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Portfolio:	Open Channel Flow		Page:	1 of 6

horizons regional council | **Hydrology Operations Manual** | **horizons** regional council

ADCP – Processing and Data Entry – QRevInt

QREVINT

QREVINT is used for the processing of moving boat ADCP gaugings.

Overview

The original program was called QRev and was developed by the USGS. Due to development conducted outside the USGS the name was changed from QRev to QRevInt, so as to represent the international support and development.

The software supplied by the different manufactures of ADCPs have limited automated quality assessment features. Software from different manufacturers use different algorithms for various aspects of the data processing and discharge computation.
QRevINT automates filtering and quality checking of the collected data and provides feedback to the user of potential quality issues with the measurement.

The general design of QRevINT was guided by the following criteria:
1. Process SonTek and TRDI data.
2. Use consistent algorithms.
3. Use the best available data (interpolate only what is missing or invalid).
4. Provide a logical workflow.
5. Automate data quality assessment and provide useful feedback.
6. Provide manual overrides for all automated filters.
7. Use windows with tables and graphs designed to evaluate specific problems.
8. Provide uncertainty information to the user.
9. Use a GUI and layout that is tablet friendly.

Hydrology Operations Manual

ADCP – Processing and Data Entry – QRevInt

Transferring data

Create a folder in the site gauging folder with standard naming convention

Hydrology Sites/*site name*/Gaugings/Sontek/*Gauging number_TIDEDA date_Site code*

Download files and copy .riv files (M9) or .rsqmb files (RS5), CompassCal, and SystemTest folders across.
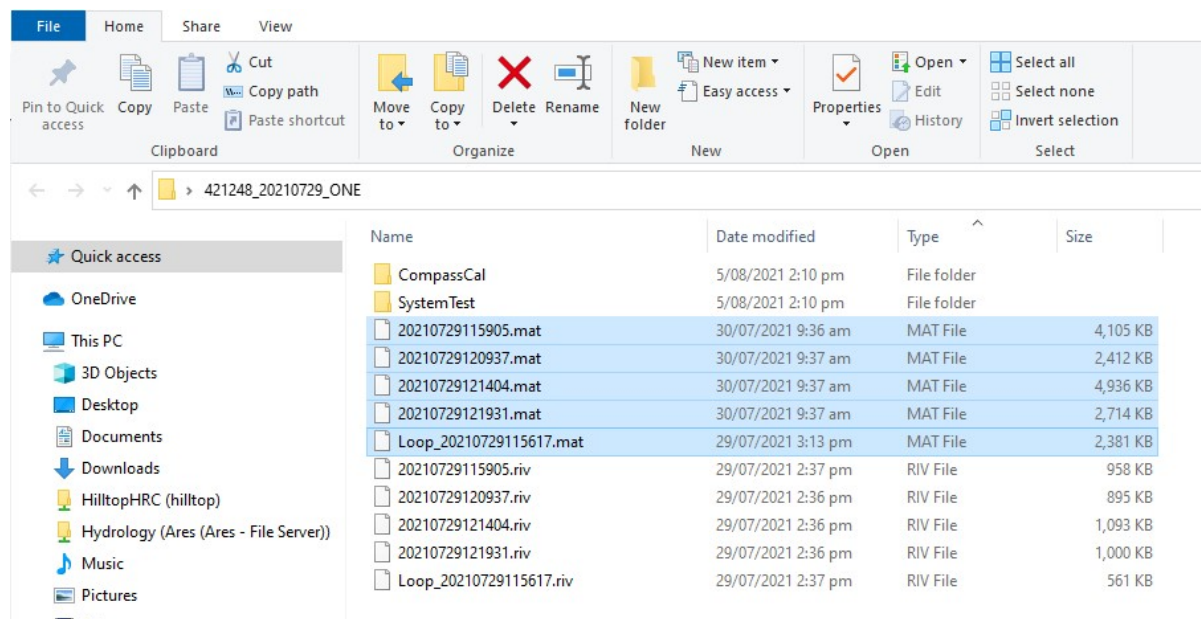
Create Matlab files

> QRev opens matlab files. The M9 and RS5 are different in how they produce these files.

> M9 – Open gauging files in RiverSuvayerLive. Matlab files will be automatically generated when you exit RiversurveyerLive

> RS5 – Open gauging file in RSQ software and export as Matlab file.

The file structure should look something like this.

Processing transects

	Hydrology Operations Manual	

ADCP – Processing and Data Entry – QRevInt

Run the latest version of QRevINT

> \Hydrology Sites\General Site Information\Gaugings\USGS QREV

Open the individual transects.mat files and QRev will pick up the moving bed test, compass cal and system test from the folders

> Note: With the M9 the CompassCal and System test folders are held on the device you used, so if you downloaded your gaugings directly from the M9 to a different device you'll have to manually copy them across.

All processing tasks can and should be undertaken in QRevINT

QRevINT has a very good navigable help file which is located in:

> \Hydrology Sites\General Site Information\Gaugings\USGS QREV\QRevInt_XXX\Help\QRev_Users.pdf

A brief description is given here. If you require clarification, refer to the user manual.

The object of the exercise is to get green tabs along the top, which in theory should lower your gauging error.

Green – Passed internal quality checks

Orange – Has failed some checks and you should have a look

Red – Failed checks and may effect the resulting discharge

Blue – User has made a change from original settings

Its not immediately obvious what parameters can be edited. You have to click in the values to see what can be changed.
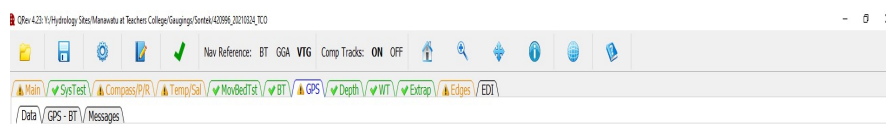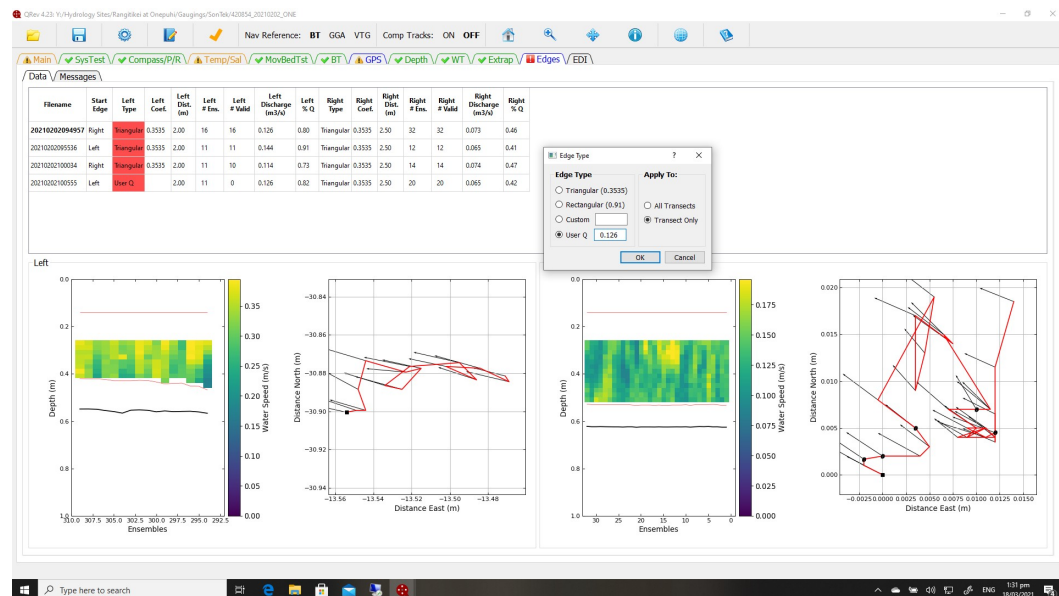

The Green tick ✓ selects or deselects transects. The Nav reference can be changed by clicking on **BT GGA VTG** in the banner.

Check Transduce depth in the Depth tab and the Mag Declination in the Compass tab and edit if needed.

ADCP – Processing and Data Entry – QRevInt
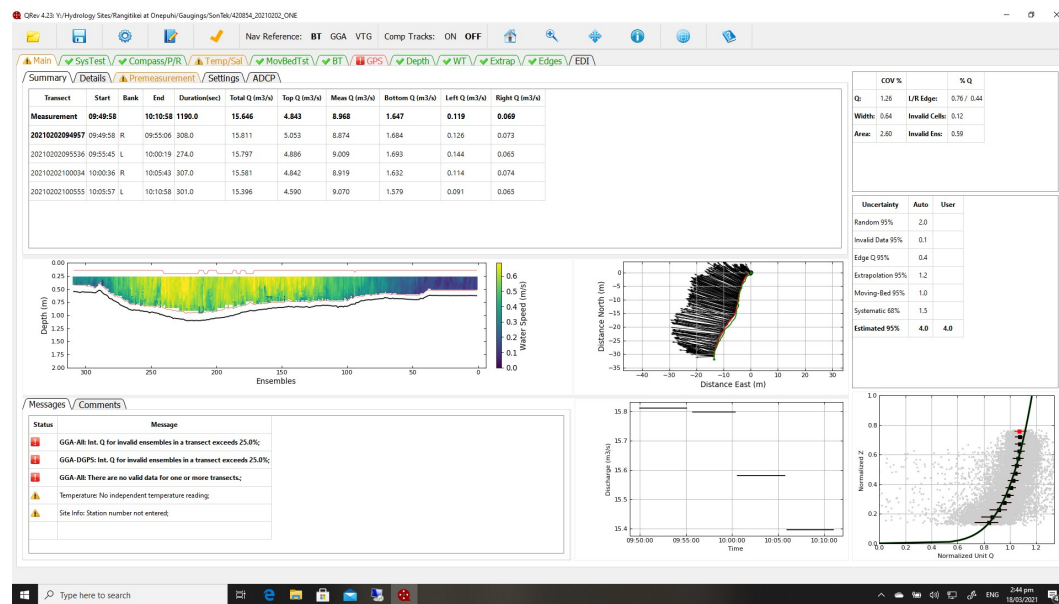
Next up have a look at the edges tab.

Make sure that the edge data contains at least 2 cells on either side. If not, this could be a reason for differing transect results. You can edit values in here. If you have no cells on an edge or something else doesn't look right you can manually enter the edge value Q. Sets off a warning but do what you think is right.

ADCP – Processing and Data Entry – QRevInt

If you have a water temperature you can enter it as the ADCP temp tends to change during a transect.

Pay attention to the messages on the main page, this gives important feedback on the gauging and helps develop field methods that may address these issues.

If your riversurveyer setup is right and your gauging is good you pretty much don't have to change much.

Fill out the Gauging Register

Save your file in the site gauging folder.
Gauging number_TIDEDA date_Site code_QRev.mat
This will produce 1 .mat file that containes all information and logs all editing.
An xml file is also created which is the file that is imported into Hilltop.
Gauging number_TIDEDA date_Site code_QRev.xml

Import the .xml file to Hilltop. Data-Import-QRev. Select the correct site name. Edit your facecard and print it out. You end up with a gauging error Uncertainty – Total %.Best thing about QRev is you don't need to make assumptions and fill out the Quality Coding Matrix on the back of the ADCP gauging card. Things like HDOP, pitch roll, measured %Q are acconted for.

Under 5% QC 600

5%-10% QC 500

Over 10% QC 400

Hydrology Operations Manual

ADCP – Processing and Data Entry – QRevInt

Print this out and attach to the gauging card.