Supplementary material

Reviews and syntheses: ^{210}Pb-derived sediment and carbon accumulation rates in vegetated coastal ecosystems: setting the record straight

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Table captions

Table 1a. Ideal excess ^{210}Pb concentration profile simulated for seagrass sediments. Considering a constant flux of excess ^{210}Pb Φ = 120 Bq m^{-2} yr^{-1}, DBD = 1.03 g cm^{-3} and a constant mass accumulation rate MAR = 0.2 g cm^{-2} yr^{-1}.

Table 1b. Ideal excess ^{210}Pb concentration profile simulated for mangrove/tidal marsh sediments. Considering a constant flux of excess ^{210}Pb Φ = 120 Bq m^{-2} yr^{-1}, DBD = 0.4 g cm^{-3} and a constant mass accumulation rate MAR = 0.3 g cm^{-2} yr^{-1}.

Table 2a. Simulation outputs for mixing scenarios A, B and C in seagrass sediments. Considering flux of excess ^{210}Pb into sediment Φ = 120 Bq m^{-2} yr^{-1}, DBD: 1.03 g cm^{-3}. Excess ^{210}Pb concentrations in bold were used to run CF:CS and CRS models.

Table 2b. Simulation outputs for mixing scenarios A, B and C in mangrove/tidal marsh sediments. Considering a constant flux of excess ^{210}Pb into sediment Φ = 120 Bq m^{-2} yr^{-1}, DBD: 0.4. g cm^{-3}. Excess ^{210}Pb concentrations in bold were used to run CF:CS and CRS models.

Table 3a. Simulation outputs for increasing sedimentation (scenarios D, E, F and G) in seagrass sediments. Considering a constant flux of excess ^{210}Pb of Φ = 120 Bq m^{-2} yr^{-1}, DBD: 1.03 g cm^{-3} and increasing mass accumulation rates (MAR) (20%, 50%, 200% ad 300%).

Table 3b. Simulation outputs for increasing sedimentation (scenarios D, E, F and G) in mangrove/tidal marsh sediments. Considering a constant flux of excess ^{210}Pb of Φ = 120 Bq m^{-2} yr^{-1}, DBD: 0.4 g cm^{-3} and increasing mass accumulation rates (MAR) (20%, 50%, 200% ad 300%).

Table 4a. Simulation outputs of erosion scenarios (H, J and K) in seagrass sediments. Considering a constant flux of excess ^{210}Pb of Φ = 120 Bq m^{-2} yr^{-1} and DBD: 1.03 g cm^{-3}. Excess ^{210}Pb concentrations in bold were used to run CF:CS and CRS models.

Table 4b. Simulation outputs of erosion scenarios (H, J and K) in mangrove/tidal marsh sediments. Considering a constant flux of excess ^{210}Pb of Φ = 120 Bq m^{-2} yr^{-1} and DBD: 0.4 g cm^{-3}. Excess ^{210}Pb concentrations in bold were used to run CF:CS and CRS models.

Table 5a. Simulation outputs of excess ^{210}Pb concentrations diluted by coarse grains size sediment composition in seagrass sediments (scenario K). Considering a mean MAR = 0.2 g cm^{-2} yr^{-1}, mean specific surface area of the bulk sediment of S_{mean} = 0.007 m^2 g^{-1} and a DBD = 1.03 g cm^{-3} that in this case is estimated as the weighted average of the DBD of the two mixed grain size fractions.

Table 5b. Simulation outputs of excess ^{210}Pb concentrations diluted by coarse grains size sediment composition in mangrove/tidal marsh sediments (scenario K). Considering a mean MAR = 0.3 g cm^{-2} yr^{-1}, mean specific surface area of the bulk sediment of 0.007 m^2 g^{-1} and a DBD of 1.03 g cm^{-3} that is estimated as the weighted average of the DBD of the two mixed grain size fractions.

Table 6a. Simulation outputs of excess ^{210}Pb concentrations as a function of varying grain size distribution with depth in seagrass sediments. To estimate initial excess ^{210}Pb concentrations we consider MAR = 0.2 g cm^{-2} and constant excess ^{210}Pb flux of Φ = 120 Bq m^{-2} yr^{-1}. Specific surface areas (S_{sp}) = 2.05 m^2 g^{-1} and 0.023 m^2 g^{-1} for clay and medium sand, respectively.

Table 6b. Simulation outputs of excess ^{210}Pb concentrations as a function of varying grain size distribution with depth in mangrove/tidal marsh sediments. To estimate initial excess ^{210}Pb concentrations we consider MAR = 0.3 g cm^{-2} and constant excess ^{210}Pb flux of Φ = 120 Bq m^{-2} yr^{-1}. Specific surface areas (S_{sp}) = 2.05 m^2 g^{-1} and 0.023 m^2 g^{-1} for clay and medium sand, respectively.

Table 7a. Simulation outputs of excess ^{210}Pb concentrations enriched by organic matter decay (scenarios N to S) in seagrass sediments. Considering a constant flux excess ^{210}Pb flux of Φ = 120 Bq m^{-2} yr^{-1}, initial DBD = 1.03 g cm^{-2}, MAR = 0.2 g cm^{-2} yr^{-1} and initial organic matter content of 16.5% and 65%. Organic matter decay rates k_s = 0.00005 d^{-1}, k_{ox} = 0.0005 d^{-1} and k_{lb} = 0.01 d^{-1}.

Table 7b. Simulation outputs of excess ^{210}Pb concentrations enriched by organic matter decay (scenarios N to S) in mangrove/tidal marsh sediments. Considering a constant flux excess ^{210}Pb flux of Φ = 120 Bq m^{-2} yr^{-1}, initial DBD = 0.4 g cm^{-2}, MAR = 0.3 g cm^{-2} yr^{-1} and initial organic matter content of 16.5% and 65%. Organic matter decay rates $k_s = 0.00005\ d^{-1}$, $k_{ox} = 0.0005\ d^{-1}$ and $k_{lb} = 0.03\ d^{-1}$.