ESTIMATES OF CARBON SEQUESTRATION AND STORAGE IN TIDAL COASTAL WETLANDS ALONG THE US EAST COAST

[1]Charpentier, M, [2]Wigand C, and [3]Hyman, J.

[1] Raytheon, 27 Tarzwell Drive, Narragansett, RI 02882.
[2]US EPA NHEERL, Atlantic Ecology Division, 27 Tarzwell Drive, Narragansett, RI 02882
[3]University of Rhode Island, Kingston, RI 02881.

Globally, salt marshes are reported to sequester carbon (210 g C m^{-2} y^{-1}), and along with mangroves in the US, they are reported to account for 1–2 % of the carbon sink for the conterminous US. Using the published salt marsh carbon sequestration rate and National Wetland Inventory areal estimates for estuarine intertidal wetlands in the eastern US, we calculated approximately 1.9 Tg C y^{-1} is sequestered (1 Tg = 10^{12} grams = 1 million metric tons), which is equivalent to CO_2 emissions from approximately 4.6 billion gallons of gasoline consumed. The coastal tidal wetlands of the U.S. east coast account for about 4% of the North American wetlands soils sink (49 Tg C / y). In addition, we used attributes from the Soil Survey Geographic (SSURGO) and US General Soil Map (STATSGO) databases developed by the NRCS (Natural Resources Conservation Service) to estimate the storage and stocks of carbon in the soils in coastal wetlands from Florida to Maine. The amount of carbon stocks in the coastal tidal wetlands of the U.S. east coast (117 Tg C) is equivalent to the CO_2 emissions from over 1 billion barrels of oil consumed or 48 billion gallons of gasoline consumed. For comparison, the April 2010 BP Gulf of Mexico oil spill released an estimated 4.9 million barrels of oil which is equivalent to 233 million gallons of gasoline consumed. In future studies the carbon stocks determined from the NRCS databases will be compared with soil carbon content measured from cores collected from selected northeastern marsh locations.

Keywords: Carbon sequestration; saltmarsh; northeast; STATSGO; SSURGO; soil carbon