

Hydroacoustics UPDATE:

Explanation of New High Definition Contour Display in Teledyne RD Instruments (TRDI) WinRiver II Software Versions 2.22 and Above

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WinRiver II version 2.22 (pushed via WFAST on September 4, 2020) introduced several new features including a new High Definition Contour Display setting that is enabled by default for all contour plots, including the typical Earth Velocity Magnitude contour plot. While the USGS Hydroacoustics Work Group (HaWG) identified some minor issues in the software, the decision was made to push the software via WFAST. WinRiver II version 2.22 is required for TRDI Acoustic Doppler Current Profilers (ADCPs) shipped after March 2020 due to changes in the internal Bluetooth communication hardware components installed on the ADCPs. None of the issues identified prevent the collection of measurement data. For a complete list of changes and known issues for these software versions, please visit:

<https://hydroacoustics.usgs.gov/movingboat/WinRiverII.shtml>

Velocity Contour Plot with High Definition Display Enabled

Beginning with version 2.22, WinRiver II defaults to smoothing being enabled with a new contour graph display setting that is referred to as the 'High Definition Contour Display'. This display setting can be helpful in smoothing outliers from the contour view and better defining areas of low and high velocity, especially when the required instrument configuration results in relatively high random velocity variations, such as data collected using some Rio Grande and StreamPro water modes. However, velocity data viewed with the High Definition Contour Display enabled can be misleading, has the potential to hide issues, and can be more difficult to troubleshoot the data in real-time. Therefore, ADCP users should be aware of this change to the default display setting, understand how the change affects the way data is viewed, and know how to revert back to the former contour display setting (Referred to as the Standard Definition Contour Display) (Figure 1).

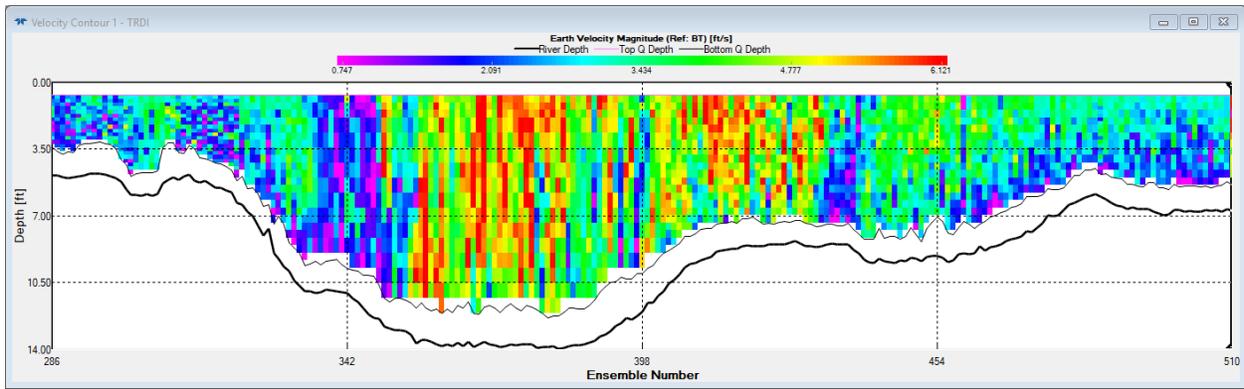


Figure 1: 'Standard Definition Contour Display' of Earth Velocity Magnitude without High Definition Contour Display enabled. This is the default contour graph display found in versions of WinRiver II prior to version 2.22.

The High Definition Contour Display setting (Figure 2) does not change the way the data is computed and only changes the way the data is displayed. Missing ensembles and bins still appear blank despite the display setting. Regardless if High Definition Contour Display is enabled, both water velocity and boat speed data (bottom track, GGA, or VTG) must be valid for each bin to show valid water velocity data.

The main difference between having the setting enabled and disabled is that, with the high definition setting enabled, the graph contains smoothed data for each bin (for example water velocity in Fig. 2). With the setting disabled, the contour graph displays the actual measured data (for example water velocity in Fig. 1) in each valid bin. Data displayed in each bin in the High Definition Contour Display are average values from the data in the eight surrounding bins (5 surrounding bins for top and bottom bins). This provides a smoothed appearance to the contour plots, but does not show the actual measured value for each bin and introduces the potential to mask issues in the data.

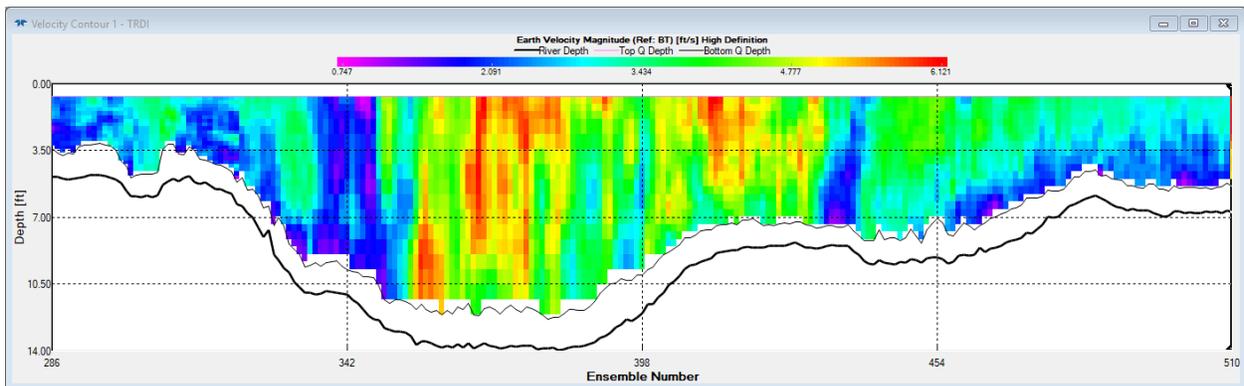


Figure 2: New High Definition Contour Display setting enabled on Earth Velocity Magnitude contour graph. This setting is enabled by default in WinRiver II versions 2.22 and greater.

Disabling the High Definition Contour Display

In order to disable the High Definition Contour Display, navigate to the Configure Menu and select 'Global Parameters' (Figure 3). Here, uncheck 'High definition Contour Display' then click 'apply' (Figure 3). This will set the velocity contour plot back to the Standard Definition Contour Display and display the actual measured data value in each bin. The view can be toggled between the two options any time during measurement acquisition or playback, but always reverts back to the High Definition Contour Display enabled when WinRiver II is closed then re-opened. A custom workspace can be saved with the setting disabled, but this workspace must also be loaded every time WinRiver II is restarted.

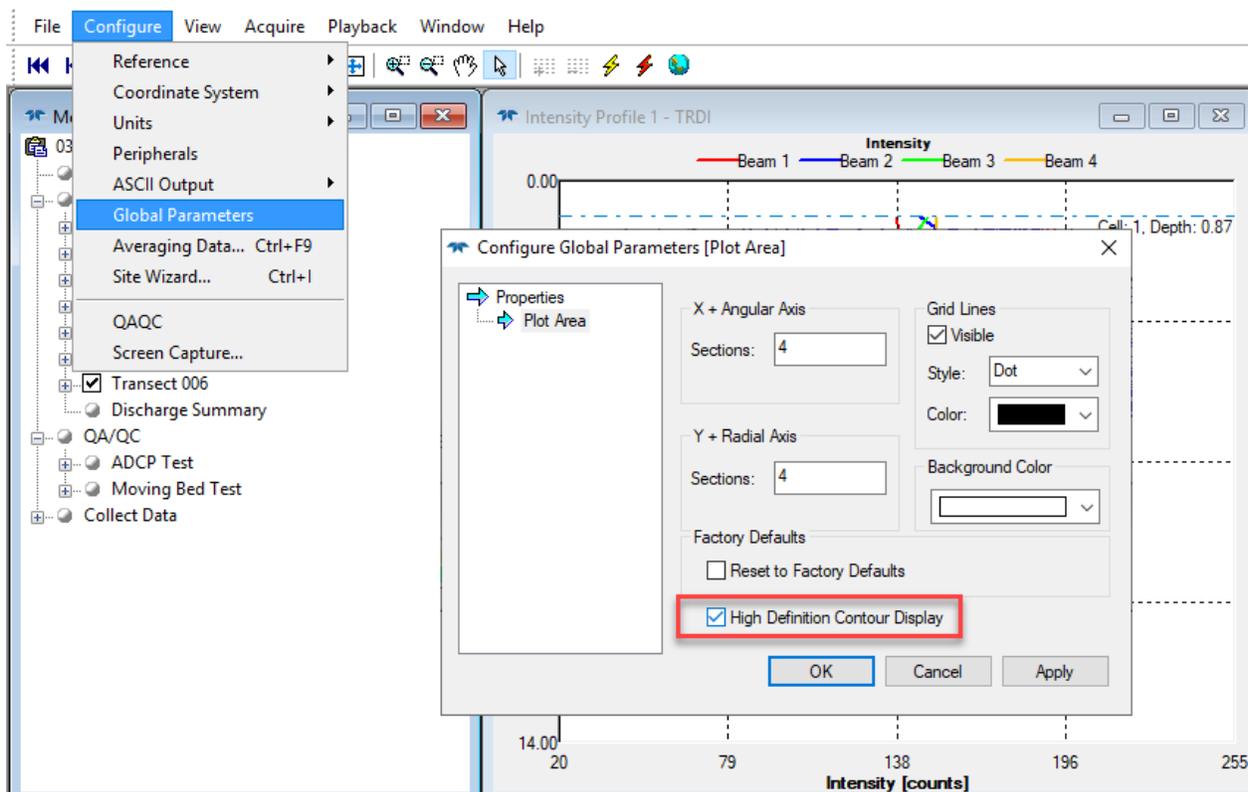


Figure 3: Toggling between Contour Display settings under 'Configure Global Parameters' Window.

Future Versions of WinRiver II

The HaWG has asked TRDI to set the default for the High Definition Contour Display to disabled and make it easier to toggle between settings. Additionally, the HaWG has suggested there be an option to view both plots at the same time, although it is not guaranteed that these changes will be made.

If anyone has questions or finds unreported issues in the software, please send an email to the HaWG at: gs-w_hawq_all@usgs.gov. If possible, send a screenshot of the issue, WinRiver II version, relevant data files, and a quick description of the issue.