

Lower James River Water Quality Monitoring

2012 Summary
November 2, 2012
CHLA Science Advisory Panel



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Needs – Criteria Development and System Status Assessment

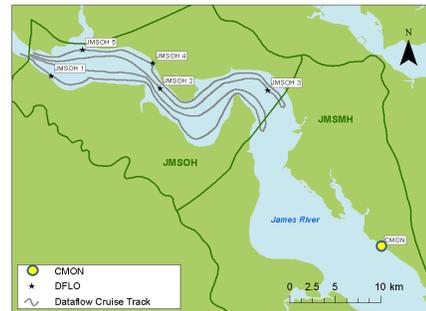
- **Objective 1. Characterize algal blooms in the lower James River and evaluating their causes.**
- **Task A1.** What are the temporal and spatial dynamics of algal blooms in the lower James River?
- **Task A2.** What are the relationships between Chl a, diagnostic pigments and HABs and other phytoplankton bloom species cell densities?
- **Task A3.** What are the environmental triggers of HAB and non-HAB bloom development and dynamics?

Monitoring Summary

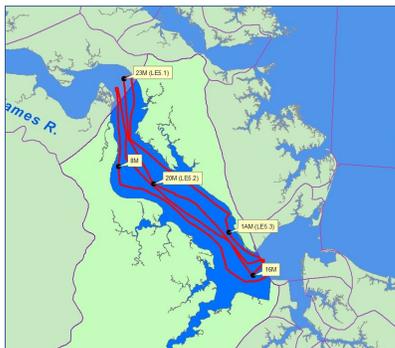
- HRSD DataFlow monitoring (JMSMH, JMSPH, LAFMH and ELIPH) conducted weekly from February-October.
- VIMS DataFlow monitoring (JMSOH) conducted twice monthly (May-June), weekly (July-Sept), twice monthly (October).
- ConMon stations: JMS17.96 (May17-Nov 1), LAF001.63 (Mar12-Oct11), LAF004.70 (Mar08-Oct11).
- Calibration samples (5 per segment) during each cruise, plus bloom samples as evident for further analyses. Calibration samples taken at each ConMon sonde switchout.
- Data is available at: <http://www3.vims.edu/vecos/> (password protected; Username: JamesDataUser; Password: VecosDataAccess)

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James Oligohaline (JMSOH)



James Mesohaline (JMSMH)



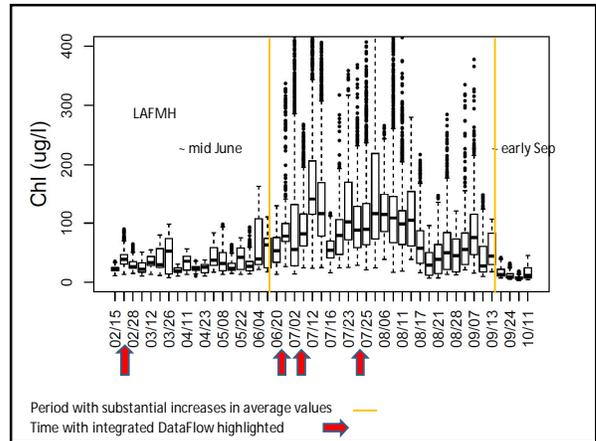
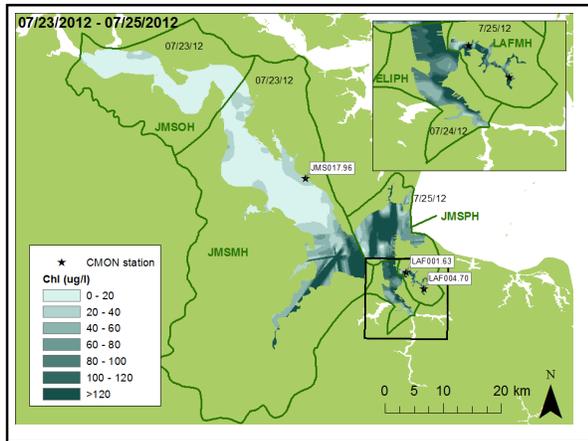
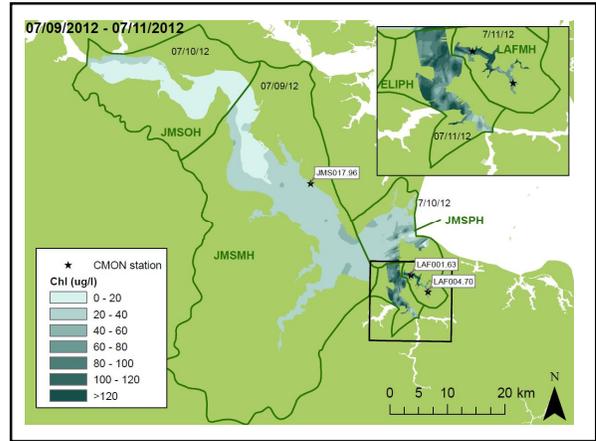
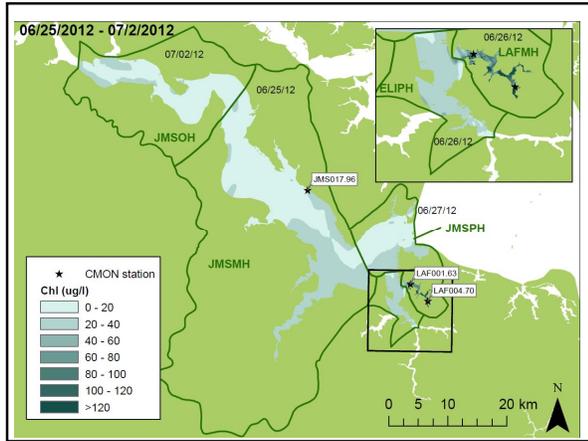
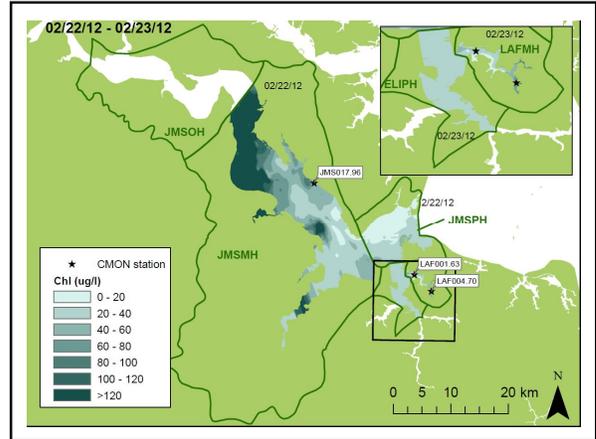
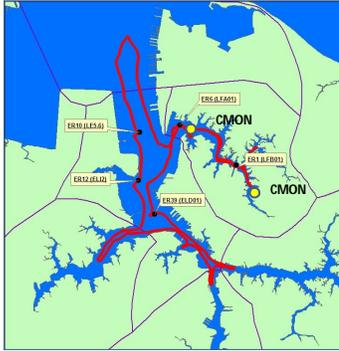
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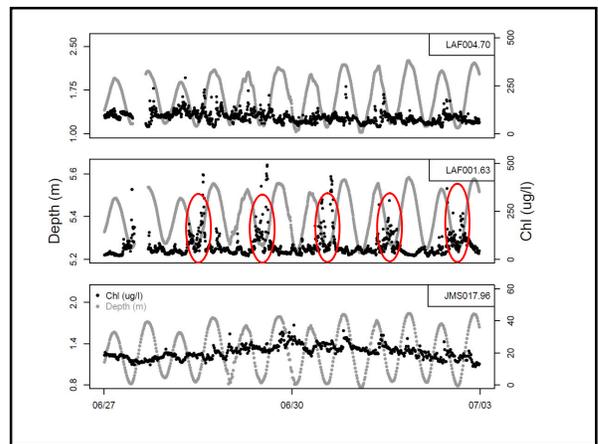
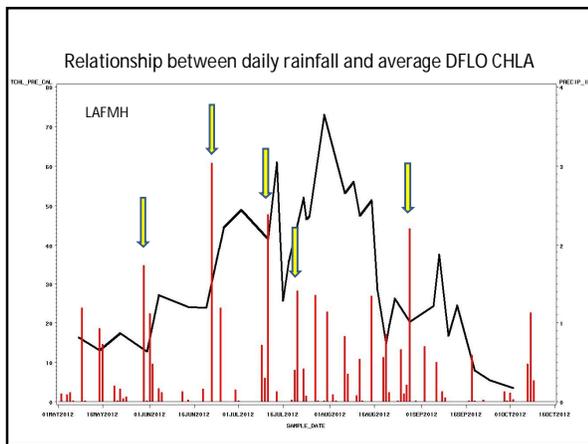
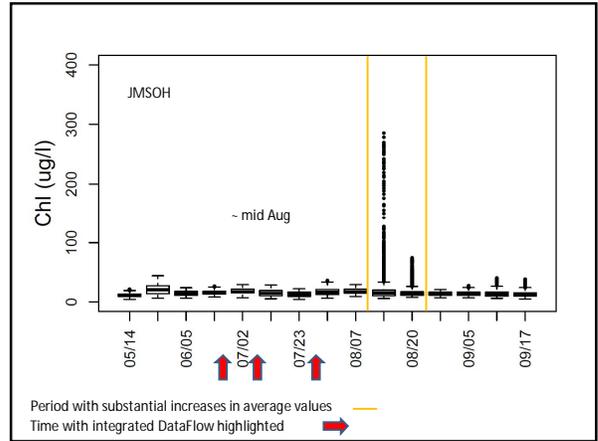
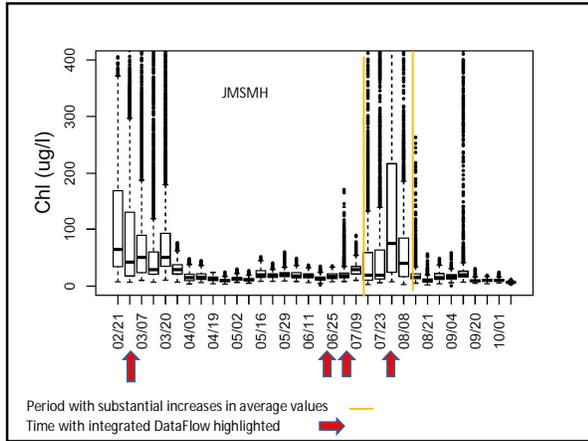
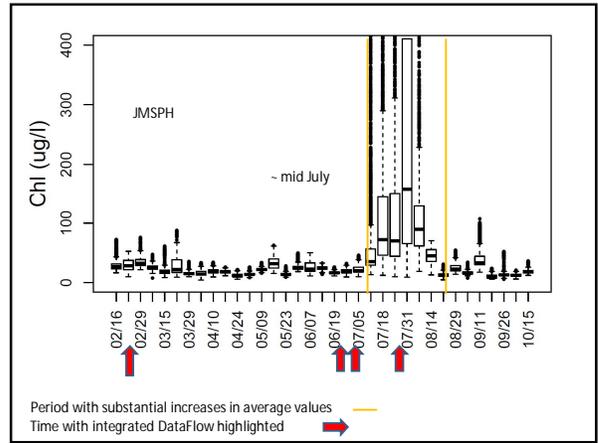
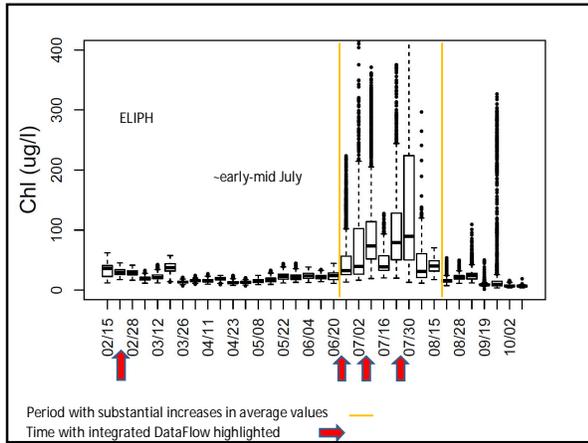
James Polyhaline (JMSPH)

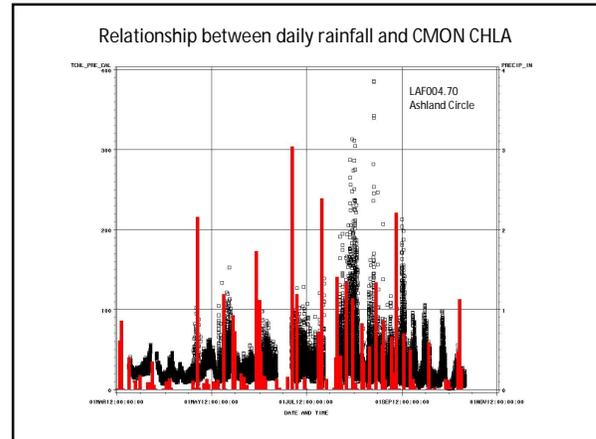
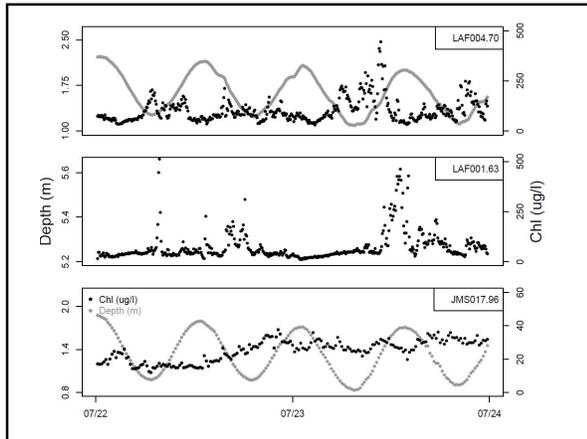


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Elizabeth (LAFMH and ELIPH)







Summary

- Summer bloom followed previous pattern
 - Initiation associated with storm events (storm effects better assessed this year)
 - The Elizabeth River appears to be the initiation grounds for the larger system
 - Hydrodynamic transport of blooms from the Elizabeth to the James is an important feature
- Spring and Summer blooms in lower James occurred earlier than in 2011 and were more intense
- Duration and intensity of blooms decreased with distance up the James
- Exposure of benthic organisms to bloom effects may vary with tides and water depth.

Recommendations for 2013

- Water quality mapping and continuous station records should be continued for at least one more year.
- Monitoring should start in February 2013 to quantify the extent of the spring bloom that was missed in 2012.
- Depth profiles of chlorophyll should be done to determine bloom depths.