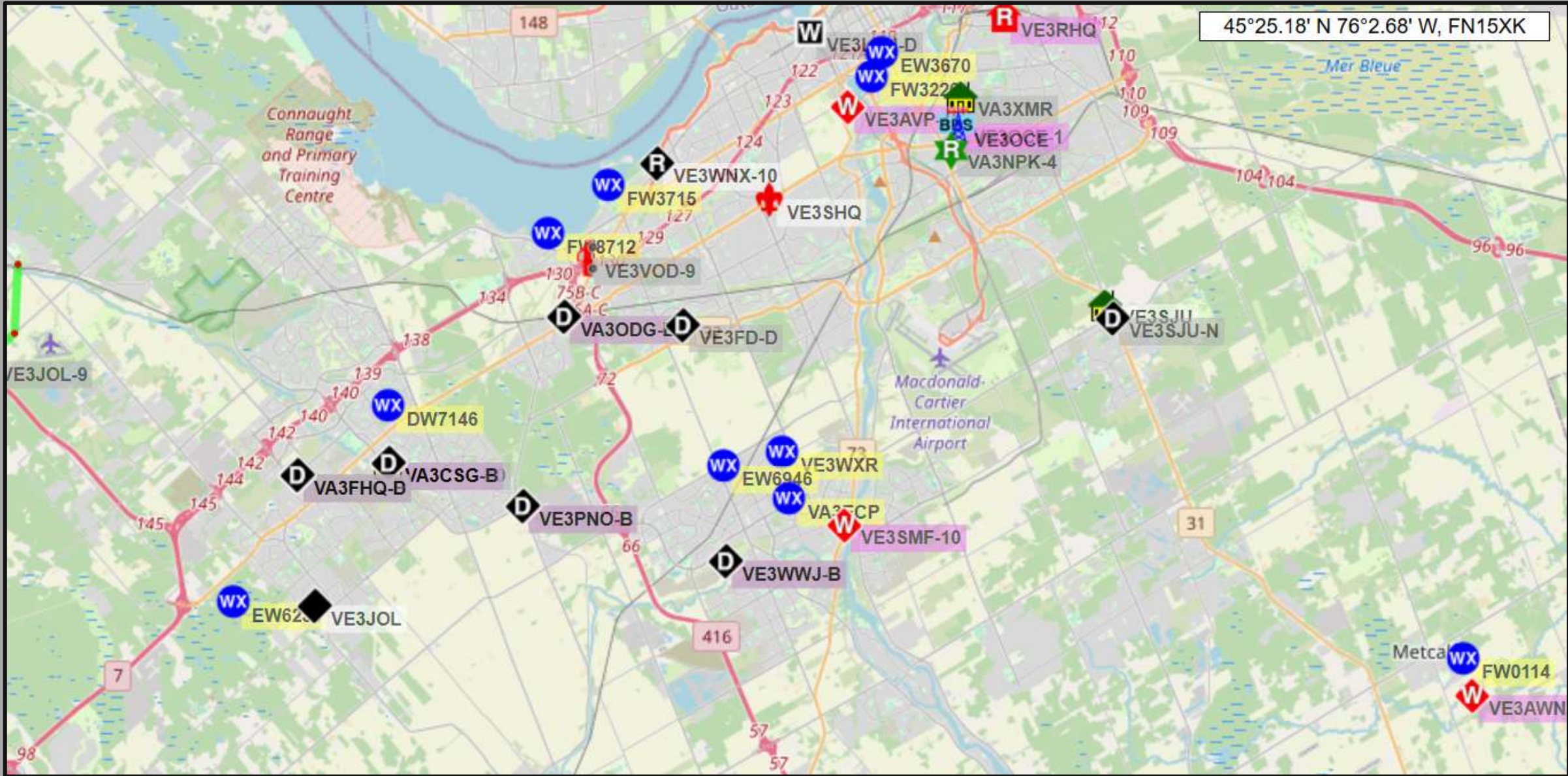
- Real time digital information sharing
- GPS position, short text messages, weather station data, device telemetry, status updates, object/marker information (events, hazards, stations)

Why is it so appealing?

- It blends radio and data transfer – great for emergency measures
- Public service events, search and rescue, hiking or mobile operation. Works without cell service, uses very little power
- 'iGates' transfer data into the cloud (APRS.FI)



Automatic Packet Reporting System (APRS)



Amateur Mesh Networks

What is it?

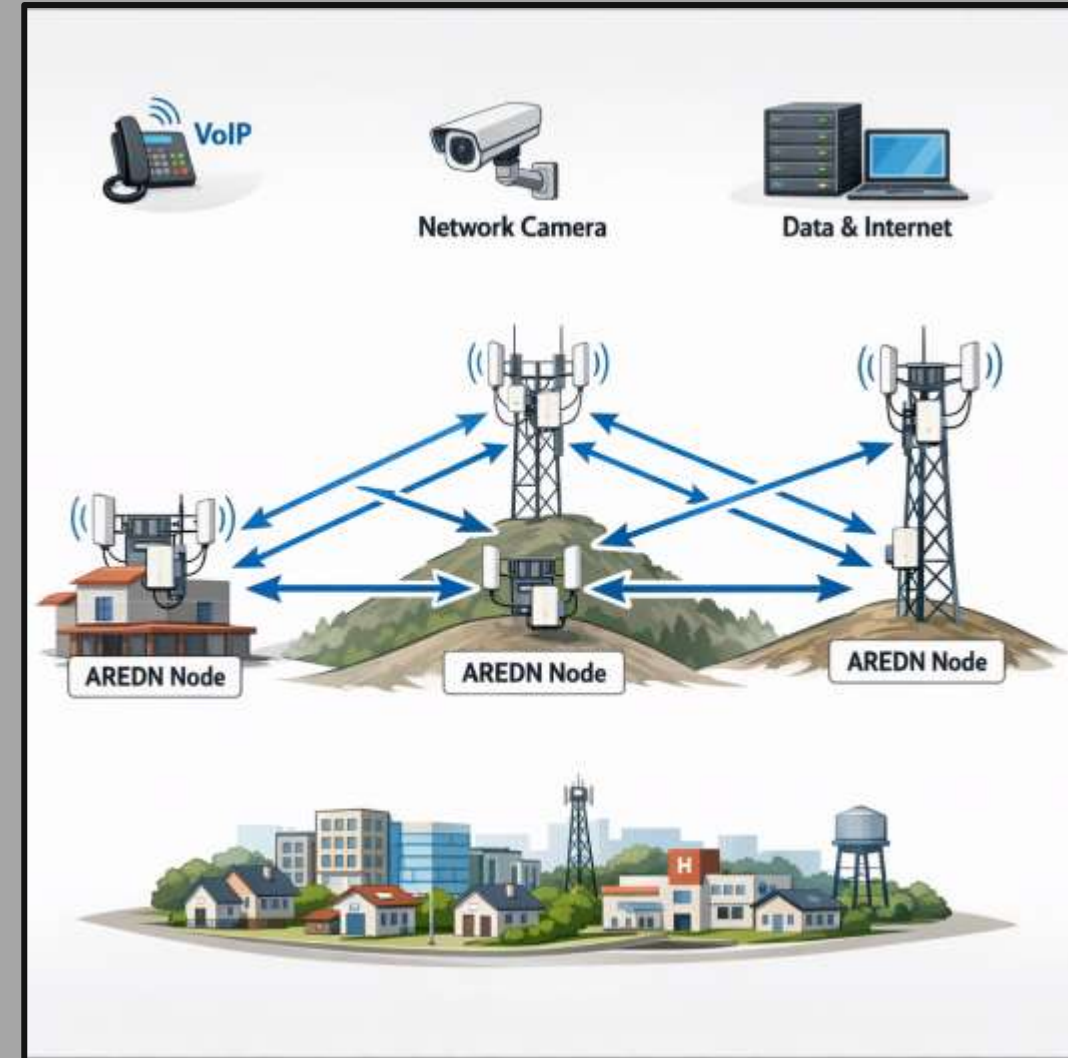
- Long-range, high-speed, IP based, mesh networks on amateur radio frequencies (2.4, 3.4, 5.8GHz, etc.)
- Point to point antennas
- Re-purposes Wi-Fi equipment
- AREDN – Amateur Radio Emergency Data Network
- HamWAN – professional grade infrastructure

What can you do with it?

- Almost anything – any IP apps or services
- Can connect nodes to the Internet

Why is it so appealing?

- It's 'new' hands-on, technical, and fun
- It encourages experimentation
- It brings networking and RF together
- It's collaborative and community-driven
- It builds real emergency-ready infrastructure



HF Digital Communications

What is it?

- Weak signal digital communications over HF
- Make quick 'voice-less' contacts. No need to "rag chew"
- Works even when SSB and CW don't
- It's the ultimate "go anywhere" mode
- Can use small antennas, run off batteries

What can you do with it?

- Make QSOs across the world with very little power (5-10w)
- Easily hunt countries

Why is it so appealing?

- Blends radio, computing, and hands-on experimentation
- Software is mostly free
- Operate from 'noisy' urban environments
- Operate during solar minimums and weak propagation
- You can learn and experiment with:
 - Endless digital modes (FT-8, FT-4, JS8Call, PSK, WSPR, Winlink, Olivia, etc.)
 - Computer applications (Echolink, WSJT-X, Winlink Express, etc.)
 - Emergency use



High Altitude Balloons

What is it?

- Launching payload balloons for fun

What can you do with it?

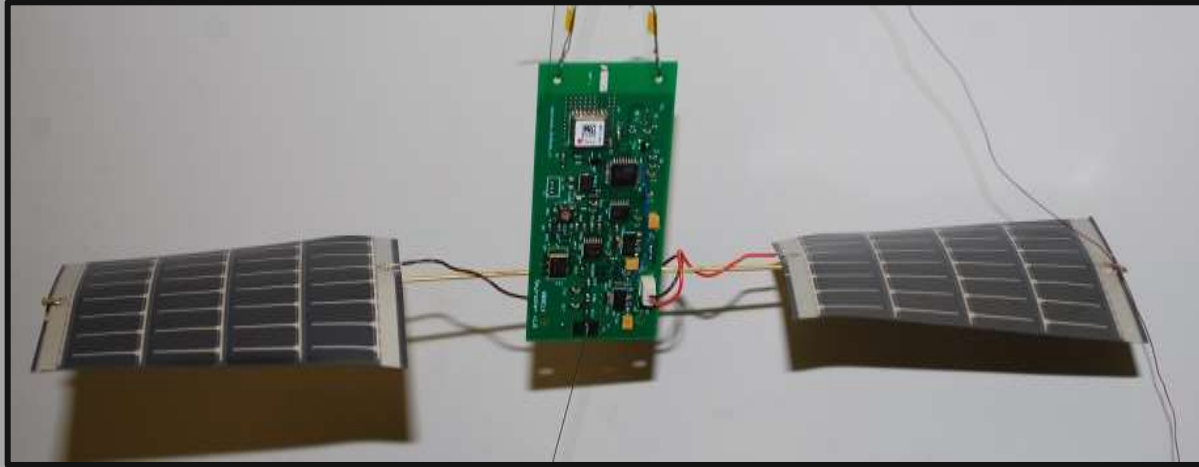
- Launch a high altitude (60-100K feet) balloon
- Track it across the globe
- Receive telemetry and sensor information including GPS, APRS, cameras, temperature, pressure, etc.
- Experiment with “latex burst” or high pressure mylar
- Experiment with helium and hydrogen

Why is it so appealing?

- Blends radio, antennas, programming, science, regulations and hands-on experimentation
- STEM activity that youth particularly enjoy
- Has a ‘WOW!’ factor
- Collaboration is fun
- Visible, dramatic and instant results
- Entry costs are generally low
- Easy to get media coverage



High Altitude Balloons



And so much more!

Field Community Events

- Canadian Ski Marathon
- CN Cycle for CHEO
- Rideau Lakes Cycle Tour

Amateur Radio Events

- World Amateur Radio Day (April 18)
- Field Day (June 28)
- CARP Hamfest (September 12)
- Radio in the Park (September 19)
- RAC Canada Day Contest (July 1)
- RAC Winter Contest (December 19)

HF / VHF Net participation

Contesting

Bicycle mobiling

Aircraft scatter

Moon Bounce (EME)

Meteor Scatter and Sporadic E signal bouncing

Building remote control stations

Building repeaters and network infrastructure

Reverse beacon global signal checking



What's Coming!

- Software defined *everything*
 - SDR based radios are the default
 - Radios with ALL filtering, modulation and signal processing done in software
- AI-assisted Operating
 - Automatic radio settings for specific purposes
 - Noise reduction, weak-signal decoding, interference identification
 - Log-checking, propagation prediction, antenna tuning
 - Real-time QSO translation (e.g. English to Ukrainian)
- Radio “apps”
- Club ‘shacks’ with radio servers
- Cloud-based remote stations (e.g. RAC VE3RHQ)
- Drone integration (e.g. APRS, mobile repeaters)



Licensing

1. Basic Qualification

- 100 multiple-choice questions
- From 400 question public database
- Technical, Regulations, Operations
- 70%: 'Basic' license
 - VHF/UHF privileges (250W)
- 80%: 'Basic with Honours' license
 - HF + VHF/UHF privileges (560W)
 - More power

2. Advanced Qualification

- 50 technical questions
- 70% to pass
- 'Advanced' license (1,000W)
- Ability to build and modify transmitters
- Run higher power
- Operate repeaters
- Use certain digital modes and special privileges
- Set up club stations or remote stations

3. Morse Code Endorsement

- Optional
- Alternate pathway to Basic with Honours



Sample Questions

An Amateur Radio Operator Certificate is valid for:

- ☐ 1 year
- ☐ 3 years
- ☐ 5 years
- ☐ Life

What instrument can provide a direct measurement of power at the output of a transmitter?

- ☐ Ammeter
- ☐ Field strength meter
- ☐ RF wattmeter
- ☐ Wave meter



Training Aids

Free ISED Question Banks and Online Practicing

<https://ised-isde.canada.ca/site/amateur-radio-operator-certificate-services/en/amateur-radio-exam-generator>

Hamstudy.com

<https://hamstudy.com>

Courses

- **Ottawa Amateur Radio Club (OARC)**
 - **Basic course – Fall and Winter courses (Hybrid)**
- **Radio Amateurs of Canada**
 - **Basic course – Fall and Winter courses (Online)**
 - **Advanced course – Fall and Winter courses (Online)**

Ottawa Area Clubs

- **Ottawa Amateur Radio Club (OARC) (VE3RC)**
- **Ottawa Valley Mobile Radio Club (OVMRC) (VE3JW)**
- **Club de Radio Amateur Outaouais Inc. (VE2CRO)**
- **Association des Radio Amateurs Indépendants (ARIA)**
- **West Carleton Amateur Radio Club / Other regional clubs**

Canadian Bucket List Amateur Radio Stations

- **Radio Amateurs of Canada - RAC Headquarters Radio Station (VE3RHQ)**
- **Diefenbunker Cold War Museum Radio Station (VE3CWM)**
- **Military Communications and Electronics Museum (Kingston, ON) (VE3RCS)**
- **Hammond Museum of Radio (Guelph, ON) (VE3HC)**
- **Manitoba Amateur Radio Museum (Austin, MB) (VE4ARM)**
- **S.P.A.R.C. Radio Museum (Coquitlam, BC) (VE7CHR)**
- **Signal Hill Cabot Tower (St. John's) (VO1AA)**
- **Admiralty Communications Museum (St. John's) (VO1BZM)**
- **Many more across Canada**

Why Add Amateur Radio In Your Life?

- Shortwave, AM and even FM are slowly disappearing (e.g. RCI – 2012)
- Being replaced by internet, satellite, apps, 6G cellular, mesh networks, smart speakers, Satellite-Terrestrial fusion, DAB, etc.
- Existing receivers become solely art objects
- Amateur Radio
 - Can open up a whole new enjoyable radio world – keeps you in the radio game
 - Licensing has become easier. Lots of help.
 - Costs can be initially low with Chinese radios and home brewing
 - Nothing to lose by trying!



How To Get Started

1. Join a club (e.g. Ottawa Amateur Radio Club) *and* join RAC
2. Attend monthly meetings (in person or online)
3. Join in some of the activities (e.g. Maker's labs, Radio in the Park, Field Day)
4. Sign up for a course (Sundays, 3 hours, ~8 to 12 weeks)
5. Regularly read the question bank
6. Regularly take practice exams
7. Take the Basic exam. Choose your callsign.
8. Decide on the initial 'Doors' that you want to open
9. Acquire your first radio and antenna (e.g. VHF/UHF)
10. Have fun and enjoy!



Radio Amateurs of Canada

- Canada's national amateur radio association, committed to enlightening, educating, supporting and backing Canadian amateurs.
- Plays key roles in ensuring our members stay current, supporting emergency preparedness, and working hard to protect Canadian amateur frequencies.



OARC Youth Equipment Fund

- Young amateurs are the hobby's future. We need more.
- We want to entice and incentivize them to join the hobby
- We work to reduce entry and journey barriers
- Provide amateur equipment for new young amateurs to give them a solid start
- Recycles quality equipment from old to new generations with a good cause
- Provide mentors to help along the way

Grateful for quality equipment and monetary donations



Summary

- Amateur radio is *very* much alive and well – and growing
- There is so much to do and try – and always expanding
- It can bring new joy if you love radio
- Experimentation, Communication, Community
- Give it a try – you have nothing to lose

For Sale

- **Grundig Satellit 800**
- **Sony ICF-2020**
- **Realistic DX-440**
- **Realistic DX-160**
- **Realistic HTX-242**



All proceeds go to the OARC Youth Equipment Fund

QUESTIONS?

**WHAT DO YOU CALL AN APOLOGY
WRITTEN IN DOTS AND DASHES?**



REMORSE CODE.

THANK YOU!