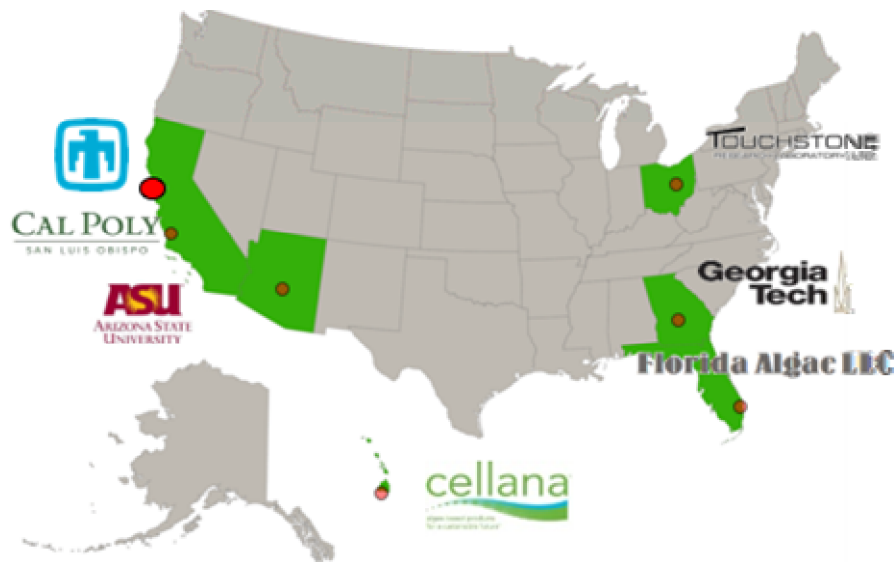


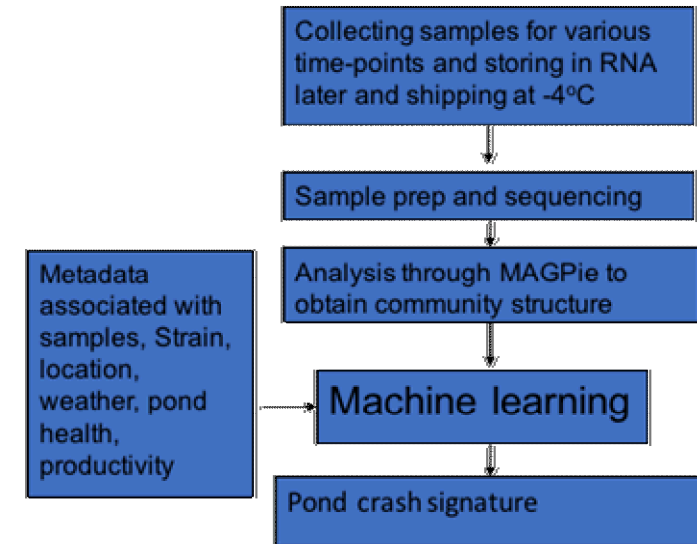


ATP³ Data

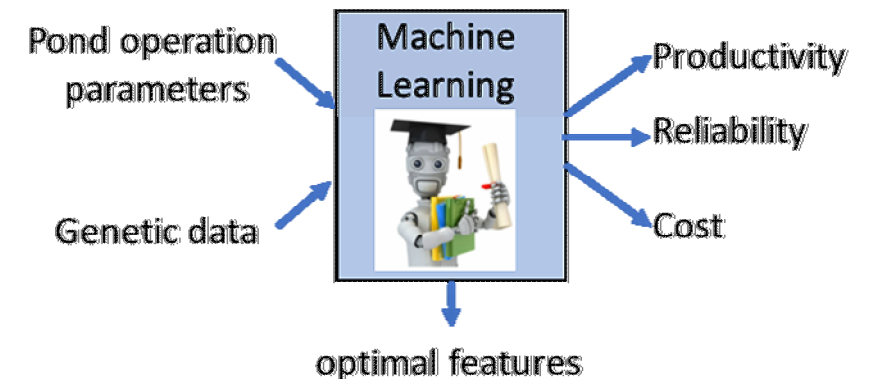
- 6 X 1000 L replicate ponds in 5 geographically distinct locations
- *Nannochloropsis oceanica*
- *Chlorella* sp DOE 1412
- *Desmodesmus*



Research Strategy SAND2017-6298C



We sequenced and analyzed ~1200 sequences for a full year of operations of ATP³ ponds in 2014

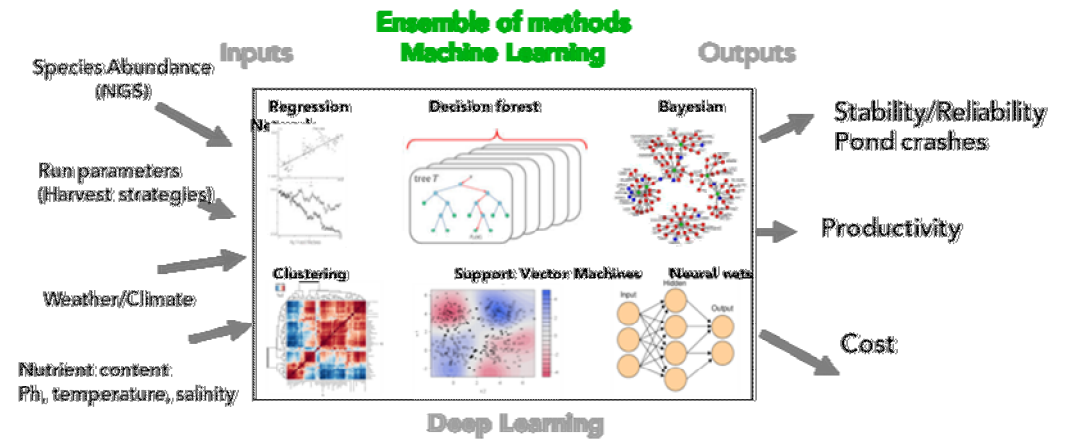
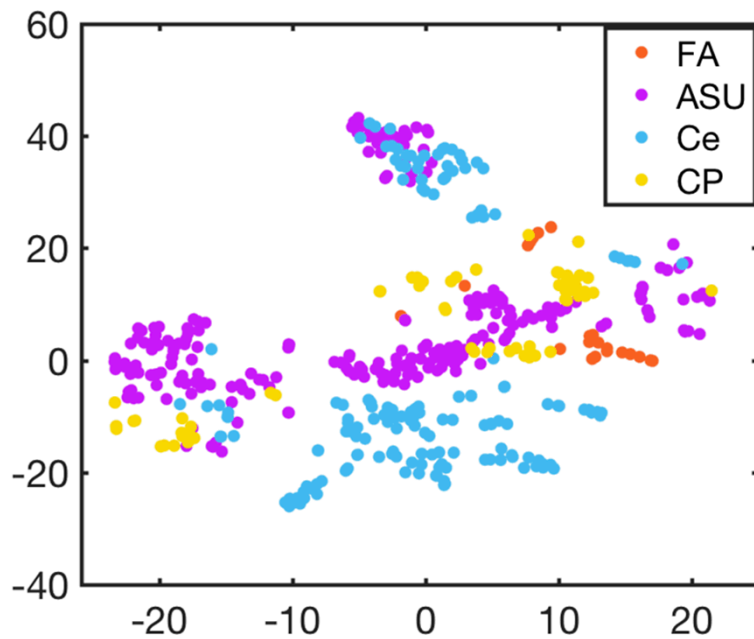




Machine Learning

We can map and understand these microbial ecology networks

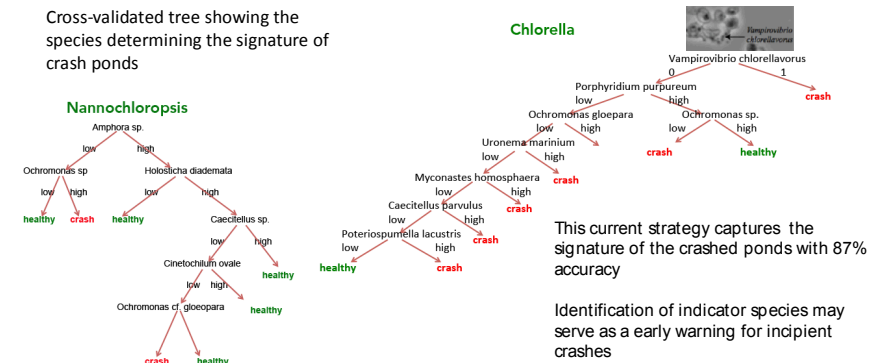
Machine learning methods can explain the variation in microbial ecology between sites, seasons and strains



And using advanced machine learning algorithms find good characters vs bad in the microbial consortia

Crash Signature

Cross-validated tree showing the species determining the signature of crash ponds



This current strategy captures the signature of the crashed ponds with 87% accuracy

Identification of indicator species may serve as an early warning for incipient crashes