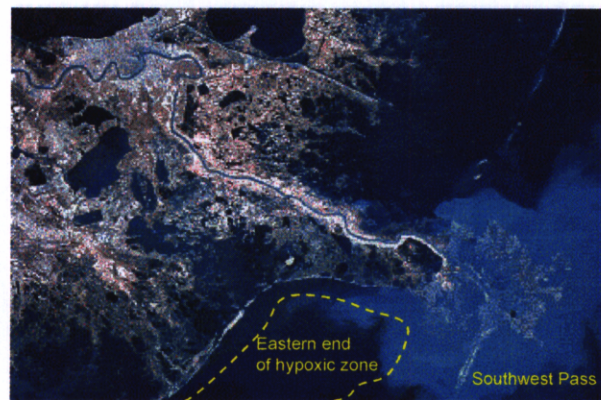


hypoxic zone. Of course, this pertains to the average conditions for the hypoxic zone; nearer the rivers a greater percentage could be accounted for by terrigenous carbon, while regions remote from the rivers receive insubstantial labile terrigenous carbon. Curiously, the UA report pays no attention to the losses of terrigenous organic carbon to sedimentation, dispersion and metabolism as it is transported over distances of 30-380 km during the several weeks⁹, yet devotes an appendix to calculations that seek to demonstrate that less than 25% of the marine organic carbon produced in waters overlying hypoxic zones is deposited to the bottom—over a vertical distance of 10 m or less. Actual published observations from sediment traps show that there is sufficient seston deposition from surface production, especially during the spring, to supply the organic carbon required (Topic 1 report).

The UA report also suggests that large injections of terrigenous organic carbon during floods may have consequences for oxygen depletion in subsequent years. Considered in the context of the previous discussion, this would have to assume that the small labile portion of this organic matter that is deposited on the shelf would remain largely undegraded over six months in relatively warm Gulf of Mexico bottom waters until stratification sets up the next year and then be actively mineralized. Also, while the multi-year consequences of flood events deserve more attention, it is important to keep in mind that these floods also inject elevated masses of nutrients, which by stimulating plant production greatly magnify the pool of labile organics on the shelf (see below). Organic matter produced *in situ* as a result of such pulses could also remain stored in the shelf system until hypoxia sets up in the following spring. At least in the 1993 flood, a much larger than normal portion of the flow through the Mississippi delta proper was lost from the shelf environment as a result of the strong discharge jet that propelled the plume onto the slope and wind forcing of currents toward the east. So, a smaller than normal proportion of the organic carbon spike could be “credited” to the carbon metabolism of the Louisiana shelf. Again, this underscores the need to consider the importance of interannual inputs of both carbon and nitrogen from a dynamic and geographically realistic perspective rather than as a simplistic black box.



Concomitant with the greatly diminished suspended particulate concentrations experienced in the lower Mississippi River during the last half of the 20th century (50 to 70 % reductions¹⁰), the concentrations and loadings of organic carbon have also declined.

⁹ Mean currents available to transport DOC or POC are quite slow, <25 cm sec-1 in the coastal boundary jets and slower in most of the region experiencing hypoxia (Wiseman, W.J. and F. J. Kelly. Seasonal variability within the Louisiana Coastal Current during the 1982 flood season. *Estuaries* 17:732-739.)

¹⁰ Kessler, R.H. 1988. The decline in the suspended load of the Lower Mississippi River and its influence on adjacent wetlands. *Environmental Geology and Water Sciences* 11:271-281.