17/08/2019

- Angular velocity (graph view selectable on the 2D sliders/Magnetometer tab) is now based on the heading/pitch sphere and is output in degrees. By default, when a data file is loaded, the software will now automatically set the angular velocity stepping (on the 2D sliders/Magnetometer tab) to the sampling frequency such that angular velocity will be calculated in degrees/second

- Loading of GPS csv files will temporarily disable the "Select data file" button to allow the GPS data file to complete loading into memory

- Fixed a cosmetic on the numbers overlay; rectangle was sitting over the label for smoothed pressure

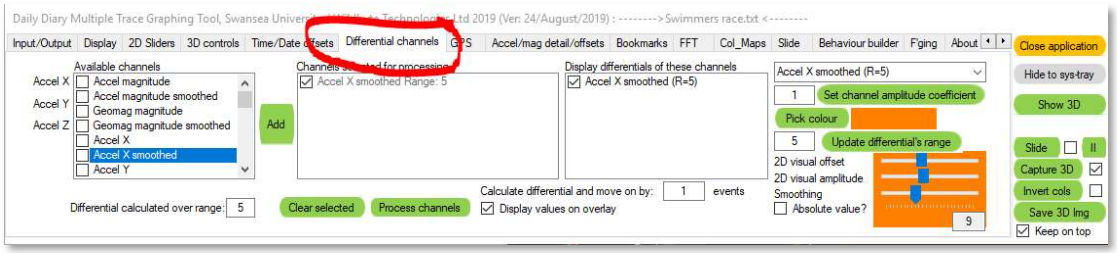
- Fixed the issue where differential headers were randomly missing in an exported data file, while the column data was present

24/08/2019

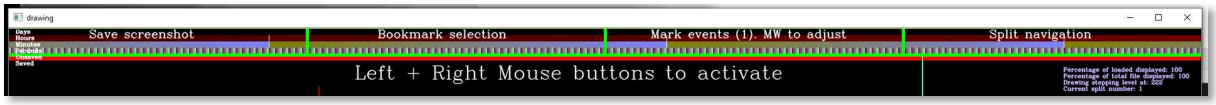
- Vertical height of Marked Events can now be set using the two horizontal lines and clicking the "set visual height" button on the marked events controls panel, accessible from the BB tab
- Bookmark Multisession – split number was incorrectly output in the header file as split-1. Correct split number now reported in the header file column data

28/08/2019

- Found a fault in the code for creating bookmarks around regions or Marked Events; Marked Events in latter splits were being interpreted as being in the first split so bookmarks would be created there. **Now corrected**
- New button added on "Bookmarks/Autocreate bookmarks" tab: "Autocreate bookmarks, whole file, for Marked Events 1-9" – as it implies, this will generate bookmarks around regions of marked events by reading through the global Marked Events array, not just for the currently loaded split
- Differential channels tab now on the top tabs row (before, it was badly placed under the "Display" tab

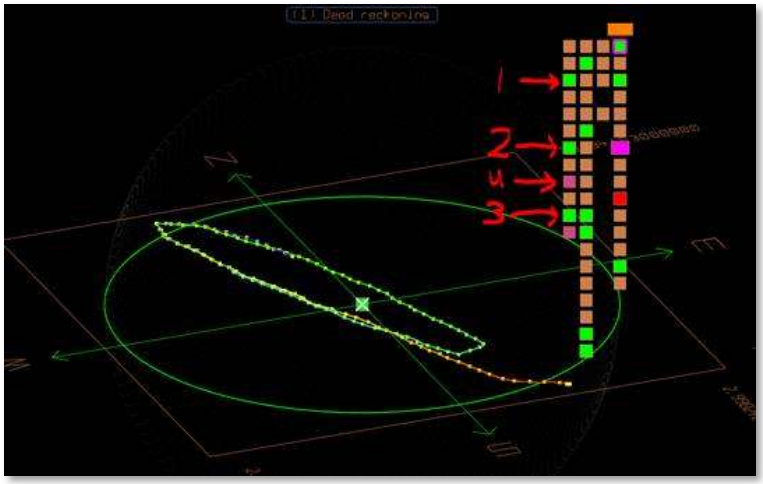


- Drawing windows (2D graphed data) now dynamically rescales the graphs to fit the new window dimensions. Window "drawing2" will follow the size changes made to window "drawing" and vice-versa
- Cosmetic change to the top 4x text regions. Text font size increased and when the mouse moves to the top line, a message appears indicating left+right mouse buttons are required to activate the relevant function



01/09/2019

- Dead Reckoning visual with GPS ground-truthing now functions. To use this, first load GPS data, time/date adjust DD data, enable GPS-DD sync (GPS tab), correct mag data and DD orientation for correct heading channel data, open up a DR visual and enable the purple buttons labelled 1,2, and 3. The button labelled "U" is for adjusting the under-sampling of GPS data (default value 1 – no undersampling) – use mousewheel to adjust.



  There was a problem a couple of weeks ago where things would go awry with low VeDBA, but this turned out to be down to a variable unable to hold the resolution of such small value changes. Variable type changed, problem solved
- Added orange zero baseline for VeDBA, ODBA, VeSBA, and Animal-g on the 2D graphs (for both drawing windows)

02/09/2019

- TDO files now include the DD orientation settings. If GPS data is present in memory (prior to loading the DD data file/split), the controls on the GPS tab: "Sync GPS file to DD" will be "auto-pressed" and "Link extremes?" will be ticked after the time/date adjustment.
  So, now, with the correctly formed TDO file, one can load GPS data, load the DD text file/split, load the TDO file, and immediately create a DR track, ground-truthed to GPS.

  Note that older TDO files will still continue to function correctly, they will simply not correct the orientation.

06/09/2019

- Fixed fault where the DD orientation manually adjusted controls for heading were being reset to the setting dictated by the DD orientation controls on the left side of that tab, whenever you moved to another split
- GPS tab “Stepping” for GPS velocity calculation text box next to the slider is now no longer read only, and also has a button allowing you to “set” the slider value directly by entering a value 1-50. GPS velocity will then immediately be recalculated based on this stepping value
- Fixed fault where the software would crash when one of the Drawing windows was minimised. This was an oversight in that Windows actually sets the window size to 0x0 and so the data arrays were too trying to reset to 0x0 (not allowed). This is a new fault due to the changes recently made where the Drawing windows would rescale if the user changed the Drawing window size
- Mouse sensitivity maximum has now been changed from maximum 100, to maximum 10,000. To get to these high levels, instead of using the left shift, use the left ctrl, which, together with the mouse wheel, will allow the change of the mouse sensitivity to rapidly increase to its limit. This is especially useful for the Dead Reckoning visual “GPS under-sampling” button that sets the GPS-GPS point stepping for the ground-truthing
- Dead Reckoning visual – “GPS under-sampling” maximum has been changed from 3,600 to 86,400 (if GPS is logged at 1 Hz, this is the equivalent of 24 hours)

08/09/2019

- When preloading a GPS file, the front panel is hidden allowing the incoming GPS data-stream counter to be viewed. This will be hidden again by the front panel to allow the DD text file to be selected/loaded
- When loading a TDO file, the GPS mean speed 2D graph will be auto switched on to view
- Added a simple (at the moment) VeDBA (smoothed) vs GPS speed (smoothed) plot (selectable on/off) on the DR visual
- Displaying RAW data i.e. not under-sampled (visually) now properly show GPS fixes sync as red dots and blued vertical lines, as is the case with the under-sampled display
- Holding down CTRL instead of SHIFT and rolling mouse wheel will adjust mouse sensitivity for zoom etc. by 100x per step, rather than 1x

14/09/2019

- Cosmetic. The numeric pad for the VeDBA Threshold/Coefficient no longer overlaps the values being changed
- When loading BB or TS csv files, it will ask if current differentials should be cleared down (if present) prior to loading any new differentials as defined within the incoming file, if present

16/09/2019

- Accel amplitude (in addition to Accel smoothed amplitude) added to the overlay. Displays together with Accel smoothed amplitude
- Fixed issue with channel naming/selection in the BB for the FFT function
- Unlimited horizontal lines can now be placed on the 2D graphing window. Now, when you hold down ALT key, you'll see light blue bands appear on the left and right side of the window. If you move the mouse into the left side region and right-click, a new horizontal line will appear. You can then vertically position this where you want it. If you right click again in this area (after first moving out and back in of this shaded region) you'll create another, and another etc. Only the last line created can be repositioned. Moving into the region on the right side and right-clicking will remove all of these temporary horizontal lines. Intensity of these bands is controlled by the same value as for the area between the two white lines; accessible on the left side of the primary "Display" tab
- DR visual – GPS speed vs VeDBA button enable; now use mousewheel to switch between normalising min/max for both axes, and min = 0 for both axes, normalised to max. i.e. the graph can now maintain origin of 0.0,0.0
- Display tab: Control panel transparency, and 2D line drawing thickness now immediate update upon change of values

17/09/2019

- Fixed issue where you could no longer hold ALT and right-click on bookmarks to include their data in the mag_correction algorithm. Error was due to recent update that allows you to add more horizontal lines to the 2D graphing window
-

18/09/2019

- Changed differential channels smoothing maximum from 25 to 300
- Finally sorted the issue where the 2D graphs are not initially displayed until the mouse wheel is scrolled on the window. It now forces an initial draw

23/09/2019

- Dead Reckoning – cleared a fault whereby if the VeDBA was below threshold before and up to a GPS point, the track would not form due to some infinities creeping into the array

02/10/2019

- XYZ visualisation now has altitude and climb rate added to X and Y axes
- XYZ visualisation – when Y channel is set to compass heading 3D, a new button appears on the 3rd column (purple). If this is not selected, then the Z axis does nothing when Y = compass heading 3D, but if radius is enabled, then the Z channel determines the radius
  Example X = altitude, Y = Compass heading 3D, Z = Climb rate with radius enabled
- Fixed minor - Smoothed pressure slider was not updating the text box adjacent to it (Channel smoothing tab)
- Importing a *.tdo* file when a *.raw* file is in memory should now be possible; it'll only update the DD orientation settings so that heading can be correctly calculated. **Needs testing**

04/10/2019

- Added new circular buttons to the top of the 3d vis button menu. Left clicking one of these (per column of buttons) will toggle the latch to show all the text for each button present
-

05/10/2019

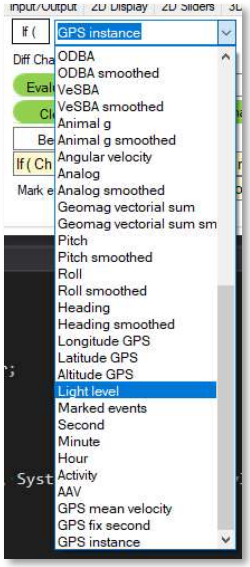
- Added ability to change the font size of all graph labels and axis labels on all vis's. Might have missed one so please let me know. To adjust font size, hold down ctrl + shift and roll mouse wheel
- Added ability to adjust the number of decimal places on the long/lat axes of the dead reckoning visualisation. Hold mouse over the button that enables these axes "Toggle long/lat/alt axes" and roll mouse wheel. Selectable between 3 and 11 dp

06/10/2019

- DR visual – GPS point thickness/size, when dropped to 1, the points no longer show, and the button text shows "GPS line thickness 1 (off)" to indicate this

10/10/2019

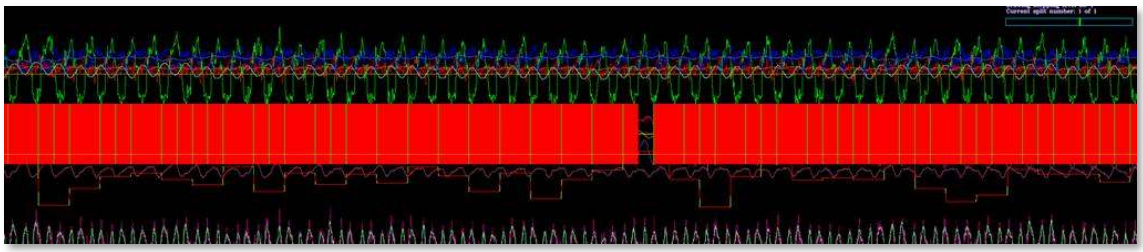
- Can now colour by “climb rate” on the XYZ plot
- Can now colour by “Marked Events”
- Channels added to BB:



GPS fix second is =1 for all points that fall within a second where a GPS event occurs i.e. if your data is 40 Hz, and a GPS fix occurred there, then 40 events will be =1

GPS instance is the GPS fix counter and only occurs once per second (the first event in “the second”. To find these points in the BB, just use something like “If Ch (GPS instance) > 0) then Mark Events” i.e. this will capture all sync’d points. Or, > 10 and < 1000 will capture points 11 – 999.

In the image below, I’ve searched for GPS fix second -> ME = 1 (red), and then GPS instance -> ME = 2 (green)



- Pitch and Roll, start / stop values have been added to the Bookmark multisession Header file
- All visualisations that can sort by Marked Events can now filter the data on the 2D window by “Marked Events All” i.e. any events that have been marked, as opposed to no filter, or a particular Marked Event value (1-9)

24/10/2019

- Behaviour Builder can now Mark Events throughout the whole file i.e. tick the “Search whole file” and using a single expression (not the Bookmark Start/Stop, but instead finish it with “then Marked Events”), it can now load each/every split, and Mark each / every event that is “true”. Note – this is not the Time Series – this can already do this…

25/10/2019

- Variance has now been added to the Behaviour Builder. Clicking on the Variance button reveals a panel where the user can select the channel to be used in the search and the “width” of data around each event over which the mean and subsequent variance value is calculated i.e. a window is width X, centred around each event.

  An example would be :

  To aid in determining the values of variance required, a new tab has been added under “2D sliders” – “Variance”, that allows the user to create a channel of variance, with each event having a variance value calculated from the data of window “width” around it (centred). The values of variance for each event can be interrogated using left/right mouse buttons as usual by selecting “Variance” on the Display Overlay (selectable on the tab “2D Display / Overlay Selection”). By selecting the same channel here that will be used in the Behaviour Builder, and the same window width, the user can determine limits on variance to be used in the search algorithm

30/10/2019

- Stopped negative zoom occurring with the 3D visuals

10/11/2019

- The Dead Reckoned output (exported DR channels in column data file) was incorrect. The longitudinal data was being over-corrected by a factor of 1/cosine(mean latitude). This was as a result of earlier code that is correcting for the narrowing longitudinal lines with high/low latitudes. Fixed

03/12/2019

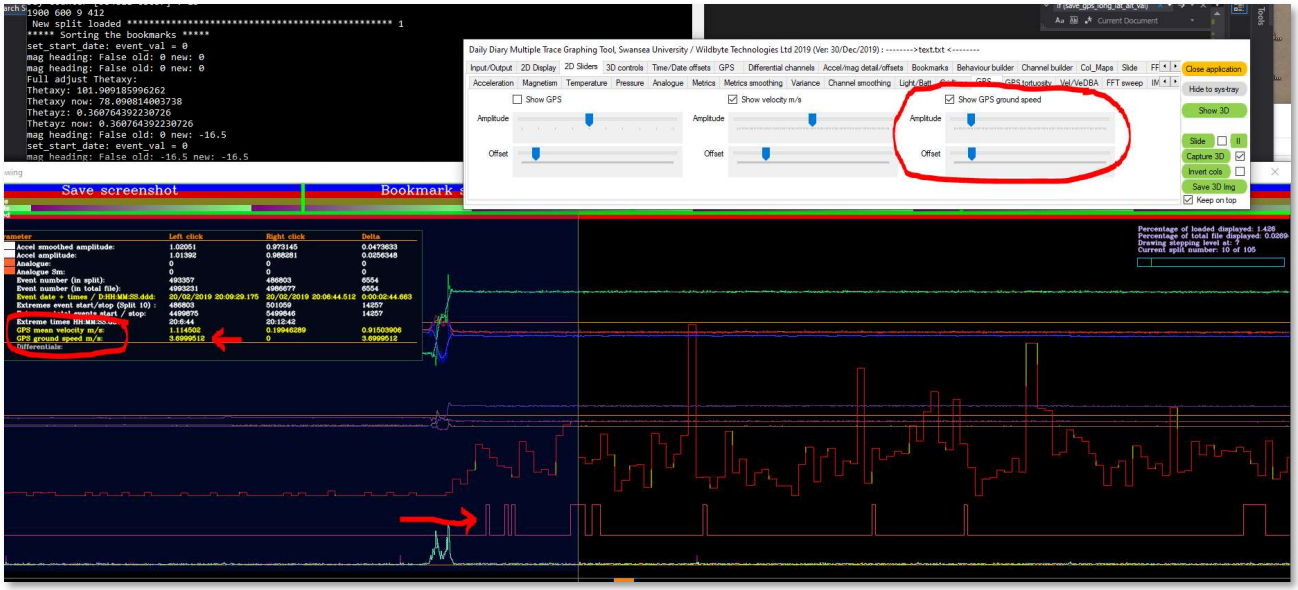
- Merging of bookmark .raw files now fully functional

30/12/2019

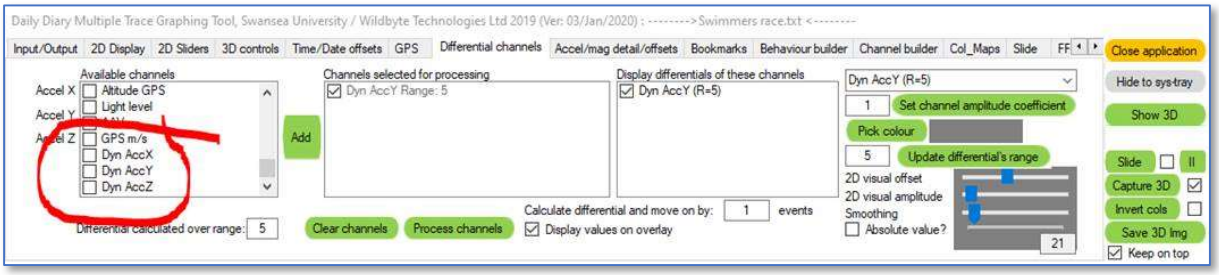
- Differentials smoothing control now adjusts by +/-1 with the mouse-wheel once the control is clicked on
- When exporting GPS data by selecting GPS in the “what to save”, a new column will be present in the exported file “GPS present”. This value will be 1 when a GPS fix is present (only the 1 event for the second) and 0 otherwise
- “Speed-sensor” column no longer present unless selected in the “what to save” within the exported data file
- Default DD orientation settings now match the settings on the left side of that tab (where the user clicks apply)

03/01/2020

- A GPS .csv file can now optionally contain a 6th column detailing GPS ground speed (derived directly from the GPS processor), typically recorded in units of km/hr. If this channel of data is present, it will be sync'd with the GPS data and can be viewed by ticking the checkbox on the 2D Sliders/GPS tab, and numerical values obtained in the Values Overlay by selecting this on the Display/Overlay Selection list. When exporting data, if "GPS Long/Lat/Alt" checkbox is selected on the What to save/Extended tab, then this GPS ground speed data will be exported along with the GPS Long/Lat/Alt data in ascii format



- Dynamic Acceleration channels, the components calculated as part of the process of calculating VeDBA etc. are now available within the differential channels list. Note, to adjust the dynamic acceleration component, adjust the "Acceleration smoothing for VeDBA, VeSBA, ODBA and Animal g" slider on the "2D Sliders / Channel smoothing" tab



18/01/2020

Dead reckoned tracks now have an extra button to allow switching between smoothed VeDBA and raw VeDBA for track generation

23/01/2020

Dead reckoned tracks had a bug whereby extra data (erroneous) would be exported at the end of the very last split, when exporting a track from within the visual (with it set to export to the last split). This has been fixed and as a consequence, with the way odd/even splits work, it the last split is less than half of the size of the earlier splits, then its export will have already been covered by the even-numbered split prior to it, and so DR track/data export will terminate at #(splits – 1)

24/01/2020

- Turning points for differential traces is now available – instructions to follow at some point! Also within this function, a histogram can be displayed on the 2D graphing window that provides mean, mode, and standard deviation of the plot
- "Zero line" removed from the mag traces on the 2D graphing window

31/01/2020

Fault cleared - pitch is inverted for the set DD orientation. This was a programming bug whereby, if the user set one or more certain options using the combo boxes on the left side to set the orientation parameters on the rhs of the DD orientation tab, sometimes an internal flag was set which caused pitch to be inverted. Then, changing things manually to something else would not clear this flag, and so pitch would continue to be inverted (incorrectly). Now, if any changes are made to the options on the RHS, this pitch inversion flag is cleared

22/02/2020

- Fault cleared – When exporting multiple bookmarks via the multisession, if the two white lines were in the last half of the split, this would potentially cause a complete crash/shutdown of the software.
- Added – for the 3d dot plot + height 3D visualisation, added the "show white dot where the left white line is on the 2D drawing window" (as was already in the 1D2D, 3D dot plots, and the o-sphere visualisations)
- Updated – Exported ascii column data bookmark header files, the "duration (s)" column now correctly shows the time difference down to 3 dp.
- Fault cleared – Imported .raw files (no bookmarks, just standard .raw file) – the initial few events and the last few events timing was incorrect. Based on the frequiency the user tells the software that the data is sampled at, the correct decimalisation is provided for the initial and last few data points in the file loaded into memory i.e. if the frequency is 10 Hz and there are 3 events with one seconds value and then then timing updates to the next seconds value, then those first 3 values will have decimal values of .7, .8, and .9 seconds. Likewise for the last few events. The remainder of the data's decimal values are calculated based on the number of adjacent events with the same seconds value and the provided frequency value

23/02/2020

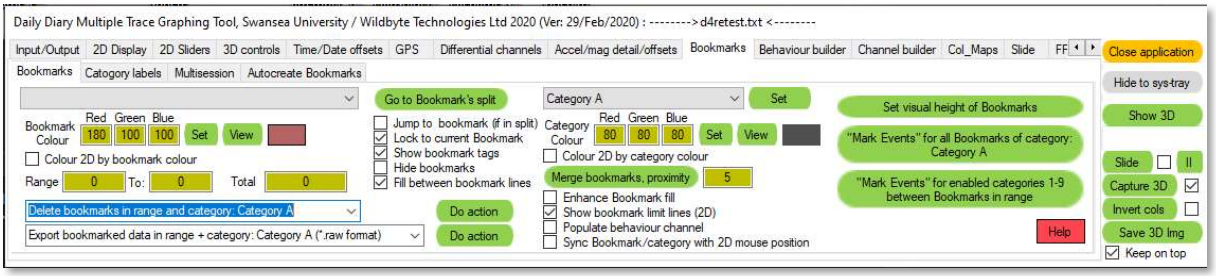
- Added – checkbox for Wildboar group to output multisession bookmarks in a specific column ordered format

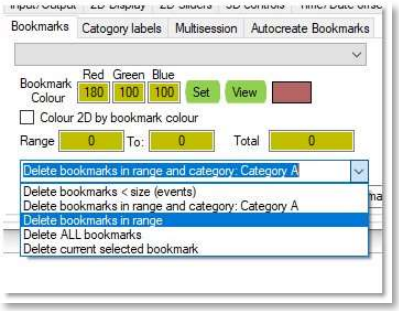
24/02/2020

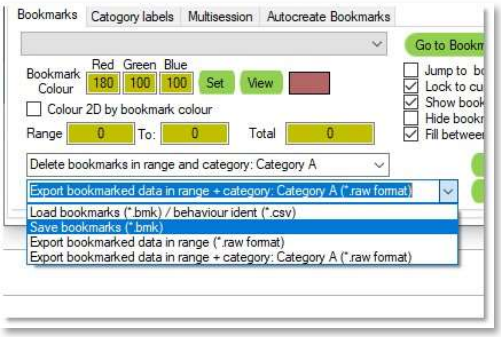
- Cosmetic – Reorganised the Behaviour Builder tab to make it more intuitive for the newcomer

28/02/2020

- Cosmetic – Reorganise the Bookmarks tab; group various “Delete #” and “Import/Export #” buttons into two drop-down selections to reduce clutter







- Default 3D auto centring of data turned off. Now defaults on first creation of each visualisation to “Data defines limits” i.e. limits set to +/-1.0 for each axis

29/02/2020

- Cosmetic – Fix the fact that the pressure and temperature traces are not “on-screen” when the data sets first load. This was due to increasing the maximum height positioning of the data for the “large screen PC”. Updated/improved the algorithm for centring the traces for temperature and pressure
- Marked Events now has its own tab as they’re now used in more than just the Behaviour Builder

01/03/2020

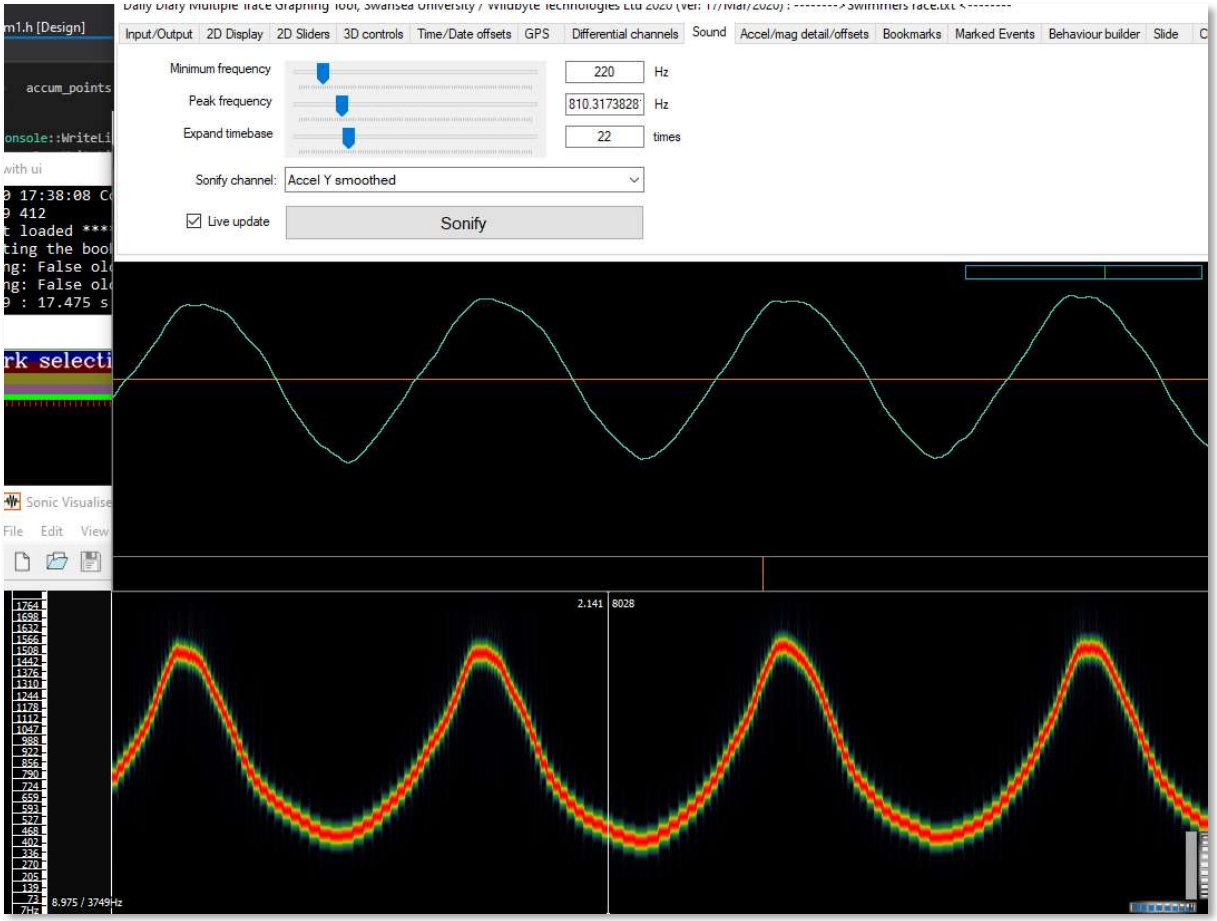
.raw files containing just a single stretch of data, and .raw files containing multiple bookmarks of data now have better decimalisation of data at the start/end of each set of data i.e. for a single stretch of data, there might be a few events at the start of the stretch with the same integer “seconds” value. These few events now have a more accurate “decimal seconds” value, calculated based on the user’s frequency value provided when the file is first loaded. This also applies to the end of the stretch, and also to the start/end of each/every sub-stretch of data per bookmark within the .raw file

14/03/2020

Magnetometer correction algorithm now uses “smoothed mag” channels for its correction, not raw, as this helps to remove, or minimise erroneous effects due to outliers

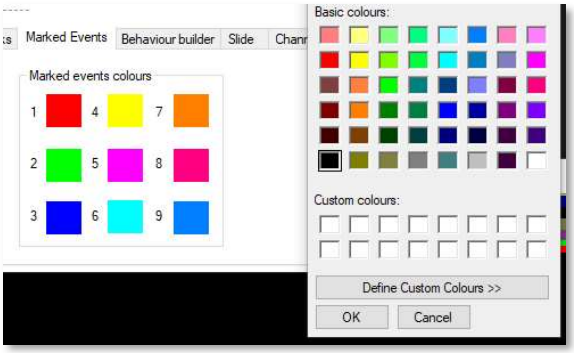
17/03/2020

New tab at the top of the control panel “Sound”. Allows you to sonify sections of data. BE CAREFUL AS ONCE IT STARTS TO PLAY A SECTION, IT CANNOT BE STOPPED (yet). So, 20 seconds of recorded data will be 20 seconds of audio playback. You can adjust the base and peak frequency, which channel to pick the waveform from. A .raw (audio raw) file is also output in the user’s chosen working directory, that can be converted to .wav format with most free audio converters out there. The binary format of the .raw file is “16bit signed PCM 1 channel”, and the playback rate is encoded as part of the filename, along with the channel name that the audio was created from.



17/03/2020

Cosmetic – Marked events tab tidied up. Colour picker adjust so you now just simply click on one of the 9 squares and select the colour, rather than selecting the box number from a combo box and clicking a button. Easier/faster



18/03/2020

Minor/cosmetic - Added guiding red-circles around the numbers on the Behaviour Panel to guide the user through the process of creating an expression. As you click the buttons, one ring vanishes and the next appears.

19/03/2020

Calculation error in VeDBA Sum when exporting bookmarks from the current split and the Left Extreme is not at the far left. The VeDBA Sum reported in the Bookmark Multisession is now correctly calculated.

04/04/2020

Updated magnetometer correction algorithm as sometimes, during the process, the right-side green sphere of points would not appear. This is because of the degree of accuracy with which it was trying to establish a starting point. I have lessened this accuracy somewhat and it now passes with the dataset that it previously failed with. Should the right-side green sphere of data points not appear in future, this is likely to be because not enough coverage of the mag-sphere of data points has been created. A good random tumble of the logger will help to mitigate this problem.

06/04/2020

When loading a .ddmt extension file from the converter app, before clicking “Load data” the user can adjust the acceleration divisor value just underneath this button so that if the static acceleration is of perhaps magnitude 0.69, then by entering this value into the box, DDMT will divide all 3x acceleration channels by this value to scale it up to 1g.

08/04/2020

The 2D sliders window for Pitch/Roll/Heading controls now includes a tickbox that switches their plots to circular mode. Here, the cosine of the value is plotted instead, and if the value is either negative (pitch/roll), or < 180 then the plot will be one colour, or alternatively a second colour. So a rotating heading will be one colour for 0-179deg, and another colour for 180+.

09/04/2020

Bug fix: For the “Point Compass” visualisation on the 3D side, ghat orients itself to the heading/pitch/roll data of the mouse’s left white line. This would always pass a heading of “zero degrees” if the “Display overlay” was not in view on the 2D Graphing Window! Fixed.

09/04/2020

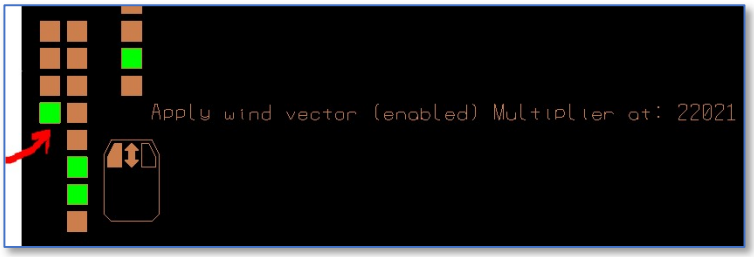
Bug fix: App not loading past the splash screen for some users. Altered one of the compile-time reference files to remove some old references that had not been flushed by the system. Fixed.

12/04/2020

Cosmetic. SD card resets on the 2D graphing window. It’s possible that resets could be overdrawn by non- card reset events. Also, when display is set to dynamic under-sampling, card resets could potentially be skipped over and not displayed. Now, all non card-resets are drawn first (non under-sampled) and then and resets are drawn over the top (non under-sampled).

15/04/2020

- Cosmetic. As for above with SD cards, GPS fixes are now drawn non under-sampled in the order – 1. Non-fix points, then fixes over the top.
- On the GPS tab, “Link extremes?” tick box is now disabled under a “Sync GPS to DD data” button has been clicked, else it does not function correctly.
- **Major:** Wind/current vector added to Dead reckoning algorithm. To use this, enable Wind vector near the bottom left of the DR menu structure. To then apply a vector, enable a change by clicking the small yellow circle and hold Ctrl/move mouse to determine direction/strength (by range). If the scale (strength) of the vector is too small/large, move mouse over the Wind vector enable button on the menu and move the mouse wheel up/down to adjust the Multiplier. Multiplier default value is 1. This will increment/decrement the multiplier by 10 units.

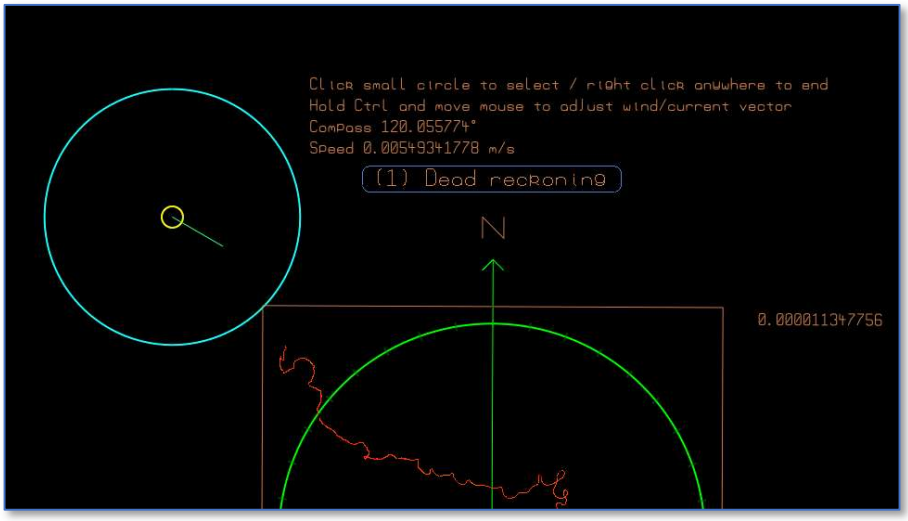


If you move the mouse off the menu structure and hold down either shift or ctrl and move the mouse wheel up/down, you can adjust the overall system multiplier to a large value to then increment/decrement the Wind vector multiplier at a faster rate.

The Wind vector control panel.

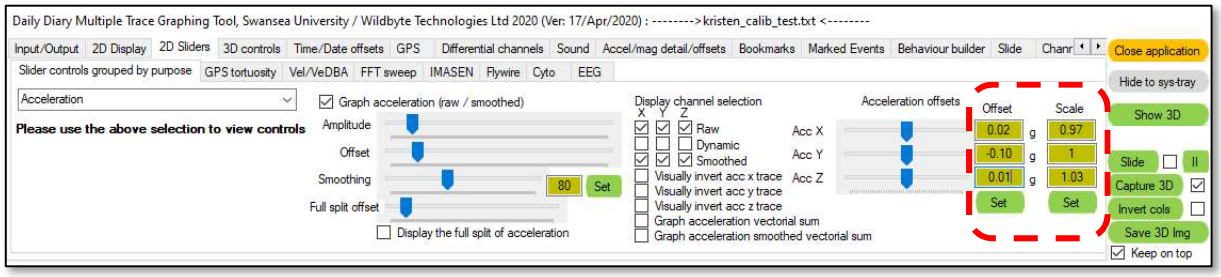
Right click anywhere to accept change and stop changes occurring.

Deselect Wind vector on the DR menu structure to remove any wind vector created.



17/04/2020

Added individual acceleration scaling factors onto the 2D sliders Acceleration tab/selection. When a scaling factor is applied by clicking “Set”, or simply by moving to another split (these 3 X/Y/Z scaling values are read every time a split of data is loaded from file), these factors are applied to the three acceleration axes. Note that the scaling factor will ripple through all metrics, including smoothed acceleration, VeDBA etc., It’ll also affect the tilt-compensated compass calculations. The aim of these scaling factors is, as the name implies, to allow the individual axes to be properly scaled. If some data were collected by slowly tumbling a logger randomly in all directions, one would expect a sphere of points with magnitude limits ~+/- 1.0 g. By using the acceleration offsets (adjacent to the scaling factor controls) and the scaling factors themselves, this calibration of +/- 1.0 g on all 3 axes can be achieved.



23/04/2020

Major: Under-sampling of data at the point of export is now divided down by the second. The reason for this is not straightforward to explain but is necessary for synchronisation of GPS and Dead-Reckoning (ground-truthed) exported data. A “Degree of under-sampling” of value 1 is under-sampled every 1 second, a value of 2 is every 2 seconds, 3 is every 3 seconds etc. So, if the data file possesses acceleration sampled at 40 Hz, then under-sampling set to “1” will export every 40th event; 20 Hz would be every 20th event and so on.

23/04/2020

Cosmetic: 2D graphing windows resolution has been returned to the front loader screen else the user has no way to set initial base preference.

24/04/2020

Major: DDMT can now extract > 2GB of data from microSD cards by creating multiple 2GB files, numbered sequentially. This is applicable to the setup whereby the data is stored hidden on the SD card and requires DDMT to extract it to a file on the user's laptop/PC. This has been tested with a 2.5 GB file on an SD card. 2 files were created; 1 of 2 GB, the other being the remainder.

29/04/2020

- **Major**: "Animal g" now changed to "VeSBA+"; metric is now 2-VeSBA
- **Major**: Changing the smoothing window of a differential resulted in loss of view selection. Also, changing absolute would reset view coefficient to 1 etc. Updating range of selected differential also no longer worked as differentials were updated to allow the same channel to have more than one differential "range". All issues here sorted

02/05/2020

Major: Dead reckoning algorithm change of location of switch for using either VeDBA or unit movement per event. The previous button that switched between Movement by VeDBA has now been removed and a simple checkbox inserted onto the Threshhold/Coefficient control added.

Further to this, when dead reckoning by Marked Events, this ability to switch between unit movement or by VeDBA is now per Marked Event channel (1-9).

Note that the threshold is blanked out when using unit movement rather than by VeDBA. When using unit movement, the coefficient determines how far, per point, the subject trans-locates. So now, unit movement can be refined for 9 different values of Marked Events (1-9).

03/05/2020

- Marked Events added to the values overlay. Checkbox to switch on/off added to the "Overlay Selection" tab.
- **Bug fix**: Behaviour Builder "Extend left/right by X events" was not working when "search whole file" selected, but DID work when searching between the two white lines. Bug fixed.

05/05/2020

Updated algorithm so that Wind (water) current can be applied to data that is ground-truthed to GPS data https://www.youtube.com/watch?v=SDvJ_Hnfqrc

07/05/2020

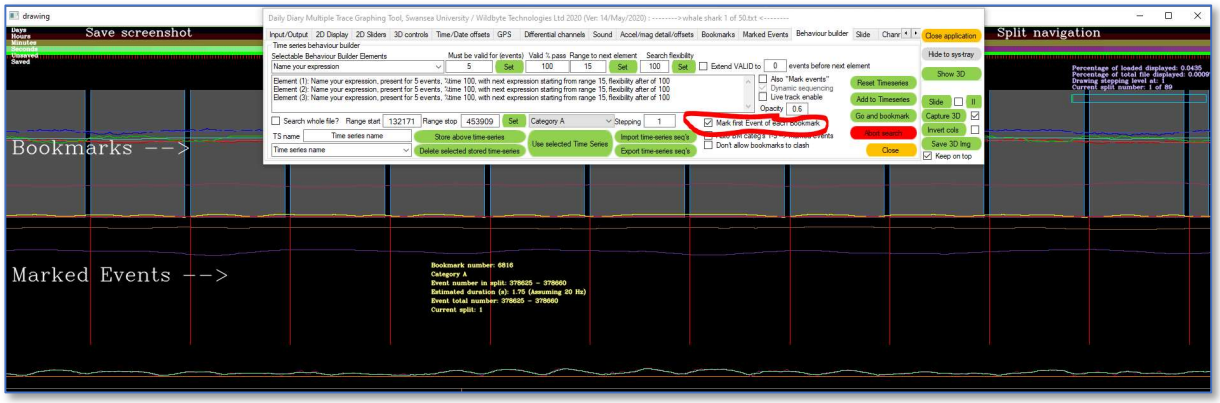
DDMT was crashing when attempting to load a .col file. Fixed.

13/05/2020

- In the time series part of the behaviour builder, when manually adjusting the valid or range parameters on the 2D graphing window, it will ensure that range value doesn't go below the valid
- Also, it is now possible to adjust the range, valid, and flex values for each expression in a TS. See YT video: https://www.youtube.com/watch?v=KYe9Kl4Q3Pw
- Also, found a bug while playing. Creating a TS series of elements, storing and then clicking "use selected time series" or "go and bookmark", and then trying to add another element to the TS would result in a crash. Now, if a TS is "used" in this way, adding another element will first reset the TS box (remove all elements present, and the new element will be added as the first in the new TS series. i.e. once you've stored and used the TS elements, you can no longer add another element to that TS
- Fixed (subject to extended testing!) the deletion of BB expressions that are earlier in the list on the BB store. Deleted BBs are also deleted in the TS available "elements list"
- Acceleration X Y Z scaling corrections are now exported/imported in .tdo files

14/05/2020

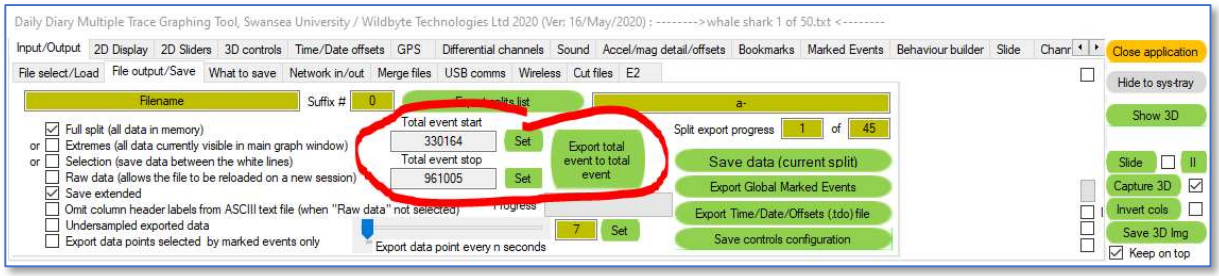
- Some optimisation of the code to reduce repeated calculation of Differentials during a loading of subsequent splits. More optimisation possible here
- Marking the first Event for every Bookmark created using the Behaviour Builder Time Series algorithm is now optional – users may not wish to overwrite pre-existing bookmarks



- More split-split loading optimisation. Calculation of AAV and smoothed heading arrays were each taking up to half a second each for 0.5 million points. AAV has been improved by 360% and smoothed heading by 414%. Loading times should be significantly better.

16/05/2020

The SAVE function has now been updated. You can now move to a split, place your left white line and set that as a save-start marker, then move to another split and repeat, setting the save-stop marker, and click a button “Export total event to total event” and it’ll save all data points between. This should also work as “under-sampled”; select “What to save” as normal



17/05/2020

The SAVE function has now been updated. Under-sampling is now possible (again) at sub-second intervals. Previously, you could under-sample every 1 second, 2 seconds, 3 seconds, and so on. Now, you can also under-sample at 0.1 seconds, 0.2 seconds, and 0.5 seconds. To get to this level, either enter 0.1/0.2/0.5 in the under-sample set box and click “Set”, or slide the slider fully left, and then click on the right-side of the slider-notch to change by one position. Currently, it is not possible to use the mouse-wheel to adjust by one step.

19/05/2020

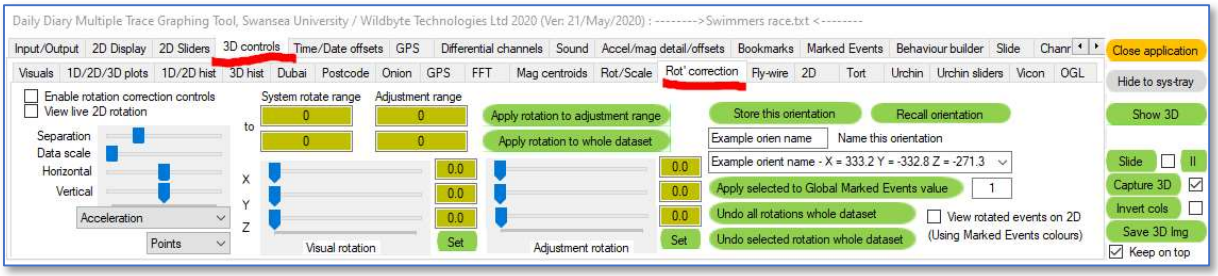
Fixed a fault with the loading of controls configuration files – would cause a mag offset in the magnetometer correction algorithm such that there was no “green sphere” on the right side, and therefore no correction would be possible.

20/05/2020

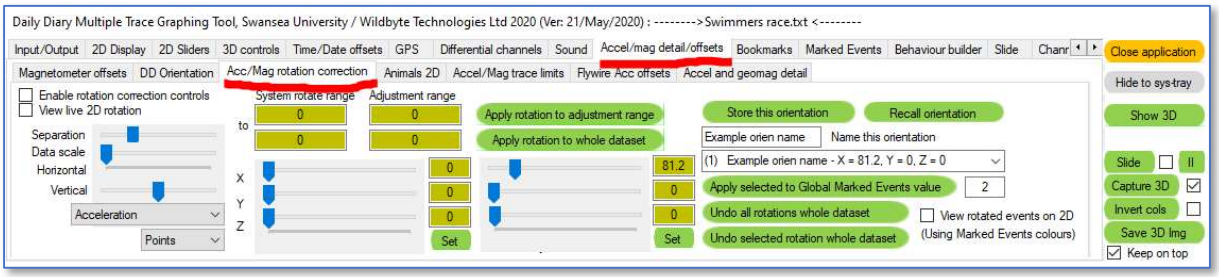
You can now export a time/date/offsets (tdo) file even if you haven’t performed a full magnetometer calibration correction routine. This is so that those with files that contain no magnetometry can still export a time/accel correction file. Let me know if any problems arise from this change.

21/05/2020

- Collar roll solution added using a combination of BB/TS and resulting Marked Events. See YouTube video for info: **https://www.youtube.com/watch?v=jecymG__-Kc**



- Rotation correction moved from the “3D controls” tab to the “Acc/Mag detail/offsets” tab as this is more appropriate. Very little remains on the “3D controls” tab; soon to be removed



24/05/2020

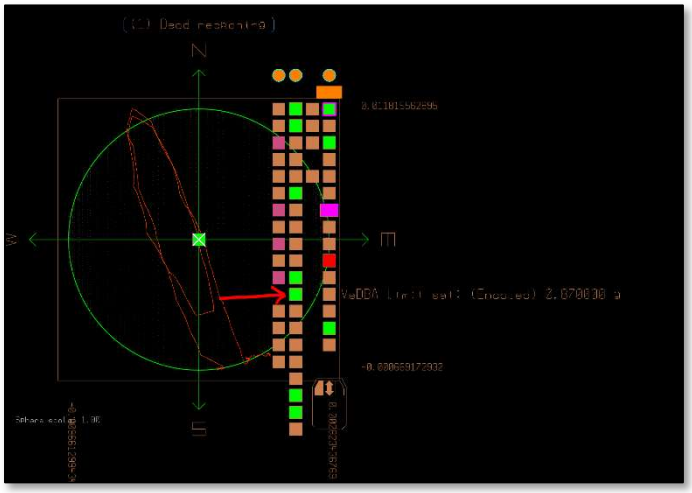
Fixed a minor bug where exporting bookmarks as a multisession was not “under-sampling” when requested.

26/05/2020

- Loading screen updated to show a plot, calculated in real-time. A little nicer than a flat image. This will also enable us to gauge if users' computers have issue with plotting data using "OpenGL core 3.3.0" for future software updates
- When selecting "Overlay GPS data…" on the dead-reckoning visual to "on", it will automatically select "on" the "Inherit first GPS point", else no data will be displayed on the visual. This ensures that the start longitude/latitude coordinates of the dead-reckoning path have something other than 0.0, 0.0. If this were not the case, the paths will likely have such vastly different tracks that nothing is displayed other than two points on the plot

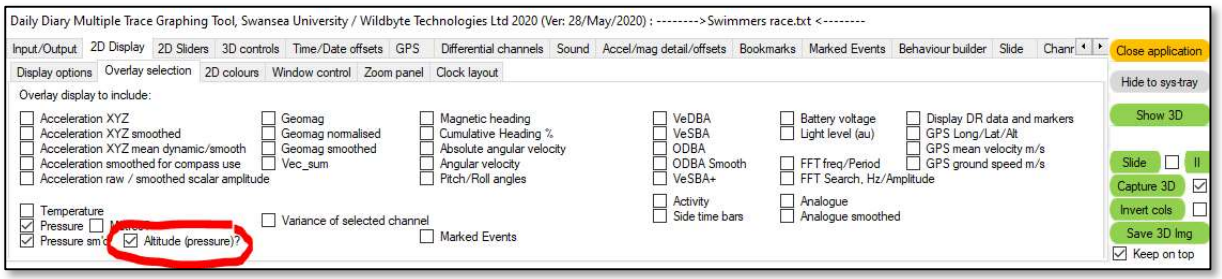
27/05/2020

- Fixed minor - on 1d/2d hist the mini-mouse overlay failed to indicate there was a left button press selection on the Y channel, to select/switch between 1d and 2d histograms
- Updated the current/wind vector correction for the dead-reckoning algorithm to also affect data points where VeDBA is below threshold (or not selected by Marked Events) i.e. a penguin that's not moving still drifts with the current
- Spherical histograms (Dubai plot) on 3D will now auto-update their base data (acc or mag) when moving to a new split (if "data tracking" enabled for that vis)
- Bookmark multisession start-up notifications can now be opted out from after first instance for a given DDMT session
- If at least 1 hour of data is present within the data file (within a loaded split), upon first loading, it will determine a best-guess sampling "actual" sampling frequency by counting the number of events over this period and /3600
- If a rotation correction is performed and a 3D spherical histogram is present, a "notice" will be displayed on the 3D window informing the user that "Resolution" should be clicked for this visualisation to recalculate the base data. If the user moves to a new split and "data tracking" is enabled for this vis, then it will automatically update the base data when the new split is loaded into memory
- Dead reckoning numerical pad for threshold/coefficient entry shifted to the side of the "By vedba coeff?" statement so no longer obscured
- Dead reckoning VeDBA limit added. Switch on / off with LMB; MW adjusts limit value (1.5 g default)



28/05/2020

- Corrected blue-band error on the Display Overlay for “Altitude (pressure)?” tickbox. No longer obscures the label.



- Dead-reckoning – the wind (current) vector control circle can now be relocated anywhere, relative to the DR visual itself (invisible tether) by holding down Shift and just moving the mouse (Ctrl and moving the mouse adjusts the wind (current) vector bearing/strength)

29/05/2020

- Acceleration XYZ can now be offset corrected to 3dp rather than 2dp. TDO’s should not be affected
- Added export of 3D histogram data – new button added to the vis. The exported .csv file also provide bin +/- ranges for all 3 axes

30/05/2020

- Added a button that, when clicked, looks for the first and last GPS points, then simply adjusts the GPS under-sampling to suit, so that only those two points are used for the whole DR track. Please note that, if the start/stop points are close together, relative to the DR track, this will cause the DR track to shrink/grow/rotate drastically to suit – only use this feature if the start/stop GPS points are spaced far apart – compare your DR tracks with/without this feature with caution

- Added a button on dead-reckoning vis that allows you to utilise GPS points that are only marked by a Marked Event of a certain value. This allows the user to export the GPS channel data for the whole file, modify GPS data and create a Marked Events (global) file that can be loaded back in for use with this function

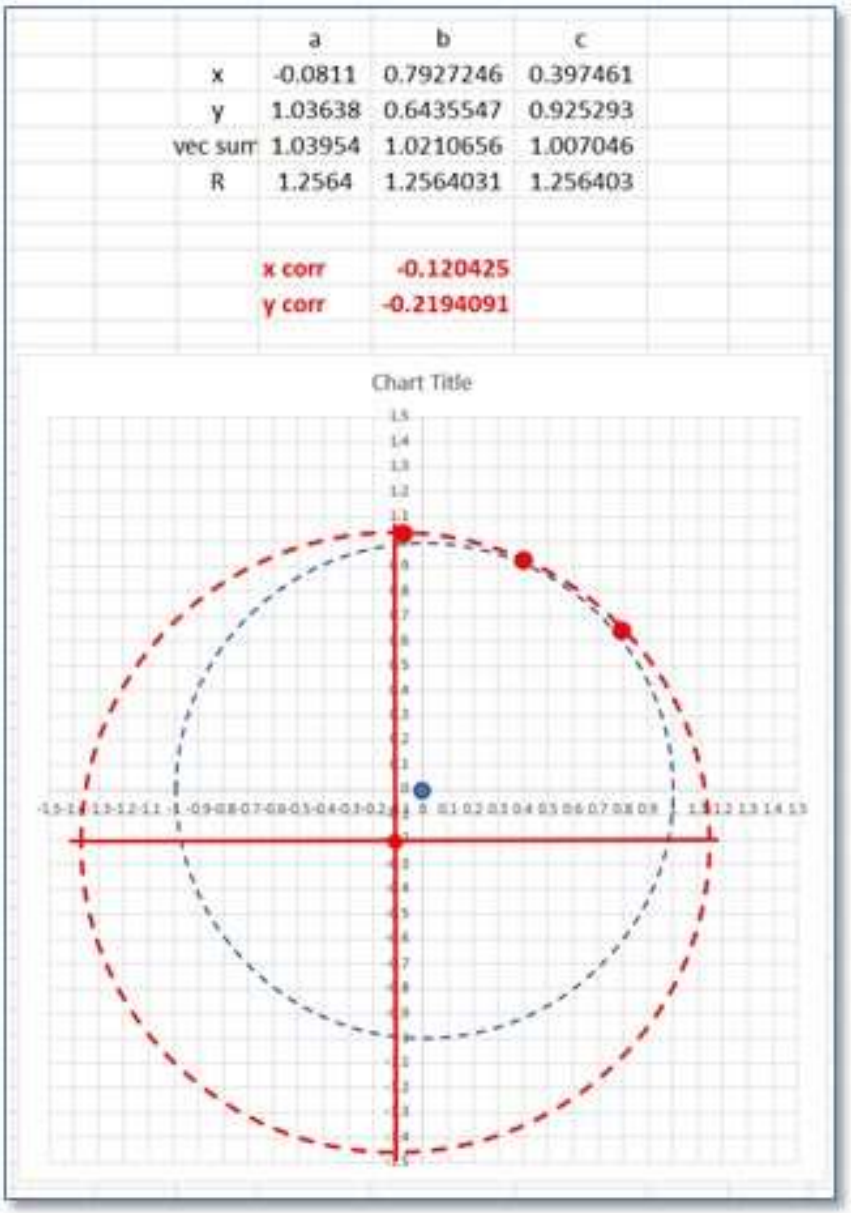
10/06/2020

- XY plot on 3D – can now left mouse-click the Y channel button to toggle off the Y channel making it a 1D plot against time. Grid range values and labels should orient accordingly
- O-Sphere now correctly colouring “by time” when filtering data by Marked Events
- O-Sphere now can “copy colour limits to user limits”
- O-Sphere now can “colour by Marked Events”

19/06/2020

2D Sliders tab – Acceleration box. “Auto offset/scale” button now working for “some cases” of datasets, but it does fail with some data due to its selection of data.

Those points it picks must be essentially on a circle of 1. If there is any vec-sum greater (or less) than 1, this results in a radius <> 1.0g. In the (good old Excel!) graph below are three points from the data it used to determine the offset. The blue circle is at 1.0g, with origin on 0,0. The three red points supposedly sit on the same circle, but the only circle that fits them all is of radius 1.25g with an origin of (-0.1204,-0.2194), hence the dramatic offsets we’re sometimes seeing. Those points are only slightly off the blue 1.0g circle, but slight errors in differing combinations can have large consequences it seems. So, the maths in the algorithm is correct, the result is just less impressive. I’ll try to develop the algorithm to use “cleaner” data but it’s immensely difficult as you can’t just tell the software to look for a vec-sum of 1.0 g as vec-sum will be non-zero if the circle is off the origin.



22/06/2020

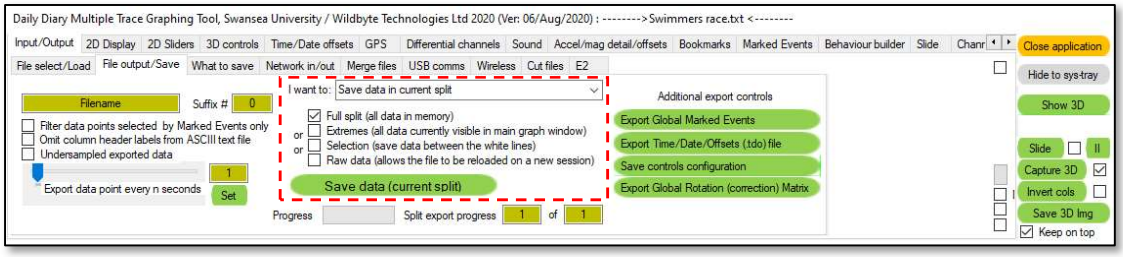
Bookmarks tab “Mark Events for all Bookmarks of category #####” button now correctly marking events according to the currently selected Bookmark!

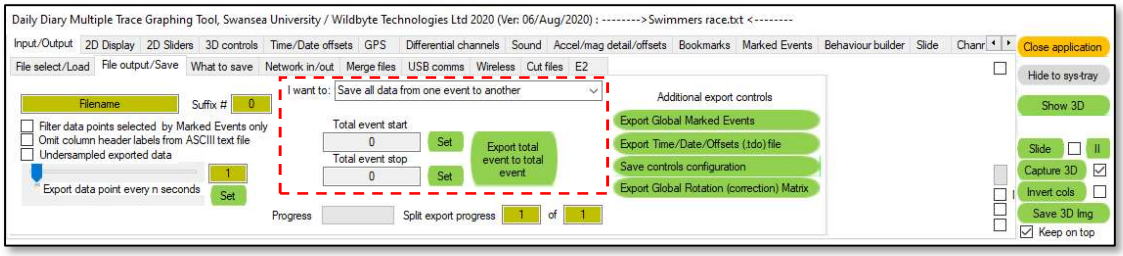
05/07/2020

- Auto acceleration correction button removed until an improved algorithm implemented
- GPS sync now only occurs from the time point where a time correction occurs. Doesn’t make sense to sync before this time point

07/08/2020

- File output/Save tab updated to break down the 3 types of exporting primary data. A combo (dropdown) box is now present to select the 3 types – reveals controls pertaining to the types in much the same way as the 2D sliders tab now presents controls



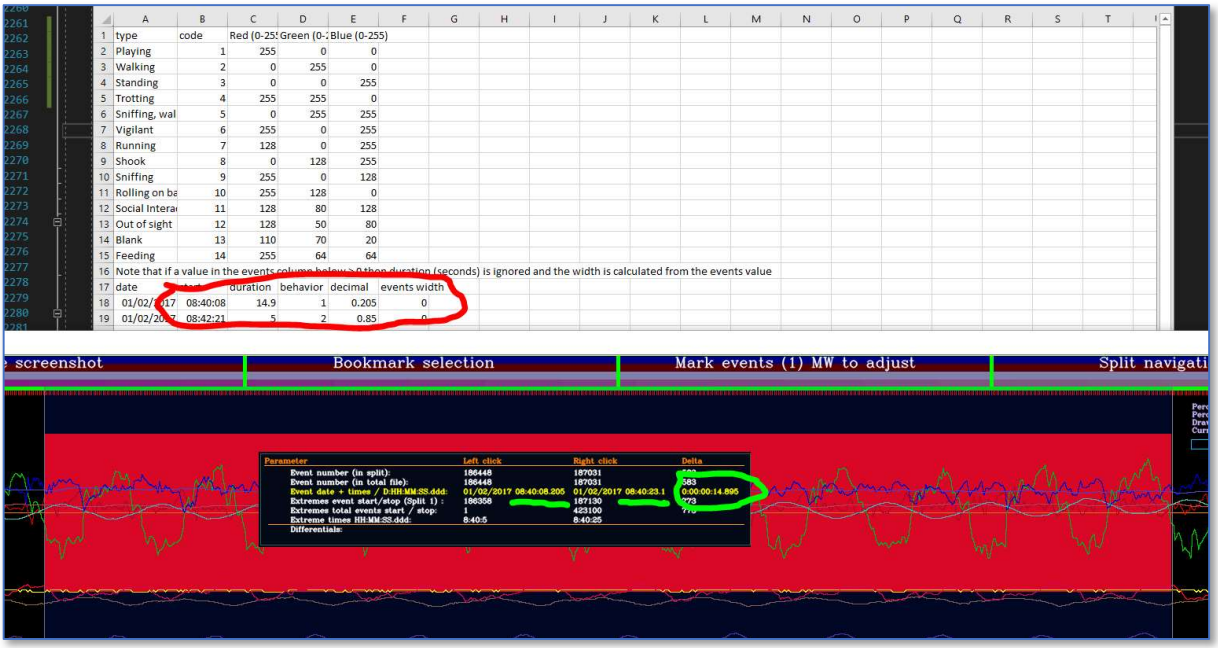


18/08/2020

Fixed fault where bookmarks spanning different categories and exported via bookmarks multisession resulted getting stuck in an export look as no bookmarks of a particular category were found in a split, and it had no way to move on.

02/09/2020

- When zoomed out on the 2D graphing window, small bookmarks might have vanished as their window width (pixel-wise) was 0. Minimum now set to 1 so a bookmark will always be at least a single line width.
- Decimal values can now be used with ethograms:

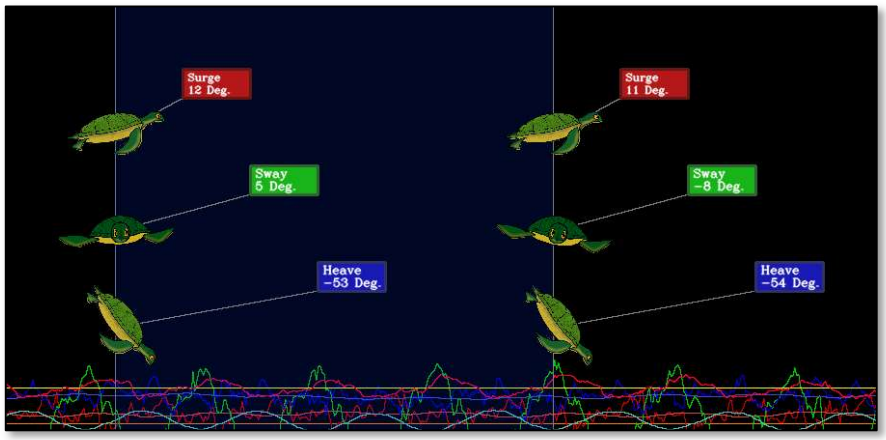


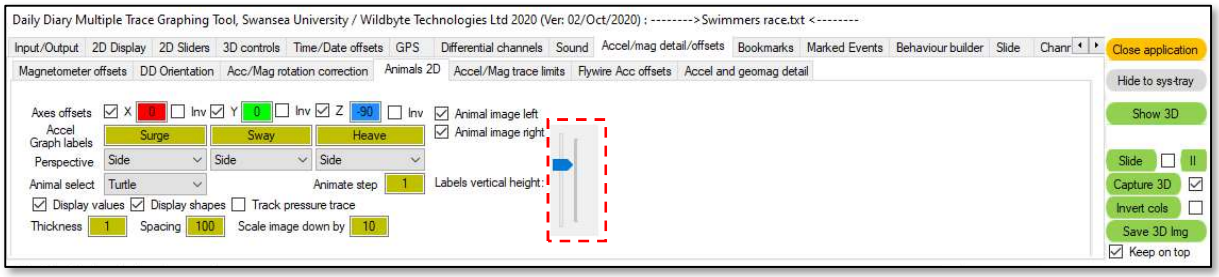
13/09/2020

Fixed issue with syncing ethograms. Wrong split reported in bookmarks and bookmarks not properly created due to searching incorrect timing array.

02/10/2020

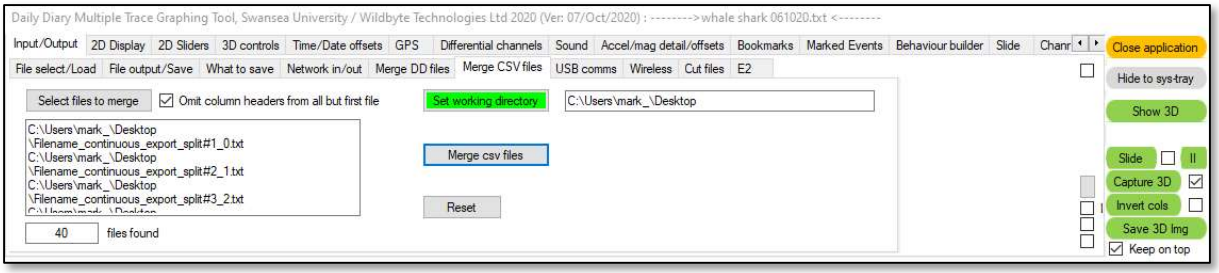
Vertical height/offset of numerical values for the Animals 2D feature are now controlled by a slider on the main Animals 2D tab:





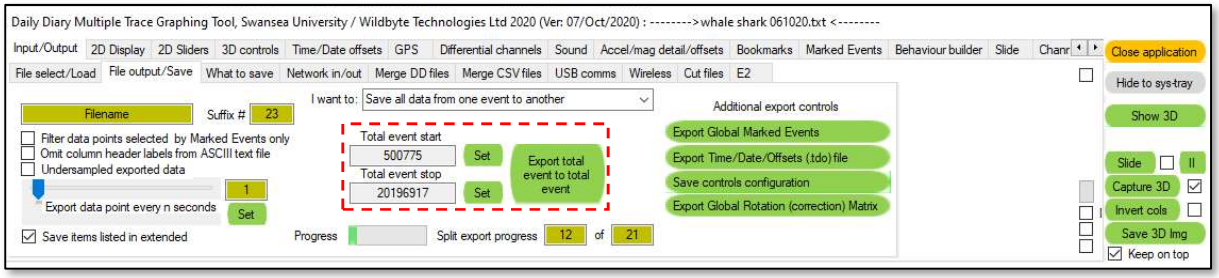
06/10/2020

Added a feature to allow the merging of multiple tab-delimited, or .csv, files. Files are added to the list in the order that they appear in Windows Explorer.



07/10/2020

Fixed an error with the “Export total event to total event” where the last 2x splits potentially mess up during export.



Updated DDMT to allow access to files >2GB in size. Prior to this, accessing data >2GB gave corrupt traces.

24/10/2020

- Fixed the problem whereby temperature and pressure would appear to randomly rescale vertically when sliding through data
- Fixed the problem whereby temperature and pressure would adjust vertically up/down when switching on/off dynamic undersampling on the 2D graphing window

25/10/2020

- Fixed a fault – creating a 1d/2d histogram in 3d, and deselecting the y channel to make it 1d, you see the min/max limits. Selecting any other visual makes the min/max limits of the 1d hist switch to 0-1
- Fixed a fault – visual label for XYZ Norm'd (XYZ + Height) being labelled as "NormAd" – the apostrophe is coming out as an "A"
- Fixed a fault - For several of the visuals, when selecting to "manually adjust the min max ranges of axes", the left (min) column values were not showing
- Fixed a fault – Cannot show sphere or change its properties on the dead-reckoning visual
  Fixed (sphere button removed – sphere not part of the DR visual) 25 Oct 2020