

Echoview 13.1 release notes

Echoview Software is committed to improving your hydroacoustic data processing capabilities by providing best practice, easy-to-use software.

Echoview 13.1 is a free upgrade for anyone with licensed access to Echoview 13 and brings a helpful selection of user-requested features that are detailed below, alongside general stability and performance enhancements.

Please contact info@echoview.com to discuss your options for licensed access to Echoview 13.1.

Significant calculation updates

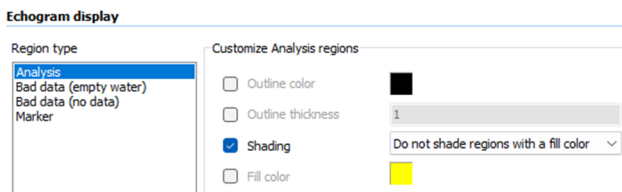
We've updated the calculation of $S_v(f)$ for Simrad EK80 wideband data, according to the latest advice from experts in the wideband echosounding community.

We've also implemented corrections to the calculation of beam volume sum and wedge volume sum in single target analyses.

Comprehensive details for both changes are overleaf.

Region customization

You can now customize the region outline color, thickness, shading and fill color for all analysis, bad data and marker regions, or for regions of a specific class only.



The new settings are found on the Classes page in EV File Properties.

Pulse duration tables for Simrad data

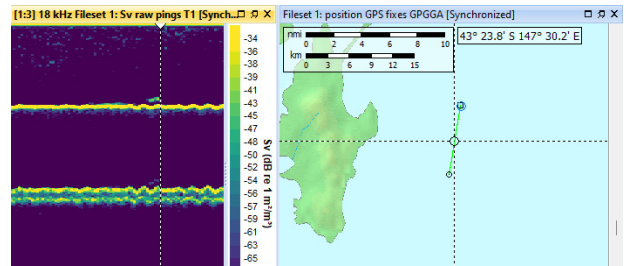
Echoview Calibration Supplement (ECS) files can now include a lookup table that allows you to set pulse duration-dependent values of transducer gain and Sa correction. The new settings apply to Simrad EK60 and EK80 data, and are:

- PulseDurationLookupKey
- PulseDurationLookupTransducerGain
- PulseDurationLookupSaCorrection

These new calibration parameters allow you to easily set up options for transducer gain and Sa correction that are automatically applied when pulse duration is changed during a survey.

Other new features

- Support for R2Sonic TruePix data.
- Support for Simrad EK80 raw data files recorded with a blank ApplicationName.
- The maximum allowed value for the Platform's z-coordinate of the water level (depth) is increased.
- Cruise tracks can include an overlay that shows the specific position of synchronized pings.



- Several multibeam target detection-relevant operators now include support for more multibeam data types.
- The performance of the Code operator has been improved.
- Simrad EK80 Portable Entry license holders can add position, attitude, depth, and speed data in CSV files.
- The Command Interface's Grid settings now store meters and nautical mile distances separately.
- The Details dialog box will report bearing and tilt for multibeam pings.
- Editable line selections can now be recalculated using the Trained Model Bottom Exclusion algorithm as the line source.

Getting Echoview 13.1

Echoview 13.1 can be downloaded from our [website](https://www.echoview.com).

A complete list of features and fixes are highlighted within the "New in Echoview 13" pages in the help file installed alongside Echoview 13.1.

Please contact support@echoview.com for further information.

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Single target volume correction

It has come to our attention that the solid angle used in Echoview's calculation of "beam volume sum" misrepresents the volume in which single targets are detected, which affects point target (e.g., fish) density estimates obtained via an echo counting method in which the number of single targets detected is divided by the beam volume sum.

Beam volume sum has used the equivalent two-way beam angle in its calculation, which results in a volume estimate that takes into account the beam pattern (effectively, a reduced volume). This is appropriate for echo integration, but the volume in which single targets are detected should be defined by the beam compensation and off-axis angle filters in use.

In Echoview 13.0 and older, it was possible to change the angle used by adjusting the `TwoWayBeamAngle` in an ECS file, but this requirement was easily overlooked and, furthermore, affected any S_v calculations in the same dataset. In Echoview 13.1, the beam volume sum for single target echograms will now represent the volume defined by the following Variable Properties settings:

- maximum beam compensation on the Single Target Detection page
- maximum off-axis angle on the Filter Targets page
- maximum beam compensation on the Filter Targets page

If more than one of the above settings is utilized, Echoview will calculate beam volume sum based on the setting that results in the smallest volume.

This correction to beam volume sum affects previous fish density estimates obtained using echo counting, including the Cell statistic [Single targets] operator. The magnitude of this effect is proportional to the difference between the equivalent two-way beam angle and the newly calculated solid angle.

Note that the beam volume sum reported with echo integration exports (from S_v echograms) has not been changed: this volume calculation still uses the equivalent two-way beam angle.

The calculation of "wedge volume sampled" has also been modified. Wedge volume sampled previously used only the major axis 3 dB beam angle in its calculation (which could be overridden by the calibration setting `WedgeVolumeBeamAngle` in an ECS file). Now, wedge volume sampled will also incorporate any reductions to this angle, according to the single

target detection settings (and can still be overridden by `WedgeVolumeBeamAngle`).

The correction affects point target density estimates obtained via an echo counting method in which the number of fish tracks is divided by the wedge volume sampled. The magnitude of the effect will depend on the difference between the 3 dB major-axis beam angle or `WedgeVolumeBeamAngle` previously used, and the angle defined by the settings in single target detection (dependent on maximum beam compensation and off-axis angle filters). For example, if the maximum beam compensation is set to less than 6 dB, the angle used by wedge volume sampled will be smaller than the 3 dB major-axis beam angle.

Wideband S_v frequency response

Prior to Echoview 13.1, $S_v(f)$ was calculated from the pulse-compressed echogram based on the nominal transmit pulse duration and a spreading-loss compensation calculated at the centre of each window of samples used for the Fast Fourier Transform (FFT) calculation.

In Echoview 13.1, the calculation of $S_v(f)$ has been updated to match [Andersen et al. \(in prep\)](#). The key changes are:

1. Range compensation for spreading loss is calculated for each sample before the FFT is taken, rather than a single calculation at the center of the FFT window, which is more consistent with the basic intent of the sonar equation.
2. The sampling volume is based upon the volume of water from which echoes contribute to the FFT window. This differs from the classical S_v sampling volume which is based upon the volume of water from which echoes contribute to a given sample.

We have verified that the $S_v(f)$ results from the new calculation in Echoview 13.1 match the Python scripts provided by Andersen et al. (at the time of writing).

The update conforms to current best practice as determined by recognized experts, and can therefore be reasonably considered as the best metric to use for quantitative analysis at the present time. The difference in calculated $S_v(f)$ between Echoview 13.1 and older versions will likely vary depending on the data.

Questions?

Please don't hesitate to contact support@echoview.com for further advice on these calculation changes.