



Carbon and nutrient deposition in a Mediterranean seagrass (*Posidonia oceanica*) meadow

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ABSTRACT: The annual depositional flux of carbon (C), nitrogen (N), and phosphorous (P) to the sediments under a northeast Spain *Posidonia oceanica* meadow was evaluated, and the sources and fate of the material deposited elucidated. The annual deposition of carbon represented 198 g C m⁻² yr⁻¹, 72% of which was derived from the seston and 28% from *P. oceanica* detritus. The depositional flux was poor in nitrogen (13.4 g N m⁻² yr⁻¹) and phosphorous (2.01 g P m⁻² yr⁻¹), although comparable to the nutrient inputs required to support the growth of *P. oceanica*. Remineralization in the sediment only returned 15.6 g C m⁻² yr⁻¹, yielding a net carbon accumulation of 182 g C m⁻² yr⁻¹. Our results show that in the Mediterranean littoral *P. oceanica* meadows are important sites of net organic carbon burial, derived from sedimented sestonic particles and seagrass detritus.

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