

What's new in TSG8 since September 2017

FXClust Scalar

This new scalar is described here:

ftp://ftp.csiro.au/MMTG/tsg_fxclust_scalar.pdf The doc's intro:

In October 2017 a new scalar calculation "FXCLUST" was put into TSG. It implements a spectral clustering procedure developed by Andrew Rodger of CSIRO. It classifies dataset samples according to the grouping of their dominant spectral features. Here's an overview of how it works:

- It is driven by feature-extraction results.
 - Feature selection can be moderated by wavelength subsetting and a minimum depth threshold.
 - The wavelength centres of each sample's deepest 2 to 5 features are the main clustering inputs.
 - Two other experimental inputs may be included for each sample.
- The "DBSCAN" clustering algorithm is used to cluster the inputs.
 - Samples with similar features are clustered together.
 - The algorithm can track shaped clusters (not just blobs) like ones often seen in feature-extraction scatterplots.
 - The algorithm has just two parameters.
- The clustering stage can be followed by one or two simplification stages:
 - Merging of spectrally similar classes;
 - Spatial smoothing.
- Good floater evaluation support is provided.
- A recalculable class scalar is produced in TSG.

Picture and GPS Import

This new tool is described here: ftp://ftp.csiro.au/MMTG/tsg_picimport.pdf The quick summary from the doc:

- This new tool (Nov 2017) has two functions: One to provide context to spectra by linking them to images of the sample measured, and two to use those images to geolocate spectra in latitude, longitude, altitude map space. Spectra are commonly seen as highly abstract things but adding images of what they represent not only provides context and relevance but also increases confidence in the spectra and sample information in their own right. If you are using a field spectrometer to log core, for example, capturing a general photo or macro-photo of the core just measured spectrally can be extremely valuable. Other uses might include capturing photos along field traverses, or of hand samples when building a spectral reference library.

Import / export

The ASCII XY import has been modified to detect and extract RUFF headers automatically.

The newish dynamic import functionality has been modified to support general wavelength units (not just nanometres).

There is a new option in the **File -> export** menu to export ASCII XY files (one per spectrum).

Floater “picture” orientation

There is a new floater menu sub-tree called “**Orientation**”. It is shown when the displayed picture has an Exif header that has an “orientation” tag. You can use it to change the picture’s orientation, e.g., to have it rotated by 90 degrees when displayed. (TSG’s floater pic mode now uses this tag automatically.)

Scatter screen

The “**linfit**” collection has a new item: **Annot: y=c**. While the other “linfit” items are about fitting a curve to the scatter or grid plot, this one is for annotating it with a flat horizontal line at the given Y value. (You get an on-screen field where you can type in your **c**.) It is useful for annotating a threshold value, for example.

“Headless” mode

You can now drag-drop a headless script file onto TSG to schedule it and a bug has been fixed in the headless copy-processing job’s layout copying, but mainly...

New “headless” job TPICGEN

You can now generate tray pictures for a HyLogging dataset in “headless” mode. The job can be used in multi mode and its parameters correspond with the fields that you see in the interactive tray-picture generation dialog. They are as follows ([with defaults in blue](#)):

- TSG_DATASET dataset path when not used in multi mode (**none**)
- BRANDING picture title (80 chars), “plain” pictures only ([HyLogging Systems](#))
- LOGO_FILE left-logo-icon path ([CSIRO icon](#))
- LOGO_RIGHT **N** or **Y**, to use “LOGO_FILE” for the right logo too
- MINDEPTH starting depth (trays before it are skipped) ([dataset start](#))
- MAXDEPTH end depth (trays after it are skipped) ([dataset end](#))
- WIDTHTRIMPC *extra* image width trimming in percent (**0**)
- OUT_PIXPERM output resolution in pixels-per-core-metre (**2000**)
- RESAMP_METH **NN** (nearest neighbour), **LINEAR**, **CUBIC**, **LANCZOS** or [SUPER](#)
- SUBDIR subdirectory to create (alongside dataset files) for the tray pictures (**none**)
- FILENAME_EX **HOLEID** and / or **DEPTH** (“decorations” for the output filenames) (**none**)
- FILE_FORMAT [JPEG](#), **BMP** or **PNG**
- JPQUAL quality factor for JPEG output, 1..100 (**75**)
- PIC_TYPE [PLAIN](#), **SCREEN** or **STICKS**
- STICK_PER [TRAY](#), **SECTION** or **INTERVAL** (type of image stick)
- STICKSPAN stick length in metres, interval stick output only (**1**)
- STICK_HORIZ **N** or **Y**, to render image sticks horizontally instead of vertically
- MASK_SCLR mask-scalar name, used for an image overlay (**none**)

- **MASK_COLOUR** colour index for mask overlay (3 and good luck changing it)
- **MASK_SOLID** N or Y, to draw the mask overlay solid instead of semi-transparent
- **WHITE_BKGND** N or Y, to give the pictures a white background instead of a black one

Here is an example script:

```
MULTIOPTIONS swir noassoc nofield
multifile C:\00me\swift\*. *
task_begin
operation tpicgen
subdir 1msticks
out_pixperm 3000
widthtrimpc 7.5
jpqual 80
pic_type sticks
stick_per interval
stickspan 1
stick_horiz y
mindepth 100
maxdepth 150
task_end
```

Change log

As usual the change log is here: <ftp://ftp.csiro.au/MMTG/tsglog1617.docx>.