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CDOM Customer Alert: September, 2010

CDOM Scale Factors Shift

WET Labs calibration testing has revealed that our CDOM quinine sulfate solution preparation methodology used to calibrate our ECO CDOM fluorometers had shifted with time. New methodology has been implemented to assure stable calibrations between instruments.

Instruments affected:

All CDOM fluorometers built or calibrated between January, 2008 and August 2010.

Instruments prior to:

FLCDS-1868
FLCDRT-1913
FLCDRTD-1955
FLCDSB-1873

WET Labs' Actions:

New Instruments:

WET Labs has instituted a new calibration standard solution preparation methodology. All new ECO CDOM's delivered from this date forward will have range characteristics as per current specifications and scale factors.

Instruments returned for service and calibration: Instruments returned for service and calibration will be calibrated using the new methodology. Accordingly the scale factor will shift and the resultant range of the instrument will widen.

While the reported scaled output of the instrument will have changed, the environmental response will not have changed, i.e. raw voltage or counts output in your environment will be the same as previously recorded.

However, ECO CDOM instruments are designed and built to achieve the best signal to noise ratio possible at the highest resolution possible. Our engineering and technical teams regularly evaluate instrument design and production methodology to continue to push for higher resolution with increasing signal to noise ratios. Improvements are identified, tested and implemented in new instruments. WET Labs service technicians will incorporate these improvements during service when practical. WET Labs' term for this service is 'retuning.' Accordingly, a serviced instrument may well have a better performance after retuning than when it was first built.



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For instruments that are retuned, benefiting in either resolution or signal to noise ratio, WET Labs will provide pre and post calibrations to allow you to link your data sets prior to service with your data sets after the instrument is returned to you.

Recommended Customer Actions:

If you calibrate your instruments then you do not need to take any action. Continue to use your calibration.

If you report only relative fluorescence, i.e. raw counts or voltages, then this change in calibration does not affect your data sets.

If you report scaled data, then you should adjust your reported values.

To compare scaled values between new instruments and existing data bases, multiply the previous scaled data by 0.63.

For example:

Previously scaled output = 50 ppb QSDE

To compare with a new instrument:

$$50 \text{ ppb QSDE}(2009) = 0.63 * 50 \text{ QSDE}(2009) = 31.5 \text{ QSDE}(2010)$$

Alternatively, to adjust your scale factor:

$$\text{New Scale Factor} = \text{Old Scale Factor} / 0.63$$

Then apply the new scale factor to your previously corrected raw data.

For instruments returned for service, you will use the ratio between the previous scale factor and pre-service scale factor. This ratio will cover both the change in the methodology and any change in your instrument between the previous calibration and this servicing.

Scale Factor for ASV = 1 from previous characterization sheet = 25 ppb QSDE per volt
Pre-service scale factor for ASV = 1 with the new methodology = 35 ppb QSDE per volt
Ratio to adjust previous data set = 0.71 (25/35)

Post-service scale factor for ASV = 1 with the new methodology = 30 ppb QSDE per volt

Use the post-service scale factor going forward.
