

## **Notes on James River Chlorophyll Simulator and CFD validation**

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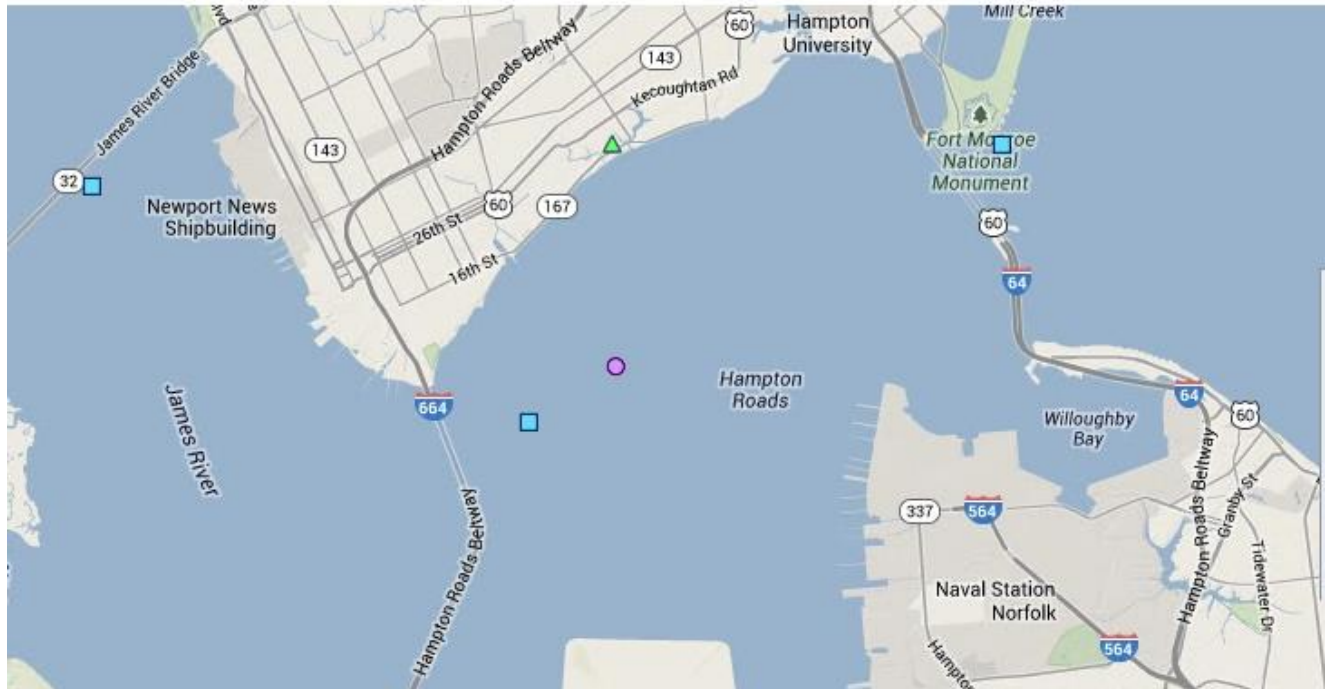


Figure 1. The Wythe Point ConMon is located at the green triangle on the north shore below the Hampton Roads Beltway and above the I64 bridge tunnel.

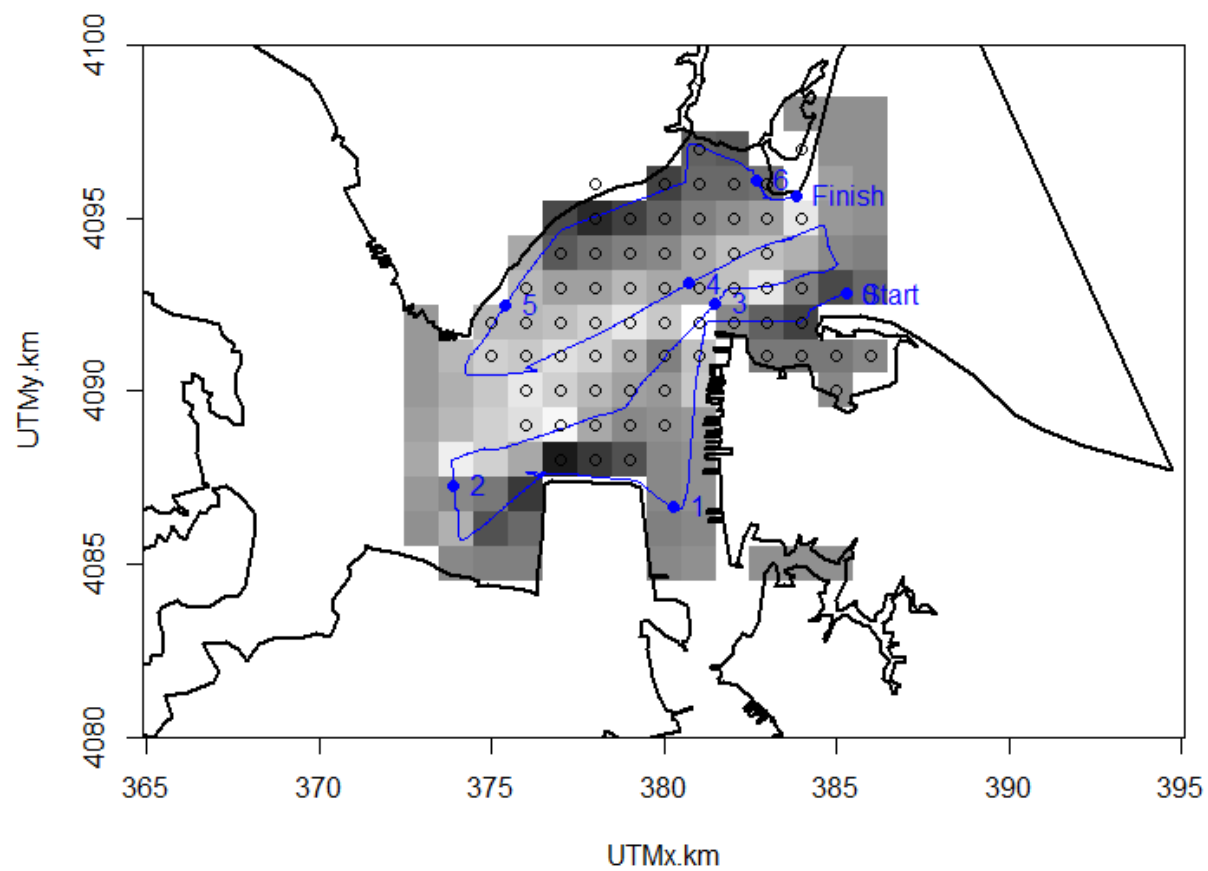


Figure 2. Krig/ed interpolation at a scale of 1 km for DataFlow log(chlorophyll) collected on 5/04/2005.

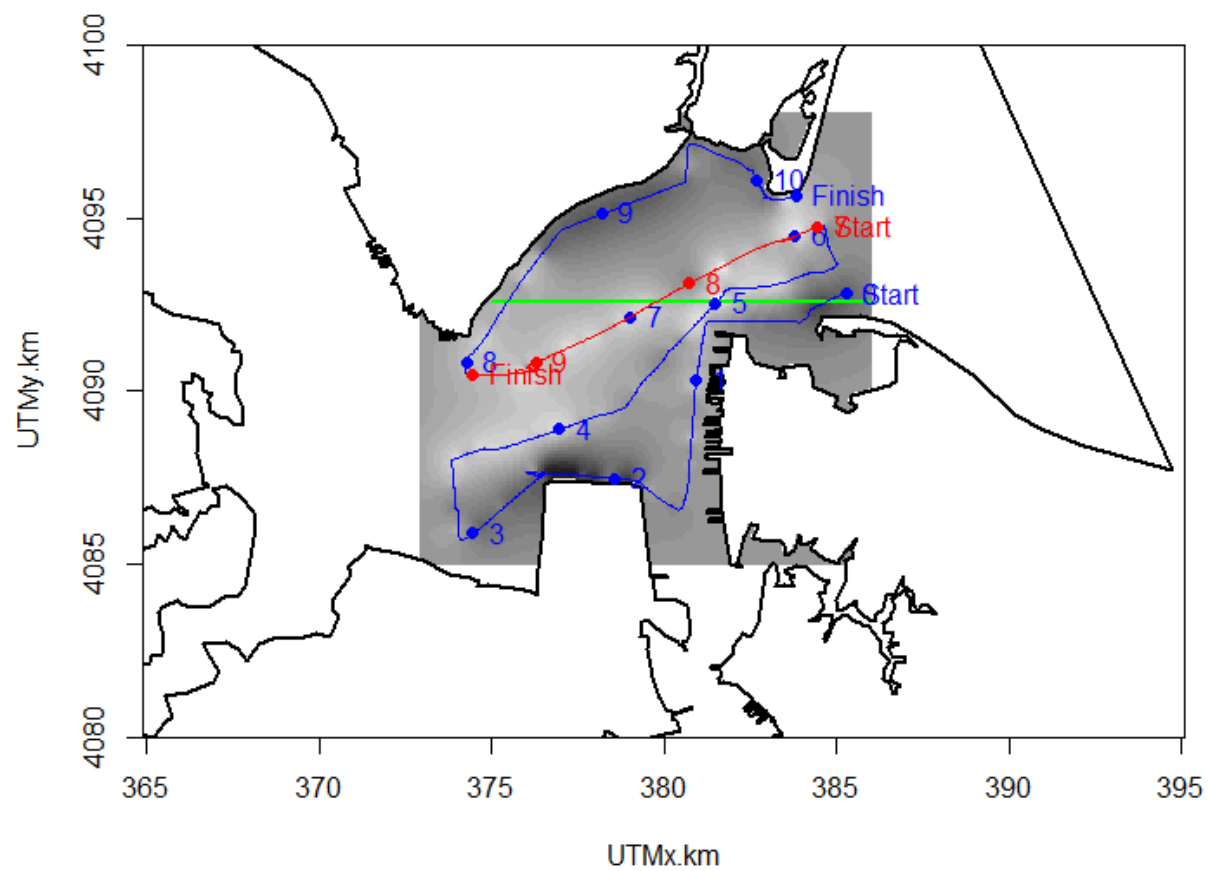


Figure 3. . Illustration of the spatial paths of cruise track data (red) and simulated data (green) being compared in Figure 2.

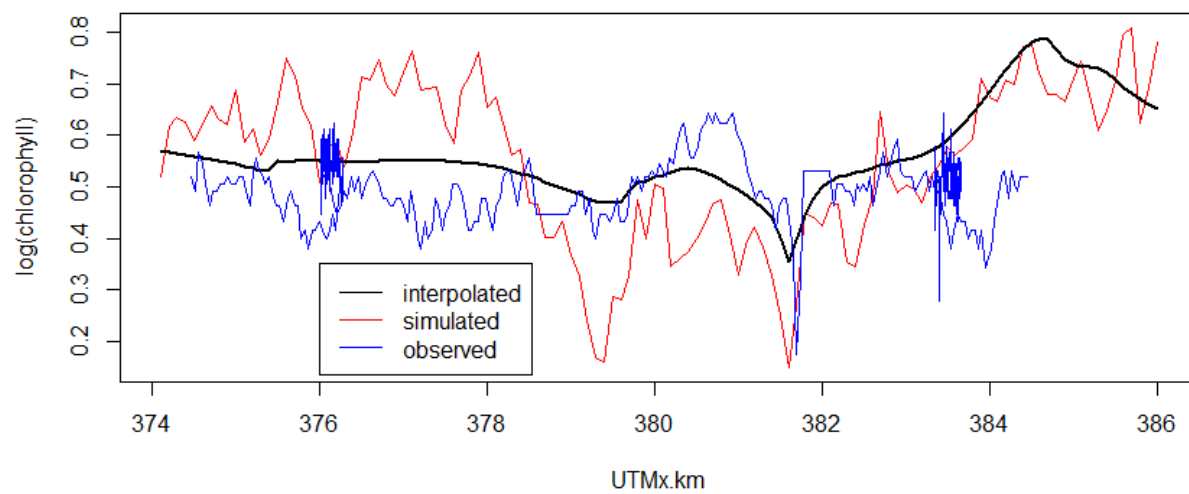


Figure 4. . Interpolated, simulated, and observed log(chlorophyll) data for a transect where UTM<sub>y</sub>.km = 4092.6 which is about at the level of the cruise start.

### Wythe Point vs closest simulation

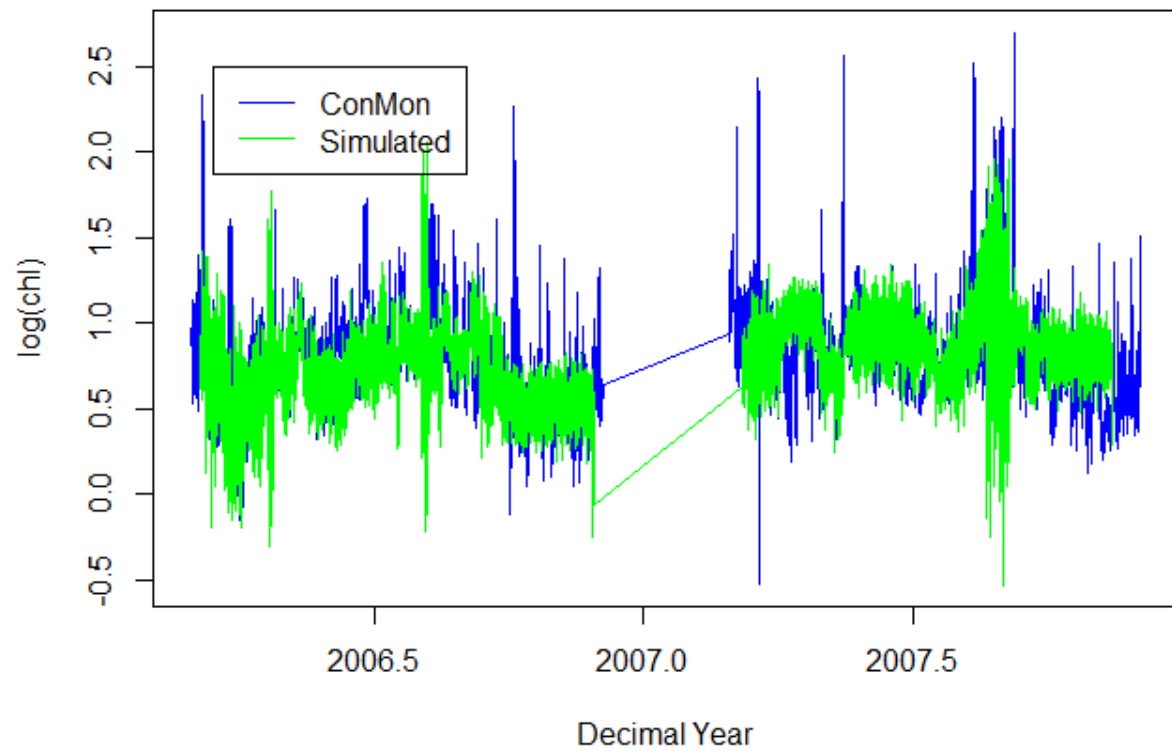
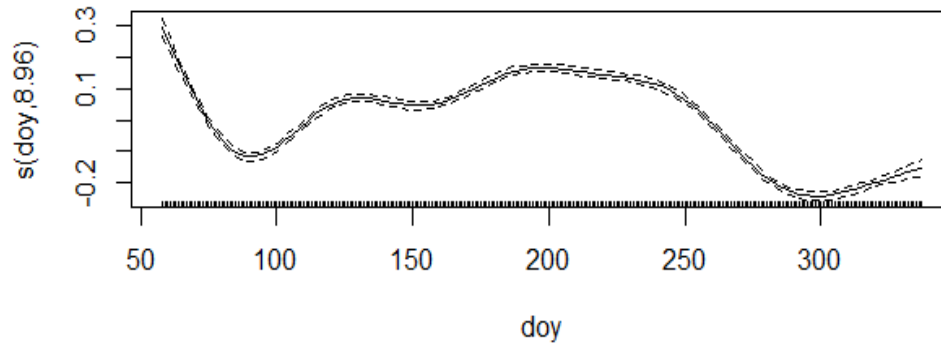


Figure 5. Two years of simulated log-chlorophyll data from this simulation process compared to the same two years of observed time series from the Wythe Point ConMon station.

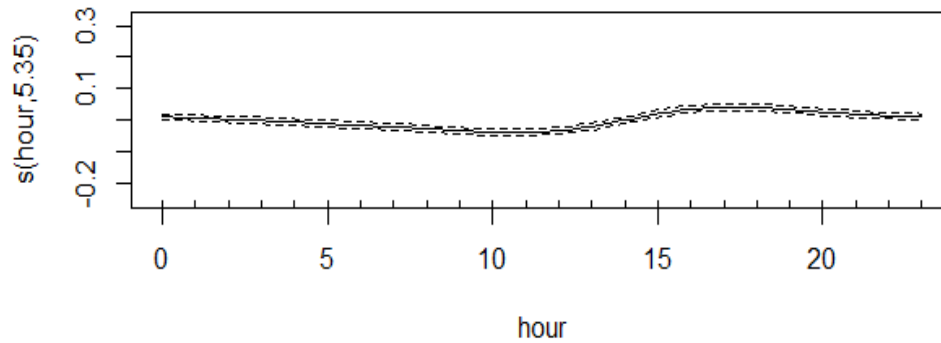
Table 1. Analysis of Variance for the Smooth Terms of the GAM for 2006 Wythe Point ConMon data.

Type	Source	edf	F-stat	p-value
smoothed terms	s(doy)	8.96	393.1487	<0.0001
	s(hour)	5.35	15.0806	<0.0001

### Wythe Point, 2006



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### Wythe Point vs closest simulation

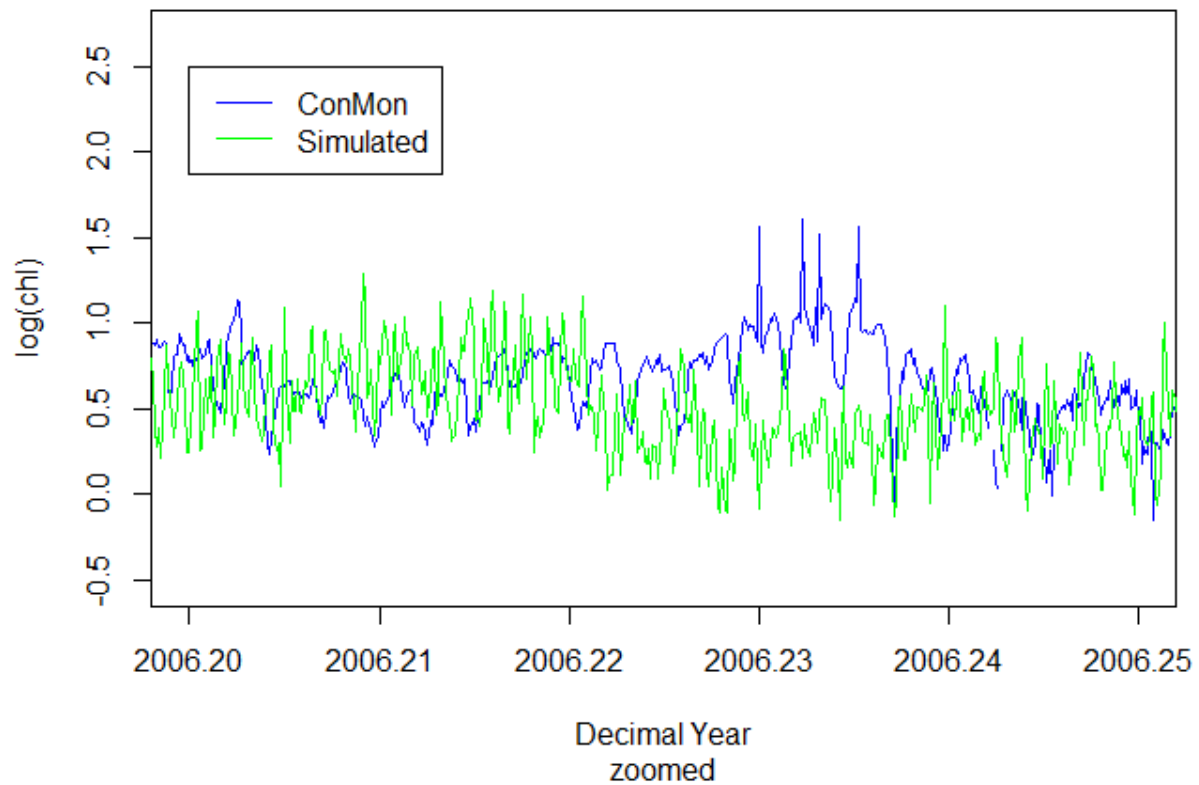


Figure 6. Zooming in to examine 0.05 years (about 18 days) of the Wythe Point ConMon log(chlorophyll) time series as compared to the simulated time series. The blue curve shows a partial time series from the Wythe Point ConMon data. The green curve shows simulated data from the interpolator cell that is closest to the Wythe Point ConMon.