

# Contents

GoldWave is a sound player, recorder, and editor. Before using GoldWave, make sure the sound drivers have been installed and configured with Window's Control Panel. The file GOLDWAVE.WRI contains more detailed information about GoldWave and sound editing.

To learn how to use help, press F1.

## Introduction

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## New Wave

GoldWave supports a wide range of sound attributes. These attributes must be specified when creating a new file. All new files will be saved in standard RIFF WAVE format.

### 8 bits vs. 16 bits

16 bits sounds better than 8 bits, but uses twice as much memory. Also, more sound devices support 8 bits than 16 bits. Therefore, GoldWave selects 8 bits as the default.

### Mono vs. Stereo

If you absolutely need stereo sound, select the stereo button. Stereo sound uses twice as much memory as mono sound and can take twice as long to edit. You can edit individual channels by using the **Options** | Edit dialog.

### Sampling Rate

This value determines the quality of the sound. It is the number of time per second data is sent to or received from the sound device. The drop down list box provides many standard rates. Microsoft recommends that this value should be one of 11025, 22050, or 44100.

11025 Voice and low pitch sounds, relatively small memory usage.

22050 Medium quality music, medium memory usage.

44100 High quality music, potentially CD quality, high memory usage.

The highest quality sound is produced with 16 bit, stereo, 44100Hz. Note that this uses 176,400 bytes for every second of sound. This format should be used if high quality is absolutely necessary.

The default rate of 8 bit, mono, 22050Hz uses only 22050 bytes for every second. This format is good if memory and disk space are limited and quality is not very important.

If you plan to do some recording, make sure you specify attributes that are compatible with your audio device.

For more information, see GOLDWAVE.WRI Appendix A

# Introducing GoldWave



GoldWave is a digital audio editor, player, and recorder. It can load and edit many different sound file formats and display separate graphs for the left and right channels of stereo sounds.

## Features:

- + Supports RIFF WAVE, VOC, Amiga 8SVX, Sun, NeXT file formats
- + Independent channel editing of stereo sounds
- + A "real-time" oscilloscope when playing
- + Separate "Controls" window for playing and recording
- + Expression evaluator
- + Intelligent editing

GoldWave is a ShareWare program. This means that you may use this program for a free 30 day trial period. If you think GoldWave is a useful utility, a registration of \$30 Canadian (only \$25 US) would be appreciated. You will receive a password that will register your copy of GoldWave in your name and remove any registration messages.

If you send more than \$59 Canadian, you will receive the next version of GoldWave when it is available.

To register, fill in the REGISTER.TXT file, then print it out and mail it along with your check or money order to the address below:

Chris Craig  
P.O. Box 51  
St. John's, NF  
CANADA A1C 5H5

My email address is:  
chris3@garfield.cs.mun.ca

See GOLDWAVE.WRI for more information.

## GoldWave Windows

There are three types of windows used by GoldWave: the **Main** window, the **Scope and Controls** window, and **Sound** windows. The **Main** window contains a menu bar, a tool bar (sometimes called a speed bar or button bar), and an information/status bar at the bottom. This window keeps all the sound windows grouped together. It is similar to the main window of a word processor, where you can have several document windows open at once.

The **Scope and Controls** window contains an oscilloscope and sound device controls. The oscilloscope displays the sound as it is being played. The controls determine the volume, left/right balance, and speed at which sounds are played. A row of standard cassette buttons for playing and recording sounds are kept in this window.

**Sound** windows are created whenever sound files are opened. Up to 5 sound can be opened (provided there is enough memory). Sound windows display a graph of the sound. Mono sounds are shown with a single green graph. Stereo sounds are shown using a green graph for the left channel and a red graph for the right channel.

Below the graph is the "Overview Bar". It provides useful information about what part of the sound is currently selected and what part of the sound is displayed by the graph. You can zoom in on a section of a sound by using the View menu commands.

### See Also

[File Menu Commands](#)

[View Menu Commands](#)

## View Menu Commands

View commands allow you to zoom in to and zoom out of the sound graph. When a sound file is initially opened, the graph shows the entire sound. By selecting a part of the sound and using the View Menu Commands, you can get a more detailed graph of the selection.

### **Zoom Block (Block Button)**

Magnifies the selected part of the sound, increasing the detail of the graph. You can zoom in many times (by selecting, then zooming again) until a single sample is shown in the graph. With this level of zoom, you can easily edit individual samples.

### **Zoom 1:1 (1:1 Button)**

Magnifies the sound to give a true representation of the graph of the sound. The left marker is used as the zoom location. With this command, you can get a detailed graph without having to move the right marker.

### **Unzoom (Out Button)**

Shows the entire sound. Sound windows are initially unzoomed.

### **See Also**

[Select part of a sound](#)

## Editing Overview

The GoldWave editor is block based. A block is defined as the highlighted part of the sound graph between two vertical markers. Most editing and effects are performed on this highlighted block. The vertical markers are cyan lines located at the far left side (start marker) and far right side (finish marker) of the graph. They may be difficult to see.

There are two ways to move the markers, depending on **Options | Settings** setup. GoldWave does not use Windows' standard "click-and-drag" method because it does not allow accurate positioning of the markers. The methods below allow you to independently set the start and finish markers to the nearest sample (when zoomed in at a 1:1 level or better).

### **Method 1, Quick block select** (default):

To move the start marker:

Click the left mouse button on the graph at the point where you want to place the start marker.

To move the finish marker:

Click the right mouse button on the graph at the point where you want to place the finish marker.

The drawback of this method is that it is easy to accidentally change the start/finish marker when clicking on a sound window.

### **Method 2, Grab and drag:**

If the "Quick block select" check box in **Options | Settings** is not checked, then a grab and drag method is used.

To move a marker:

- 1) Position the mouse arrow over the marker. Make sure the mouse is inside the graph area. You should see the arrow change into a vertical bar with small arrows on either side.
- 2) Press and hold the left mouse button.
- 3) Move the mouse to the left or right.
- 4) Release the mouse button when the marker is at the desired position.

The drawback of this method is that the marker must be inside the graph box before you can move it. This may not be the case if you are zoomed in.

### **See Also**

[Edit individual channels of stereo sounds](#)

[Edit Menu Commands](#)

[View Menu Commands](#)

## **File Menu Commands**

### New

Creates a new sound file and allows you to choose the file's attributes. New files will always be saved with Microsoft's RIFF WAVE format.

### **Open**

Opens an existing sound file. Only 5 files can be opened at one time. Note that ".au" and ".snd" files may take some time to decode. See GOLDWAVE.WRI for more details.

### **Save**

Saves the current file to the disk.

### **Save as**

Saves the current file to the disk under a different name. Note: Files are saved in their original format. You must give an appropriate filename extension.

### **Exit**

Exits GoldWave.

## **Edit Menu Commands**

### Cut

Copies the block into the clipboard and deletes it from the sound window.

### Copy

Copies the block into the clipboard.

### Paste

Pastes the clipboard into the sound window.

### Mix

Mixes the clipboard with the sound window.

### Delete

Deletes the block.

### **Insert space**

Inserts a blank space into the sound window of a size you specify in seconds. The space is inserted at the start marker's position.

### **Select view** (Sel Vw button)

Moves the start and finish markers to the far left and far right of the sound graph.

### **See Also**

[Edit individual channels of stereo sounds](#)

[Editing Overview](#)



## Cut (Cut Button)

Removes the block from the active sound and puts it in the clipboard. The contents of the clipboard can then be pasted into a sound window using **Paste**.

To cut:

- 1) Move the start and finish markers to the part of the sound you want to cut.
- 2) Choose **Cut** from the Edit menu or click on the Cut button.

### See Also

Delete

## Copy (Copy Button)

Copies the block into the clipboard. The block is not removed. The contents of the clipboard can then be pasted into a sound window using **Paste**.

To copy:

- 1) Move the start and finish markers to the part of the sound you want to copy.
- 2) Choose **Copy** from the Edit menu or click on the Copy button.

## Paste (Paste Button)

Places the sound in the clipboard into the active sound. The sound is inserted at the start marker's position. The length of the active sound is increased so that the clipboard sound will fit. The clipboard sound is automatically converted to match the attributes of the active sound.

To paste:

- 1) Move the start marker to the place where you want to paste the clipboard sound.
- 2) Choose **Paste** from the Edit menu or click on the Paste button.

Tips: By copying a small block and pasting it several times, a stutter effect can be achieved.

You can use Paste to convert stereo to mono by copying from a stereo file and pasting to a mono file.

If a sound format is not supported by your audio device, use **File | New** to make a new compatible sound. **Copy** from the original, then **Paste** to the new.

Technical Note: Clipboard data is automatically up-sampled or down-sampled to keep pitch and playback speed constant. You can use **Effects | Playback rate** to change the playback speed before copying/cutting.

### See Also

Mix

## Mix (Mix Button)

This is a special editing feature for sounds. The sound in the clipboard is blended (superimposed) with the active sound. You are asked for the mix volume. This volume is applied to the clipboard sound as it is being mixed.

To mix:

- 1) Move the start marker to the place where you want to mix the clipboard sound.
- 2) Choose **Mix** from the Edit menu or click on the Mix button.
- 3) Enter the volume to mix the clipboard (100 = normal volume).
- 4) Choose OK.

Tip: With this feature you could add your own vocals to music.

Technical Note: Clipboard data is automatically up-sampled or down-sampled to keep pitch and playback speed constant. You can use **Effects | Playback rate** to change the playback speed before copying/cutting.

### See Also

[Volume](#)

[Paste](#)

## Delete (Delete Button)

Delete removes the block from the active sound. The block is not copied to the clipboard. Note that if only the left or right channel is active in a stereo sound, then only that channel is removed. Since it is not possible for one channel to be larger than the other, the end of the deleted channel is padded with silence (this is also true for **Cut**).

To delete:

- 1) Move the start and finish markers to the part of the sound you want to delete.
- 2) Choose **Delete** from the Edit menu or click on the Delete button.

### See Also

[Cut](#)

## Effects Menu Commands

### Echo

Produces an echo in the block.

### Fade out

Gradually fades the volume throughout the block.

### Invert

Inverts the block.

### Maximize volume

Increases the volume of the block.

### Playback rate

Changes the rate at which the entire sound is played.

### **Reverse**

Reverses the block so that it will play backwards.

### **Silence**

Silences (mutes) the block.

### Volume

Changes the volume of the block.

### **Expression evaluator**

See GOLDWAVE.WRI, Appendix B for details.

### **See Also**

[Editing Overview](#)

[Edit Menu Commands](#)

## Echo

Produces an echo effect with the block. The echo delay and volume (see Volume) can be entered after choosing this command. You may want to try the default values first.

The longer the delay, the longer it takes for the echo to "bounce" back. Try values less than 0.1 for a large room, 0.3 for a baseball stadium, above 0.3 for a canyon echo.

The lower the volume, the quieter the echo will be. Values less than 50 give good results.

To make the echo sound correct, GoldWave extends the effect slightly outside the block boundary. This may increase the length of the sound. If you do not want to modify sound outside the block or you do not want the length of the sound to change, use the **Options | Editing** dialog to disable modification outside the block.

To add an echo:

- 1) Move the start and finish markers to the part of the sound you want to add an echo.
- 2) Choose **Echo** from the Effects menu.
- 3) Enter the delay time, then choose OK.
- 4) Enter the volume, then choose OK.

## **Fade out**

Gradually decreases the volume throughout the block. The percentage of fade can be entered after choosing this command. The fade percentage is the amount that the volume should decrease. A value of 100 fades to complete silence. A value of 50 fades to half the original volume.

To fade out part of a sound:

- 1) Move the start and finish markers to the part of the sound you want to fade.
- 2) Choose **Fade out** from the Effects menu.
- 3) Enter the fade percentage, then choose OK.

Tip: To **fade in** a sound, **Reverse** the block first, **Fade out**, and **Reverse** it again.



## **Invert**

Reflects the block data about the x (time) axis. This produces no noticeable effect in mono sounds and has a slight effect in stereo sounds. Inverting a single channel of a stereo sound will produce a surround-sound effect.

To invert part of a sound:

- 1) Move the start and finish markers to the part of the sound you want to invert.
- 2) Choose **Invert** from the Effects menu.

## Maximize volume

Searches the block for the maximum percent that the volume can be increased without producing distortion or clipping errors. This volume is then applied to the block. If the percentage is above 2000% or equal to 100%, no changes will be made.

To maximize the volume of part of a sound:

- 1) Move the start and finish markers to the part of the sound you want to increase the volume.
- 2) Choose **Maximize Volume** from the Effects menu.

## Playback rate

Changes the playback rate of the entire sound. The sound will play faster (or slower) and its pitch will be higher (or lower). Essentially, this just changes the first number in the information bar. Values of 11025, 22050, and 44100 are the recommended values.

To change the playback rate of the entire sound:

- 1) Choose **Playback rate**.
- 2) Enter the new rate, then choose OK.

The **Speed** control in the Scope and Controls window also affects playback rate. It only changes the device's playback rate, whereas the **Playback rate** Effect changes the rate within the sound. A **Speed** of 1.00 is normal. The new speed will be used the next time a sound is played.

To change the playback rate of the audio device:

- 1) Move the **Speed** scroll bar to the left or right. GoldWave will automatically find the closest speed that is compatible with your audio device.

Tip: If you want to convert the actual sampled data from one sampling rate to another, you could use **Edit | Copy** and **Edit | Paste**. If the file you Copy from is sampled at 22050Hz and the file you paste to is sampled at 11025, then the Paste command will down-sample the data as it pastes. This cuts the size of the sound in half. Up-sampling is also possible this way.

## Volume

Modifies the block so that it sounds louder or softer. The percentage of volume can be entered after selecting this command. Values less than 100 make the sound softer and values greater than 100 make the sound louder. A value of 100 has no effect. Enter 50 to half the volume and 200 to double the volume.

To maximize the volume of part of a sound:

- 1) Move the start and finish markers to the part of the sound you want to change the volume.
- 2) Choose **Volume** from the Effects menu.
- 3) Enter the new volume percentage, then choose OK.

By using independent left/right editing (**Options | Editing**), the internal balance of a sound can be adjusted.

The **Volume** and **Balance** controls in the Scope and Controls window also affect volume (if your audio device supports them). They change the device's output volume, whereas the **Volume** Effect actually changes the volume within a sound.

To change the output volume of the audio device:

- 1) Move the **Volume** or **Balance** scroll bar to the left or right.

## Options Menu Commands

### **Input device**

Allows you to choose a device for recording sounds. It also shows you the capabilities of your device.

### **Output device**

Allows you to choose a device for playing sounds. It also shows you the capabilities of your device.

### **Aux volume**

Sets the output volume on an auxiliary device.

### Settings

Allows you to set certain features in GoldWave.

### Editing

Allows you to set sound editing options.

## Editing Options

By selecting the menu command **Options | Editing**, you are presented with a dialog box.

The **Channel Editing** group lets you control which channel (or channels) will be edited for stereo sounds. For example, if you choose "Left channel", all effects and editing will only change or use the left channel. You can then use **Edit | Copy** to extract the left channel into the clipboard or use **Edit | Mix** to mix the clipboard with the left channel and so on.

The **Modify outside block** option prevents certain effects (like Echo) from changing the sound outside the block markers.

**See Also**  
[Editing Overview](#)

## Output device

The list shows you the names of output devices/drivers. Above the list is a table that tells you what sound attributes/formats the driver supports. All boxes with check marks in them are supported by the currently selected driver. You can select any driver to see its capabilities.

## **Input device**

The list shows you the names of input devices/drivers. Above the list is a table that tells you what sound attributes/formats the driver supports. All boxes with check marks in them are supported by the currently selected driver. You can select any driver to see its capabilities.



## **Aux volume**

This dialog allows you to set the output volume on an auxiliary device. This may be useful when recording from a CD-ROM. A list of installed auxiliary devices is displayed at the bottom of the dialog.

To change auxiliary output volume:

- 1) Select a device. If the device supports volume control, the "left" control will be enabled. If the device supports stereo volume control, both the "left" and "right" controls will be enabled.
- 2) Adjust the volume with the "left" and/or "right" controls.

## Settings

**Sound Path** is used by **File | Open**. You can specify the directory where you keep your sound files. If you type "d:\sound\wave", for example, the **File | Open** dialog will automatically list the files in that directory whenever you start GoldWave.

If **Save window positions** is checked, the main window and Scope and Controls window positions will be saved when you exit GoldWave. This means you will not have to adjust window positions every time you start GoldWave.

If **Load uLaw as 8-bits** is checked, any encoded file (".au" files) will be converted to 8-bit PCM format. This will cause some loss of quality, but will allow playback on a larger variety of audio devices. If the box is not checked, the data is converted to 16-bit PCM format. If your audio device supports 16-bit PCM files, uncheck this box.

The **Scope active** check box enables or disables the oscilloscope. Unchecked, the oscilloscope is disabled during playback and recording (the oscilloscope box will still be present). Some "synchronous" audio devices do not allow the scope to work.

The **Quick block select** check box allows you to choose which method to use when selecting a block.

**See Also**  
[Editing Overview](#)

## Playing and Recording Sounds

To play part of a sound:

- 1) Move the start and finish markers to the part of the sound you want play.
- 2) Choose the play button on the **Scope and Controls** window (the green triangle).

You can pause playback with the pause button (two vertical blue bars).

To record a sound (provided your audio device can record):

- 1) Move the start and finish markers to the part of the sound you want record over (you can use **Edit | Insert space** to create a place to record the sound).
- 2) Choose the record button the **Scope and Controls** window (the red circle with an 'R').

You can use the stop button (red square) to stop playback or recording at any time.

### **See Also**

[Editing Overview](#) for information about setting markers.

## Raw File Format

The Raw File Format dialog is presented if any of the following occur:

- 1) The file has no header information.
- 2) The file does have a header, but the file structure is incorrect for the given header.
- 3) The file has a new format that GoldWave does not recognize.
- 4) The file is in a format not supported by GoldWave.

The dialog allows you to specify a format and attributes for the data in the file. Supported data formats are:

WAVE / VOC / PCM:

Unsigned 8-bit data. Mono or stereo.  
Signed 16-bit data. Mono or stereo.  
Default sampling rate: 22050Hz

Amiga / Signed 8-bit

Signed 8-bit or 16-bit data. Mono or stereo.  
Default sampling rate: 16000Hz

AU / SND / micro-Law encoded

Micro-Law coded 8-bit data. The data is decoded to 8-bit or 16-bit data depending on the number of bits you specify.  
Default sampling rate: 8000Hz

See GOLDWAVE.WI for a table of supported formats in the Open subsection.

To specify the format and attributes:

- 1) Select one of the formats specified above. GoldWave will automatically set common attributes for this format.
- 2) If the default attributes are incorrect, set the correct bits, channels, sign, and sampling rate.
- 3) Choose OK.
- 4) Play the sample to ensure the attributes are correct.

If the format is incorrect or the attributes are wrong, the sound will play distorted. You will have to close the sound window and reopen it using a different format.

If the sampling rate is incorrect, the sound will play too fast or too slow. You can use the **Effect** | Playback rate to quickly fix this.

Warning: If you save the file later, any header information will be lost. You are encouraged to save the file under a different name using **File** | **Save as**. Be sure to give a meaningful filename extension.

## Convert Attributes

By using **File | New** in conjunction with **Edit | Copy** and **Edit | Mix** or **Edit | Paste**, you can change the attributes of a sound file.

To convert:

- 1) Use **File | New** to create a new sound window with attributes you need.
- 2) Use **File | Open** to open the sound file to be converted.
- 3) Choose **Edit | Copy** to copy the entire file into the clipboard.
- 4) Active the new sound window by clicking on its title bar.
- 5) Choose **Edit | Mix** or **Edit | Paste** to convert the sound and place the result in the new sound window.

Using **Edit | Mix** with a volume of 100 is similar to using **Edit | Paste**. **Paste**, however, will insert the converted sound, leaving 5 seconds of blank space at the end of the new sound window.

Future versions of GoldWave may support conversions directly.

### See Also

[Editing Overview](#)

[Edit Menu Commands](#)

[File Menu Commands](#)

