BIOL 497 RESEARCH SCIENTIFIC JOURNAL

BY LEO SAI

START DATE; JAN. 17, 2024

END DATE; IN PROGRESS

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| JAN 17. 2024 | Downloaded and organized.  -Water Community Abundance, and Cell Count for 2014-2023. |
| JAN 24. 2024 | Downloaded and organized.  -Soil Periodic 2014 to 2023. |
| JAN 31. 2024 | Downloaded and organized.  -Benthic Community Microbes and Group Abundance 2014-2023. |
| FEB 7. 2024 | Downloaded and organized.  -Soil Microbial Community Count and Group Abundance 2014-2023 |
| FEB 14. 2024 | Presented current data to group.  -Water Community Abundance, and Cell Count for 2014-2023.  -Soil Periodic 2014 to 2023.  -Benthic Community Microbes and Group Abundance 2014-2023.  -Soil Microbial Community Count and Group Abundance 2014-2023 |
| FEB 21. 2024 | Downloaded and organized on EXCEL  -Water Community Abundance, and Cell Count for 2014-2023.  Data input; ARIK 2014-2015 Cell Count Microbe Surface Water |
| FEB 29. 2024 | Downloaded and organized on EXCEL  -Water Community Abundance, and Cell Count for 2014-2023.  Data input; ARIK 2016-2019 Cell Count Microbe Surface Water |
| MAR 7. 2024 | Downloaded and organized on EXCEL  -Water Community Abundance, and Cell Count for 2014-2023.  Data input; ARIK 2020-2021 Cell Count Microbe Surface Water |
| MAR 14. 2024 | Downloaded and organized on EXCEL  -Water Community Abundance, and Cell Count for 2014-2023.  Data input; ARIK 2021 Cell Count Microbe Surface Water |
| Mar 21. 2024 | Formula formation of;  -Water Community Abundance, and Cell Count for 2014-2023.  -Soil Periodic 2014 to 2023.  -Benthic Community Microbes and Group Abundance 2014-2023.  -Soil Microbial Community Count and Group Abundance 2014-2023  Data input; ARIK 2021-2023 Cell Count Microbe Surface Water  BARC 2015-2016 Cell Count Microbe Surface Water |
| Mar 31. 2024 | Data input; BARC 2018-2021 Cell Count Microbe Surface Water |
| Apr 1. 2024 | Data input; SOIL\_PROPERTIES\_FACTOR\_0  (All Sites D01-D20)  SPF0\_T1\_sls\_soilCoreCollection  SPF0\_T1\_sls\_soilMoisture  SPF0\_T1\_sls\_soilpH  SPF0\_T1\_sls\_metagenomicsPooling  INFORMATIONAL  SPF0\_T1\_ntr\_internalLab  SPF0\_T1\_LabBlanks  UNI\_FL\_WETLANDS\_BIOGEOCHEM  SPF0\_T1\_ntr\_externalLab  sls\_soilChemistry  sls\_bgcSubsampling  Uni\_of\_Wyoming\_Stable\_Isotope\_F  CSU ntr\_externalSummary  Data input; BENTHIC\_GROUP\_MICROBE\_ABUNDANCE\_1  (All Sites D01-D20)  INFORMATIONAL  Genomics.mga\_batchResults  Genomics.mga\_labSummary  mga\_benthicGroupAbundances |
| Apr 2. 2024 | Data input; Group Abundance Microbe Surface Water 2  (All Sites D01-D20)  Genomics.mga\_batchResults  INFORMATIONAL  Genomics.mga\_labSummary  mga\_swGroupAbundances  Data input; MICRO\_SOIL\_GROUP\_ABUND\_3 (All Sites D01-D20)  Genomics.mga\_labSummary  Genomics.mga\_batchResults  INFORMATIONAL  mga\_soilGroupAbundances  LAB\_SUMMARY |
| Apr 4. 2024 | Data input; MICROB\_BENTHIC\_COMMUINITY\_1  (All Sites D01-D20)  INFORMATION  taxonTableLabSummary  Data input; MICROBE\_SURFACE\_WATER\_COMMUINITY\_2 (All Sites D01-D20)  TaxonTableLabSummary  INFORMATION  mcc\_swSeqVariantMetadata\_IT  mcc\_swSeqVariantMetadata\_16S  DNA1\_ITS  DNA1\_16S |
| Apr 7. 2024 | Data input; MICROBE\_SURFACE\_WATER\_COMMUINITY\_2 (All Sites D01-D20)  EPIPHYTON 3-DNA1\_ITS  EPIPHYTON.3-DNA1\_16S  EPIPSAMMON 3-DNA1\_ITS  EPIPSAMMON 3-DNA1\_16S  EPIPHYTON 2-DNA1\_ITS  EPIPHYTON 2-DNA1\_16S  EPIPHYTON 1-DNA1\_ITS  EPIPSAMMON 1-DNA1\_ITS  EPIPSAMMON 2-DNA1\_16S  EPIPSAMMON 1-DNA1\_16S  EPIPHYTON 5-DNA1\_ITS  EPIPHYTON 5-DNA1\_16S  EPIPHYTON 4-DNA1\_16S  EPIPHYTON 1-DNA1\_16S  EPIPHYTON 4-DNA1\_ITS  EPIPSAMMON 2-DNA1\_ITS  EPIPSAMMON.3-DNA2\_ITS |
| Apr 10. 2024 | Data input; BENTHIC\_GROUP\_MICROBE\_ABUNDANCE\_1  (All Sites D01-D20)  EPILITHON 2-DNA1\_ITS  EPILITHON 2-DNA1\_16S  EPILITHON 3-DNA1\_16S  EPILITHON 3-DNA1\_ITS  EPILITHON 6-DNA1\_16S  EPILITHON 6-DNA1\_ITS  EPILITHON 8-DNA1\_16S  EPILITHON 8-DNA1\_ITS  EPIPSAMMON 4-DNA1\_16S  EPIPSAMMON 4-DNA1\_ITS  EPIPSAMMON 5-DNA1\_16S  EPIPSAMMON 5-DNA1\_ITS  EPIPSAMMON 7-DNA1\_16S  EPIPSAMMON 7-DNA1\_ITS |
| Apr 20. 2024 | Data input; BENTHIC\_GROUP\_MICROBE\_ABUNDANCE\_1  (All Sites D01-D20)  EPILITHON 1-DNA1-DNA1\_ITS  EPILITHON 1-DNA1\_DNA1\_16S  EPILITHON 1-DNA1\_I6S  EPILITHON 1-DNA1\_ITS  EPILITHON 2- DNA1\_DNA1\_16S  EPILITHON 4-DNA1\_I6S  EPILITHON 4-DNA1\_ITS  EPILITHON 5-DNA1\_16S  EPILITHON 5-DNA1\_ITS  EPILITHON 7-DNA1\_16S  EPILITHON 7-DNA1\_ITS  EPIPELON.1-DNA1\_ITS  EPIPELON.1-DNA1\_16S  EPIPSAMMON 6-DNA1\_16S  EPIPSAMMON 6-DNA1\_ITS  EPIXYLON.1\_DNA1\_ITS  EPIXYLON.1\_DNA1\_16S  EPIXYLON.2\_DNA1\_16S |
| Apr 21. 2024 | Data input; BENTHIC\_GROUP\_MICROBE\_ABUNDANCE\_1  (All Sites D01-D20)  EPILITHON.2.DNA-DNA1\_ITS  EPILITHON.1.ARC-DNA1\_16S  EPILITHON.1.ARC-DNA1\_ITS  EPILITHON.1-DNA2\_ITS  EPILITHON.3.ARC-DNA1\_16S  EPILITHON.3.ARC-DNA1\_ITS  EPILITHON.3.DNA-DNA1\_16S  EPILITHON.3.DNA-DNA1\_ITS  EPILITHON.4.DNA-DNA1\_16S  EPILITHON.4.DNA-DNA1\_ITS  EPILITHON.5.ARC-DNA1\_16S  EPILITHON.5.ARC-DNA1\_ITS  EPILITHON.5.DNA-DNA1\_16S  EPILITHON.5.DNA-DNA1\_ITS  EPILITHON.5-DNA2\_16S  EPILITHON.6.DNA-DNA1\_16S  EPILITHON.6.DNA-DNA1\_ITS  EPILITHON.7.DNA-DNA1\_16S  EPILITHON.7.DNA-DNA1\_ITS  EPILITHON.8.DNA-DNA1\_16S  EPILITHON.8.DNA-DNA1\_ITS  EPILITHON.9-DNA1\_16S  EPILITHON.9-DNA1\_ITS  EPIPELON.2-DNA1\_16S  EPIPELON.2-DNA1\_ITS  EPIPELON.3-DNA1\_16S  EPIPELON.3-DNA1\_ITS  EPIPELON.4-DNA1\_16S  EPIPELON.4-DNA1\_ITS  EPIPELON.5-DNA1\_16S  EPIPELON.5-DNA1\_ITS  EPIPELON.6-DNA1\_16S  EPIPELON.6-DNA1\_ITS  EPIXYLON.2-DNA1\_ITS  EPIXYLON.2-DNA1\_16S  EPIXYLON.3-DNA1\_16S  EPIXYLON.3-DNA1\_ITS  EPIXYLON.4-DNA1\_16S  EPIXYLON.4-DNA1\_ITS  EPIXYLON.5-DNA1\_16S  EPIXYLON.5-DNA1\_ITS  EPIXYLON.7-DNA1\_16S  EPIXYLON.7-DNA1\_ITS  EPIXYLON.9-DNA1\_16S  EPIXYLON.9-DNA1\_ITS  Data input;  Commuinity\_Microbe\_Soil\_3  (All Sites D01-D20)  Informational |
| April 22. 2024 | Road Map PowerPoint Presentation Started  <https://docs.google.com/presentation/d/1sBVdWo8jjupsdA-g_FAGIHxAsA7tlKTK1W985Wf3PNA/edit#slide=id.p> |
| April 23. 2024 | Guest Speaker input on;  Commuinity\_Microbe\_Soil\_3  (All Sites D01-D20)  Use Pivot Tables (Helps show the data taxa easier) |
| May 11. 2024 | Data input;  Commuinity\_Microbe\_Soil\_3  (All Sites D01-D20)  GEN-DNA2\_16S  GEN-DNA2\_ITS  GEN-DNA3\_ITS  GEN-DNA3\_16S  mcc\_soilSeqVariantMetadata\_16S  mcc\_soilSeqVariantMetadata\_ITS  NEON.NEON\_HQ.mcc\_taxonTableLabS |
| May 12. 2024 | Data input;  Commuinity\_Microbe\_Soil\_3  (All Sites D01-D20)  GEN-DNA1\_16S\_A  GEN-DNA1\_16S\_B  GEN-DNA1\_16S\_C  GEN-DNA1\_16S\_D  GEN-DNA1\_16S\_E  GEN-DNA1\_16S\_F  GEN-DNA1\_ITS\_A  GEN-DNA1\_ITS\_B |
| May 13. 2024 | Worked on Road Map PowerPoint Presentation  <https://docs.google.com/presentation/d/1sBVdWo8jjupsdA-g_FAGIHxAsA7tlKTK1W985Wf3PNA/edit#slide=id.p> |
| May 14. 2024 | Worked on Road Map PowerPoint Presentation  <https://docs.google.com/presentation/d/1sBVdWo8jjupsdA-g_FAGIHxAsA7tlKTK1W985Wf3PNA/edit#slide=id.p> |
| May 15. 2024 | Worked on Road Map PowerPoint Presentation  <https://docs.google.com/presentation/d/1sBVdWo8jjupsdA-g_FAGIHxAsA7tlKTK1W985Wf3PNA/edit#slide=id.p> |
| May 16. 2024 | Record worked hours for the length of work time and state what you did; might need to use an electronic time stamp  Worked on Road Map PowerPoint Presentation and graphing  <https://docs.google.com/presentation/d/1sBVdWo8jjupsdA-g_FAGIHxAsA7tlKTK1W985Wf3PNA/edit#slide=id.p> |
| May 20. 2024 | Starting the layout for Cell Count and Cell Density for annual and monthly trends in respect to O2 Saturation, Temperature, etc. |
| May 27. 2024 | Start Summer Research start at 5pm-11pm (6 Hours)  Worked on Cell Density annual and monthly patterns and Benthic Community Individual Counts table. |
| May 29. 2024 | Start Summer Research start at 8pm-2am (6 Hours)  Cell Density Water Community  (In progress) Community Soil |
| May 30. 2024 | Start Summer Research start at 9am-10am and 5:30pm-7:30pm (2 Hours)  Community Soil  Soil Microbe Abundance Charting  Benthic Abundance Charting (w/out PCR efficiency b/c only uid code to identify kind of more tricky) |
| June 3. 2024 | 11:30am-1:00pm 1.5 hours  8:30pm-10:00pm 1.5 hours  Soil Factor Charting (Need to filter years or months to match up to other sheets) |
| June 8. 2024 | Biomass Charting Finished  Email David and Professor Xu for Meeting in Figure Step  SDSU RESEARCH FOUNDATION Training |
| June 9. 2024 | SDSU RESEARCH FOUNDATION Training |
| June 10. 2024 | Prep Meeting with David to reconvene on the figures and ways to clean it up and to analyze the figures. |
| June 13. 2024 | Zoom weekly meeting cleaning up the figures and worked on ways to analyze the figures that had multiple 1.1-1.3 monthly and annual figure slides. |
| June 14. 2024 | R script analysis template for Excel Worksheets from Week 1 to Week 6 |
| June 16. 2024 | R script analysis template for Excel Worksheets from Week 1 to Week 6 |
| June 20. 2024 | Weekly Meeting and another meeting with David.  Simplified Excel Charting Figures.  R script analysis template for Excel Worksheets from Week 6 to Week 13  Might need to revise nonmetric multidimensional scaling, principle component analysis, and Sankey diagram  Might need to revise Soil Prop Charting and Biomass Charting |
| June 27. 2024 | Weekly Meeting  -Prep a Presentation for next week if possible  -Revised coding template  -Monthly patterns need change to seasonal every three months is a season  -Keep Scaling Pattern separate  -Remove Freeze Dry Mass because we have density of the soil property |
| June 29. 2024 | -Revised R script Template with Sankey Diagram coding template website and the Multidimensional Test  -Worked on changing soil property and biomass charting data set  -Still need to work on Annual 1.2 and do all monthly changes in soil prop |
| July 1. 2024 | Annual Pattern 1.2 finished  Abundance charting monthly finished  Community Charting monthly finished  Biomass Charting monthly finished  Need work:  Surface Water charting  Soil Prop Charting |
| July 6. 2024 | Finished Surface Water Charting Seasonal Changes |
| July 10. 2024 | Working on the R Script for Microbial Cell Density Surface Water and the Community factors |
| July 17. 2024 | Finished Seasonal Pattern in Soil Prop Charting  Working on Presentation:  <https://docs.google.com/presentation/d/1lU2rb_KoAsFL2QacCxiOZaEOUdUDH8AEl4Dkr0CUSWQ/edit#slide=id.g2ecd404ff62_0_15>  Fixed Abundance and Community Charting as it did not have a seasonal and annual change to the point of desire. |
| July 25. 2024 | Weekly meeting, finished Surface Water Charting Figure R Script  Changing the Sankey Diagram Plan to PCA [principle component analysis] |
| August 1. 2024 | Weekly meeting, Working on Pie Chart for Community Charting |
| August 7. 2024 | Weekly meeting, Finished Working on Pie Chart for Community Charting but not finished the full figure |
| August 8. 2024 | Weekly meeting, Finished Working on Pie Chart for Community Charting but not finished the full figure |
| August 13. 2024 | Finished abundance soil, benthic, and water seasonal changes charting figure as well as biomass charting figure. Still working on the Community Charting figure |
| August 22. 2024 | Still working on the Community Charting figure |
| August 30. 2024 | Still working on the Community Charting figure |
| August 31. 2024 | Finished Community Charting Figure as well as the presentation slide |
| September 4. 2024 | Climate Titling still in progress. Failed to correlate magnitude because only 19 sites out of 40 are recorded by NEON |
| September 7. 2024 | Progressed in Presentation Slide. Presentation symposium forms for January CSU BIOTECH symposium. Still need letter of rec and dean signatures. Still in progress to submit SDSU symposium spring event |
| September 11. 2024 | Presentation symposium forms for January CSU BIOTECH symposium. Still need letter of rec and dean signatures. Still in progress to submit SDSU symposium spring event |
| September 14. 2024 | Continued presentation slides. Remain text description empty. Finished road map to completion. Still need letter of rec and dean signatures. Still in progress to submit SDSU symposium spring event |
| October 6. 2024 | Continued presentation slides. Remain text description empty. Finished road map to completion. Still need dean signatures. Still in progress to submit SDSU symposium spring event |
| October 13. 2024 | Global figure created and started for additions of pie charts |
| October 21. 2024 | Refigure the layout of all figures for professionalism using different fonts and bolder titles and size variations. |
| October 28. 2024 | Refigure the layout of all figures for professionalism using different fonts and bolder titles and size variations. |
| November 4. 2024 | Presentation presented and findings re-evaluated.   * 36 height 48/60 wide * Fix the figure numbering * Title = 32/36 size font and 28/24 font text b/c when you print * Caption after the figure (legend) * Result, etc. (format like lab reports) * Summarize all figures and reorganize |
| November 11. 2024 | Reformatting Presentation for the SDSU symposium, BIOTECH symposium rejected due to travel application |
| November 18. 2024 | Start on ideas and formatting of publication paper with mostly finished figures except the correlation matrix and the global figure distribution. |
| November 25. 2024 | Presentation presented about thaumarcheotal microorganisms. |
| December 2. | Weekly check in and continued work on the figures and finalization of them |
| December 9. 2024 | Finished all the figures in finalization but reevaluation may be required to further proceed. |
| December 16. 2024 | Paper is somewhat created with a rough draft expect the discussion, conclusion, and references. |
| December 23. 2024 | Paper is somewhat created with a rough draft expect the discussion, conclusion, and references. |
| December 27. 2024 | Rough Draft of Paper is completed and now working on the 3rd and final step of presenting the work at SDSU S3 application.  Presentation of Research Done |
| December 30. 2024 | Simplified Presentation but needs more simplifying  Figures need a statistical analysis (ex. independent t-test, ANOVA, etc)  Better analysis is crossed over into paper as well then. |
| Feburary 5. 2025 | Multidimensional SEM research figure: numbers are too close together, legend doesnt fit |
| Feburary 8. 2025 | Multidimensional SEM research figure: numbers are too close together, legend doesnt fit |
| Feburary 10. 2025 | Multidimensional SEM research figure: numbers are too close together, legend doesnt fit |
| Feburary 15. 2025 | Presentation but needs more simplifying  Figures need a statistical analysis (ex. independent t-test, ANOVA, etc)  Better analysis is crossed over into paper as well then. |
| Feburary 18. 2025 | Presentation but needs more simplifying  Figures need a statistical analysis (ex. independent t-test, ANOVA, etc)  Better analysis is crossed over into paper as well then. |
| Feburary 20. 2025 | Presentation but needs more simplifying  Figures need a statistical analysis (ex. independent t-test, ANOVA, etc)  Better analysis is crossed over into paper as well then. |
| Feburary 22. 2025 | Presentation but needs more simplifying  Figures need a statistical analysis (ex. independent t-test, ANOVA, etc)  Better analysis is crossed over into paper as well then. |
| Feburary 28. 2025 | Revise all figures for Symposium 3 and make a poster with more simple text |
| March 2. 2025 | Presentation but needs more simplifying |
| March 8. 2025 | Figures need a statistical analysis (ex. independent t-test, ANOVA, etc) |
| March 10. 2025 | Better analysis is crossed over into paper as well then. |
| March 12. 2025 | Presentation but needs more simplifying |
| March 20. 2025 | Figures need a statistical analysis (ex. independent t-test, ANOVA, etc) |
| March 22. 2025 | Better analysis is crossed over into paper as well then. |
| March 26. 2025 | Presentation but needs more simplifying |
| March 30. 2025 | Use adobe illustrator and more discussion and methodology on paper, needs more citations |
| April 1. 2025 | Use adobe illustrator and more discussion and methodology on paper, needs more citations |
| April 4. 2025 | Use adobe illustrator and more discussion and methodology on paper, needs more citations |
| April 6. 2025 | Use adobe illustrator and more discussion and methodology on paper, needs more citations |
| April 7. 2025 | Use adobe illustrator and more discussion and methodology on paper, needs more citations |
| April 10. 2025 | Use adobe illustrator and more discussion and methodology on paper, needs more citations |
| April 13. 2025 | Redo R script with log transformation for PCA and Matrix |
| April 15. 2025 | Redo R script with log transformation for PCA and Matrix |
| April 20. 2025 | Redo R script with log transformation for PCA and Matrix |
| April 25. 2025 | Figures need a statistical analysis (ex. independent t-test, ANOVA, etc)  Better analysis is crossed over into paper as well then. |
| April 28. 2025 | Figures need a statistical analysis (ex. independent t-test, ANOVA, etc)  Better analysis is crossed over into paper as well then. |
| April 30. 2025 | Figures need a statistical analysis (ex. independent t-test, ANOVA, etc)  Better analysis is crossed over into paper as well then. |
| May 2. 2025 | Revising paper for publishing end of month |
| May 4. 2025 | Revising paper for publishing end of month |
| May 8. 2025 | Revising paper for publishing end of month |
| May 12. 2025 | Revising paper for publishing end of month |
| May 15. 2025 | Revising paper for publishing end of month |
| May 18. 2025 | Revising paper for publishing end of month |
| May 21. 2025 | Revising paper for publishing end of month |
| June 2. 2025 | Revising paper for publishing end of month |
| June 4. 2025 | Revising paper for publishing end of month |
| June 8. 2025 | Revising paper for publishing end of month |
| June 12. 2025 | Revising paper for publishing end of month |
| June 15. 2025 | Revising paper for publishing end of month |
| June 18. 2025 | Revising paper for publishing end of month |
| June 21. 2025 | Revising paper for publishing end of month |
| June 29. 2025 | Calculate Biomass and redo figures |
| June 30. 2025 | Revising paper for publishing end of month with biomass and revising paper for publishing end of month |
| July 1. 2025 | Zoom meeting with submission and revisions by end of week with literature revisions |
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