

Water Quality Synthesis Update

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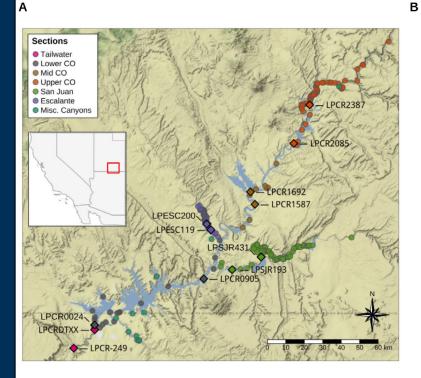


U.S. Department of the Interior U.S. Geological Survey

Over half a century record of limnology data from Lake Powell, desert southwest USA: from reservoir filling to present day (1964-2021)

Data paper submitted to L&O Letters in August 2022, currently in revision.

58-year water quality dataset8 research ready flat files5,208 unique site visits9 sites with long-term quarterly to monthly scale data

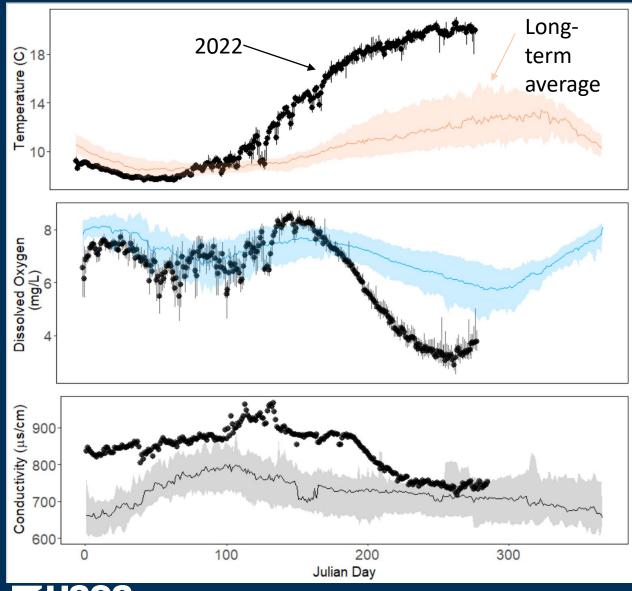


Deemer et al. In Revision

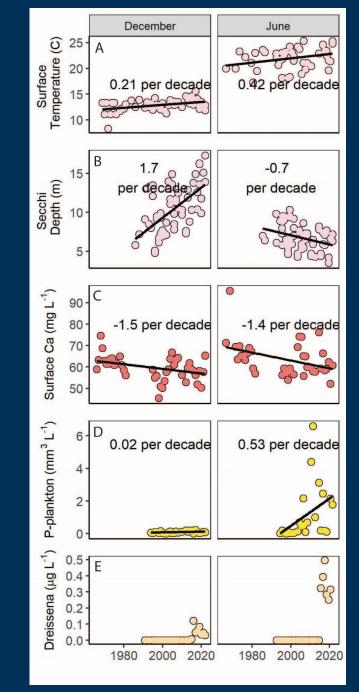
| | | Profiles | Secchi | Major Ions | Nutrients | Phytoplankton | Zooplanktor |
|-----------------------|--------|-----------------|--------|------------|-----------|---------------|-------------|
| Tailwater | | | | | | | |
| LPCR-249 | | 76 ¹ | NA | 292 | 307 | 258 | 247 |
| LPCRDT0X ² | | 40 ³ | NA | 262 | 273 | 245 | 244 |
| Lower CO | | | | | | | |
| LPC | R0024 | 576 | 360 | 2,994 | 1,114 | 330 | 781 |
| LPC | R0905 | 291 | 136 | 1,583 | 345 | 113 | 141 |
| Mid CO | | | | | | | |
| LPC | R1587 | 94 | 92 | NA | NA | 4 | 5 |
| LPCF | R16924 | 277 | 122 | 1,301 | 342 | 108 | 133 |
| Upper CO | | | | | | | |
| LPC | R2085 | 108 | 108 | 327 | 335 | 104 | 123 |
| LPC | R2387 | 261 | 109 | 938 | 259 | 92 | 112 |
| San Juan | | | | | | | |
| LPS | JR193 | 274 | 121 | 1,296 | 334 | 107 | 133 |
| LPS | JR431 | 106 | 104 | 288 | 295 | 98 | 118 |
| Escalante | | | | | | | |
| LPE | SC119 | 100 | 96 | 303 | 305 | 97 | 117 |
| LPE | SC200 | 83 | 82 | 4 | 1 | 11 | 10 |



Water Quality is Dynamic



GS Preliminary Data, Do Not Cite



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CE-QUAL W2 Model Improvements



-Bryce Mihalevich began a Post Doc in June 2022.

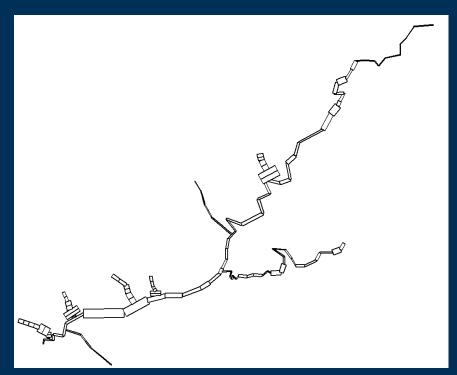
-Constructing a new grid with updated bathymetry from Jones and Root 2021

-Examining options for different weather inputs -AR5

- -Bullfrog Marina Weather Data
- -Page Airport
- -Dryland Research Institute/BOR

-Incorporate information from long term monitoring program on:

-Wind sheltering -Water clarity



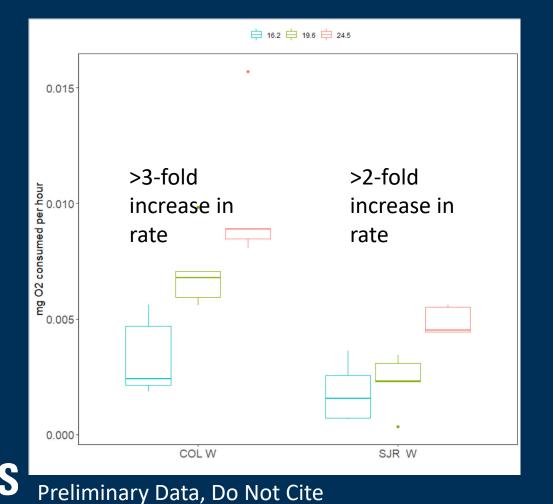
Example Lake Powell CE-QUAL grid structure

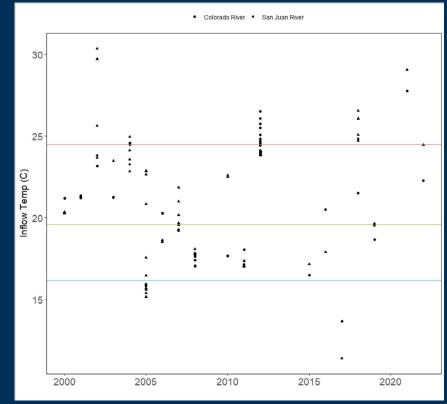


Dissolved Oxygen Demand in Inflow Plumes

3 Temperature Treatments (16.2, 19.6, 24.5)







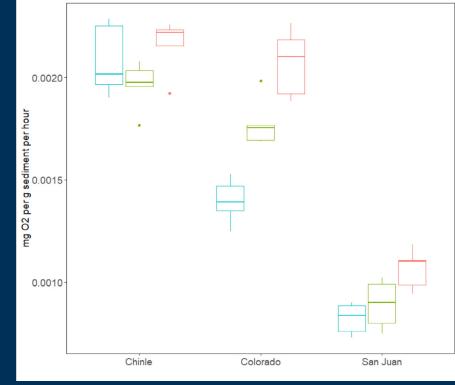
Preliminary Data, Do Not Cite

Dissolved Oxygen Demand in Inflow Plumes

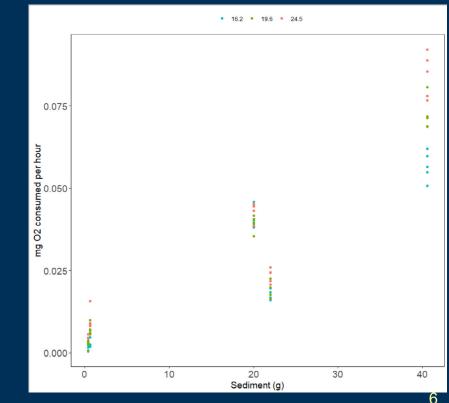




븜 16.2 🛱 19.6 🛱 24.5









Preliminary Data, Do Not Cite