



DRIVERS OF BLOOM  
INITIATION & TERMINATION

HABSOS 2019 Review

# WHAT WE THINK WE KNOW

---

- **Climate change is impacting blooms. – everything that comes along with climate can exasurbate by releasing nutrients.**
- **Increased rain associated with climate change will drive more nutrients off the land, resulting in more nutrients, including urea, being driven to Lake Okeechobee. (lets not forget about global warming, SLR). Increased rainfall intensity. Biosolids – sources might be coming back – leg. Changing mgmt.**
- **Most communities are dominated by a few- types of bacteria.**



# WHAT WE DON'T KNOW

---

- **What does the community – bacteria, zooplankton, and other phytoplankton – look like before a bloom initiates?**
- **How do bacteria communities contribute to a bloom?**
- **What factors are involved in bloom termination?**
- **What are microcystin degradation rates?**



# RESEARCH PRIORITIES - CYANOHABS

---

1. Understand the factors that contribute to initiation, persistence severity, and decline of blue-green HABs
2. Evaluate past and current hydrology and the effects of freshwater releases on blue-green algae in Lake Okeechobee
- 3a. Determine what is responsible for variability in toxicity and toxin production
- 3b. Determine the function(s) of toxins
4. Understand the movement of toxins into the environment, including air
5. Determine variability of strain toxin levels and the relationship with N and P
6. Determine the role of herbicides on bloom development
7. Determine how to adequately measure bloom initiation
8. Evaluate the role of viruses and viral interactions
9. Assess food web ramifications and develop better ecological models



# RESEARCH PRIORITIES –HABS IN GENERAL

---

1. Evaluate bloom termination (including environmental and ecological factors such as predation, hypoxia, etc.) and what is released when a bloom dies
2. Identify and understand the role of nutrient sources supporting blooms, specific gaps include:
  - Linkages to eutrophication
  - Benthic-pelagic coupling (internal cycling)
  - River influences (including iron)
3. Understand bloom triggers via experimental work (lab, mesocosm, and field experiments) and predict their movement, behavior, and termination
  - Identify direct link between HABs and climate change, such as increased water temperatures
- 4a. Clarify the relationship between blue-green algae and red tide
- 4b. Examine the inter-relationship between bloom species
5. Determine if blooms are more common or more intense

