

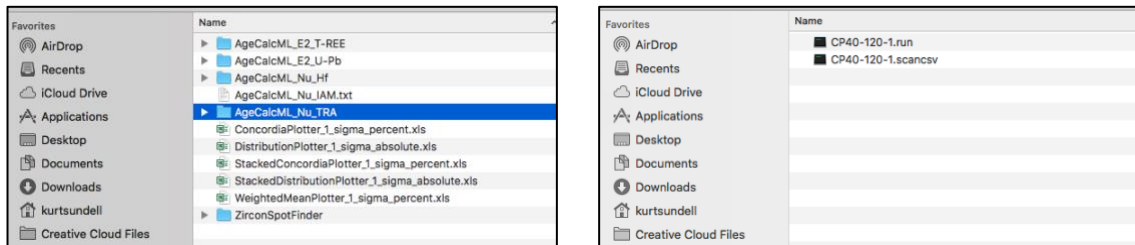
Data Reduction of U-Pb Data from Nu Multicollector in Time-Resolved Analysis (TRA) Mode



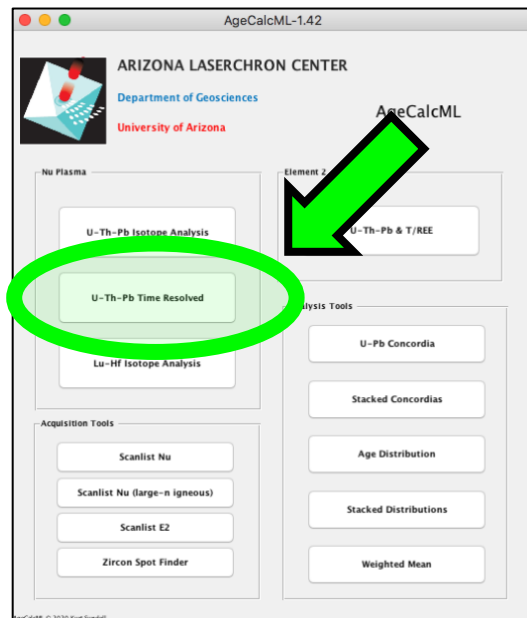
ARIZONA
LASERCHRON
CENTER
Department of Geosciences
University of Arizona

A step-by-step guide from the Arizona LaserChron Center

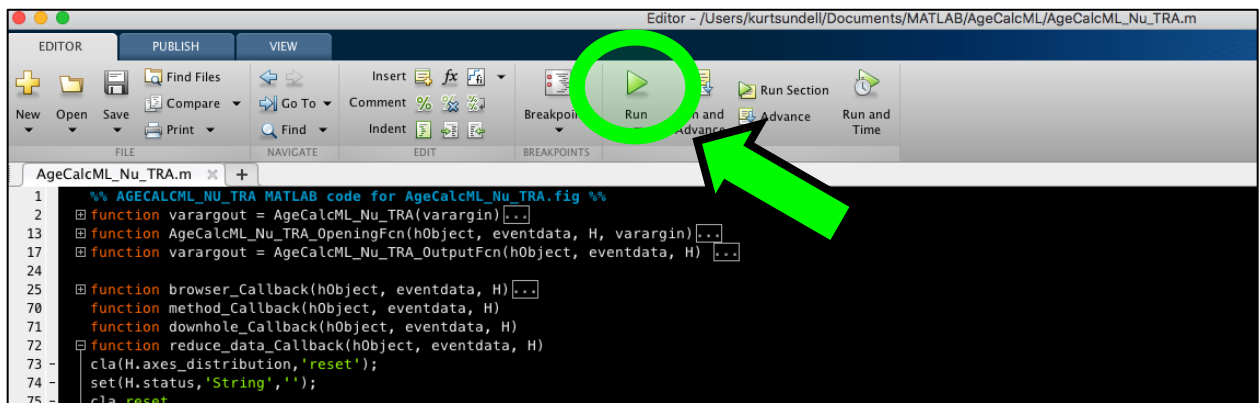
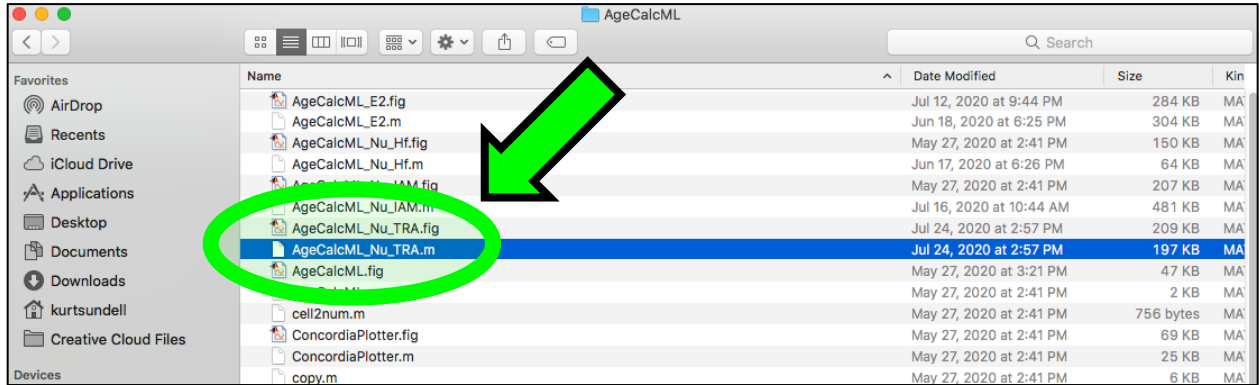
Step 1. Prepare your input by placing the .scanscv file from Chromium and the .run file from the Nu Plasma software into a folder



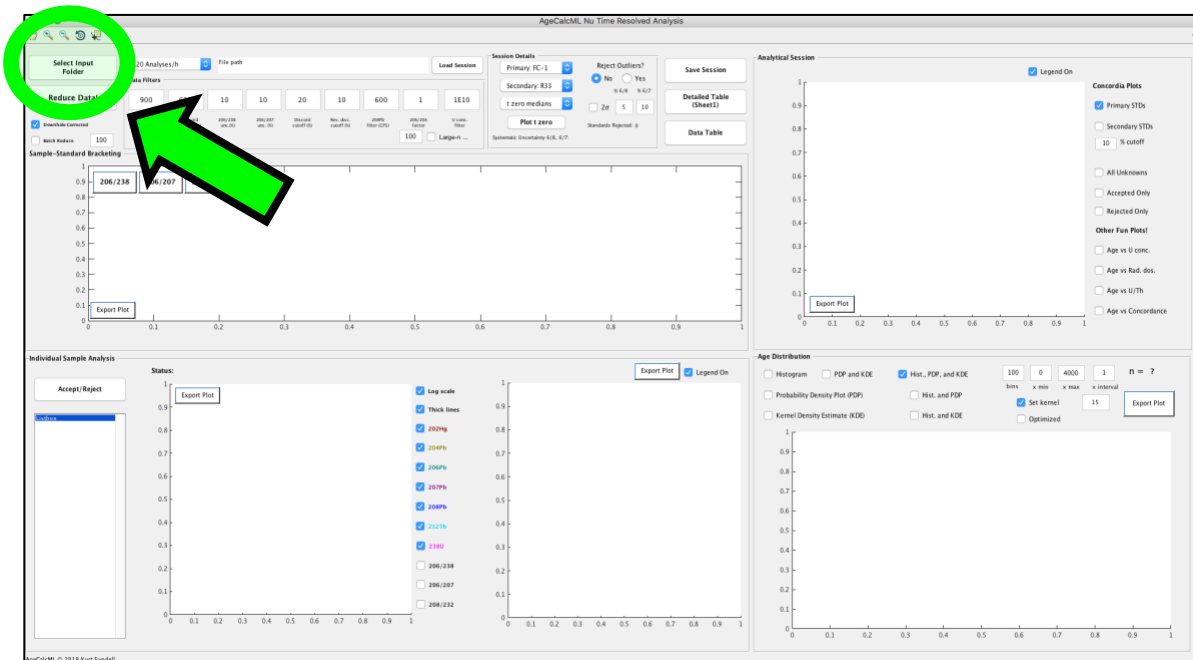
Step 2. Open AgeCalcML and press the U-Th-Pb Time Resolved pushbutton



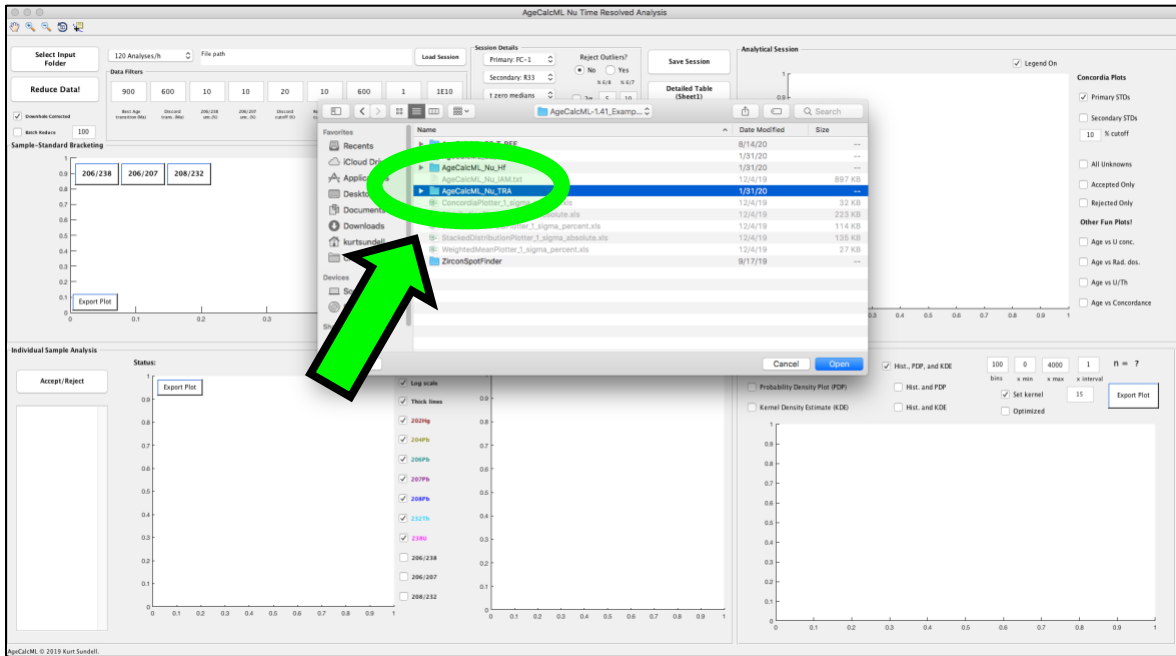
Alternatively, if running in MATLAB, you can open AgeCalcML_Nu_TRA.m from your MATLAB AgeCalcML directory press the big green Run button



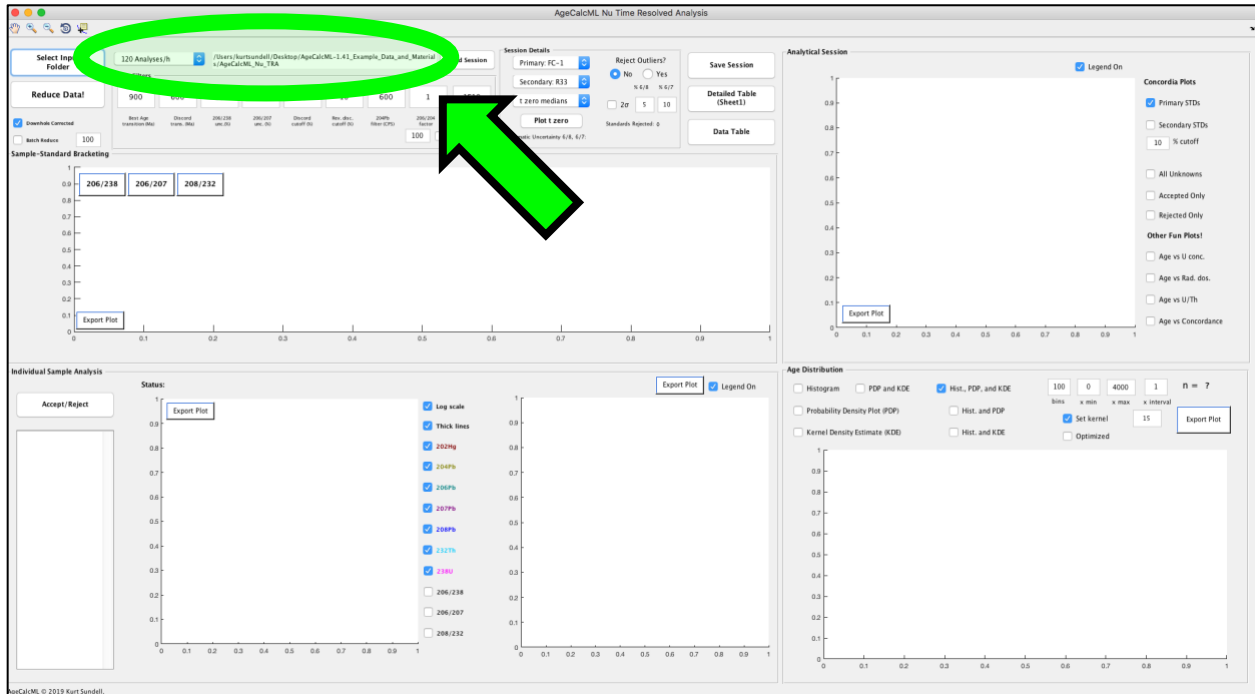
Step 3. Load your data by first pressing the Select Input Folder pushbutton



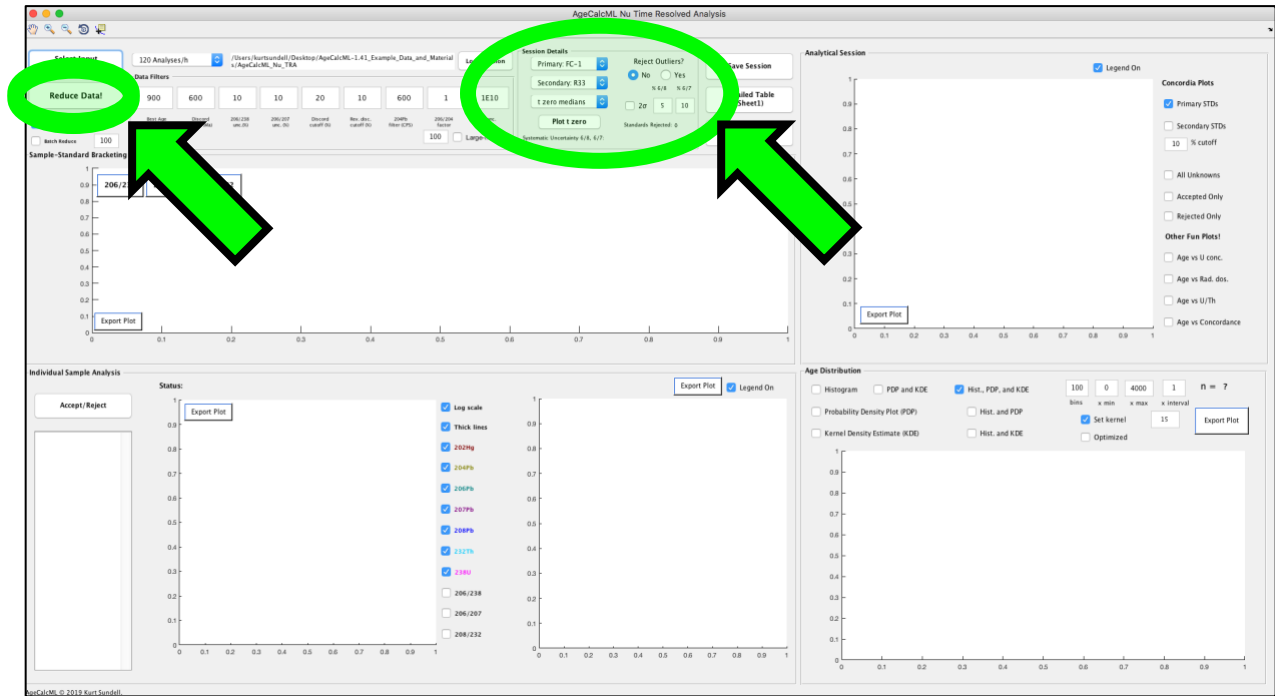
Select the entire folder (do not navigate into the folder) and press Open



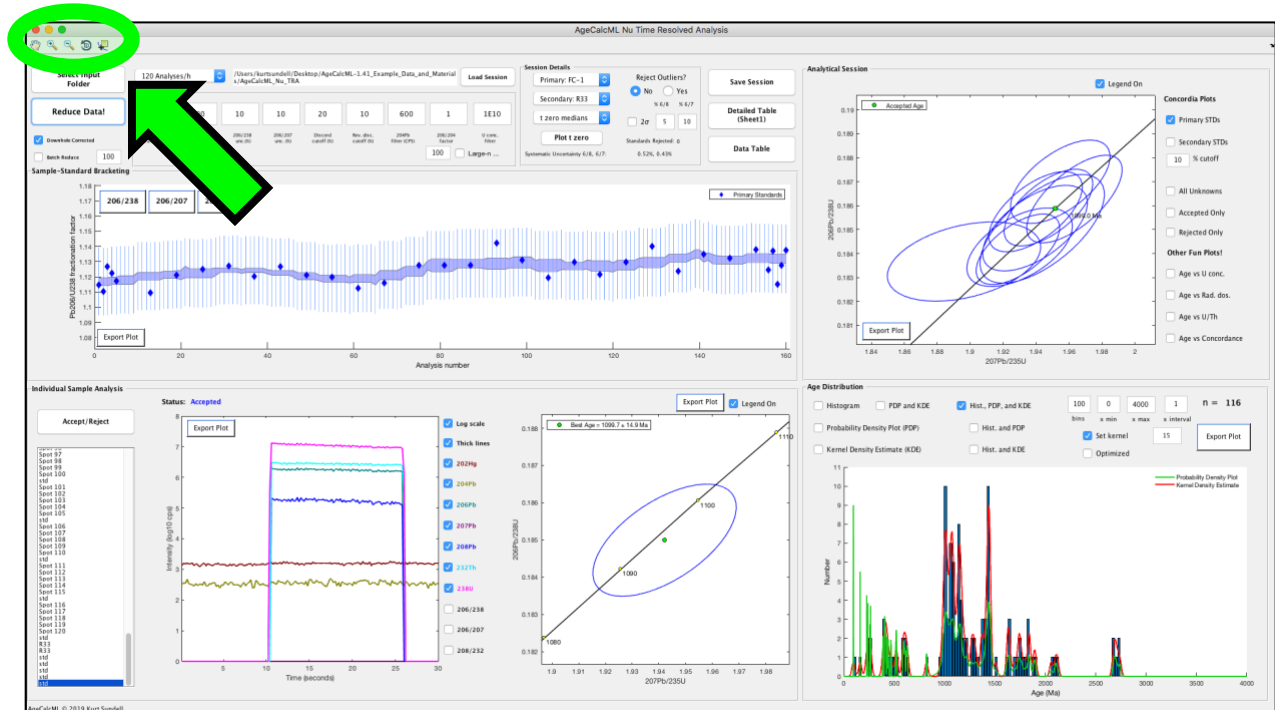
The rate of acquisition (e.g., 300 analyses/h) will automatically be determined from the input. The folder directory will also populate.



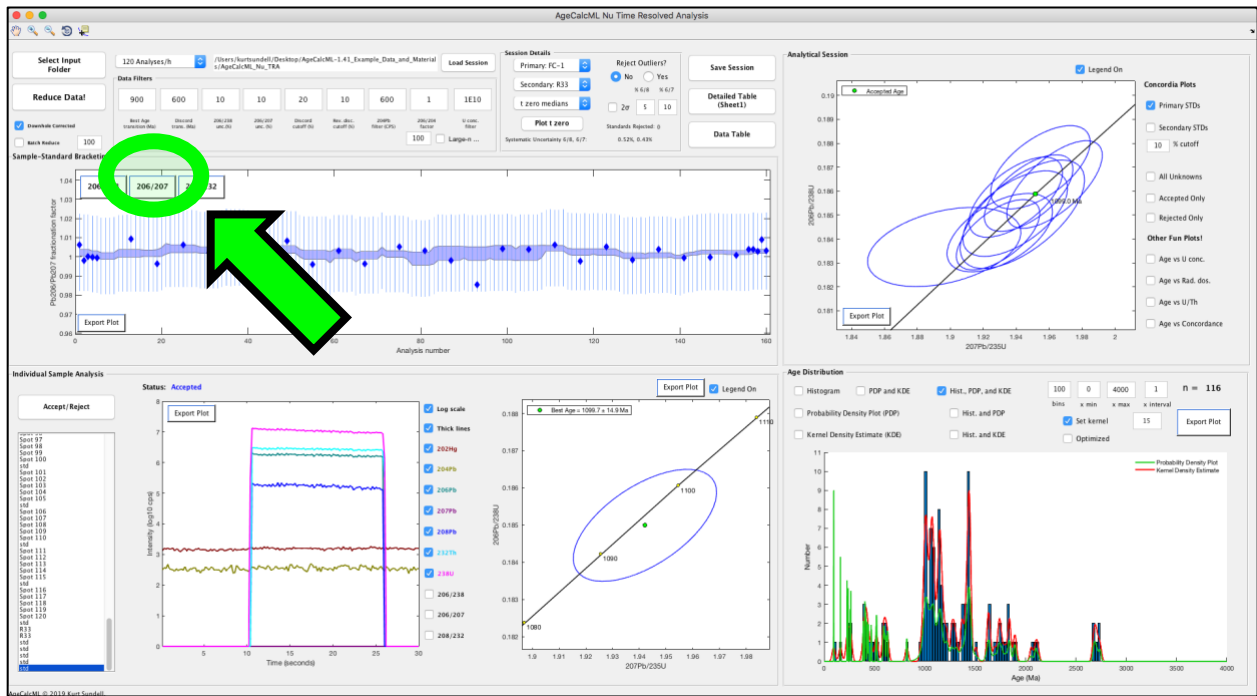
Step 4. Make sure the correct standards are selected. Select Yes or No for rejecting standard outliers (best practice to test without first). Press Reduce Data!



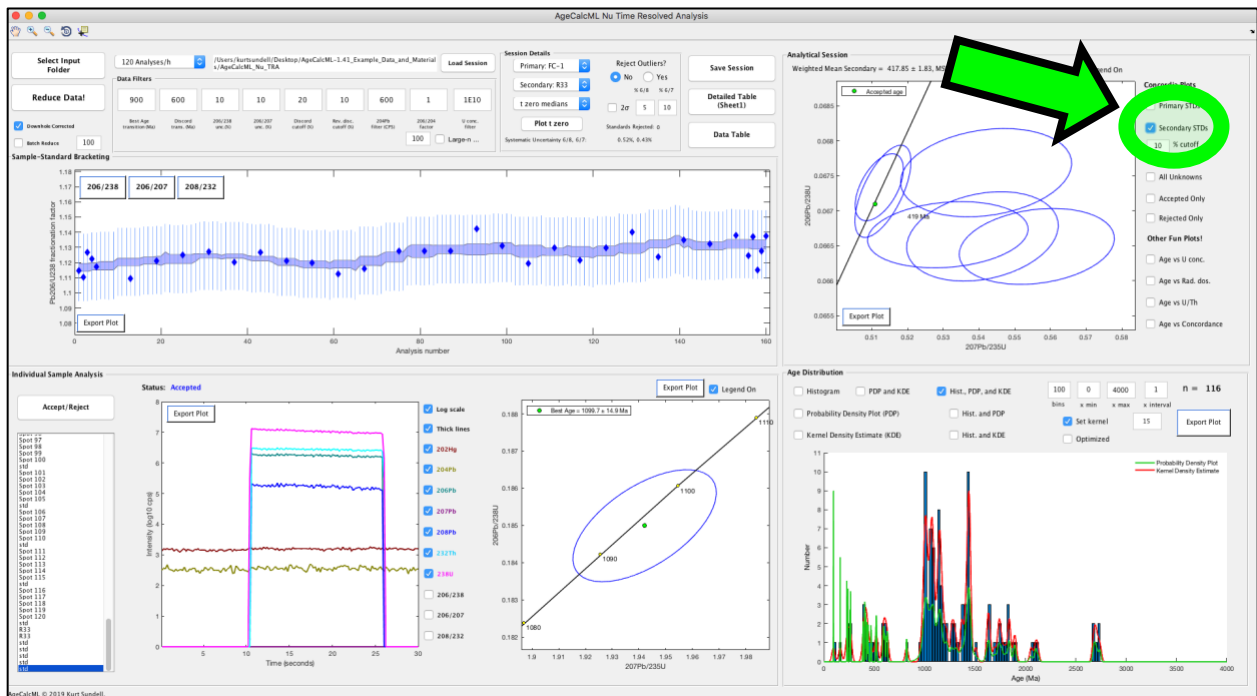
Each of the panels should now have results plotted in them. There are tools in the upper left of the interface that can be used on all plots including the pan tool (hand icon), the zoom in and out tools (the + and - magnifying glass icons), the rotate 3D tool (the small circular arrow icon), and the data cursor tool (the + icon)



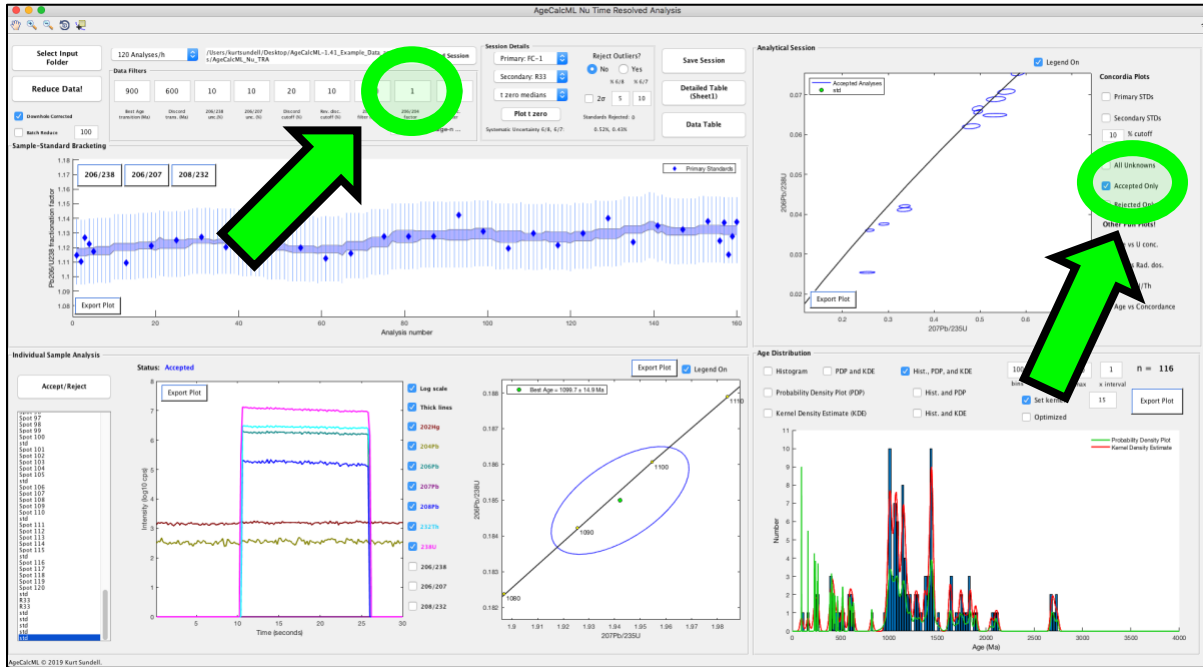
The program automatically plots 206/238 fractionation (session drift). Press the 206/207 pushbutton to see the Pb/Pb fractionation. It should be flatter and closer to 1 than the 206/207.



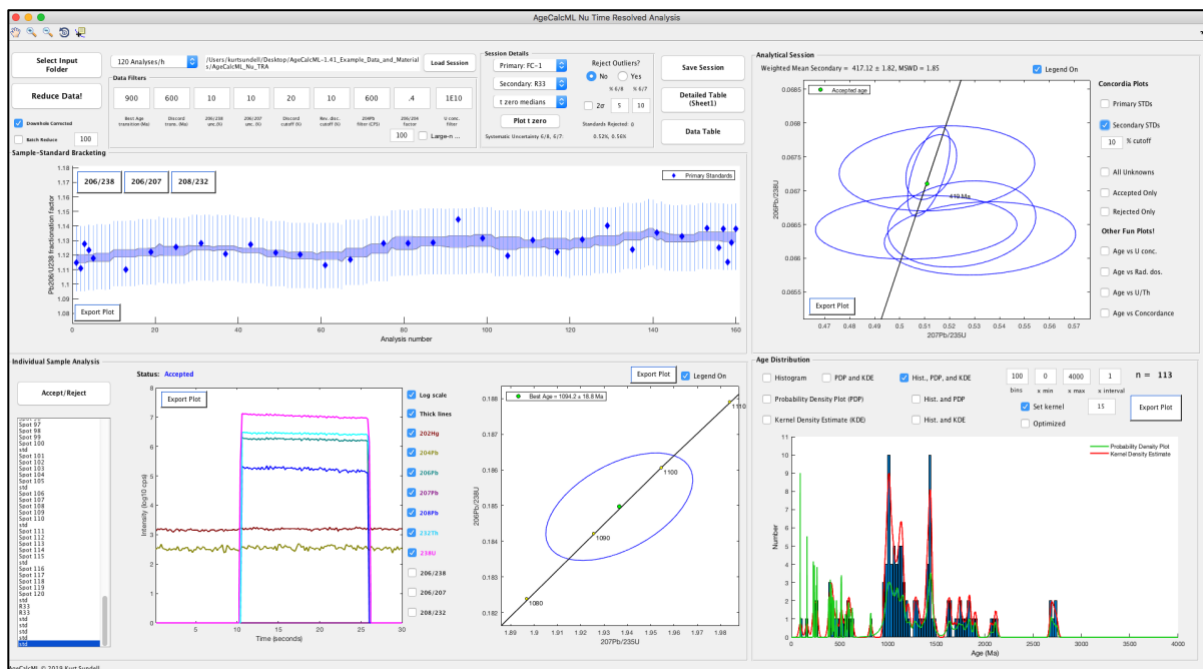
Step 5. Check the secondary standard analyses. This is one of the most important verifications you have to assess how well the analytical session went. Here you see they are a little bit positively discordant.



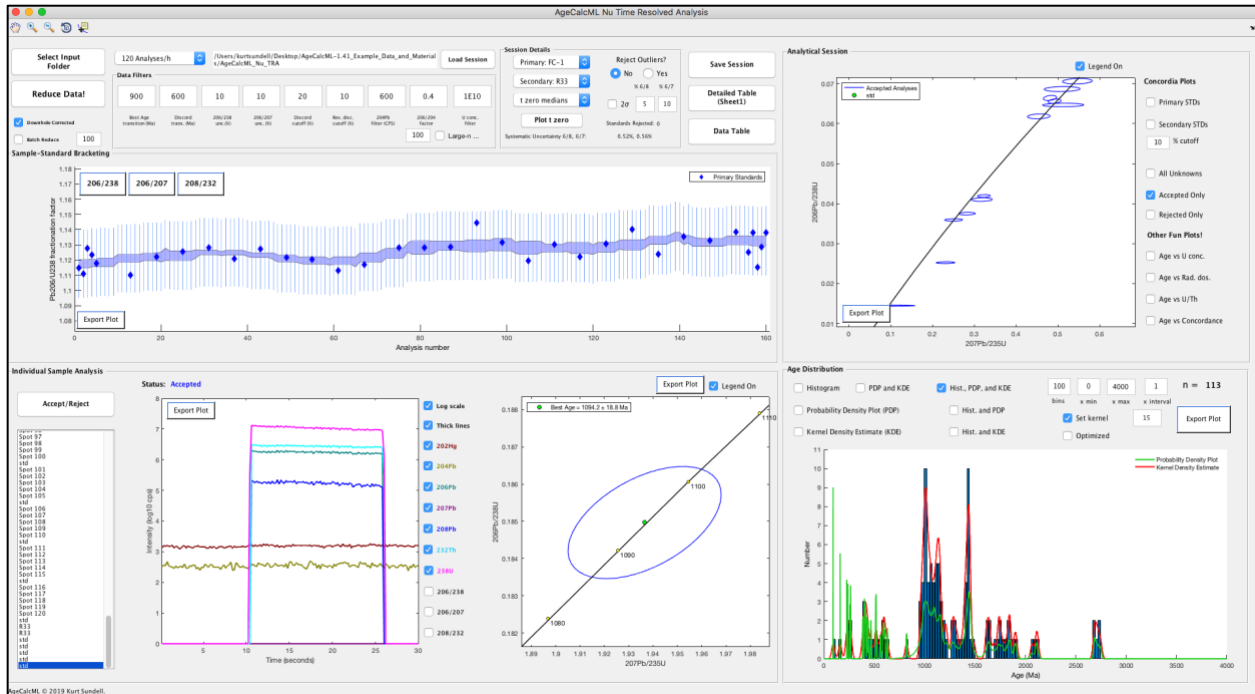
This is very important for younger analyses. Select the Accepted only checkbox and zoom in on the plot using the + magnification tool (click and drag in the plot). Notice the young analyses are also positively discordant. This means you need to reduce the 6/4 factor, which controls the common Pb correction applied to all analyses. Reduce no lower than 0.2. Let's try changing from 1.0 to 0.4. Press Reduce Data!



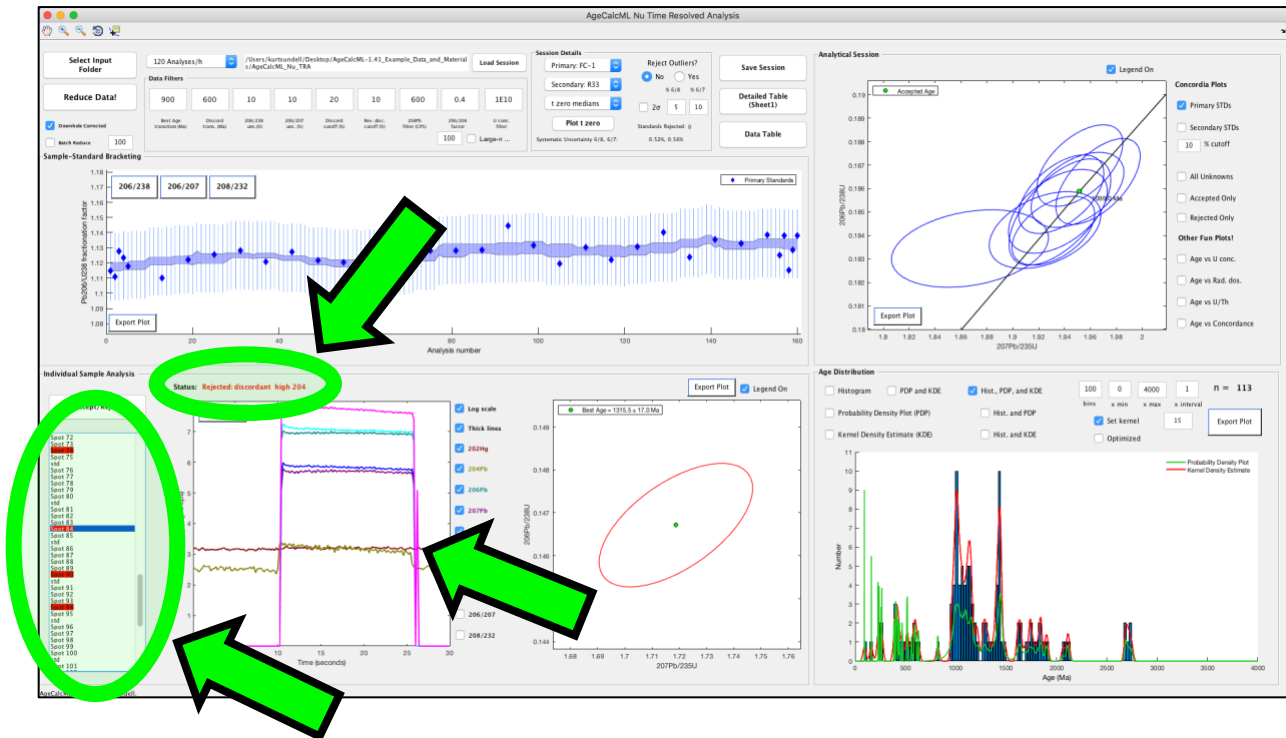
Now look at your secondary standards, they now plot on concordia



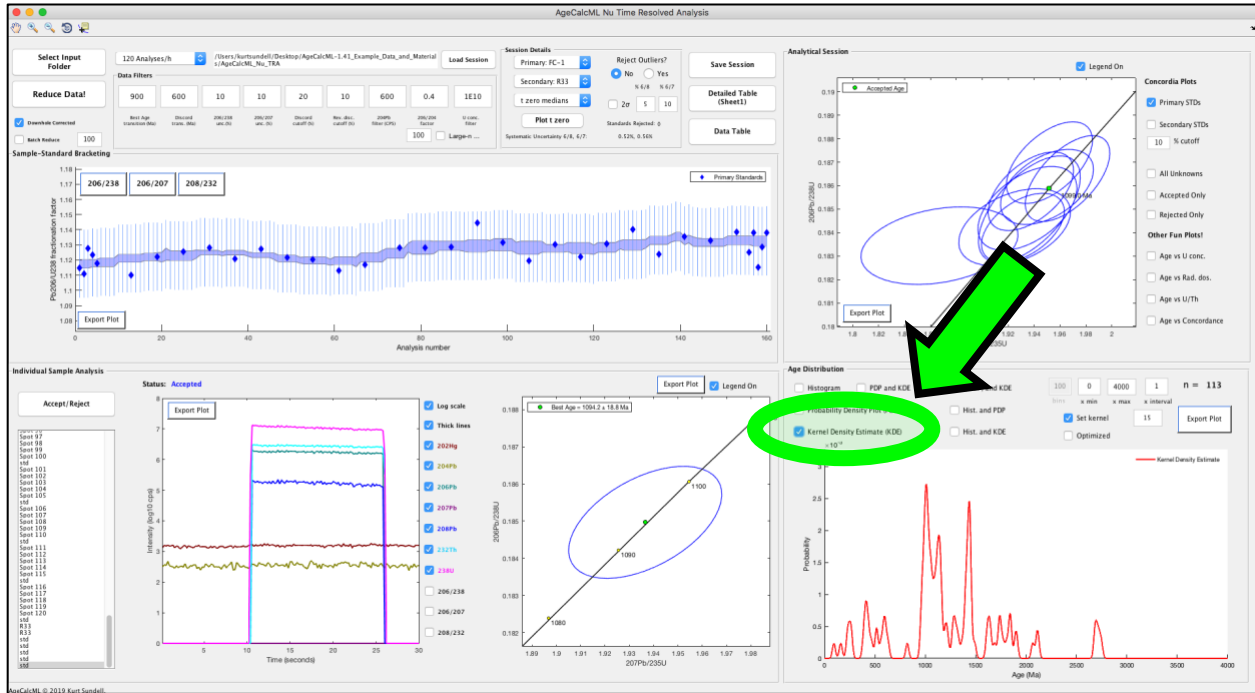
Check the young analyses. They also now plot closer to concordia.



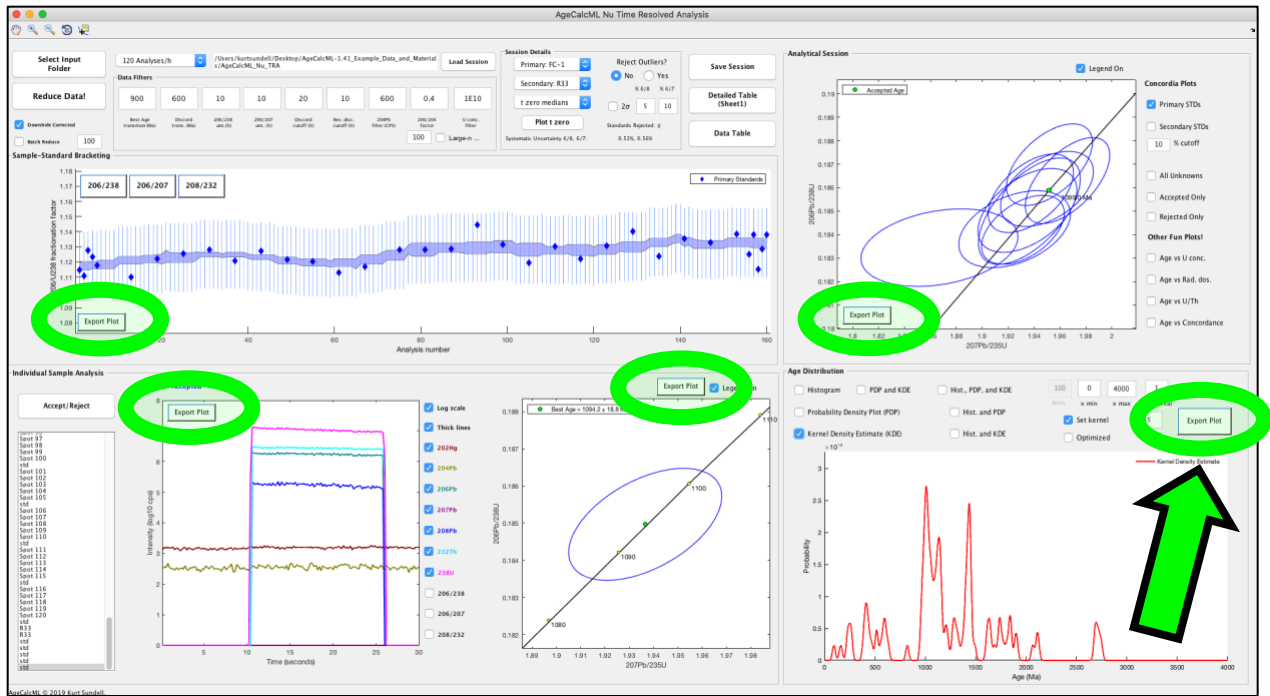
Step 6. Look at individual analyses. If highlighted red this means the analysis was rejected based on the filters above the fractionation plot. Spot 84 for example was rejected due to reverse discordance and high 204. This makes sense based on the individual analysis plot.



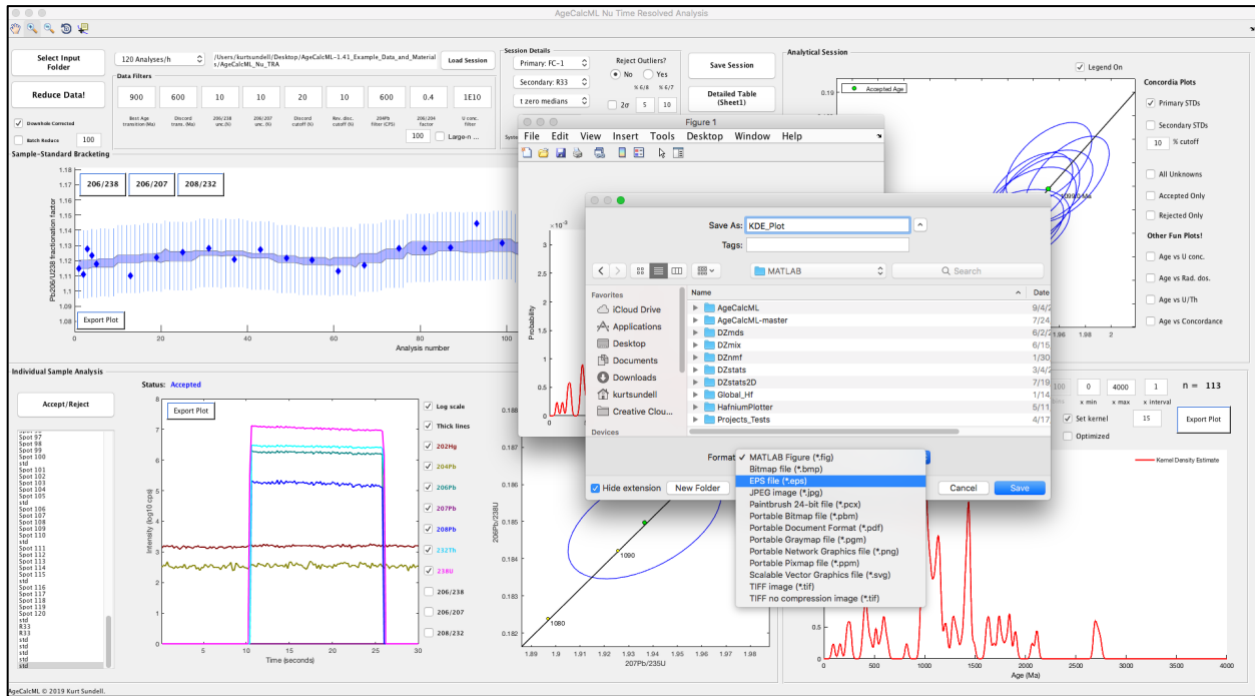
The Age Distribution panel plots only the accepted data that passed through the filters. You can select any of the checkboxes to visualize the distribution as you like. The number of accepted analyses is in the upper right of this panel.



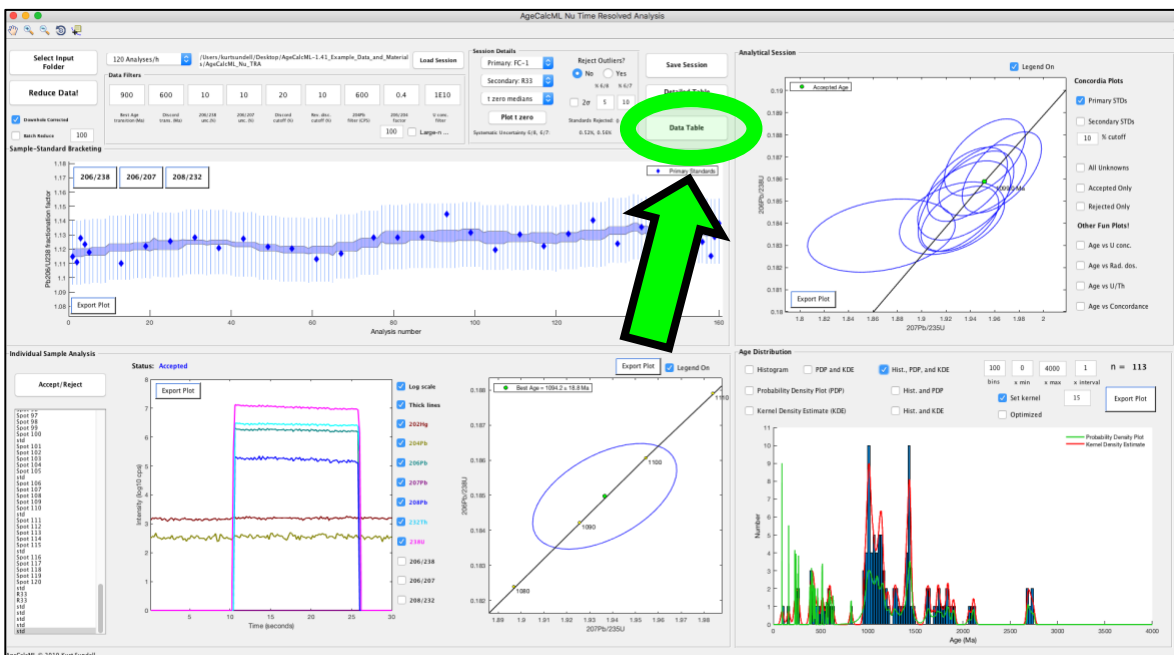
All plots can be exported and saved at any point



If you want to save plots and edit in a drafting program such as Adobe Illustrator .eps is a good format readable by many drafting programs



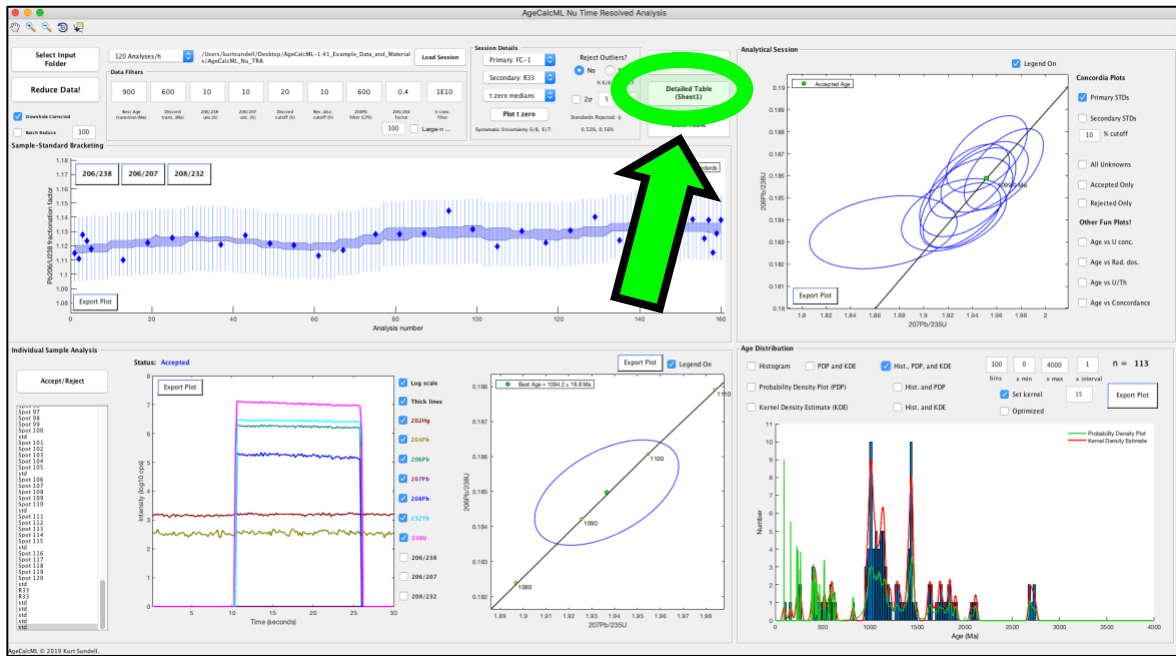
Step 7. Save the data. There are three formats to export and save the reduced data. The table most users will be interested in is the Data Table option. This saves a simplified spreadsheet containing all the data researchers need for their data repositories. It is good practice to save these files in the same folder as the data input.



The spreadsheet can also be uploaded directly to Geochron.org in this format (once metadata are added). References for the Arizona LaserChron Center are also included

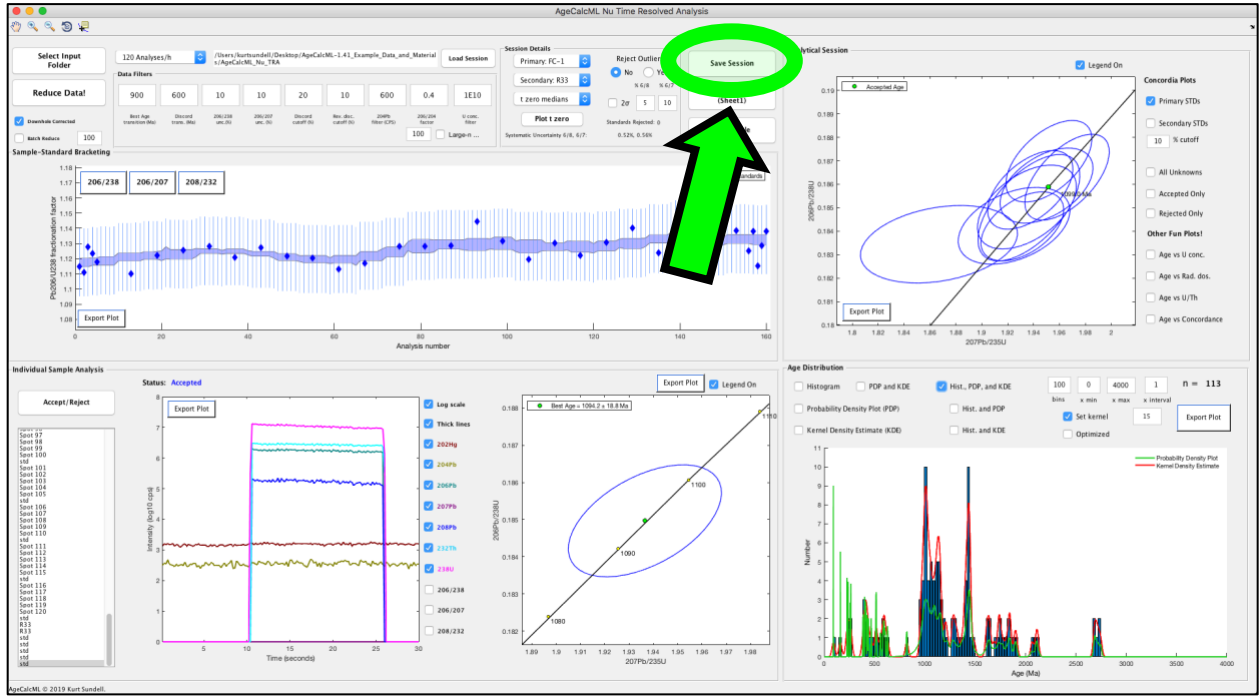
Sample Name	Stratigraphic Formation Name	Stratigraphic Age	Rock Type	Mineral	Method	Latitude	Longitude	Internal Uncertainty Level	External Uncertainty 206/238 (% two sigma)	External Uncertainty 206/207 (% two sigma)	Analysis Purpose	Lab Name	Analyst Name	Aliquot Reference	Aliquot Instrumental Method	Aliquot Instrumental Reference
Spot 1				Zircon	UPb			one sigma	0.24183339	0.58842061		Arizona LaserChron Center				
Spot 2				Zircon	UPb			one sigma	0.24183339	0.58842061		Arizona LaserChron Center				

A second way users may want to export is the Detailed Table. This is formatted the same as 'Sheet 1' in the original AgeCalc for Excel.

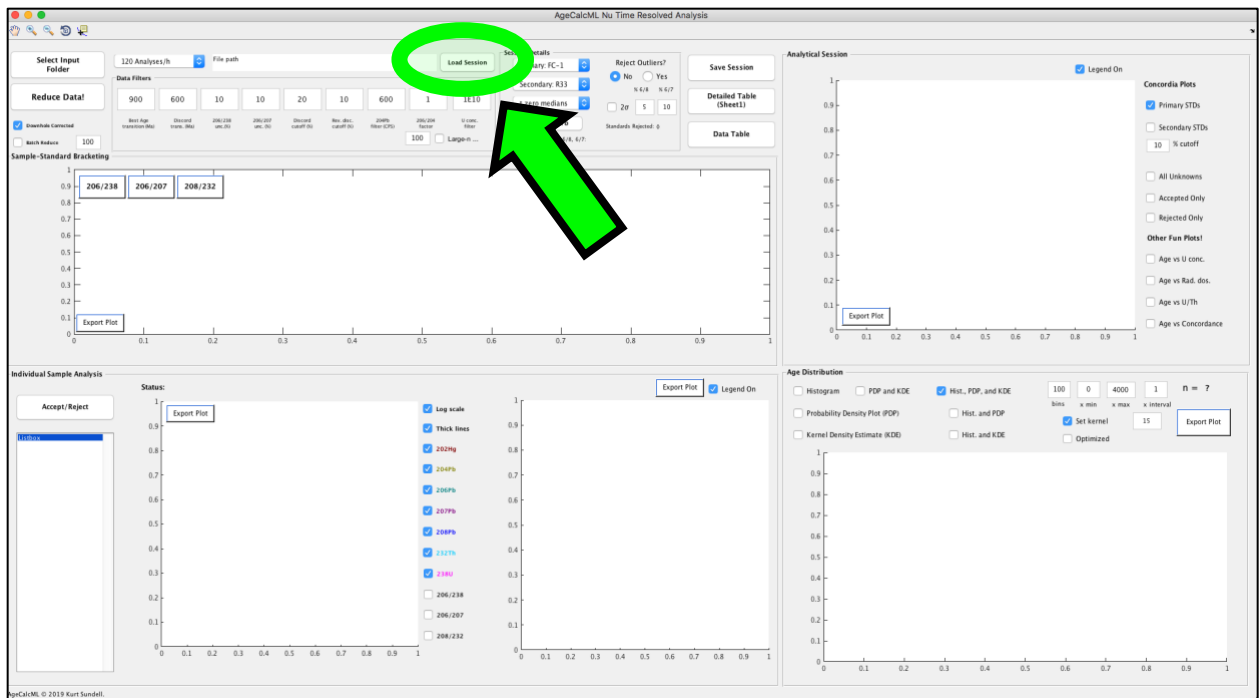


Sample Name	Stratigraphic Formation Name	Stratigraphic Age	Rock Type	Mineral	Method	Latitude	Longitude	Internal Uncertainty Level	External Uncertainty 206/238 (% two sigma)	External Uncertainty 206/207 (% two sigma)	Analysis Purpose	Lab Name	Analyst Name	Aliquot Reference	Aliquot Instrumental Method	Aliquot Instrumental Reference
Spot 1				Zircon	UPb			one sigma	0.24183339	0.58842061		Arizona LaserChron Center				
Spot 2				Zircon	UPb			one sigma	0.24183339	0.58842061		Arizona LaserChron Center				

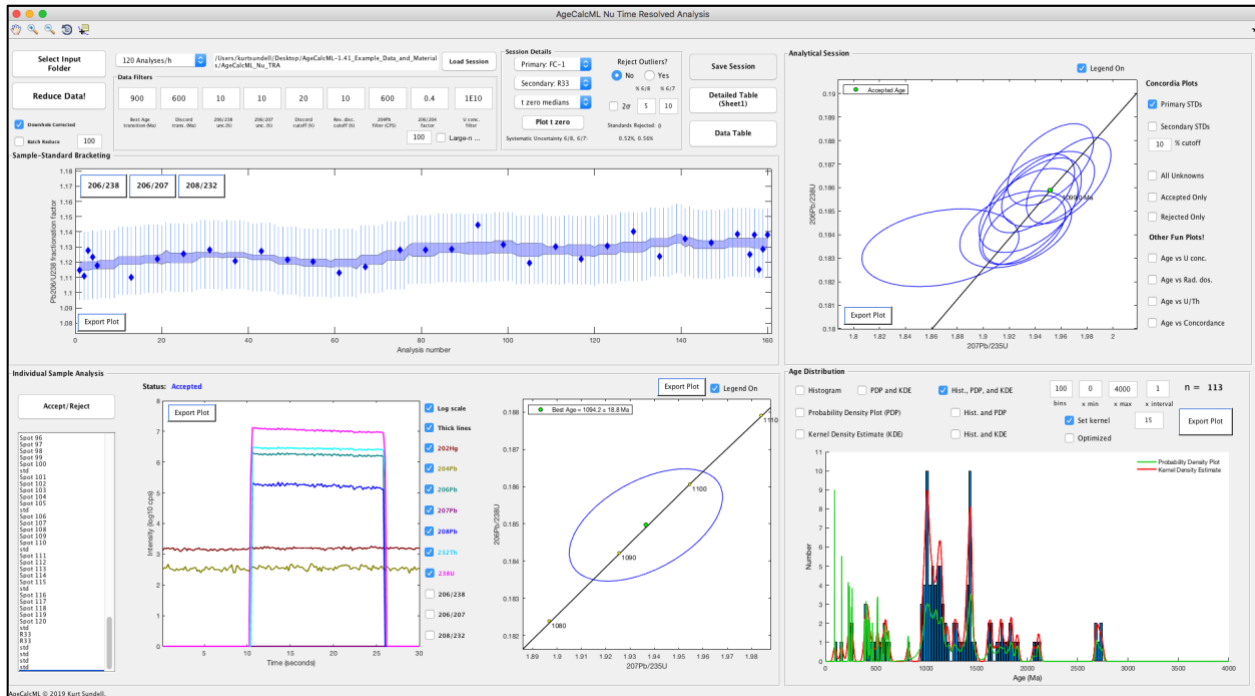
A third way users can save their work is to save an instance of the MATLAB session itself. This can be done by pressing the Save Session pushbutton.



The saved file is in .mat format and can be opened using the Load Session pushbutton from a blank session



The blank session closes and the saved session will open right where you left off.



It is good practice to save all of these in the data input folder. This folder can still be loaded and reduced from scratch because the program identifies the raw data by looking for "scancsv" and "run". Accordingly, do not include these in the file names.

