Radio Programming with CHIRP

Presented by

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What is CHIRP?

- CHIRP is a freeware open-source software utility designed for easy programming of amateur radios,
    - Developed by Dan Smith
    - Located on the web at https://chirp.danplanet.com/projects/chirp/wiki/Home
    - Directly supports a few hundred different makes and models of radios
    - Usually provides access to radio features in addition to memory locations
    - Is available for Microsoft Windows, Linux, and Apple MacOS platforms
    - Is frequently updated to add additional support and/or features

Installing CHIRP

- **The CHIRP installation** will, of course, vary by platform. **We will discuss the Microsoft** Windows iteration today.

- **Begin by downloading** the current version...

  - **https://trac.chirp.danplanet.com/chirp_next/next-20230427/**

	Name	Last modified	Size	Description
	Parent Directory		-	
	unit_report.html	2023-04-27 02:16	2.2M	
	supported.md	2023-04-27 02:16	17K	
	driver_report.html	2023-04-27 02:16	11M	
	chirp-next-20230427.app.zip	2023-04-27 02:16	37M	MacOS Application
	chirp-next-20230427-win32.zip	2023-04-27 02:16	28M	Windows in-place application
	chirp-next-20230427-installer.exe	**2023-04-27 02:15**	**23M**	**Windows Installer (recommended)**
	chirp-20230427.tar.gz	2023-04-27 02:15	1.6M	Source Tarball
	chirp-20230427-py3-none-any.whl	2023-04-27 02:15	1.4M	Python 3 wheel
	build.properties	2023-04-27 02:15	94	
	SHA1SUM	2023-04-27 02:15	590	

Installing CHIRP

- **The frequent updates** are called *"dailies"*...
- **The dailies file names** indicate the date of the release...
  - *e.g., a daily named "chirp-next-20230427-installer.exe"* was released on 27 April 2023.
- **It is recommended that** the CHIRP daily that you install be **retained at least until** the next update is successfully running
  - Occasionally, a new release will be problematic, and by uninstalling that update and reinstalling the previous version, you can keep on working.
- **Some anti-virus apps** may flag CHIRP dailies as being infected
  - *It is safe to ignore these warnings, provided that you obtained the CHIRP file directly from the CHIRP website.*

Windows Defender

- **If Windows Defender flags the CHIRP install program as an infector, the dialog at right will appear.**

- **Click the "More info" link to continue the installation.**

Windows protected your PC

Microsoft Defender SmartScreen prevented an unrecognized app from starting. Running this app might put your PC at risk.

More info

Don't run
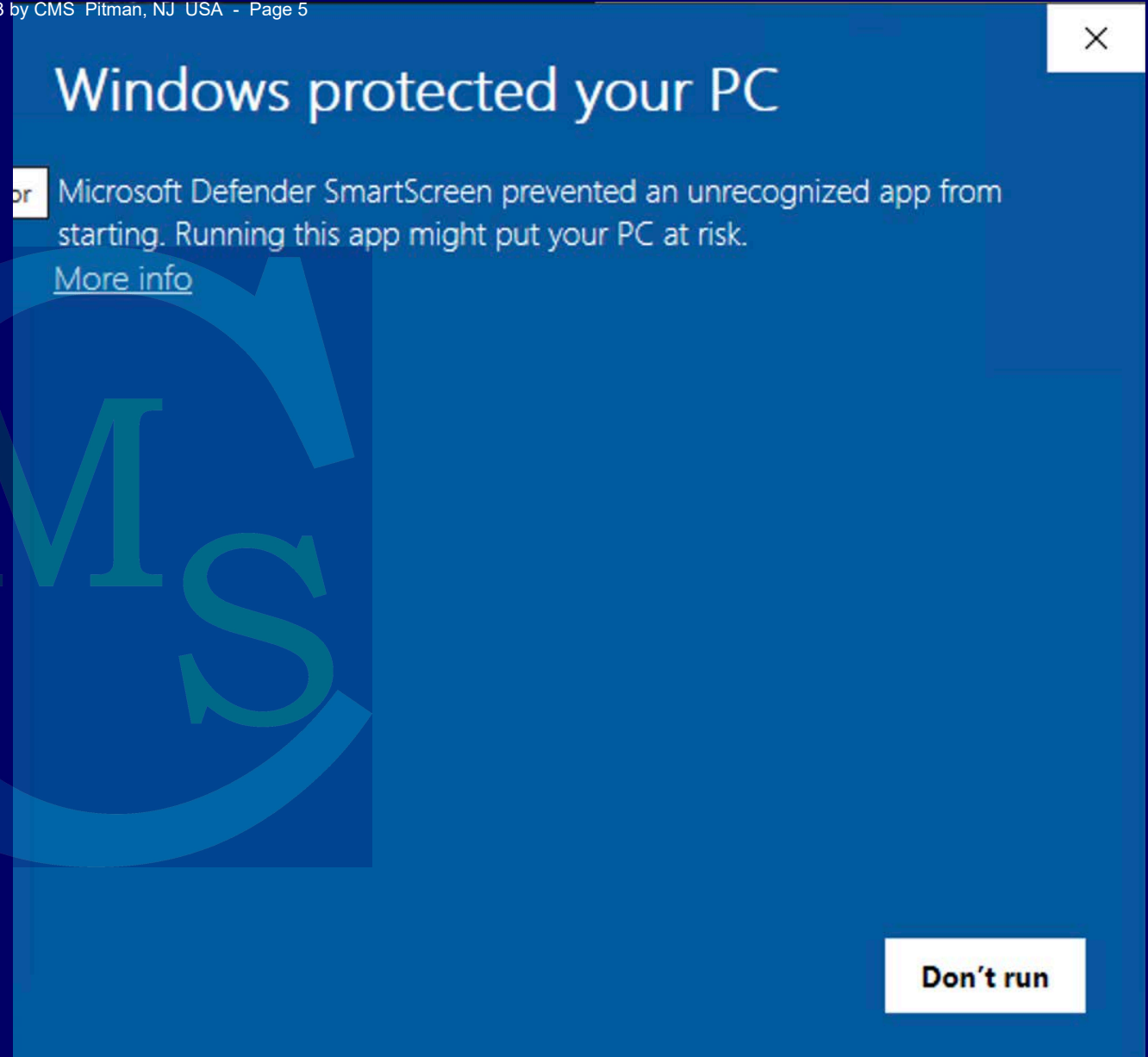
Windows Defender

- In the next dialog that appears, shown at right, you must click on the "Run Anyway" button in order to continue with the CHIRP installation routine.

Windows protected your PC

Microsoft Defender SmartScreen prevented an unrecognized app from starting. Running this app might put your PC at risk.

App: chirp-next-20230216-installer.exe
Publisher: CHIRP Software LLC

Run anyway   **Don't run**
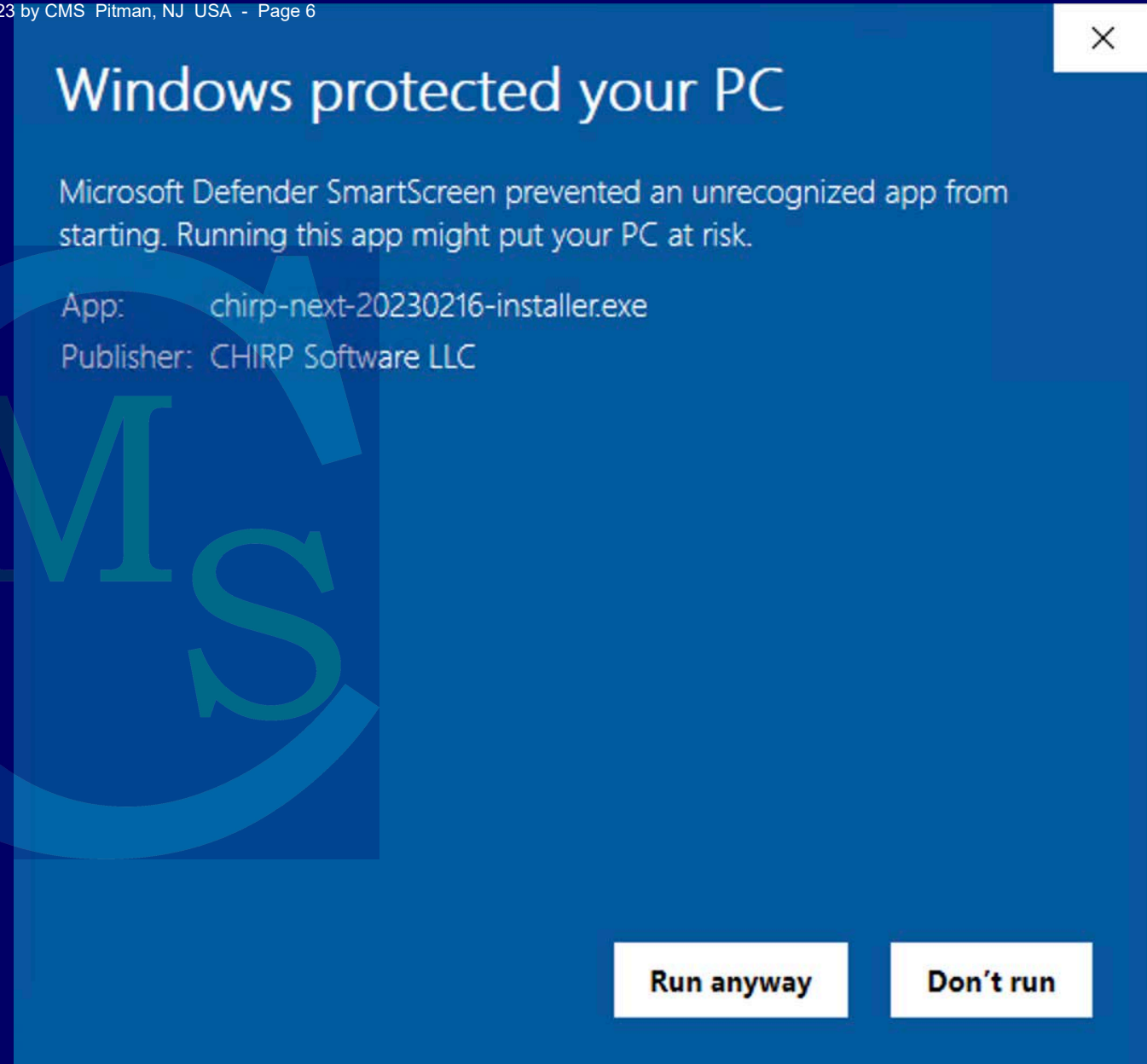
Windows User Account Control Issue

- **The Windows UAC system may prompt you, depending upon its settings, to approve the installation of the program.**

- **Click "Yes" to continue with the installation.**
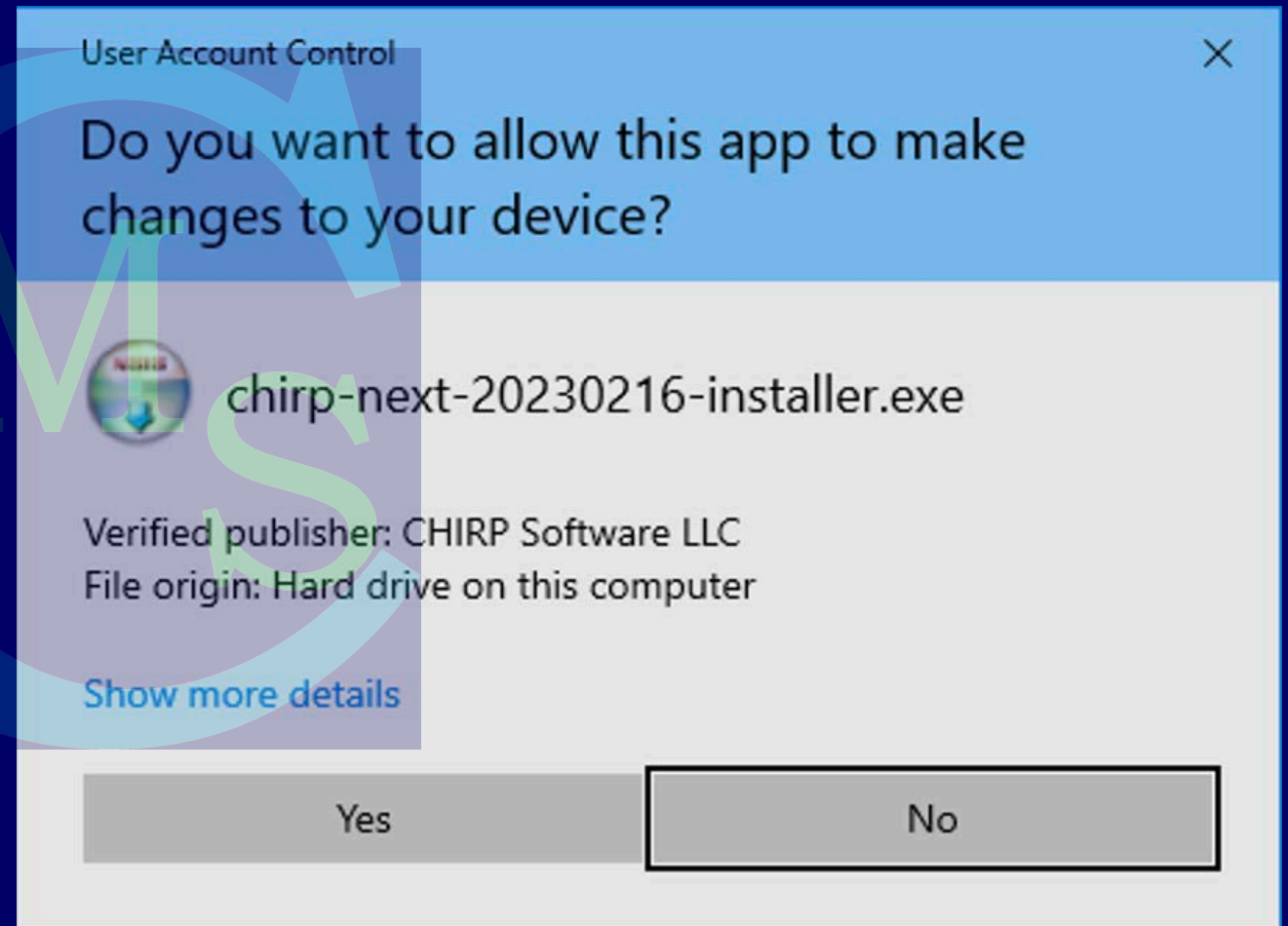
Microsoft Edge Browser Issues

- When downloading CHIRP via the Microsoft Edge web browser, a unique problem can crop up whenever you download a file that Edge flags as "not commonly downloaded".

- This happens frequently with .exe files and other executable files.

- It is a behavior that is by design, and is intended to protect your system.

- The next four slides explain how to get around this issue…

Step 1

- **Edge flags the file, and may list it in the browser Downloads list as "unconfirmed".**

- **The dialog at right will appear if you click on the file in the list. If not, right-click on the file entry in the Downloads list.**

Radio Programming with CHIRP
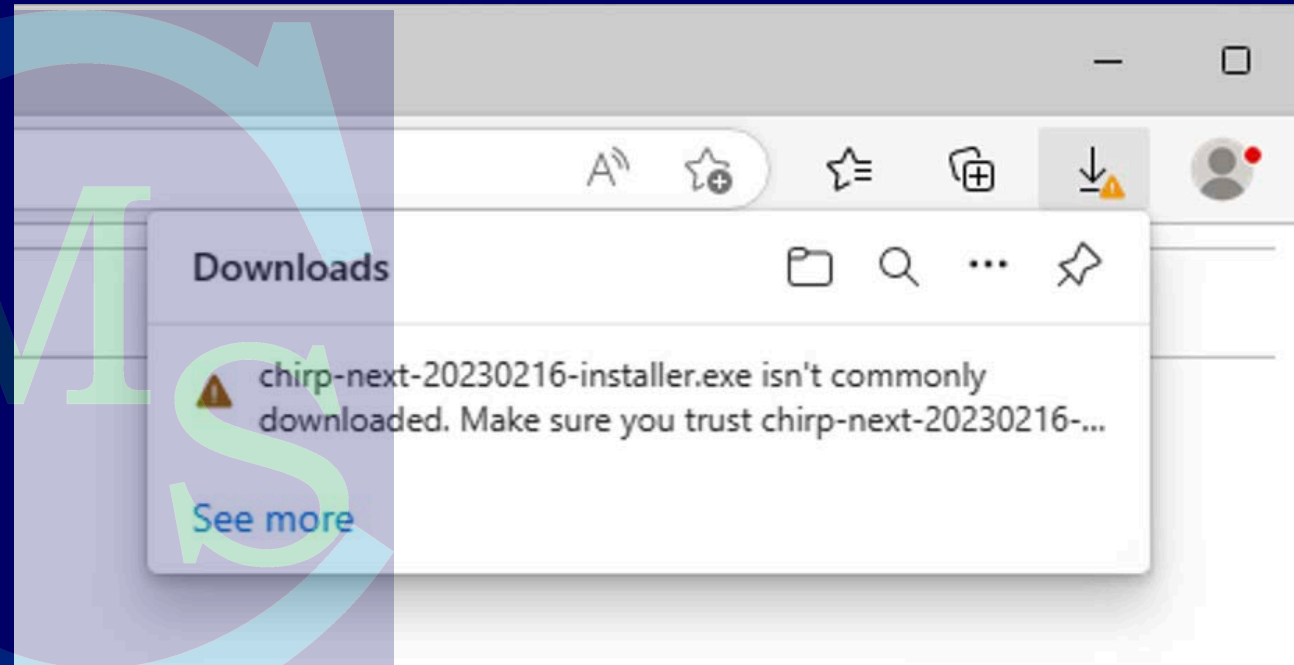
Step 2

- Click the ellipsis button (the three dots) to get the context menu as shown at right.

- Select "Keep" from this context menu.

Radio Programming with CHIRP
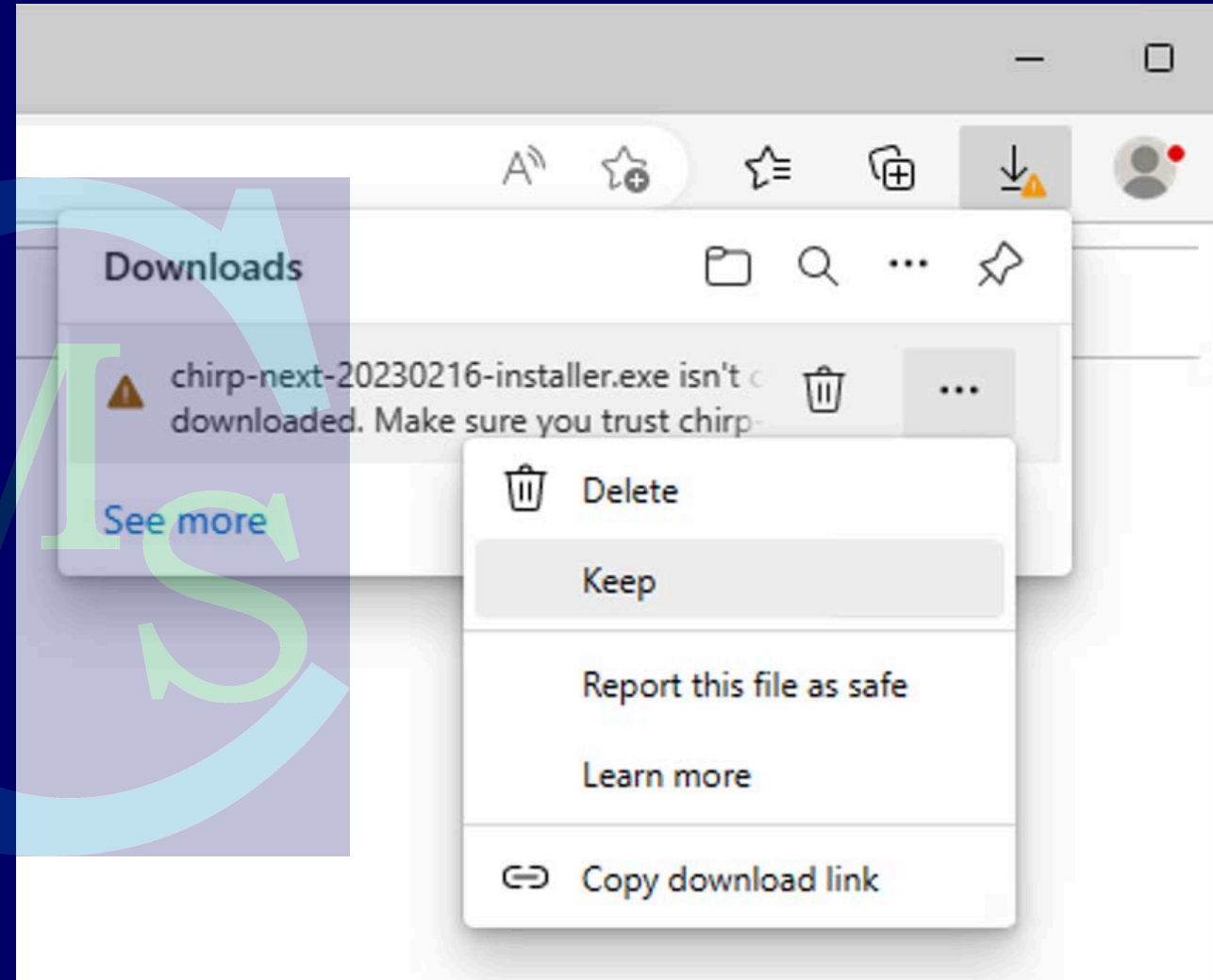
Step 3

- **The dialog at right will then appear.**
- **Click the "Show More" text to continue with the download.**
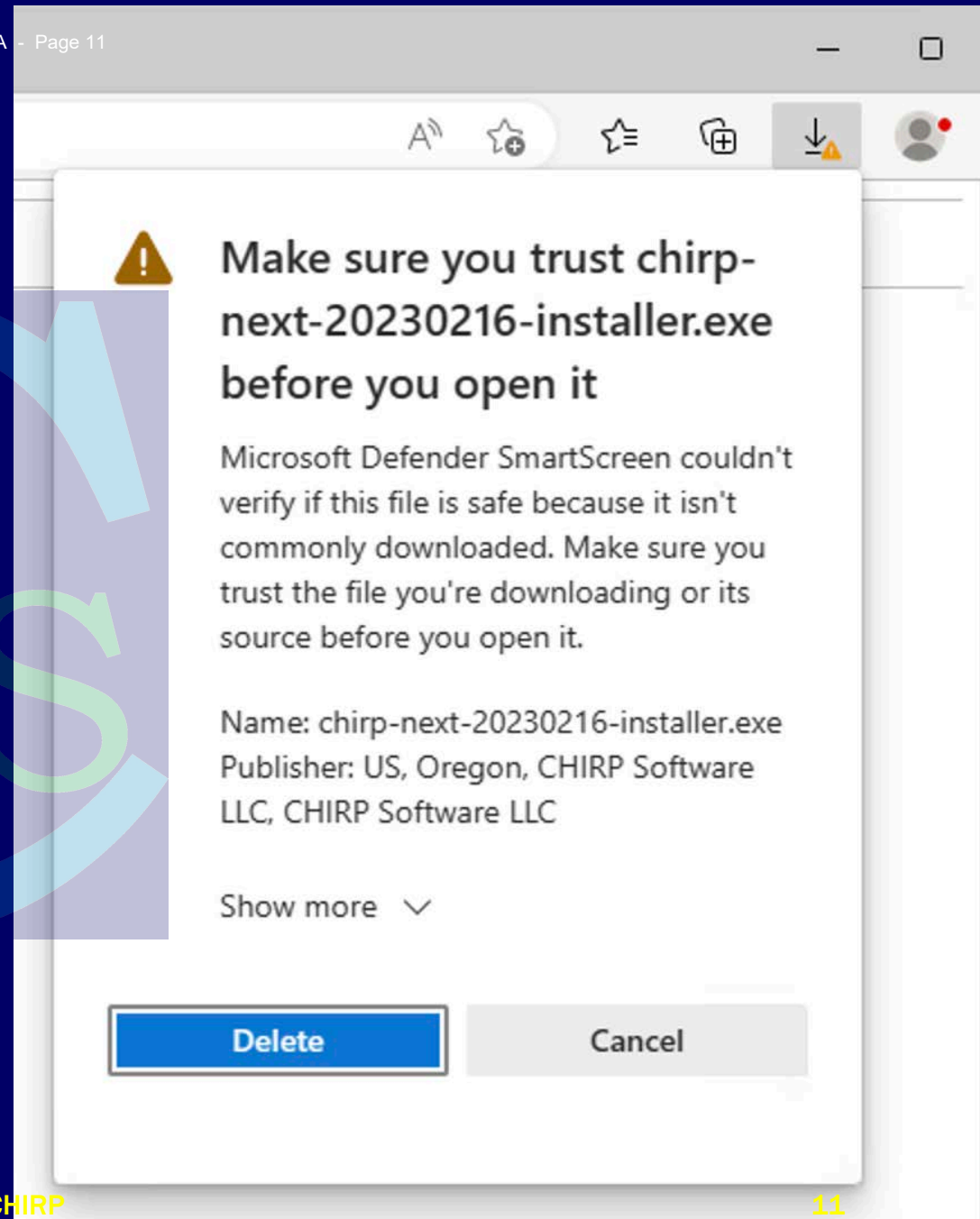
Step 4

- **To finish up, click the "Keep Anyway" item from the list in the dialog that appears.**

- **The file will then be confirmed and will thus be ready for installation.**

Radio Programming with CHIRP
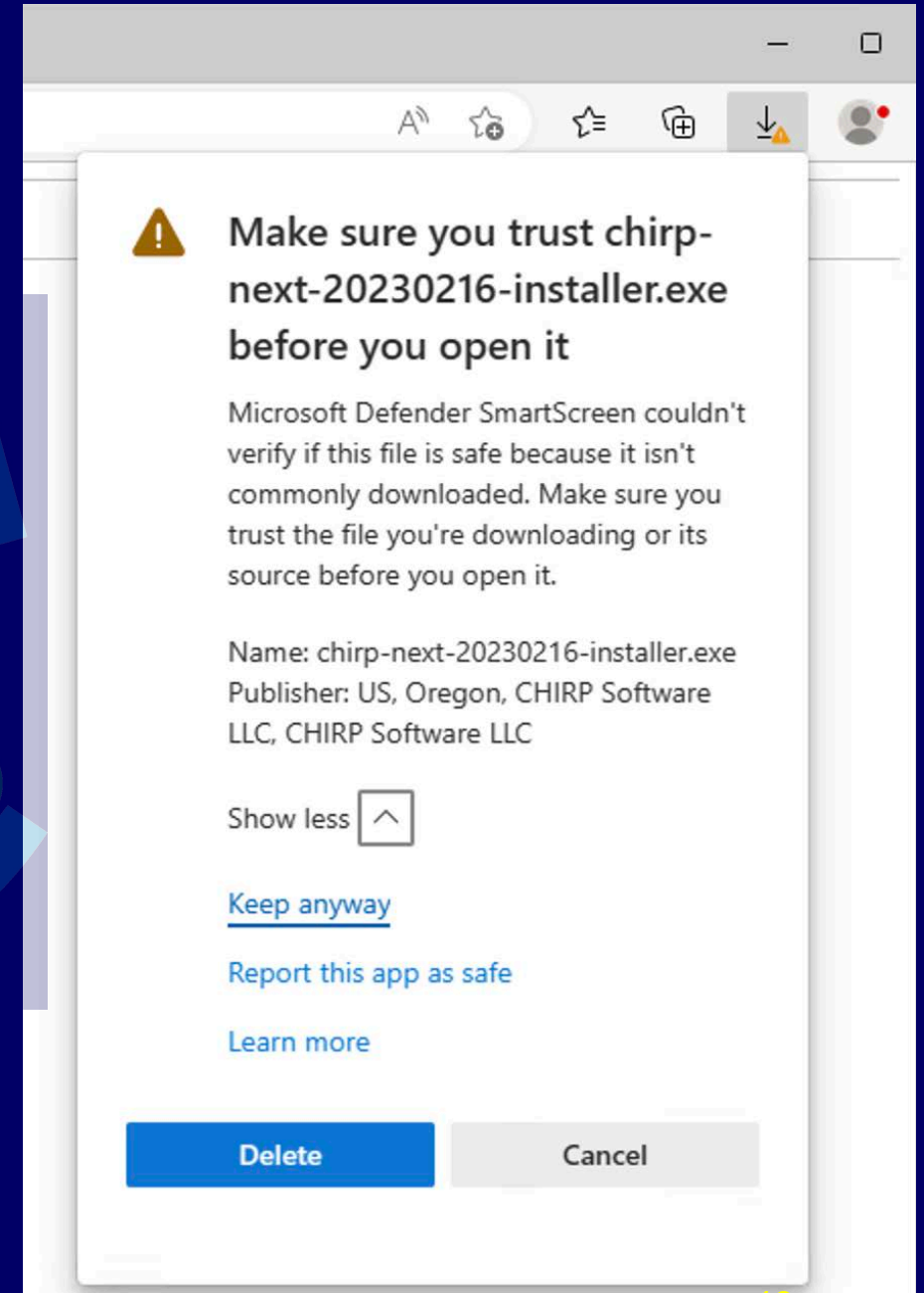
Installing CHIRP

- Once the download has been successful, browse to the downloaded file location, which is usually the Downloads folder under the current user, and then double-click on the downloaded CHIRP daily.

- Follow the simple installation routine, confirming the options as they are presented.

- The install itself takes a matter of seconds to complete.

- If you are installing a CHIRP update, the previous install does not have to be uninstalled, but it does need to be in a not-running state.

Running CHIRP

- **Double-click on the new CHIRP icon to launch the application.**
  - **The icon may be on the Desktop, and it will also be found in the Start Menu programs list.**

- **Make sure that your radio is connected to the PC and that the radio is in its ready-to-program mode.**
  - **Some models simply have to be turned on with the audio gain turned up to about 75% of maximum.**
  - **Others may need to be started in a certain manner, or may need to be placed into a *program* or *clone* mode.**
  - **Check and follow the manual directions for entering the program or clone mode.**

The CHIRP Screen

- **The Welcome screen is the start-up launching point.**

- **Five menus are available...**
  - **File**
  - **Edit**
  - **View**
  - **Radio**
  - **Help**

- **Each of these menus will be discussed and explained in detail...**

- **Note the keyboard shortcuts!**
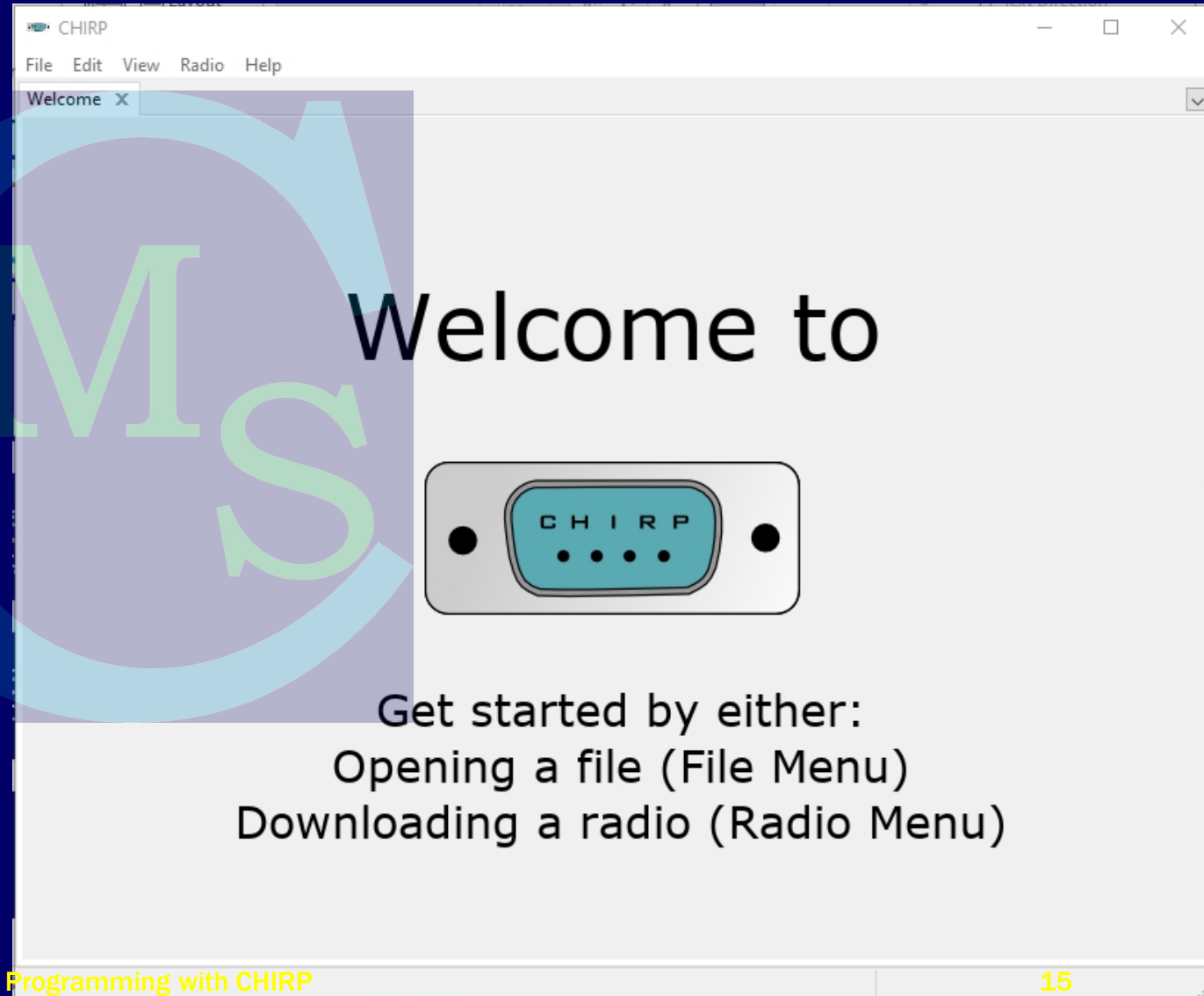
File Menu

- **New... opens a new, blank CHIRP file and grid**

- **Open... provides a dialog to allow the user to open an existing CHIRP .IMG file**

- **Open Stock Config... provides the user a choice of existing pre-defined frequency sets**

- **Open Recent... provides a list of the most recently used CHIRP .IMG files for quick re-opening of those files**

Radio Programming with CHIRP
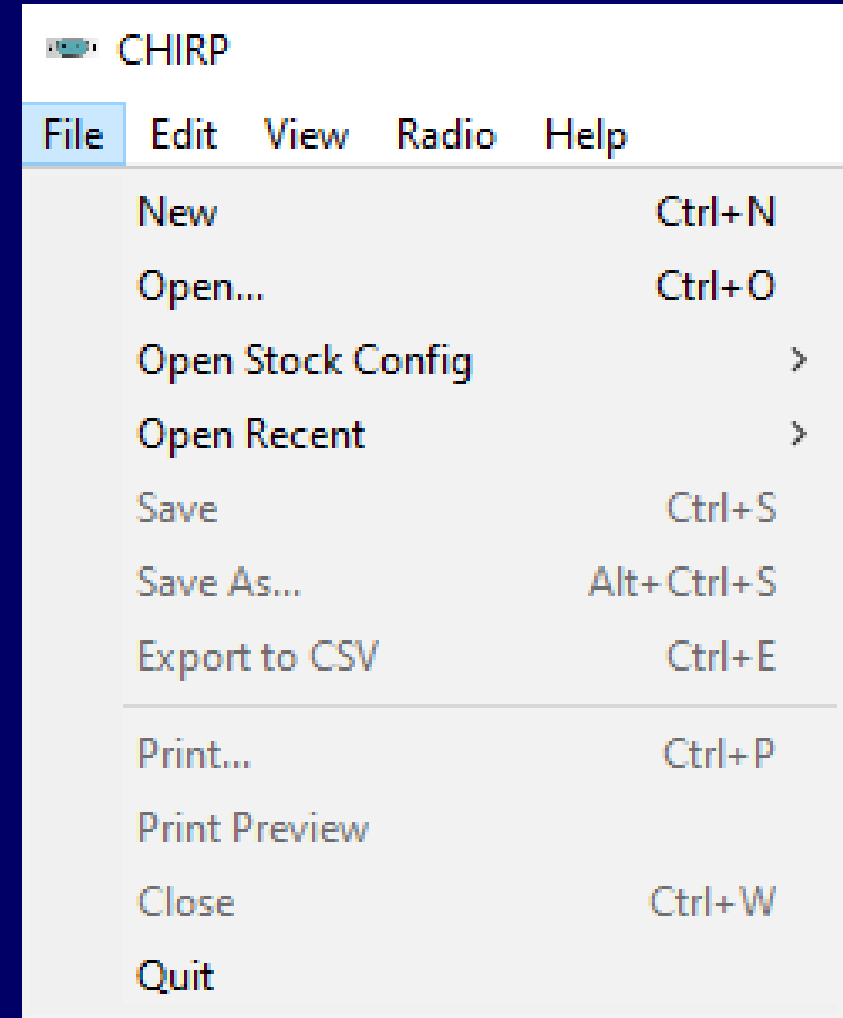
File Menu

- **Save...** allows the user to save an already-named .IMG file to disk

- **Save As...** allows the user to save a CHIRP .IMG file to a new filename

- **Export to CSV...** provides a data dump of the CHIRP grid into a comma separated values text file

- **Print...** sends the screen contents to the default printer via the print dialog
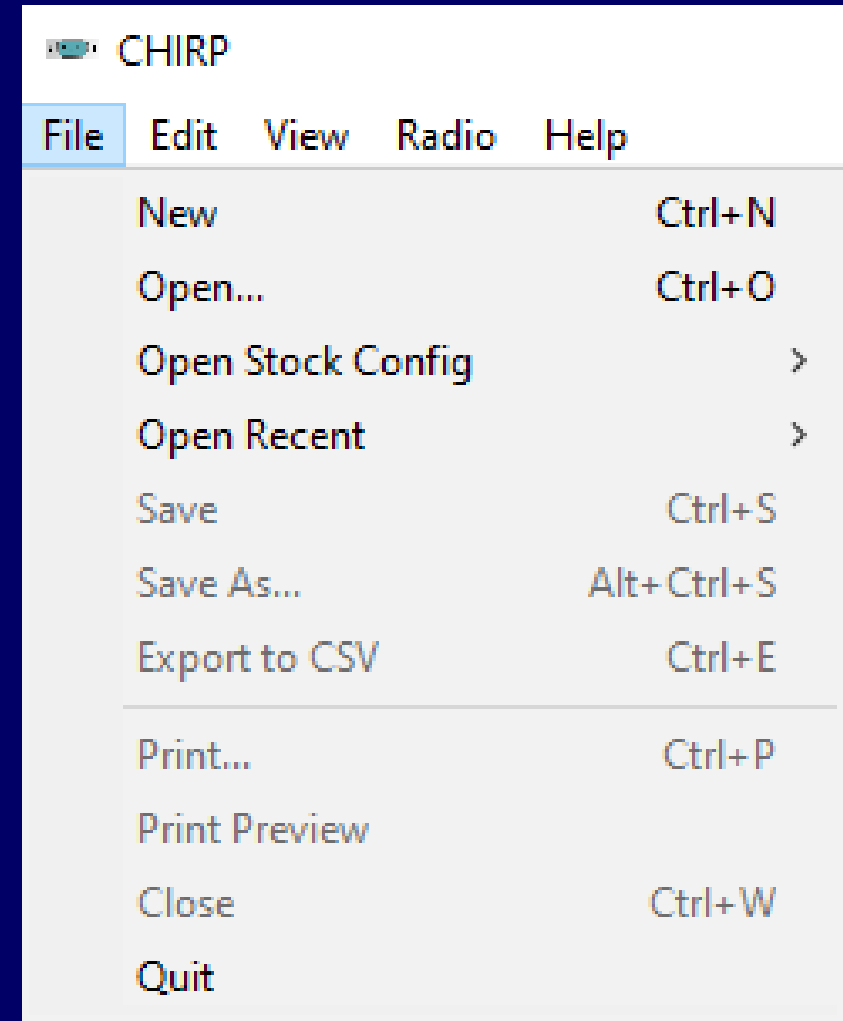
File Menu

- **Print Preview... allows the user to see how the oriented output will appear**

- **Close... Closes the active CHIRP .IMG file**

- **Quit... exits and ends the program**
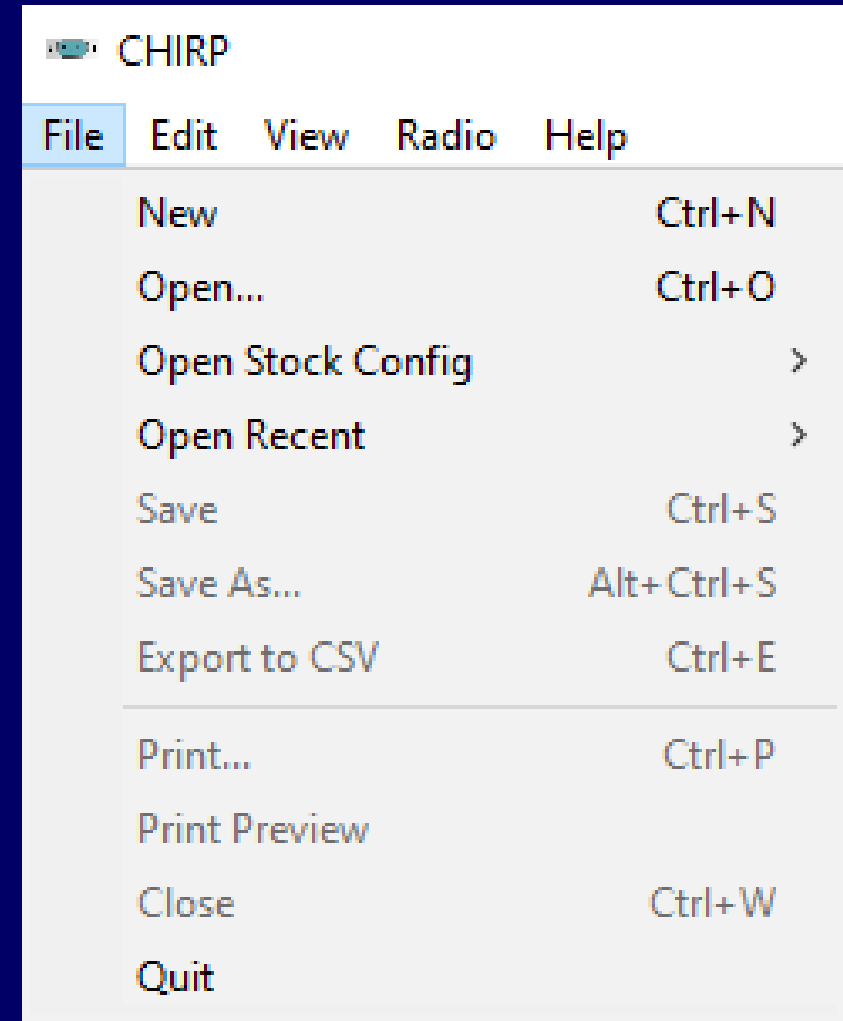
Edit Menu

- **Cut… removes the selected text from the grid and places it on the clipboard**

- **Copy… places the selected text on the clipboard without removing it from the grid**

- **Paste… Places the test on the clipboard into the selected location in the grid**

- **Select All… Selects all text in the grid**
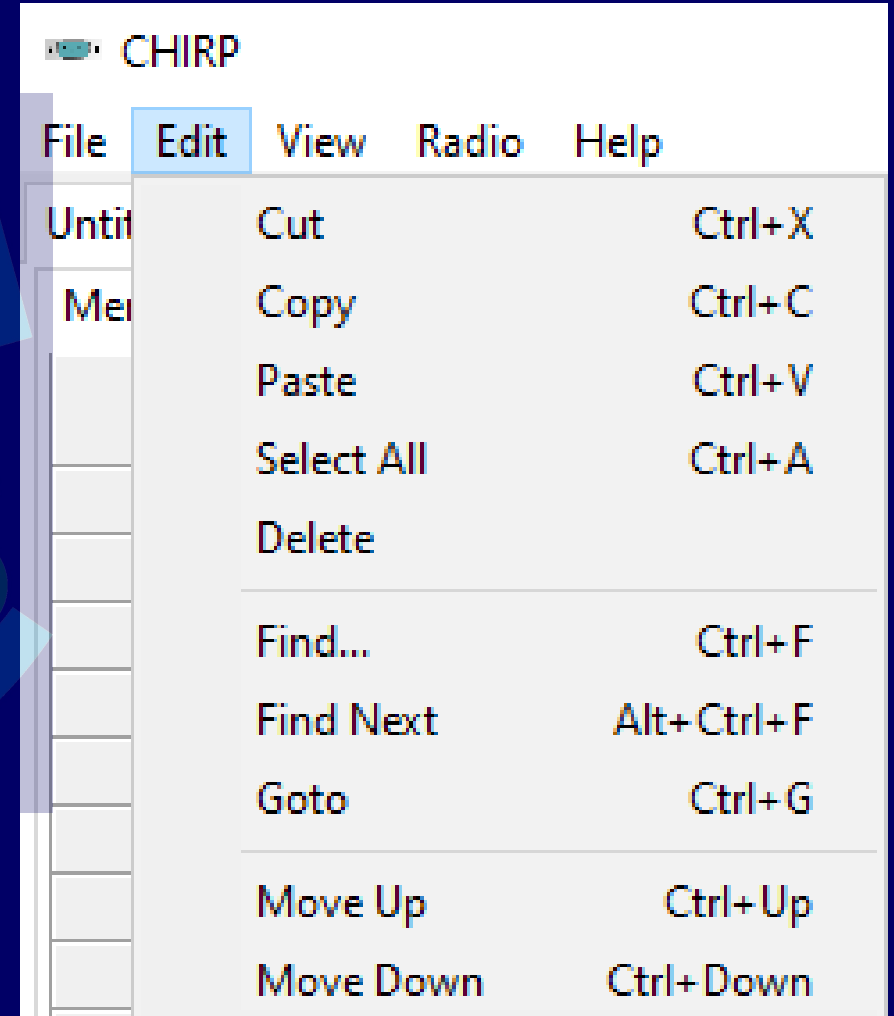
Edit Menu

- **Delete… removes the selected text from the grid and discards it**

- **Find… executes a search routine to locate the cited text in the grid**

- **Find Next… repeats a search routine to locate the next occurrence of the cited text in the grid**

- **Goto… jumps the focus to a given memory slot in the grid**
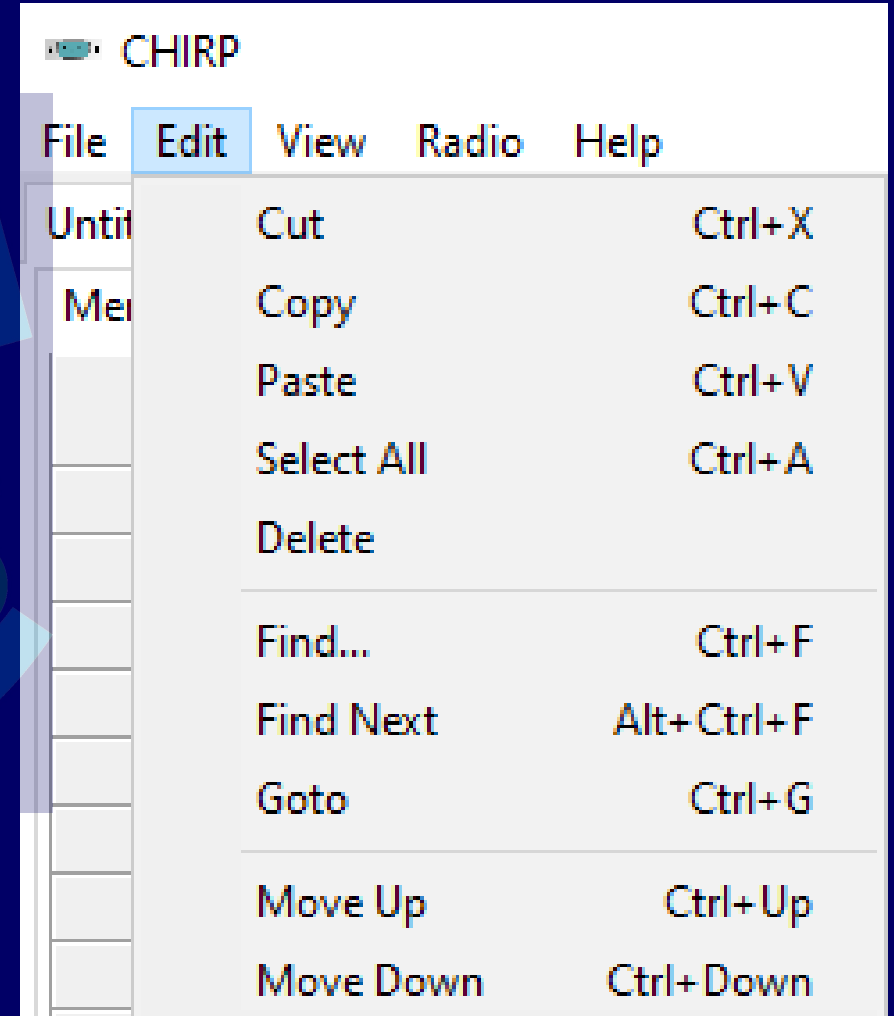
Edit Menu

- **Move Up… shifts the selected line upward in the grid, displacing others downward**

- **Move Down… shifts the selected line downward in the grid, displacing others upward**
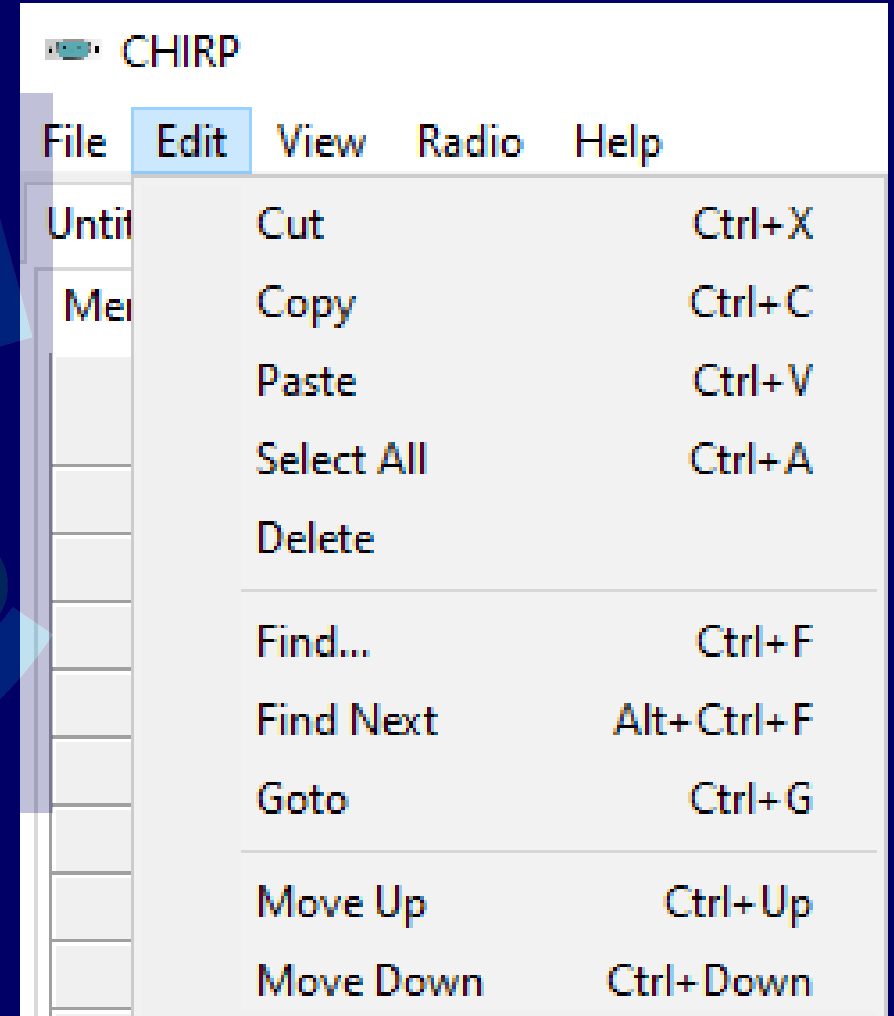
View Menu

- The *View* menu is a relatively new addition to the CHIRP interface. It provides only two menu options…

- Use fixed-width font… instructs the interface to use a font with consistent character spacing rather than the native Windows font

- Use larger font… magnifies the text size in the user interface
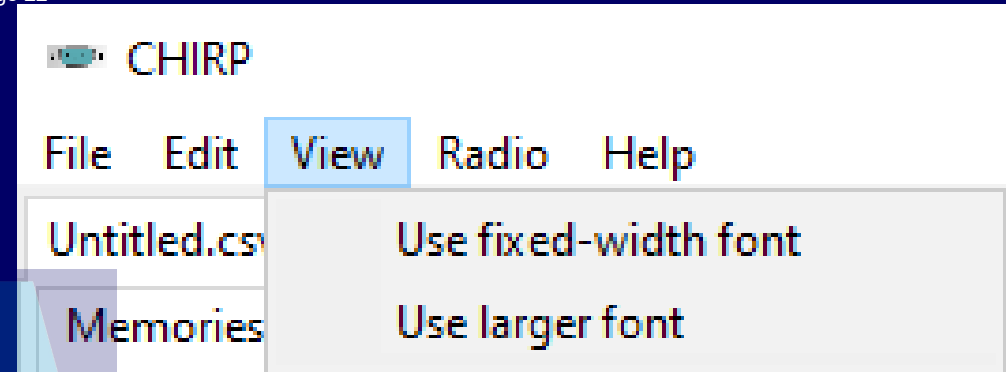
Note that both menu items here can be toggled on, meaning that the font will be changed to a fixed-width font *and* it will be magnified. They can also be used separately.

Radio Menu

- **Download from radio...** launches the dialog that allows cloning the radio into the software

- **Upload to radio...** launches the dialog that allows cloning the software values into the radio

- Query source... allows the user to obtain a list of frequencies from several well-known data sources

- Enable Automatic Edits... toggles the software's ability to make text entries autonomously as regards offset, offset direction, and mode

- Select Bandplan... selects one of five defined bandplans for use with the software
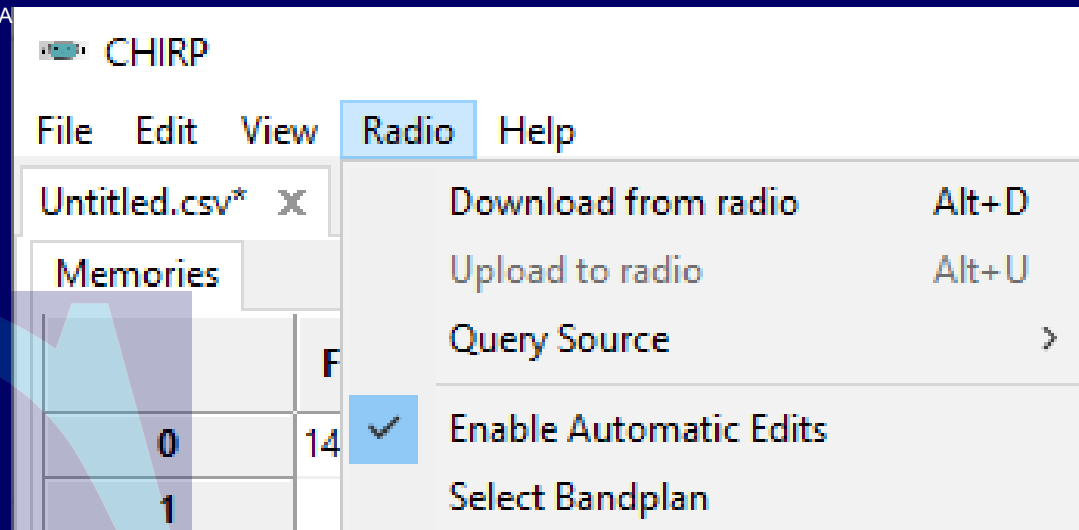
About the Main Screen

- Note that when CHIRP is opened, it creates a default top-level tab with an almost empty memory grid on a single lower-level *Memories* tab

- Downloading from a radio or opening a CHIRP .IMG file creates an additional upper-level tab for each radio downloaded or file opened
  - These upper-level tabs will often have two or more lower-level tabs including at least a *Memories* tab and usually a *Settings* tab

- Each import from a data source will also create a new upper-level tab

- Always be aware of which upper-level tab is being edited!

The CHIRP Memory Grid

Upper-level tab

Lower-level tabs

	Frequency	Name	Tone Mode	Tone	Tone Squelch	DTCS	RX DTCS	DTCS Polarity	Cross mode	Duplex	Offset	Mode	Skip	Power	Comment
0	147.180000	W2MMD	Tone	131.8						+	0.600000	FM		Med	
1	147.180000	W2MMD	Tone	131.8						+	0.600000	FM		Med	
2	145.290000	K2AA	Tone	91.5						-	0.600000	FM		Med	
3	441.050000	W2MMD								+	5.000000	FM		Med	
4	442.100000	W2MMD	Tone	131.8						+	5.000000	FM		Med	
5	449.975000	W2FHO	Tone	131.8						-	5.000000	FM		Med	
6	147.120000	KC2DUX	Tone	123.0						+	0.600000	FM		Med	
7	440.106250	KD2LNB								+	5.000000	FM		Med	
8	146.865000	K2UK	Tone	131.8						-	0.600000	FM		Med	
9	442.350000	K2UK	Tone	131.8						+	5.000000	FM		Med	
10	147.225000	WA2WUN	Tone	192.8						+	0.600000	FM		Med	
11	145.390000	K2DX	Tone	91.5						-	0.600000	FM		Med	
12	440.243750	K2EOC								+	5.000000	FM		Med	
13	447.775000	NJ2GC	Tone	146.2						-	5.000000	FM		Med	
14	147.895000	K2EOC	Tone	91.5						-	0.600000	FM		Med	
15	445.031250	N2SRQ								-	5.000000	FM		Med	
16	444.300000	WB3EHB	Tone	131.8						+	5.000000	FM		Med	
17	448.025000	N2HQX	Tone	131.8						-	5.000000	FM		Med	
18	145.370000	NJ2CH	Tone	91.5						-	0.600000	FM		Med	
19	444.900000	K3RJC	Tone	131.8						+	5.000000	FM		Med	
20	145.150000	K2AX	Tone	91.5						-	0.600000	FM		Med	
21	147.345000	WA3BXW	Tone	127.3						+	0.600000	FM		Med	
22	442.300000	KA2PFL	Tone	131.8						+	5.000000	FM		Med	
23	147.540000	HAMFST										FM		Med	
24	147.180000	W2MMD	Tone	131.8						+	0.600000	FM		Med	
25	147.120000	KC2DUX	TSQL		123.0						+	0.600000	FM		Med	
26	C	K2BR	TSQL		146.2						-	0.600000	FM		Med	

Baofeng BF-F8HP

Memory Grid Columns

- Frequency... the receive frequency of the programmed station
- Name... an alphanumeric identifier applied to the programmed station
- Tone Mode... the access tone methodology employed by the programmed station
- Tone... the access tone frequency for basic Tone mode – used on TX only
- Tone Squelch... the access tone frequency used for Tone Squelch mode – used on both TX and RX

Memory Grid Columns

- DTCS... the DTCS code to be transmitted and used for receiver squelch when the Tone Mode is set to DTCS

- RX DTCS... sets the DTCS code to be used for RX if radio-supported and Tone mode is set to Cross

- DTCS Polarity... sets the polarity of the transmitted DTCS code

- Cross Mode... controls squelch behavior when Tone mode is set to Cross

- Duplex... sets the duplex mode for the programmed station, either off, +, -, or split

Memory Grid Columns

- Offset... sets the frequency difference between RX and TX frequencies in Duplex mode

- Mode... controls the RX and TX mode of operation for the programmed station, either FM, NFM, WFM, AM, or DV

- Skip... sets the programmed station as either a prioity channel (P) or a skipped channel (S) during scanning

- Power... sets the RF output power of the programmed station

- Comment... an alphanumeric note regarding the programmed station

Making Grid Entries

- The memory grid can be edited manually or via cut-and-paste operations from other parts of the grid or from another open radio grid.

- When Automatic Editing is enabled, portions of the grid line will be entered automatically when the frequency is entered, absed upon that frequency and the customary norms.

- Earlier versions of CHIRP allowed "hiding" of unused colums, but that feature is no longer available.

- Any unused column in a given grid line should simply be left empty.

About COM Ports

- Microsoft Windows will assign virtual communications (COM) port numbers to each instance of an active USB communications device that can emulate a standard communications port.

- Moving a USB device from one USB port to another will generally cause Windows to create a new COM port number for the device in its new location.

- Selecting the wrong COM port number in the *Radio> Upload...* or *Radio > Download...* dialog will cause an error, which will prevent the operation from completing successfully.

Cloning From A Different Radio

To build a memory list based on the entries in a different radio...

1. Download the data from the source radio and optionally save that data as a CHIRP .IMG file

2. Connect the target radio and download its data (or open a CHIRP .IMG file appropriate for the target radio)

3. Select (highlight) and copy (Ctrl+C) the rows of data in the source radio memory tab to be cloned into the target radio

4. Click into the target radio memory tab and choose the destination location rows for the new rows of data

5. Paste (Ctrl+V) the data into those rows

6. Upload the new data to the target radio

Downloading from Radio

To download data from a radio…

1. Connect the radio to the PC and ensure that it is ready to clone

2. Click *Radio > Download from radio*

3. Select the correct COM port

4. Select the correct radio make and model

5. Click *OK* to begin download

Uploading to Radio

To upload data to a radio...

1. Connect the radio to the PC and ensure that it is ready to clone

2. Click *Radio > Upload to radio*

3. Select the correct COM port

4. Select the correct radio make and model

5. Click *OK* to begin upload

About Uploading...

- CHIRP will not permit uploading of unformatted data to a radio.
  - The data must be entered into a memory grid that is formatted for the specific radio make and model into which the user desires to upload the data.
  - A formatted memory grid can be obtained by either one of two methods...
    - Download the existing format from the target radio, or
    - Open a CHIRP .IMG file that is formatted for that particular radio make and model.
  - The radio make and model for which a CHIRP .IMG file is formatted will appear as a part of the automatically-generated filename of the .IMG file.
    - It is *highly* recommended that the filename assigned by the software always be accepted with the addition of the save time to the end of the filename, such as *Baofeng_BF-F8HP_20230429_2008.img*.

Other Radio Settings

- Depending upon the radio make and model, there will usually be two lower-level tabs showing under the radio's upper-level tab in CHIRP

- The first lower-level tab is the *Memories* tab

- The second lower-level tab is the *Settings* tab, as shown at right
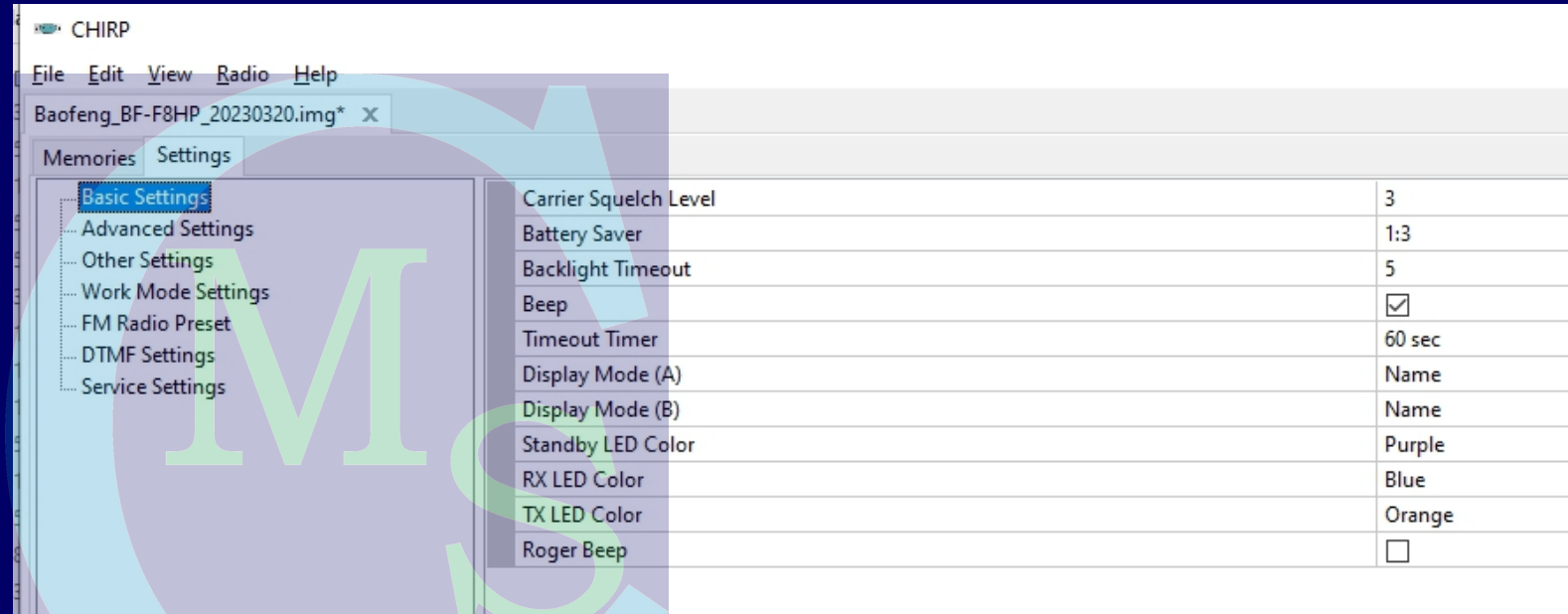
- The options available on the *Settings* tab will vary from one radio to the next

- These are the radio "personality" settings

Things to remember

- It is always advisable to save the downloaded data from a new radio so that it can be restored later if necessary
    - Click *File > Save As* to save the CHIRP .IMG file

- CHIRP can import .CSV files, but they cannot be directly uploaded
    - Data from a .CSV file must be entered into a radio-formatted memory grid in order to upload it

- CHIRP can also export its data to a CSV file for use in other applications

- CHIRP can open numerous different radio file types, all found in the *File > Open* dialog in the file types drop list

Things to remember

- Sometimes, a radio must be listed as a different make and/or model radio in order for CHIRP to program it successfully
  - A Google search for "CHIRP" and the radio make and model will often turn up the necessary information.
- Always be sure that the data cable is fully seated into the jack(s) on the radio
- Always make sure that the operating system recognizes the radio and has assigned a COM port value to it
- Switching USB ports will usually garner a new COM port designation for a given data cable

Things to remember

- Data in the *Memories* tab can be edited directly in the grid, or can be edited in a pop-up window that will appear if the grid row is right-clicked, and *Properties* is chosen from the context menu that appears.

- That same context menu will allow some manipulation of the data rows...
  - ...insertion of a blank row above the current row(s)
  - ...deletion of the current row(s)
  - ...sorting of the data, ascending or descending, in the current row(s)
  - ...display of the raw memory contents (useful for development team)

Things to remember

- **Double-clicking most cells in the memory grid will launch a drop list of available optional values for that cell**

- **Selecting a value in this way will also change the underlying data structure**

  - *...e.g.,* **if you have set the Tone mode to Tone, but then select a value in the DCS cell for that row, the Tone mode will be automatically changed,** *even if the Enable Automatic Edits* **option is toggled off**

- **Use this method carefully until you are well acclimated to its behavior to avoid erroneous values from appearing in the grid**

- **It is always advisable to append the save time to the automatic file naming convention so as to differentiate between multiple files saved on the same day**

Questions?

Radio Programming with CHIRP