2002 – 2011 Simulation

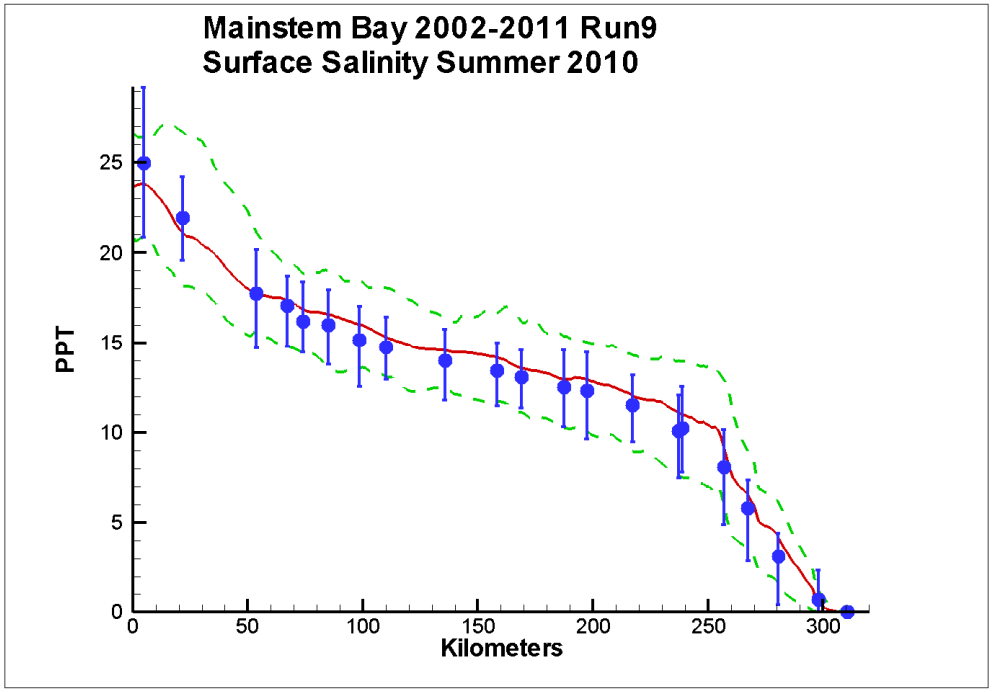
- This is a new base simulation for activities through to the 2017 re-evaluation. The previous base was 1991 - 2000
  - Move to recent land uses, loads, data.
  - Incorporate bulk of shallow-water data.
  - Provide boundary conditions for multiple model project.

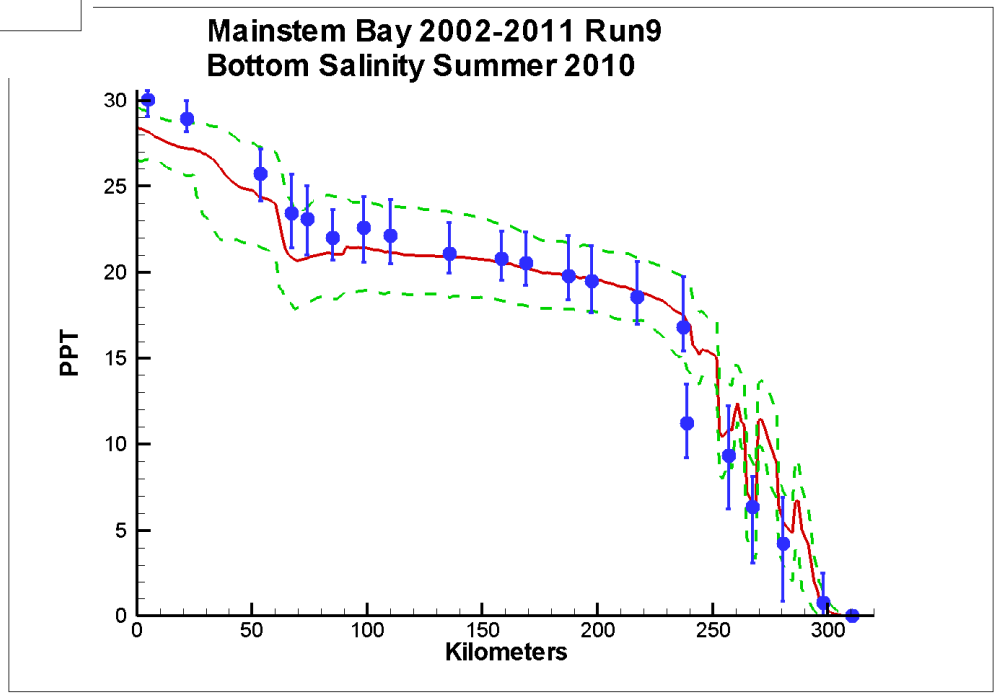
What Did We Need to Do?

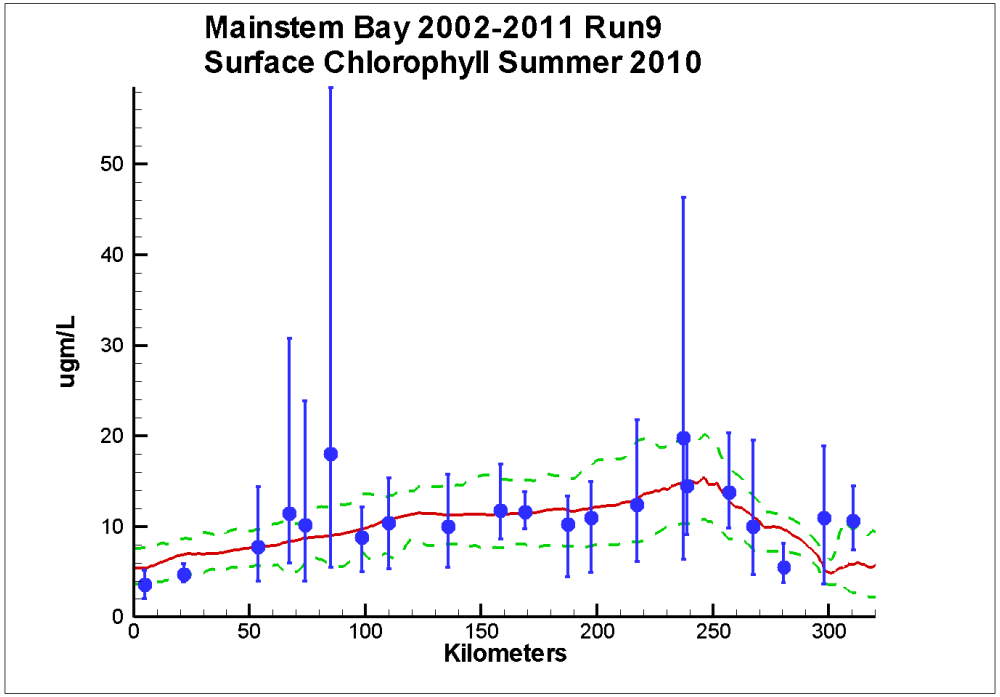
- Watershed Model Loads – Phase 6 loads provided by CBP July 2013.
- Hydrodynamics – Prepared by CBP circa July 2013.
- Meteorological Files – Prepared by CBP circa July 2013.
- Conventional Monitoring Program – Data downloaded by ERDC circa July 2014. Organized according to previous procedures. Time series at selected stations. Seasonal-averages along axes of Bay and major tributaries.

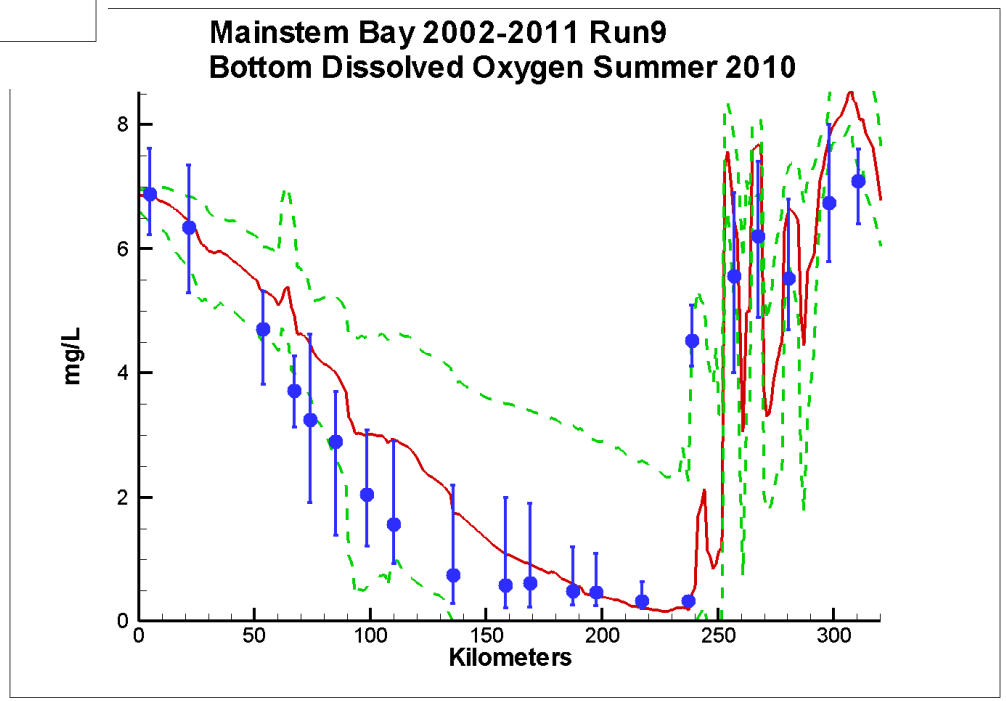
What Did We Need to Do?

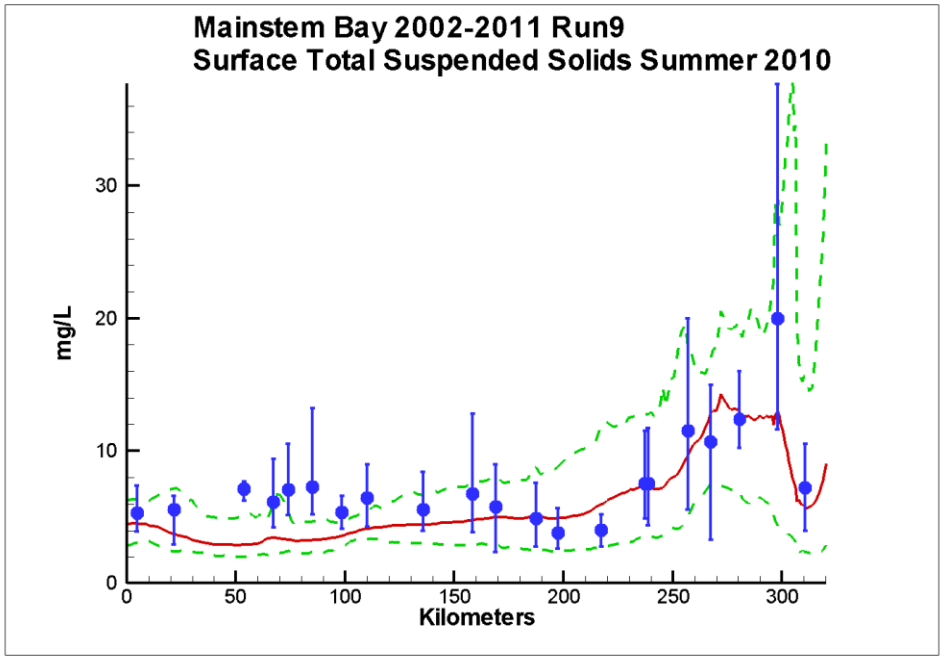
- Boundary Conditions – Required at open mouth and at fall line for model variables.
- The S3 File – Atmospheric Loads, Bank Erosion, Wetlands Loads.

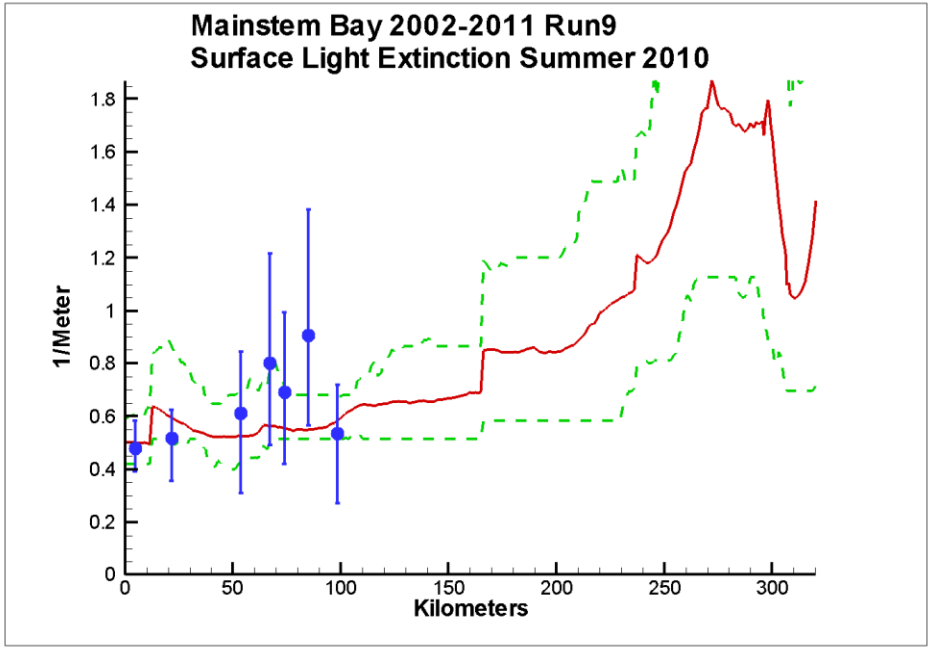

Mainstem Bay 2002-2011 Run9
Surface Salinity Summer 2010
PPT
Kilometers
0
5
10
15
20
25
0
50
100
150
200
250
300

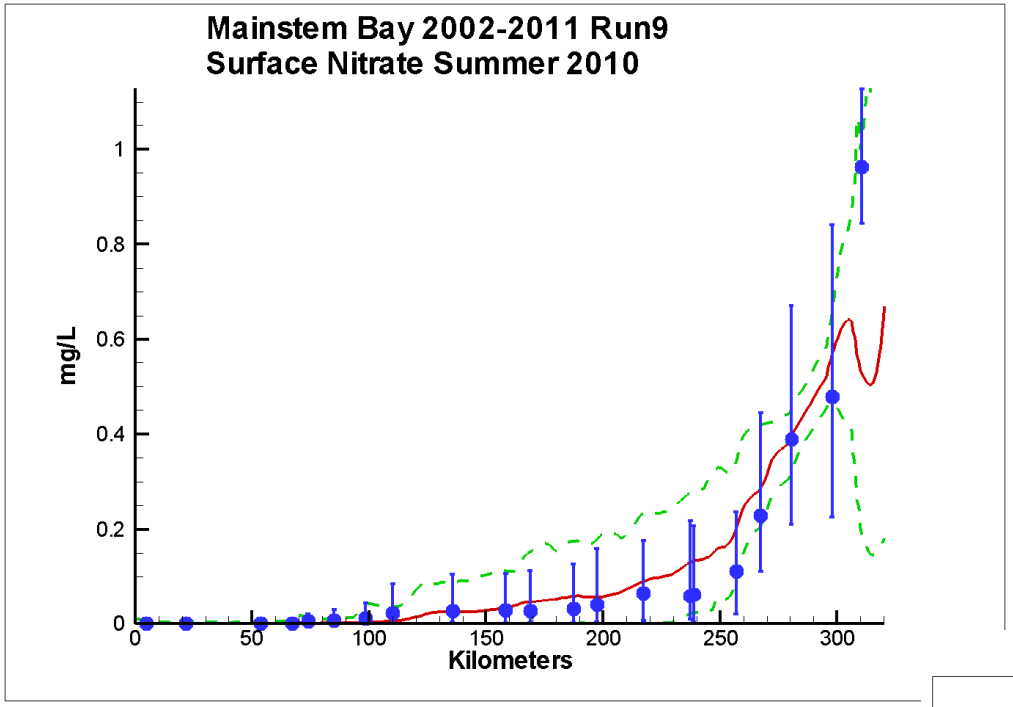

Mainstem Bay 2002-2011 Run9
Bottom Salinity Summer 2010
PPT
Kilometers
0
5
10
15
20
25
30
0
50
100
150
200
250
300

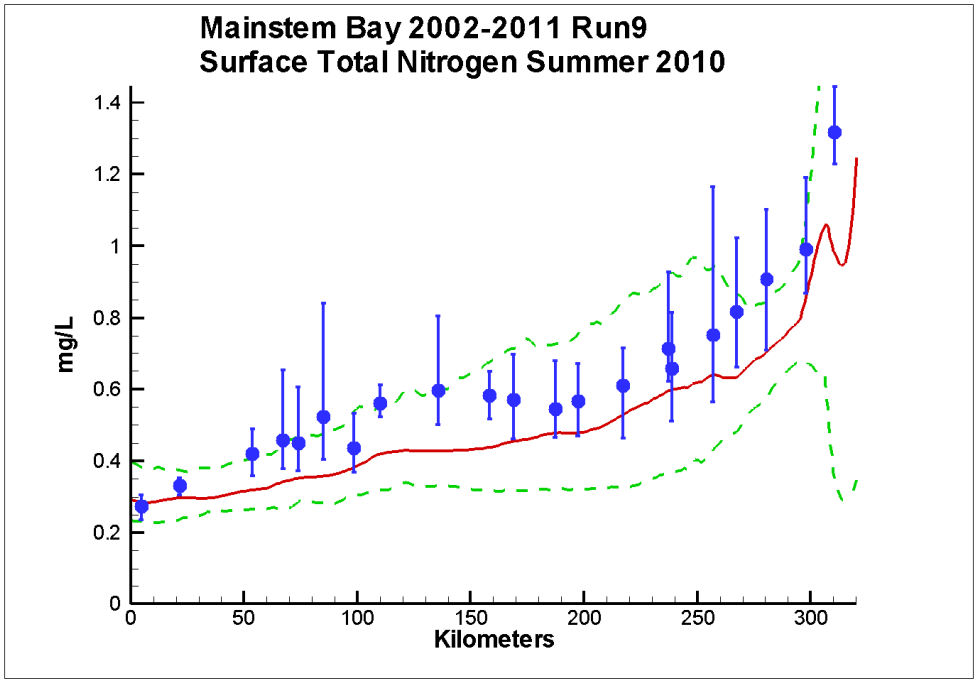

Mainstem Bay 2002-2011 Run9
Surface Chlorophyll Summer 2010
ugm/L
0
10
20
30
40
50
0
50
100
150
200
250
300
Kilometers

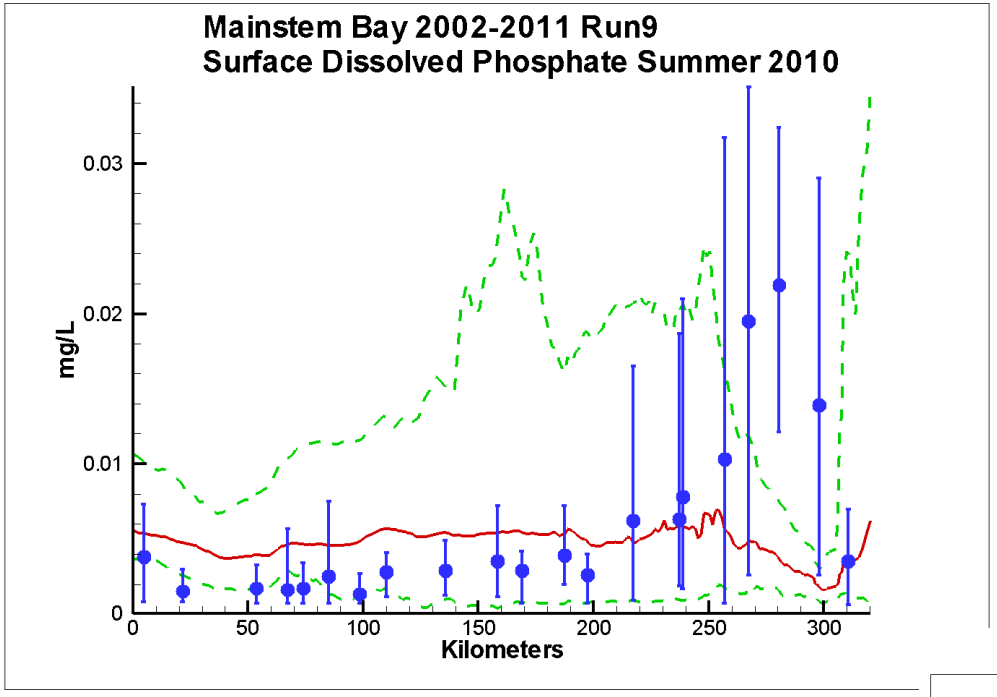

Mainstem Bay 2002-2011 Run9
Bottom Dissolved Oxygen Summer 2010
mg/L
0
2
4
6
8
0
50
100
150
200
250
300
Kilometers

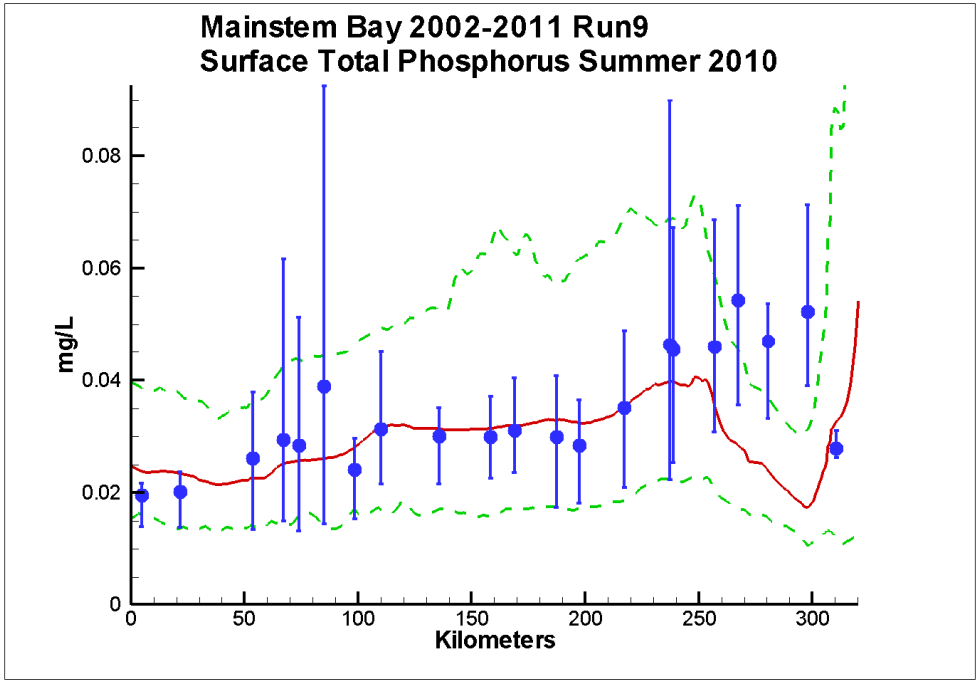

Mainstem Bay 2002-2011 Run9
Surface Total Suspended Solids Summer 2010
mg/L
0
10
20
30
0
50
100
150
200
250
300
Kilometers

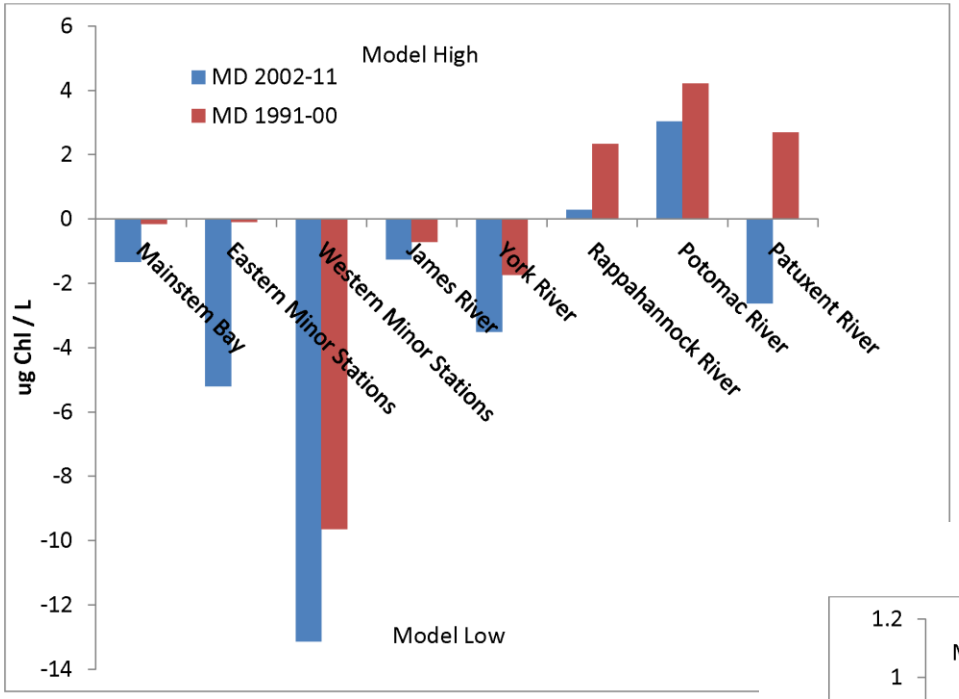

Mainstem Bay 2002-2011 Run9
Surface Light Extinction Summer 2010
1/Meter
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
0
50
100
150
200
250
300
Kilometers

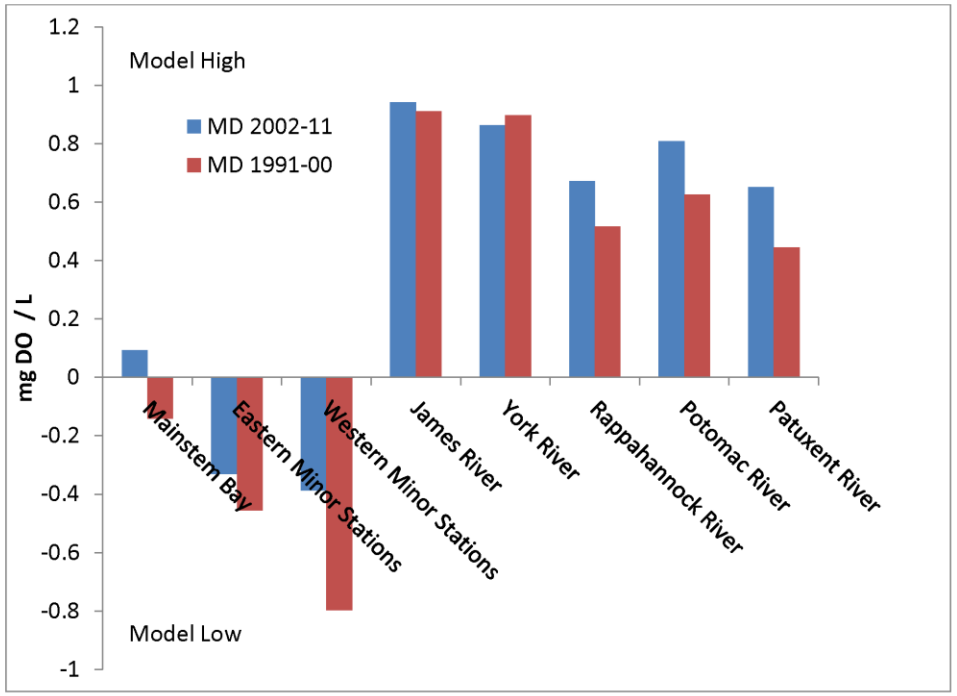

Mainstem Bay 2002-2011 Run9
Surface Nitrate Summer 2010
mg/L
0
0.2
0.4
0.6
0.8
1
0
50
100
150
200
250
300
Kilometers


Mainstem Bay 2002-2011 Run9
Surface Total Nitrogen Summer 2010
mg/L
0
0.2
0.4
0.6
0.8
1
1.2
1.4
0
50
100
150
200
250
300
Kilometers

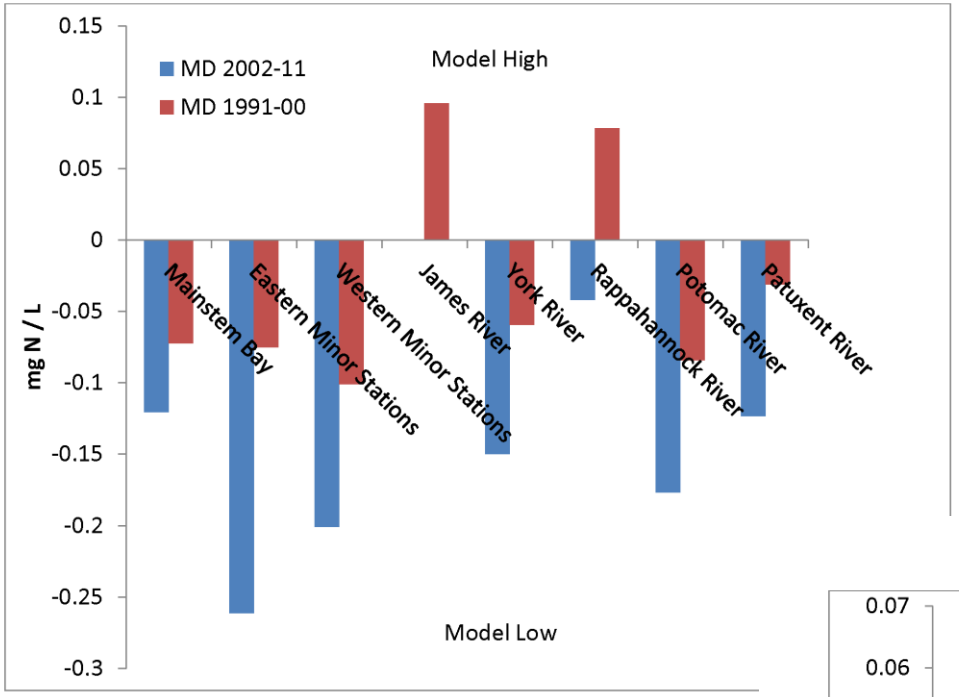

Mainstem Bay 2002-2011 Run9
Surface Dissolved Phosphate Summer 2010
mg/L
0.03
0.02
0.01
0
0
50
100
150
200
250
300
Kilometers


Mainstem Bay 2002-2011 Run9
Surface Total Phosphorus Summer 2010
mg/L
0.08
0.06
0.04
0.02
0
0
50
100
150
200
250
300
Kilometers

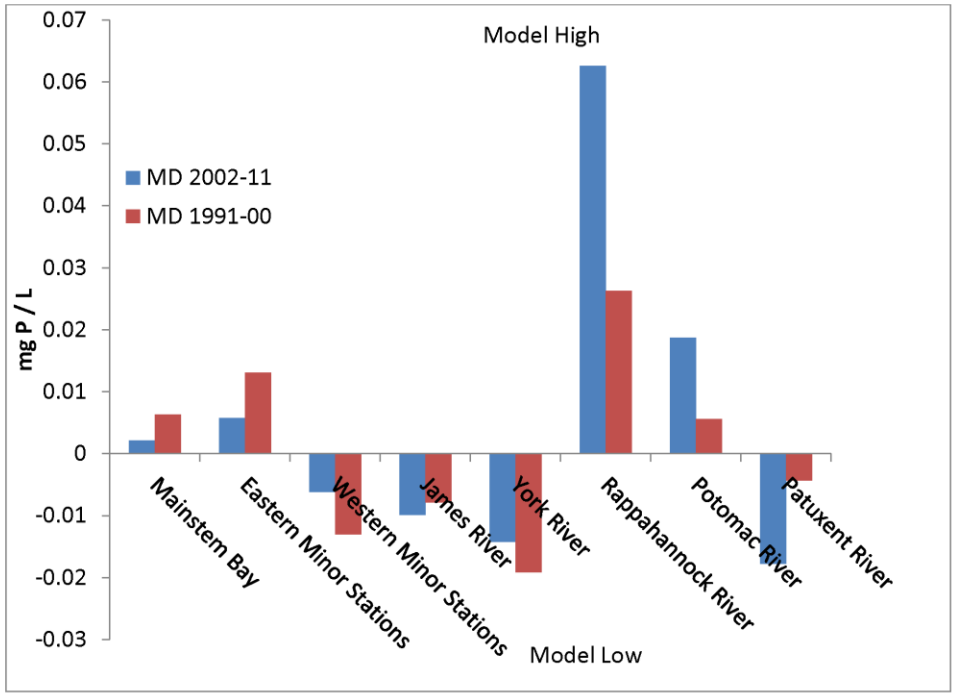




Mean Difference Statistic = (∑ model - ∑ obs)/n



Mean Difference Statistic = (∑ model - ∑ obs)/n



So Where Are We?

- The basic elements of the 2002 – 2011 simulation are in place.
- The characteristics of previous simulations are carried forward to this one.
- On average, calculations of chlorophyll are up and DO are down compared to previous simulation.
- The changes in chlorophyll and DO appear linked to an overall decrease in calculated total nitrogen.
- The Phase 6 WSM is undergoing revisions. Results are expected in mid-February. We will re-visit the WQM calibration then. May need to rerun HM, depending on changes in hydrology.