Lower James River Monitoring

2011 Summary
May 3, 2012
CHLA Science Advisory Panel

Other Details

• HRSD monitoring conducted weekly
• James River segments monitored since 2005
• Elizabeth River segments monitored since 2008
• Data is available at: http://www3.vims.edu/vecos/

Example output
Number of observations ranges by segment (~2,500-4,500)
Phytoplankton and HPLC filter sampling - example

Data generated - 2011

- 94 cruises completed and reported on VECOS
- 728 phytoplankton and HPLC filter samples collected
- 267 submitted to ODU for phytoplankton ID and cell density determinations - balance preserved and archived
- Special sampling (fixed site and blooms) resulted in a paired dataset – spanning wide range of CHLA conditions (<5 to >300 ug/l) over space and time

A. Spring DFLO CHLA time series

Mar week 1

Mar week 2

Mar week 3
B. Summer DFLO CHLA time series
Bloom Summary - 2011

- Summer bloom followed previous pattern
  - Initiation associated with storm events
  - 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 bloom appears to follow a different pattern – more intense in lower James
- There is large variability in CHLA over space and time in both seasons

B. Seasonal distribution of species (w/ emphasis on work plan species)

Heterocapsa triquetra, Prorocentrum minimum, Akashiwo sanguinea, Scrippsiella trochoidea, and Cochlodinium polykrikoides
Prorocentrum minimum

Cochlodinium polykrikoides

Akashiwo sanguinea

Scrippsiella trochoidea

C. CHLA * Dinoflagellate cell density relationships (x-y)

15 μg/L chla trigger used for bloom sampling

$p<0.01$

$R^2=93\%$
p<0.01
$R^2=62\%$

[Excludes one outlier 08Aug11 - ER]

Proportion of samples exceeding 1,000 cells/ml by CHLA range

Season=Spring

Note: Cell density value of 1,000 / ml is used as example only – biological effects presently unknown.

Proportion of samples exceeding 1,000 cells/ml by CHLA range

Season=Summer

Note: Cell density value of 1,000 / ml is used as example only – biological effects presently unknown.

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