

Total Suspended Solids in the Muskingum and Ohio Rivers (October 2010)

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Nine teams, each consisting of a graduate student, high school teacher and students, of the NSF-funded project (BookS) conducted on-boat water samplings in the Muskingum and Ohio Rivers in October 2010. Besides other water quality testing, each team took water samples in three depths (0.1 m, 1 m, and 2 m below water surface) for the purpose of measuring Total Suspended Solid (TSS) in our laboratory (ASTM, 2007, Glysson et al., 2010). There were two teams sampling at M3 and M5 locations of Muskingum River (3 and 5 miles upstream from Marietta, respectively), and 7 teams sampling, respectively, at O164 (Ohio River mileage 164), O170, O174, O180, O182, O185, and O190. The confluence of Muskingum and Ohio Rivers is at O172.

As shown in Figure 1, TSS values at M5 and M3 are significantly higher than those sampled at Ohio River sites, upstream or downstream of Marietta. Indeed, TSS values at O164 and O170, upstream locations from Marietta, are particularly lower than that at O174, immediately below the confluence. It is noted that the team sampling at M3 site did not label depths of the three samples taken. Figure 2 is a similar plot by averaging TSS values sampled at the three varied depths.

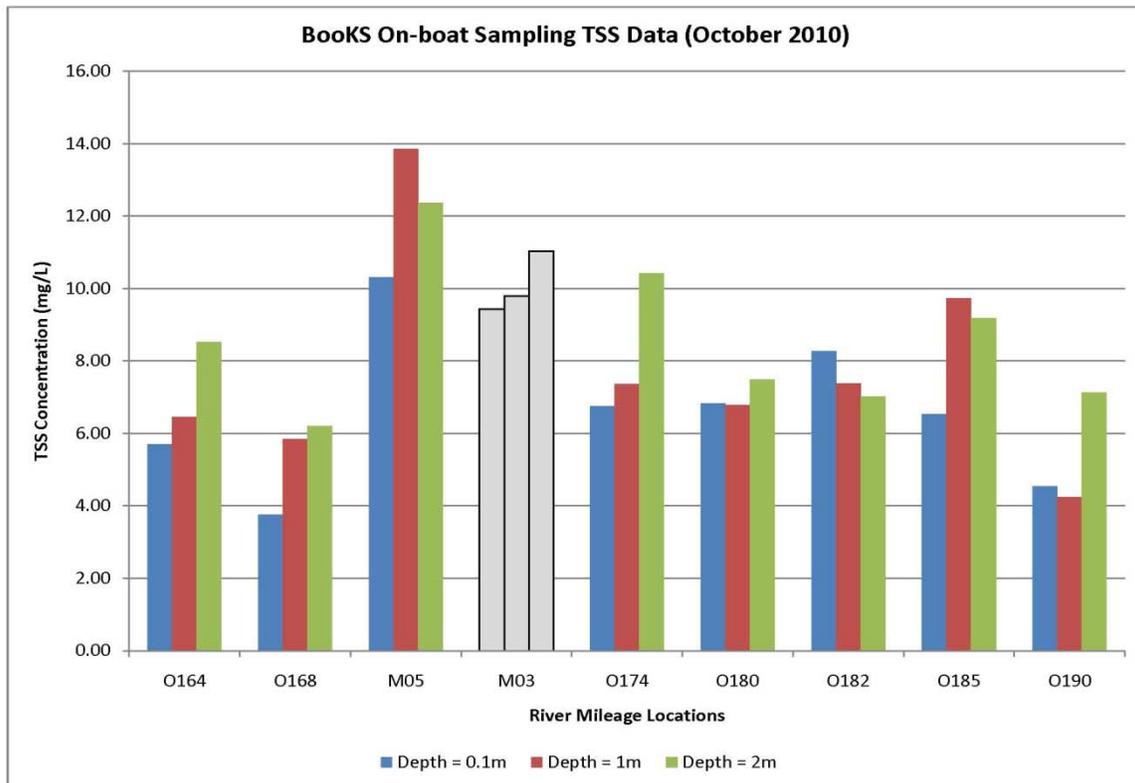


Figure 1. TSS at varied locations of Ohio and Muskingum Rivers

Of course, Muskingum River is not alone to contribute to the increase of TSS in the Ohio River. The increase of TSS value at O185 as shown in both Figures 1 and 2 is resulted from the joining of the Little Kanawha River with the Ohio River at O184.5.

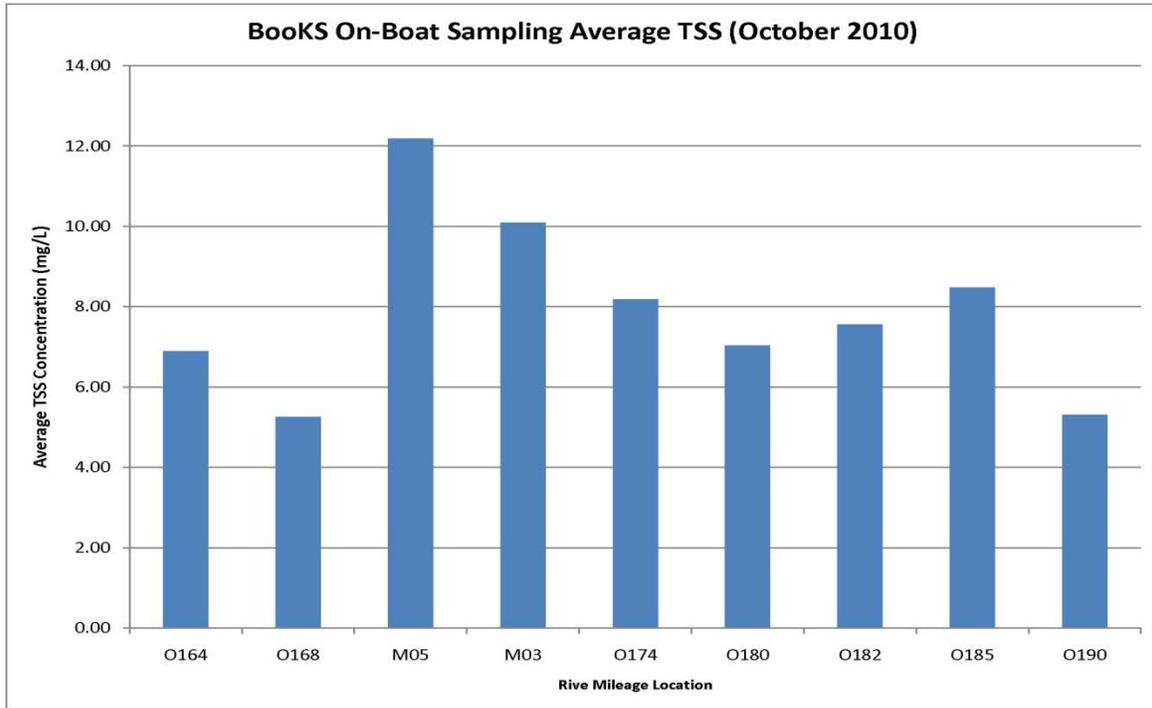


Figure 2. Average TSS at varied locations of Ohio and Muskingum Rivers

Acknowledgement

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References

ASTM, (2007). Standard Test Method for Determining Sediment Concentration in Water Samples: American Society of Testing and Materials (ASTM), D 3977-97, Vol. 11.02, 1999 original revised 2007.

Glysson, G.D., J.R. Gray, and L.M. Conge (2010). “Adjustment of Total Suspended Solids Data for Use in Sediment Studies,” USGS, <http://water.usgs.gov/osw/pubs/ASCEGlysson.pdf>.