

# On the Use of Digipeaters to Improve the APRS Experience

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# Digipeaters to Improve the APRS Experience

- Why APRS?
- Why Improving APRS Experience?
- Why a Digipeater?
- How to Setup a Digipeater?
- How to Operate a Digipeater Station?

# Why APRS?

- Amateur radio operators appreciate APRS for its ability to provide real-time data exchange, including location tracking, weather updates, and messaging, which enhances communication and coordination during events and emergencies. (Google AI)
- A cheap VHF radio suffices to enable sending/receiving APRS signals.
- Can be functional without the presence of its operator.

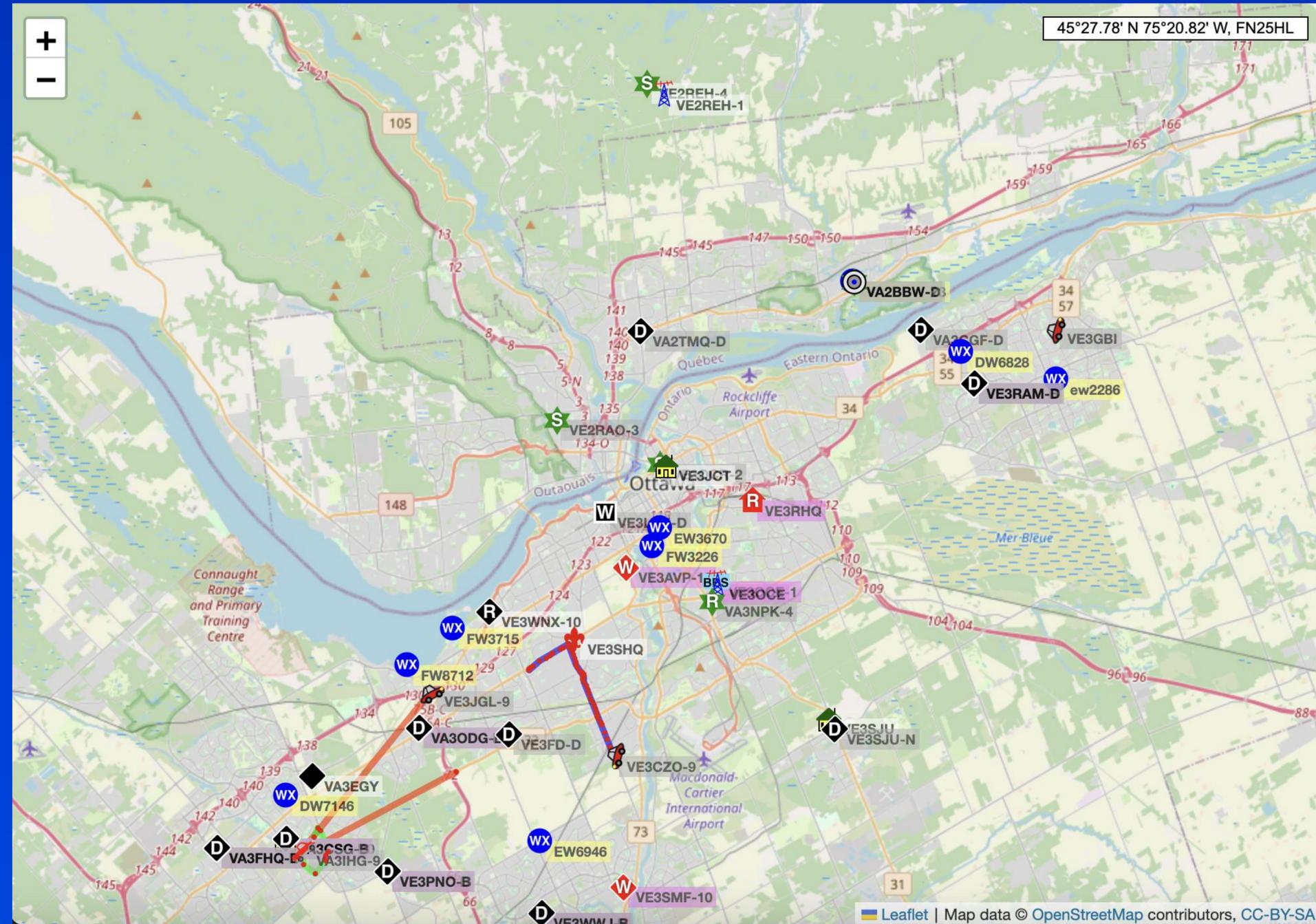
# Location Tracking

Screenshot from

<https://aprs.fi>

20-01-2026

16:05 UTC



# Receiving APRS on the Radio

Receiving an APRS signal on a HT  
(Source: Yaesu Manual for FT5D)



# Sending Messages from an APRS Capable Radio

Use the instruction manual.

Be patient!

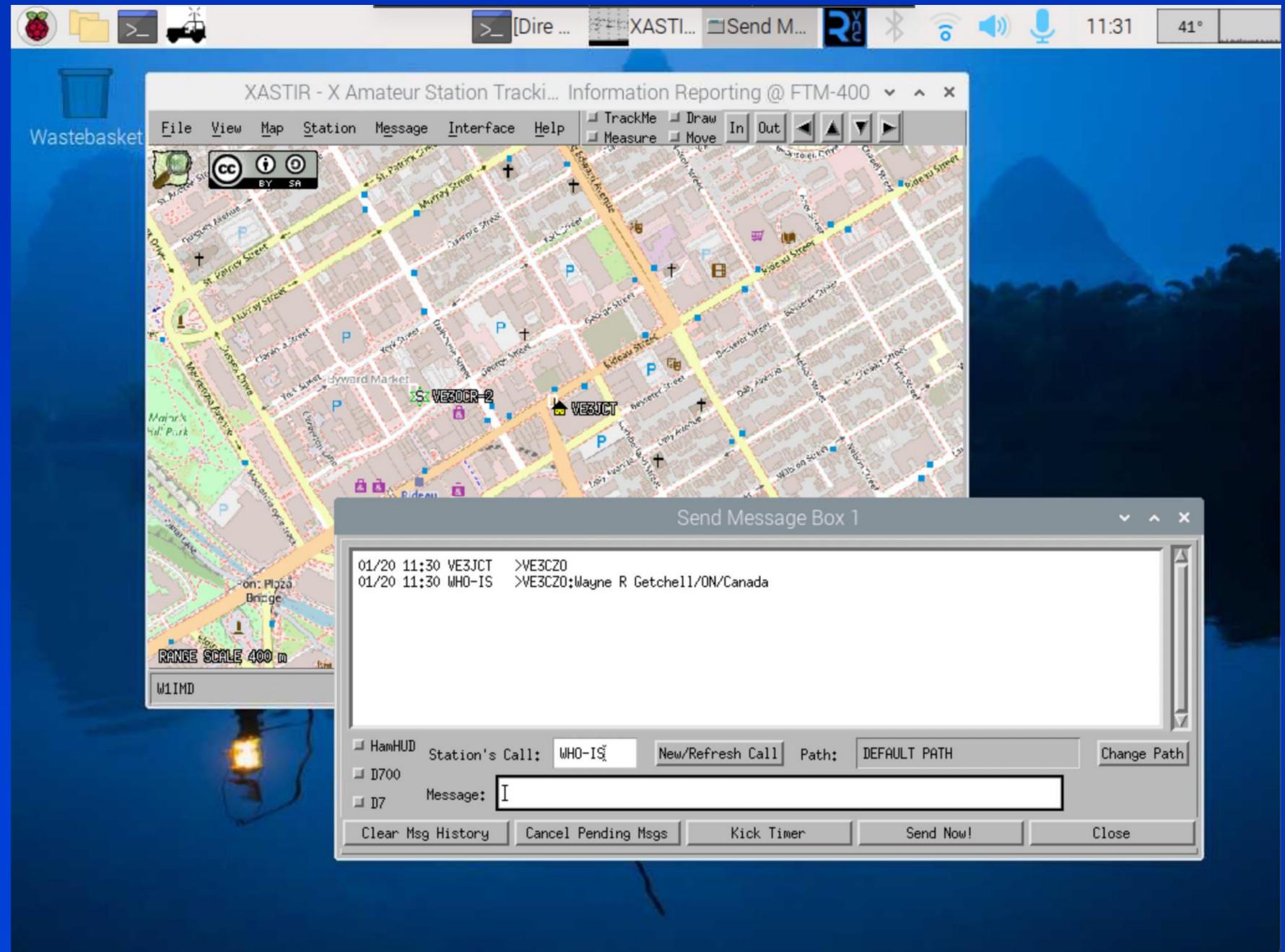
Can be used to send automatic beacons to all listeners, or a message directed to a specific recipient using her/his call sign.



# Sending Messages Using an App Linked to a Radio

Sending a WHO-IS message

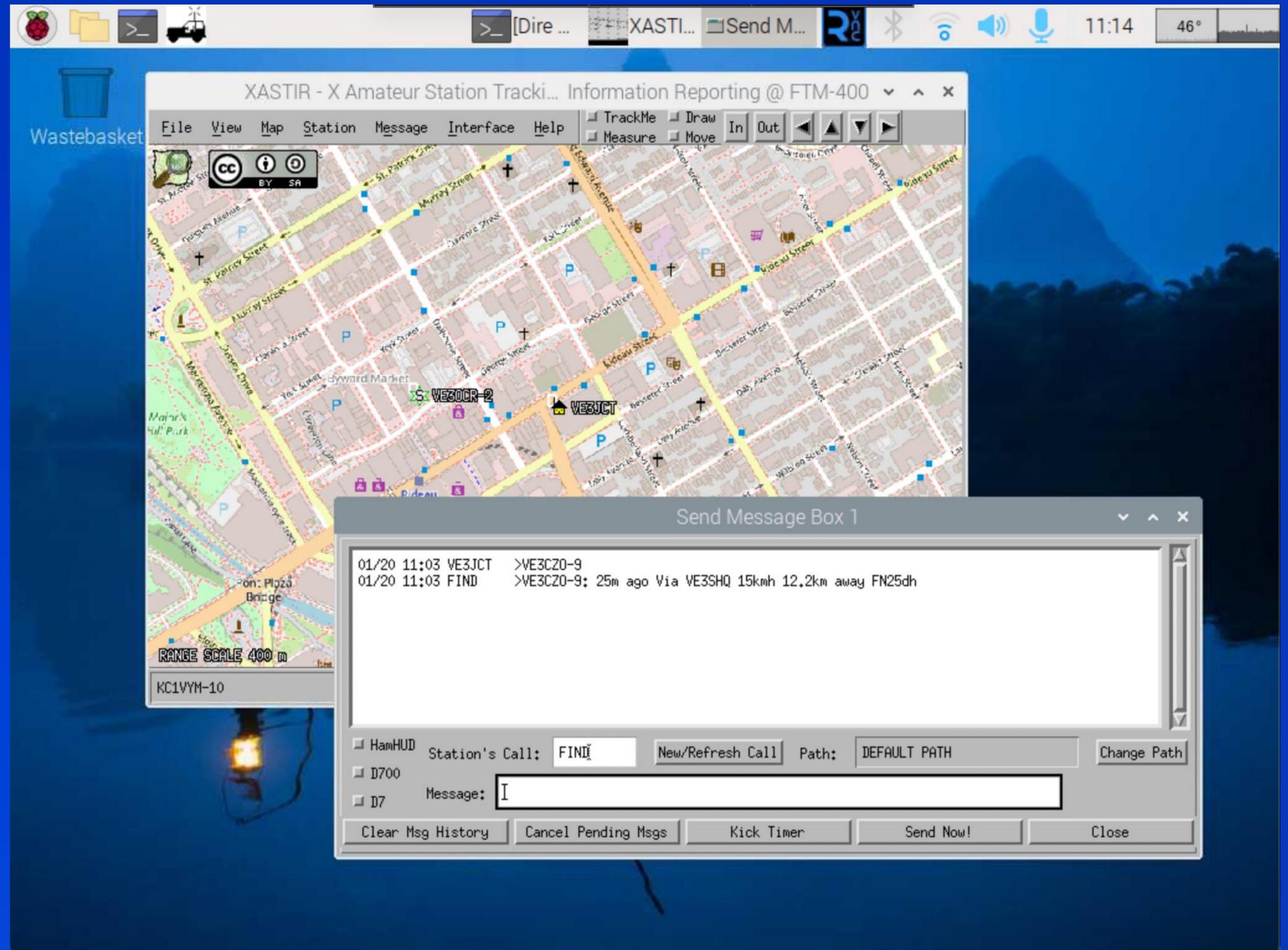
WHO-IS is an APRS BOT



# Where is my colleague?

Sending a FIND message

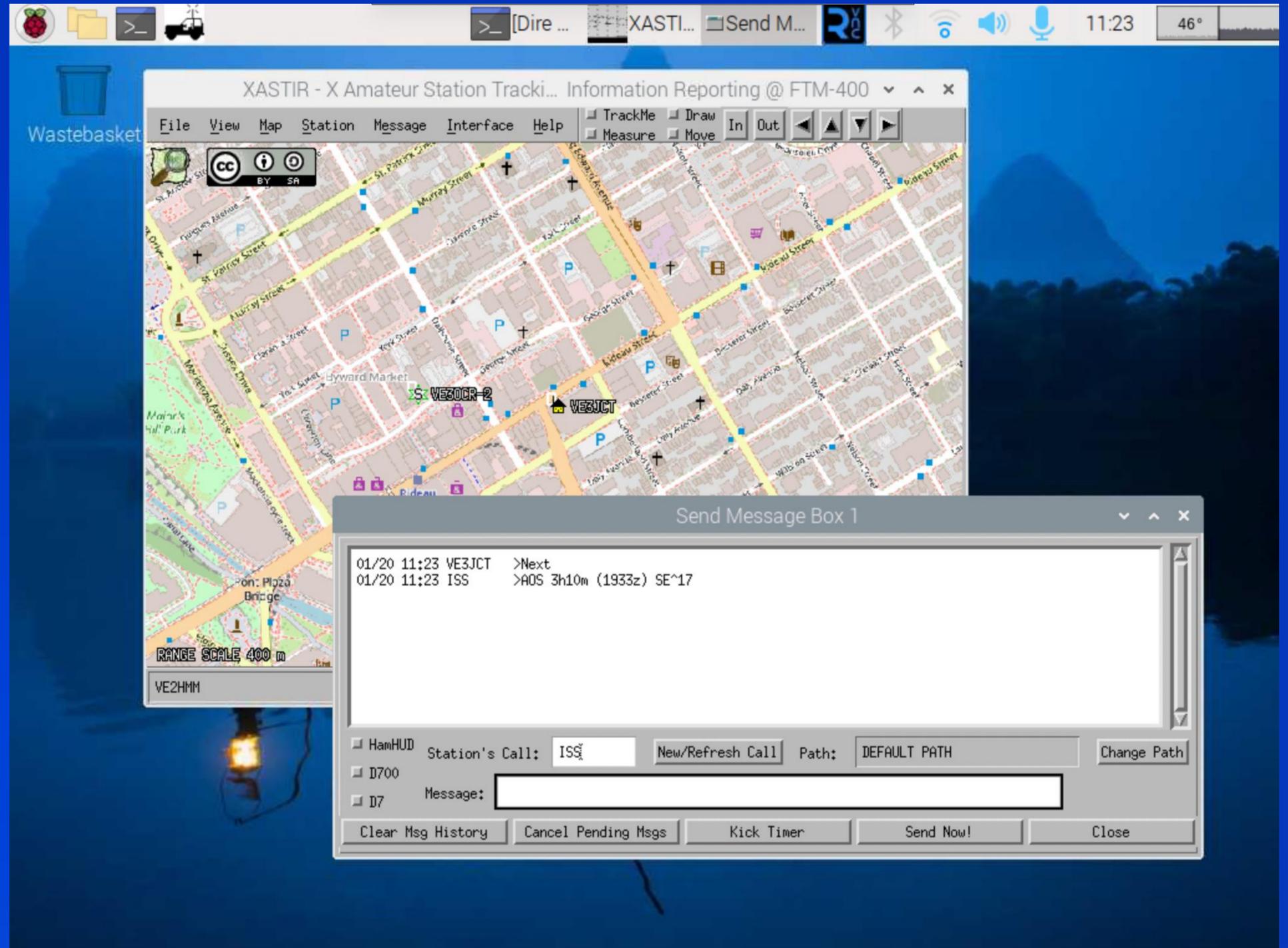
FIND is an APRS BOT



# When will the next ISS pass be?

Sending an ISS message

ISS is an APRS BOT



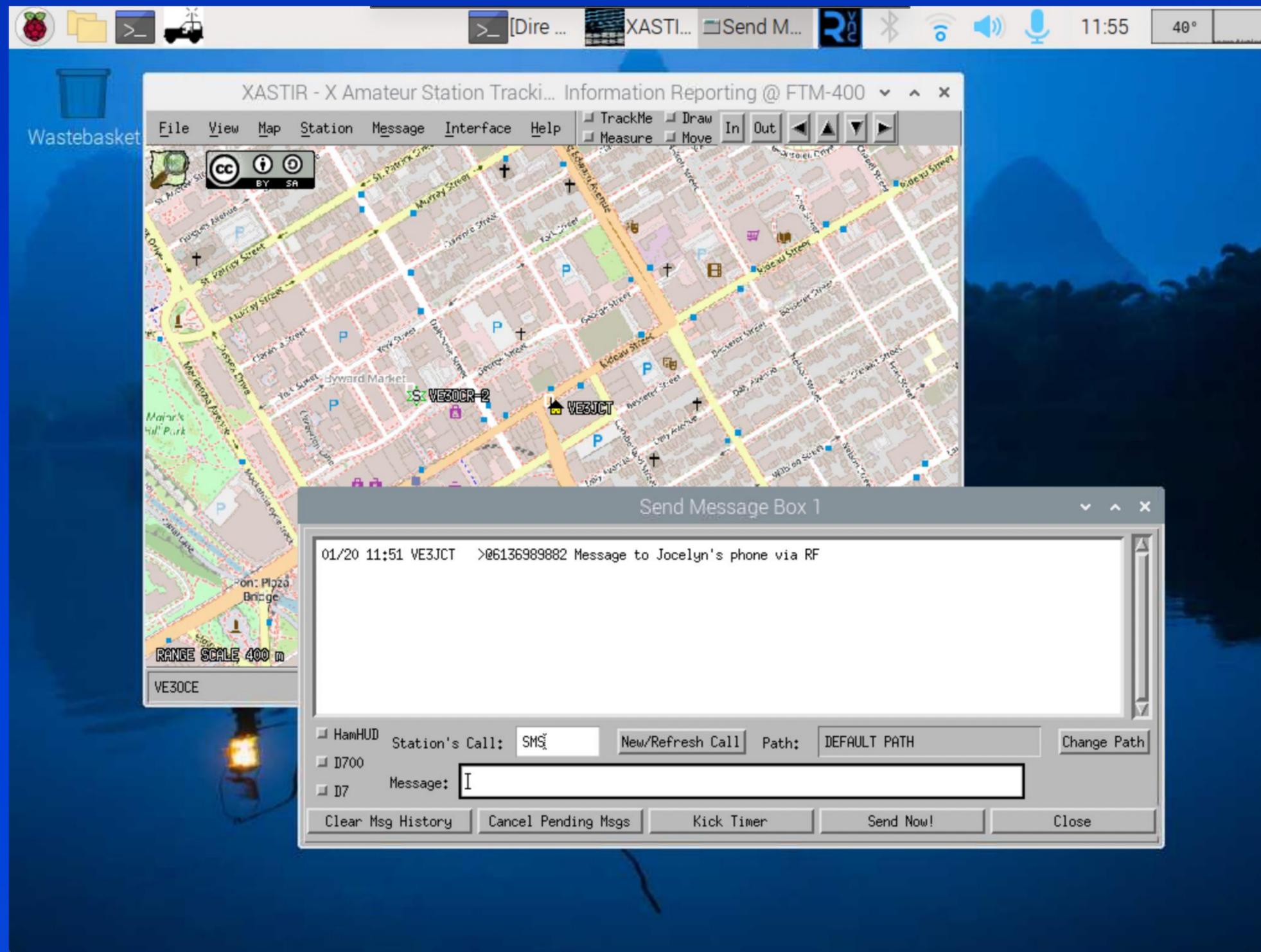
# Send a SMS to a Cell Phone

Sending SMS via RF

SMS is an APRS BOT

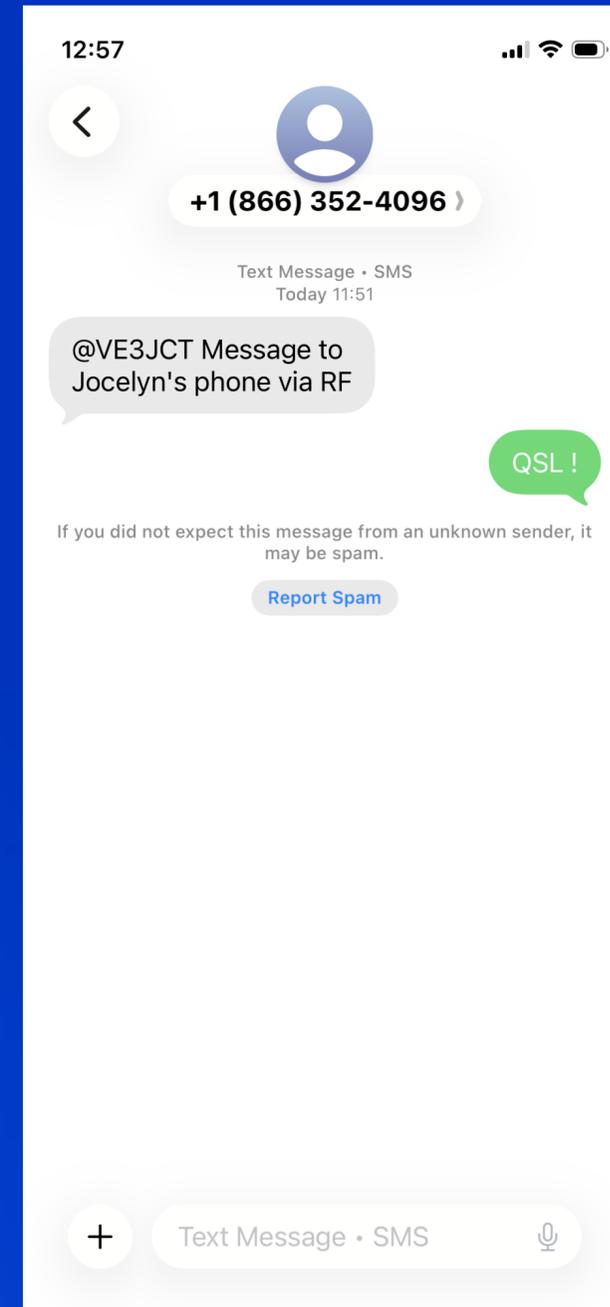
<https://aprs.wiki/>

Winlink & APRS SMS Gateway



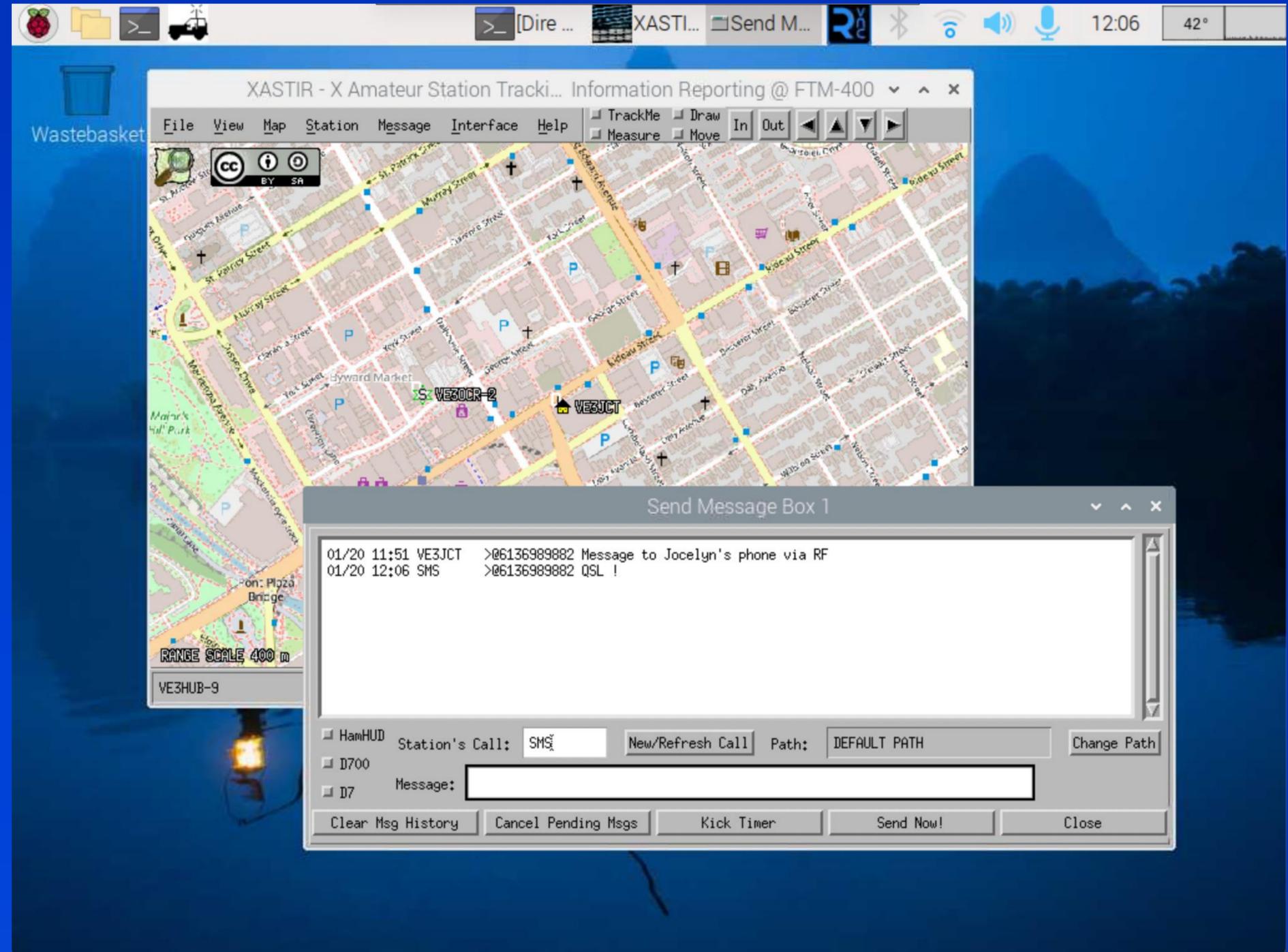
# Receiving a SMS sent from a Radio

Receiving SMS on cell phone  
and responding to it



# Receive a SMS via RF

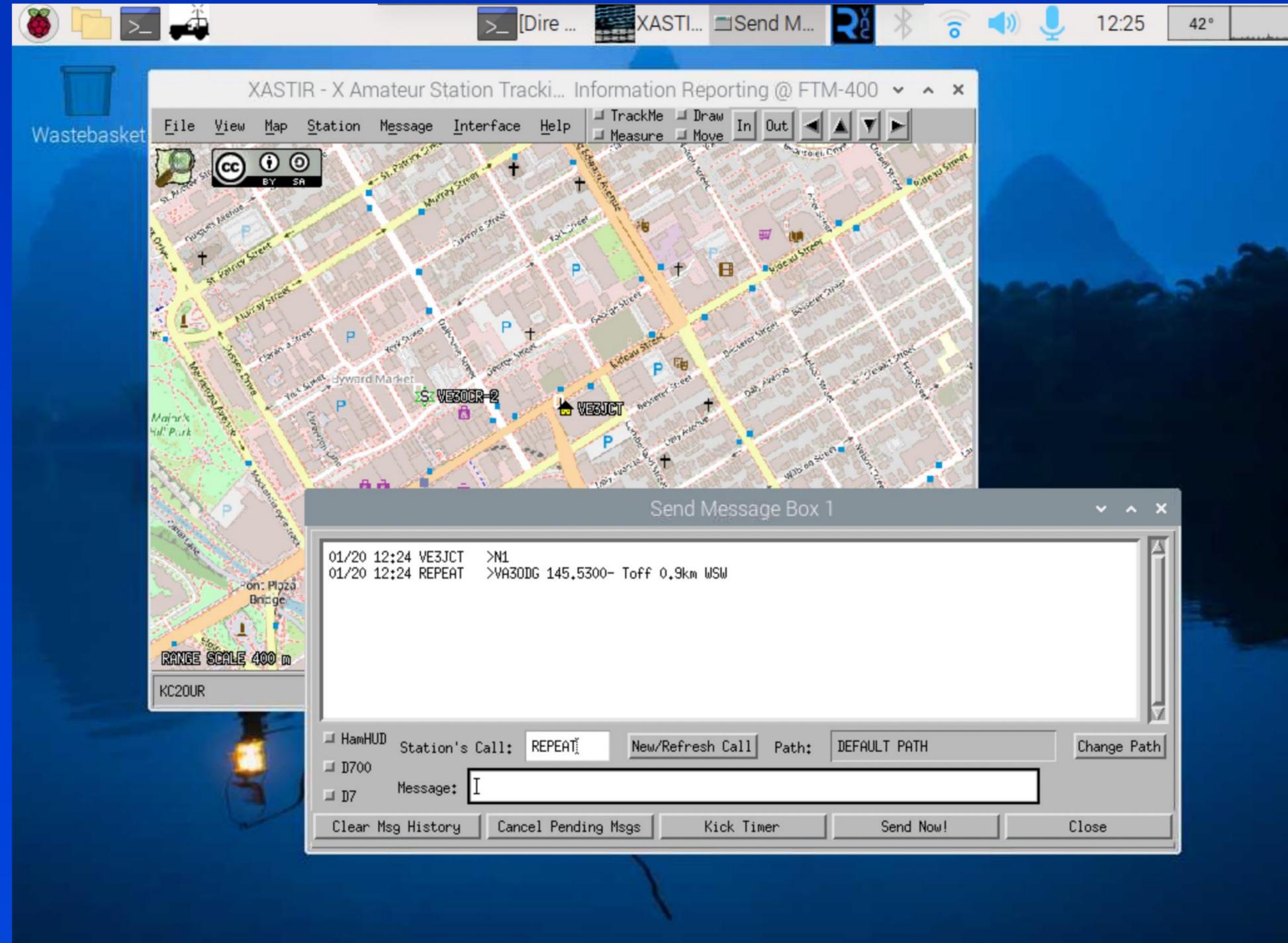
Reply received from  
cell phone operator



# Find a Nearby Repeater

Send REPEAT to get  
closest repeater

REPEAT is an APRS BOT



# Why Improving APRS Experience?

All these goodies from APRS presented so far require:

- The Internet to see the [aprs.fi](http://aprs.fi) web page (locations and stations details).
  - (or cell coverage running an APRS App)
- Access to the Internet to get data from APRS BOTS
- To be able to reach deployed operators by RF at 144.39 MHz (where distance and geography matters).
- A keyboard and monitor to be efficient.

# Why a Digipeater?

- When placed at a strategic location, a digipeater can greatly increase the range at which a deployed operator's APRS signal can reach other operators.
- Thereby extending the area covered by a deployed team.
- More than one digipeater can be used to cover an even larger area.
- Reaching another digipeater somewhere, which has access to the Internet (an iGate).

# How to Setup a Digipeater

- Need a VHF radio (APRS frequency is 144.39 MHz in North America)
- Need a computer to run APRS software
  - On Linux, I use **Direwolf** (a software TNC for packet radio), and **Xastir** (an APRS client).
    - The previous Raspberry Pi screenshots showed the Xastir application.
- Need a GPS if the digipeater is to be moving. Otherwise, set the location coordinates directly in the, for example, Direwolf configuration file.
- Need a soundcard modem (e.g. Signalink or Digirig Mobile) to link the radio to the computer.

# A Typical Digipeater Setup

This is one of the three digipeaters currently displayed on the table



May require custom cables between radio and soundcard modem

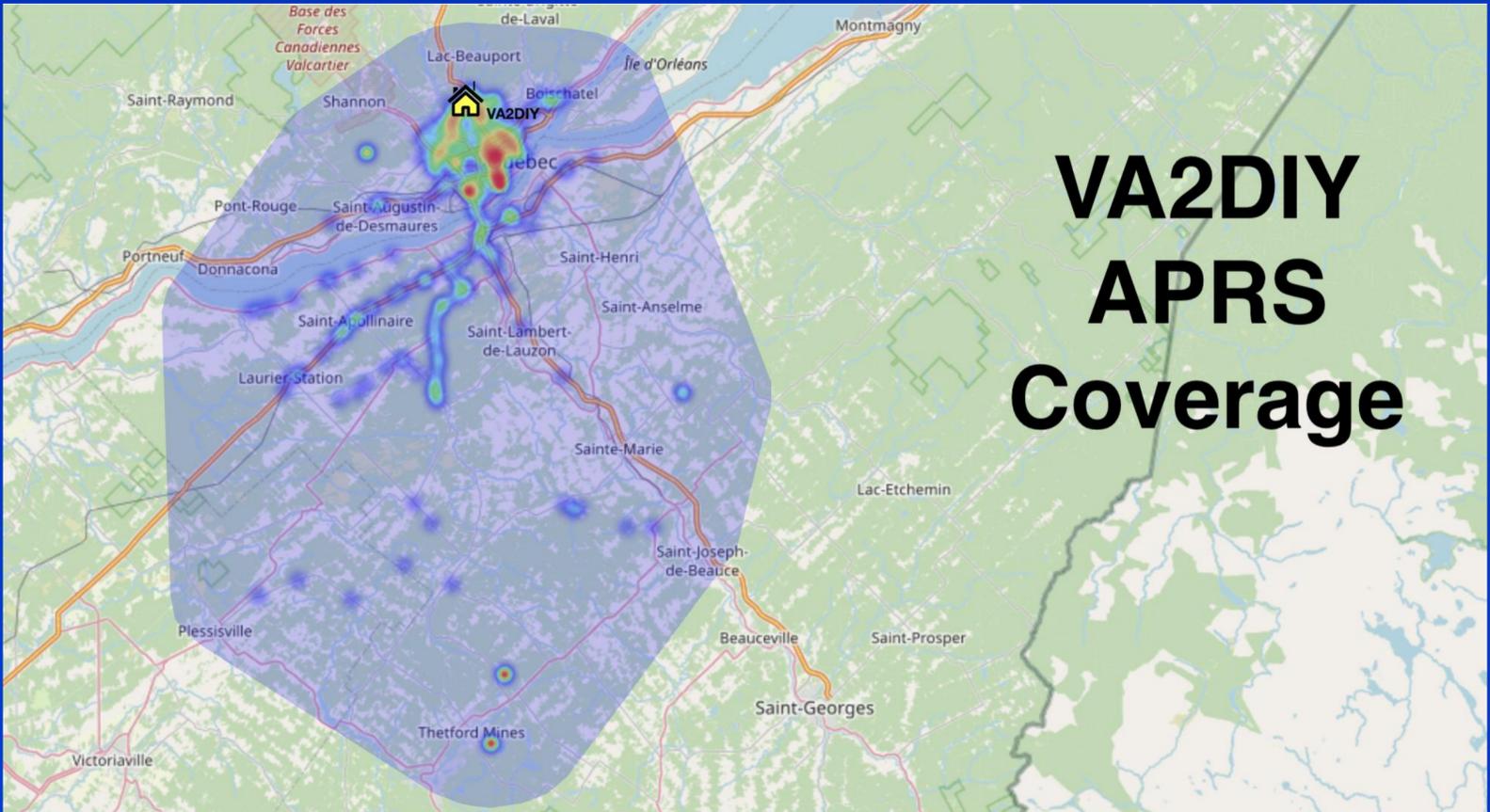
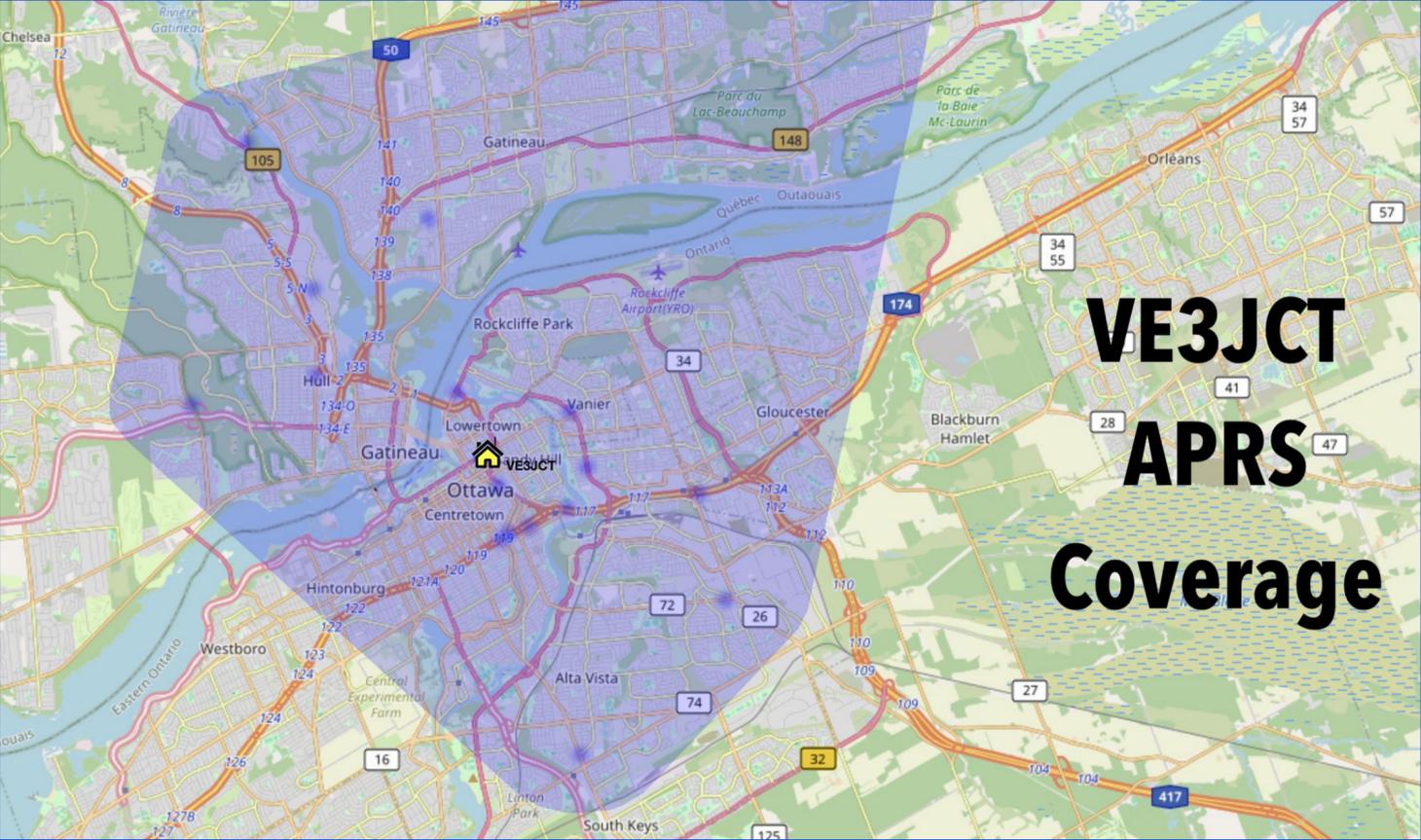
# How to Operate a Digipeater

- Power
  - DC power (radio+computer)
  - RF power (not too much)
  - Antenna gain (as much as possible)
- Dedicated operator
  - Requires man power...
- Radio with two operating frequencies is preferable



Used in the standalone portable digipeater station displayed on the table

# Areas Covered by my QTH Digipeaters-iGates



# Questions?

*APRS is a digital communication system. It functions by sending small packets of data via radio waves. It's designed for exchanging messages and information over short distances. It was initially developed in the 1990's by Bob Bruninga, WB4APR (SK). Since then, it is used extensively by amateur radio operators.*

Source: <https://hamradioprep.com/aprs-for-ham-radio/>