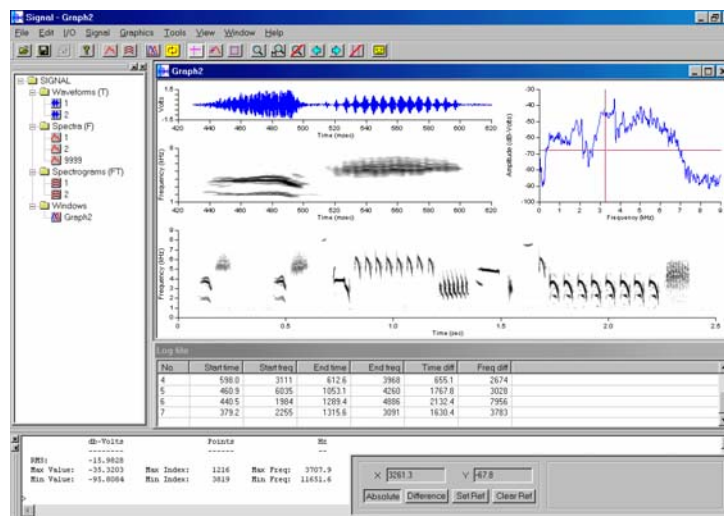


SIGNAL for Windows

Graphical and programming environment
for bioacoustic analysis

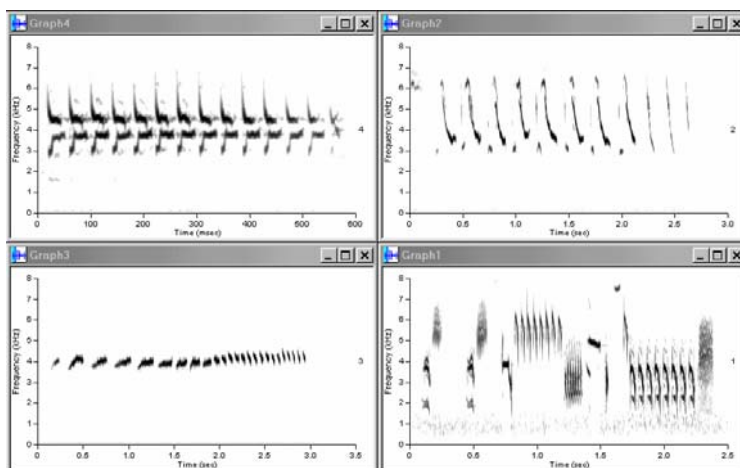


SIGNAL 4.0 provides a rich and powerful graphical environment for viewing, measuring, and manipulating signals. **Multiple graph windows** display an unlimited number of signals simultaneously. A **crosshair cursor**

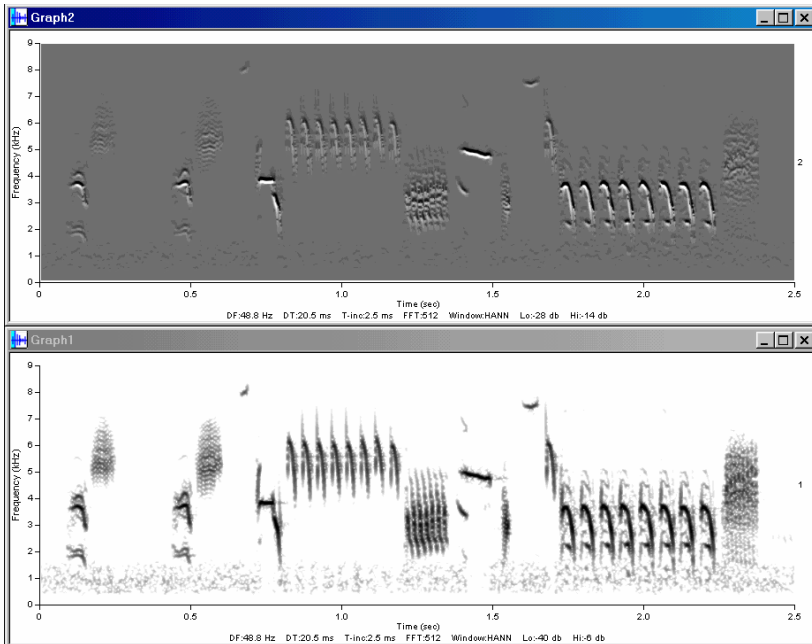
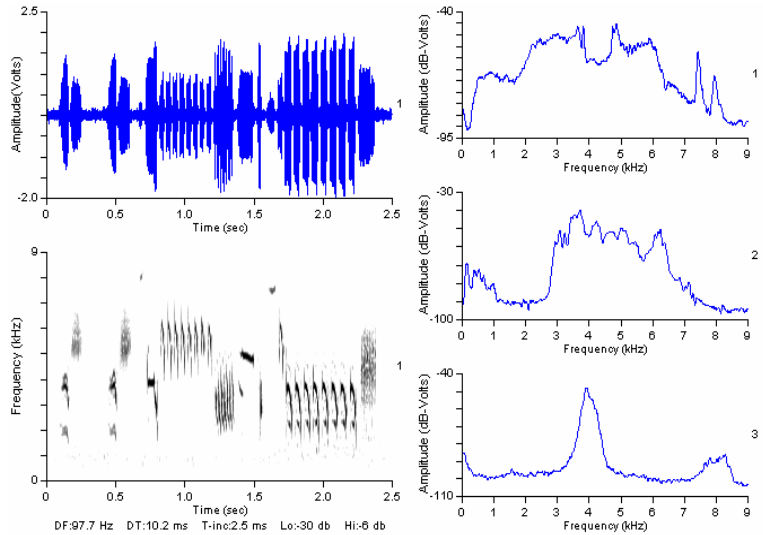
provides measurement, zooming, storage, and data logging;

a **tracking cursor** tracks the function values of a power spectrum or pitch contour, and a

stretch box zooms spectrogram sections.

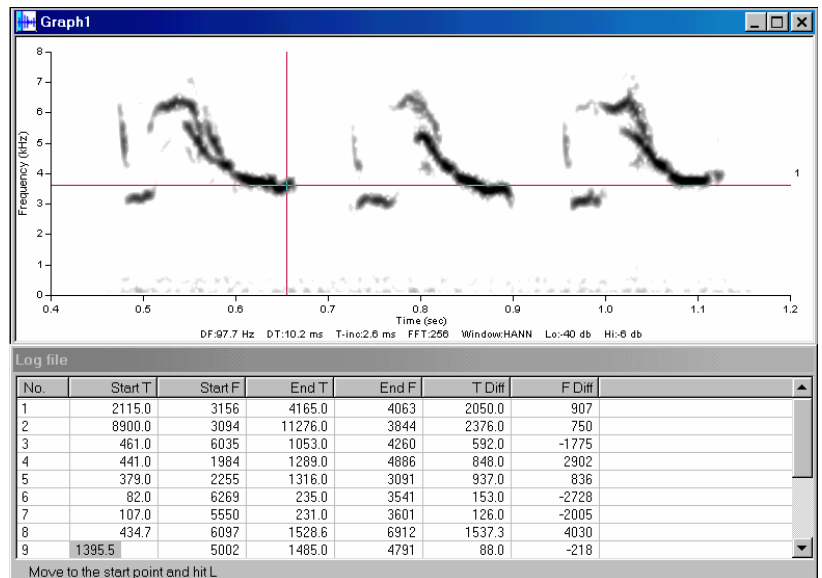


Graph properties can be changed interactively, including font size, captions, custom axis labels, axis range, and axis intervals, and saved to recreate the graph later. **Custom graph layouts** can be composed from graphs of any types and sizes, using drag-and-drop, then saved for reuse, and even called from SIGNAL programs.

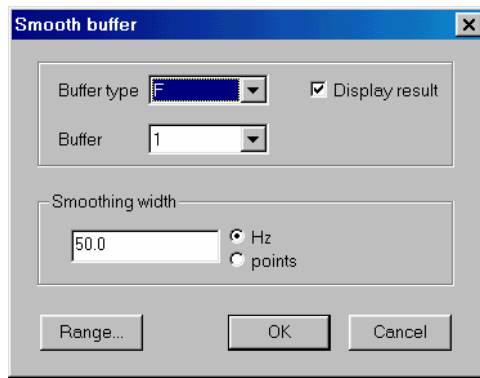
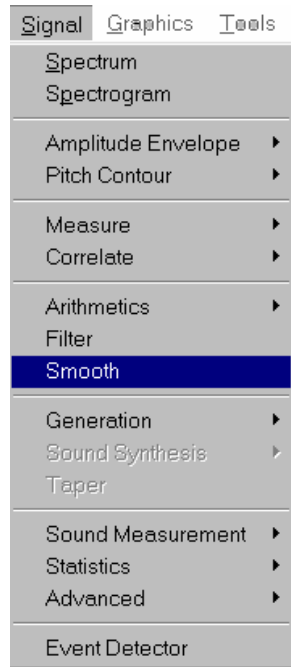
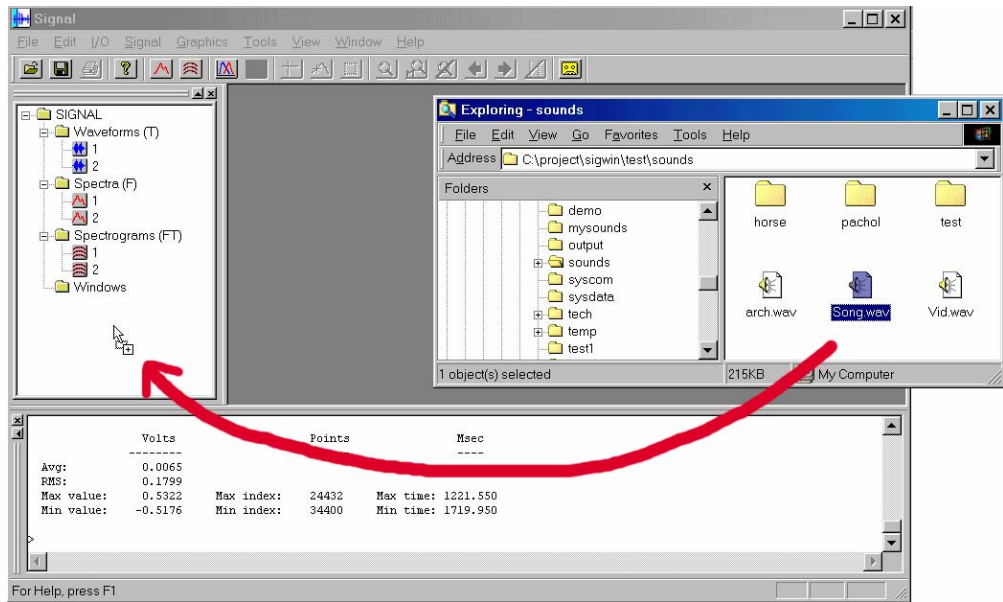


The new **gradient spectrogram** can display low-level spectrogram features in high relief, using mathematical differentiation and topographical shading.

An on-screen **measurement file** stores screen measurements from the cursors and calculated values from user programs. This file can be customized by the user, then saved and exported to a spreadsheet or statistical program for further analysis.

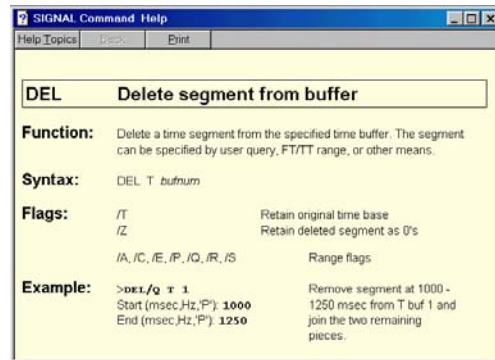


SIGNAL 4.0 is **easy to learn** and convenient to use. Many actions, such as opening and displaying a sound file, can be performed simply using drag and drop.

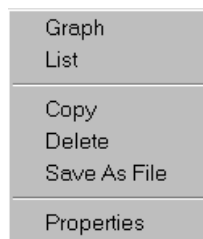


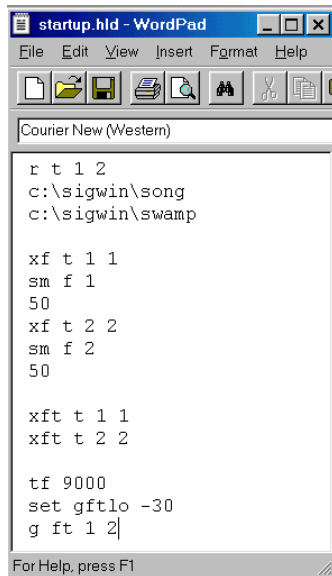
Every SIGNAL operation can be performed from the **main menu** with an easy-to-use dialog box. All operations can also be performed using **keyboard commands**, for experienced users and for programming. Keyboard and menus can be freely mixed.


On-line help supports all commands and menus and will provide background materials and examples.



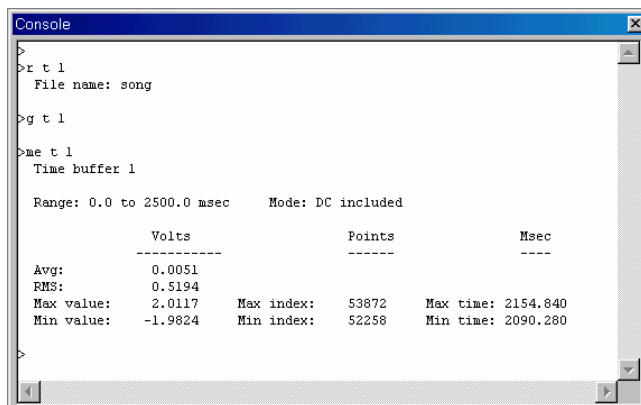
Numerous **context menus** provide guide the user in different program areas, including the browser window, graph window, measurement cursor, graph layout editor, and measurement file.



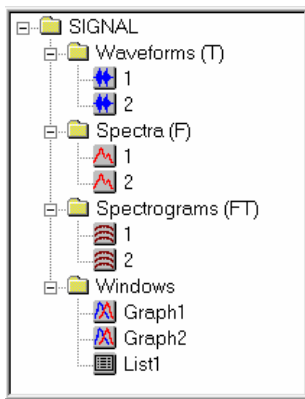


SIGNAL 4.0 was designed for **maximum compatibility** with SIGNAL 3.1. It uses the same SIGNAL language and runs SIGNAL 3.1 command files with minor modifications. A built-in **command file converter** performs most command file modifications automatically. The new **macro recorder**  logs every SIGNAL keyboard command, all menu commands, and most drag and drop operations, automatically translating them into SIGNAL commands. Users can create command files simply by using the menus and dragging signals around the screen! **New users** can learn the SIGNAL language quickly by using the menus, then studying the recorded output to learn the corresponding SIGNAL commands. **Experienced users** can use the recorder to conveniently construct SIGNAL programs.

The SIGNAL 4.0 **console window** functions like the SIGNAL 3.1 command line, allowing users to enter commands from the keyboard and execute command files.



The **browser window** displays current signal buffers and graph windows in a tree view similar to the SIGNAL 3.1 buffer directory. Signals can be graphed, listed, copied, deleted, and saved to disk directly from the tree, using drag-and-drop and menus.



SIGNAL 4.0 includes built-in **export of sound, image, and measurement files**. Sound files can be read and written in SIGNAL, .WAV, AIFF, and headerless binary format. A mathematical resampler can adjust sample rates to accommodate different sound hardware, such as PC and Macintosh sound chips. Graphs can be automatically captured and saved as bitmap (.BMP) files. And measurement files can be exported in text format to spreadsheet and statistics programs.

Engineering Design

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