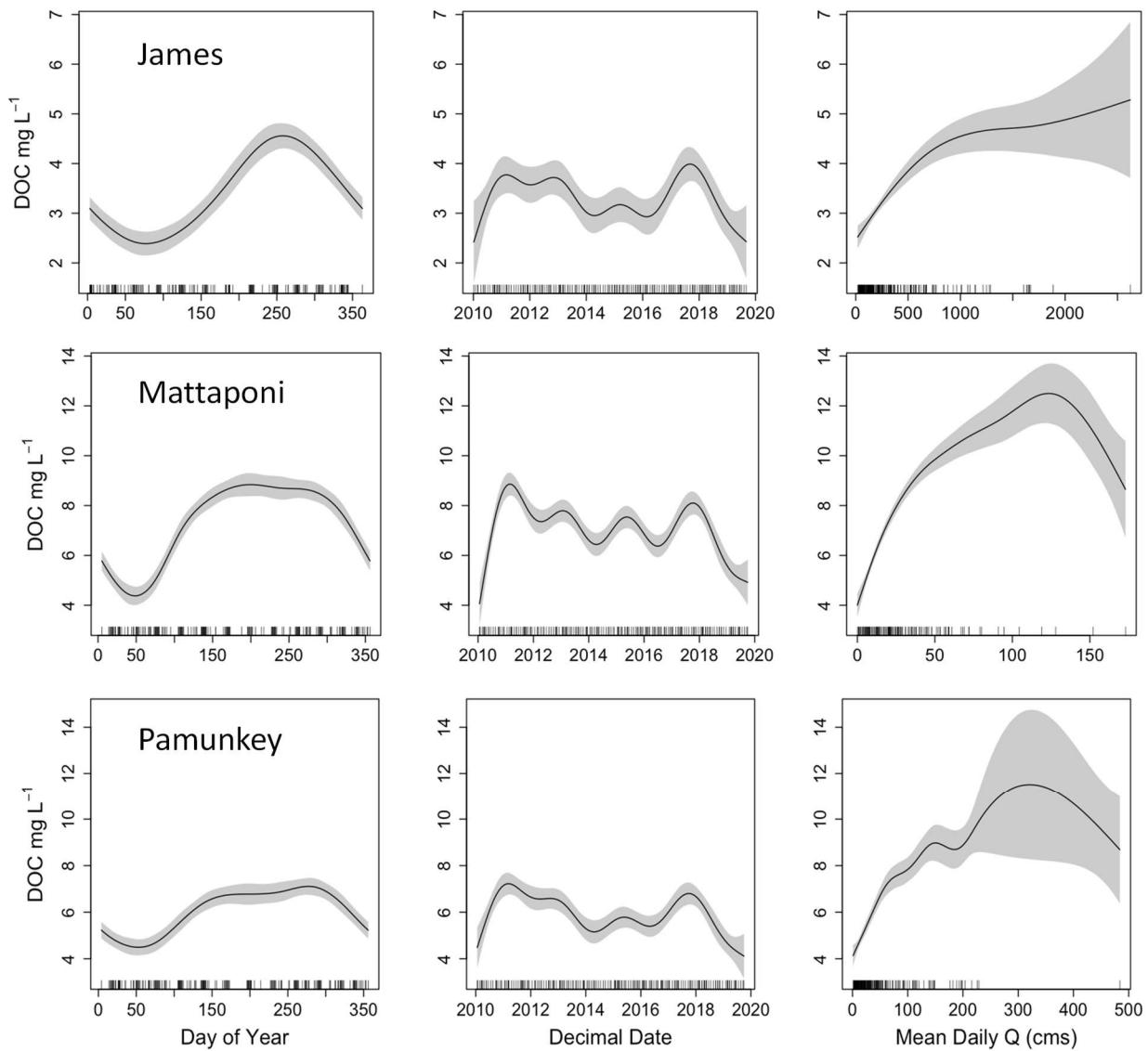
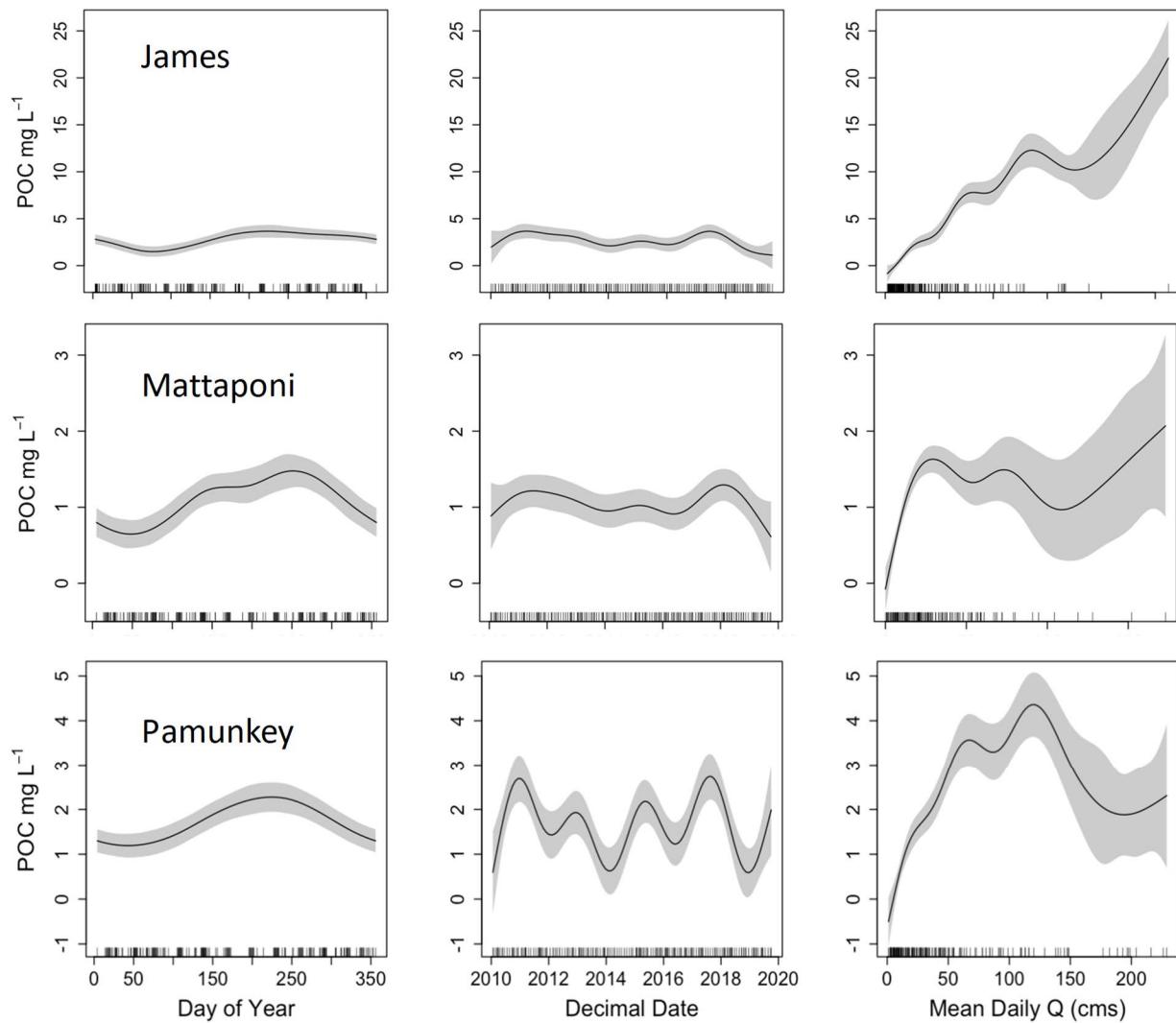
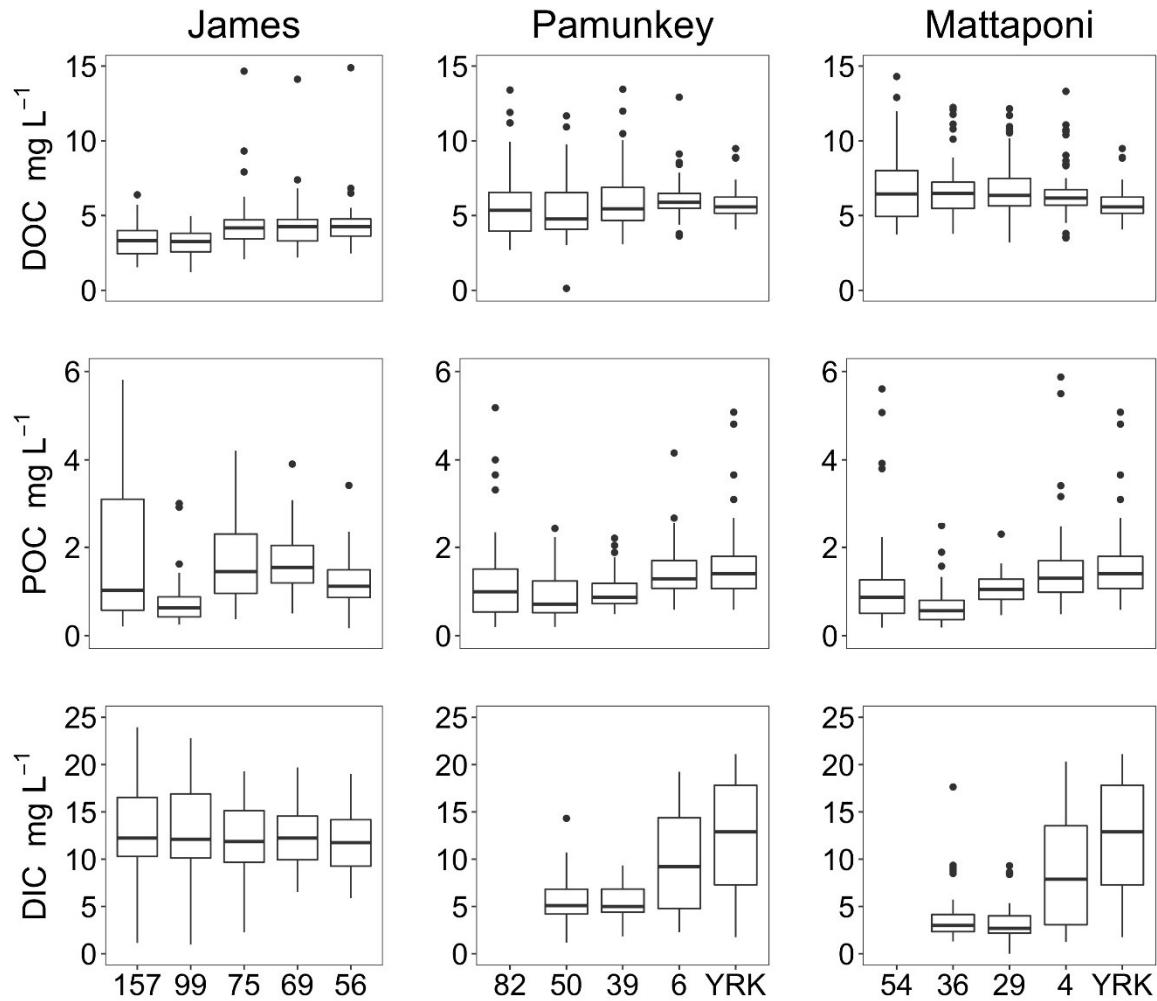
Supplemental Information

Supplemental Figure 1. Seasonal, inter-annual and discharge-dependent variation in DOC concentrations of the James, Mattaponi and Pamunkey Rivers (2010-2019).

Supplemental Figure 2. Seasonal, inter-annual and discharge-dependent variation in POC concentrations of the James, Mattaponi and Pamunkey Rivers (2010-2019).

Supplemental Figure 3. River and estuarine concentrations of DOC, POC and DIC in the James, Pamunkey and Mattaponi during 2017-2019. Station numbers denote distance in river miles from the confluence with Chesapeake Bay (James) or the York (Pamunkey and Mattaponi). Riverine data are for USGS gauging sites (JMS157, PMK82, and MPN54).

Supplemental Figure 4. Longitudinal variation in pCO2 in the James, Mattaponi and Pamunkey during summer (June-September; upper panels) and winter (November-February; lower panels). Station numbers denote distance in river miles from the confluence with Chesapeake Bay (JMS) and the York Estuary (MPN, PMK).