Flask to Field – Lessons Learned

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WHY?
\[ W(t) = \int_{t}^{\infty} U(c(\tau))e^{-r(\tau-t)} d\tau \]
Lessons Learned

1. Keep Your Eye on the Ball
2. There is No Such Thing as Standard
3. We Must Embrace Complexity
Keep Your Eye on the Ball

Easy to get lost in details

Small changes in one dimension of the algae production process create numerous impacts throughout the system and can lead to a cascade of events.

The complex nature of algae growth, harvesting, processing and logistics make it easy to lose sight of the big picture.
There is No Such Thing as Standard

Each researcher, laboratory, operation, facility has their own process flow and data collection processes.

Even “standardized” measures have stochastic variability in the measurement and reporting.

Understanding variability in data collection, measurement, and algae systems is critical.
There is No Such Thing as Standard

Systems need to be designed around the variability and stochastic nature of the algae systems and of the people and processes that operate them, as well as the broader system in which we are considering algae industries.

Advances in data science and modeling make this possible (but not easy).
RAFT is building and using a reactive programming framework to allow for variability in data collection, measurement, and application across our diverse test beds and experiments.
Users can view existing data and select variables, graphing options, and views as well as upload data and add meta data to the uploaded files.
Users can view correlations between multiple variables and see histograms and regressions on chosen variables. Allows for MULTIPLE variable views.
Users can view existing files or upload their own to add to the RAFT database.
Users can view descriptive statistics and download the tables.
Users can add experiment information to their data.

Flexible (REACTIVE) system

Users are NOT restricted to the type of data they can upload or variable names.
We Must Embrace Complexity

Changes in data science allow us to better model and build around complexity.

Data analysis and visualization of non-standardized or controlled data is critical.

As we better understand and utilize the new data tools available, the quicker and more completely we can capture important system benefits.
Don’t lose sight of the answer to WHY
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