

Mediterranean seagrass (*Posidonia oceanica*) carbon sinks under increasing anthropogenic pressures

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Effect of environmental factors (wave exposure and depth) and anthropogenic pressure in the C sink capacity of *Posidonia oceanica* meadows

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Dynamics of carbon sources supporting burial in seagrass sediments under increasing anthropogenic pressure

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Posidonia oceanica meadows

- the main C sinks in the Mediterranean Sea



Widespread *P. oceanica* loss - mostly attributed to coastal deterioration driven by rapid human population growth

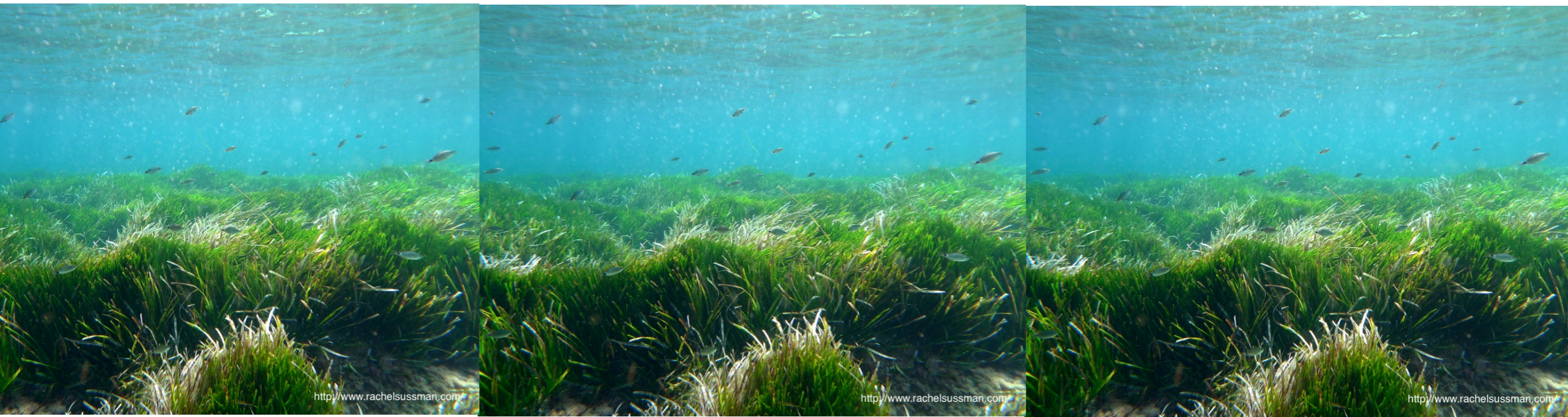


Loss of C sink capacity due to seagrass loss?
Enhanced C_{org} burial from increased allochthonous C?

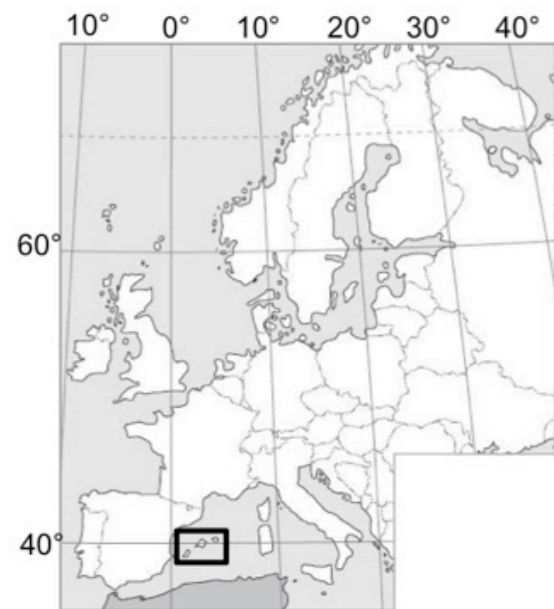
	(km ²)	loss
Max	43,550*	13
Min	31,040**	38

OBJECTIVE

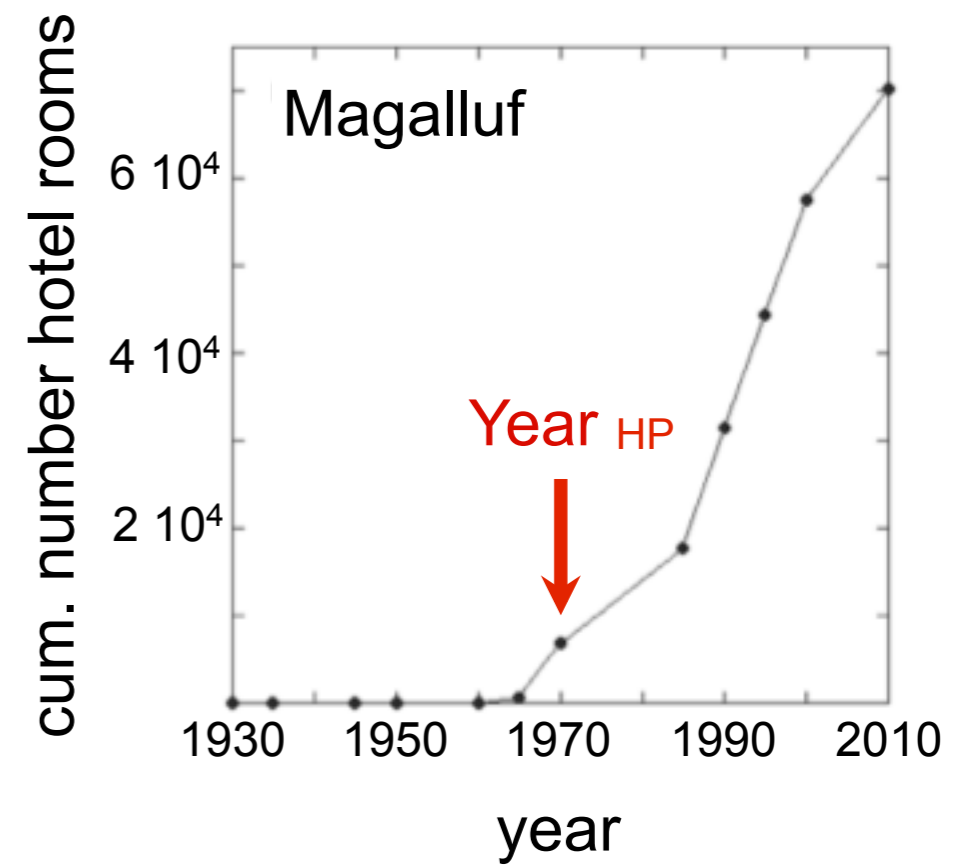
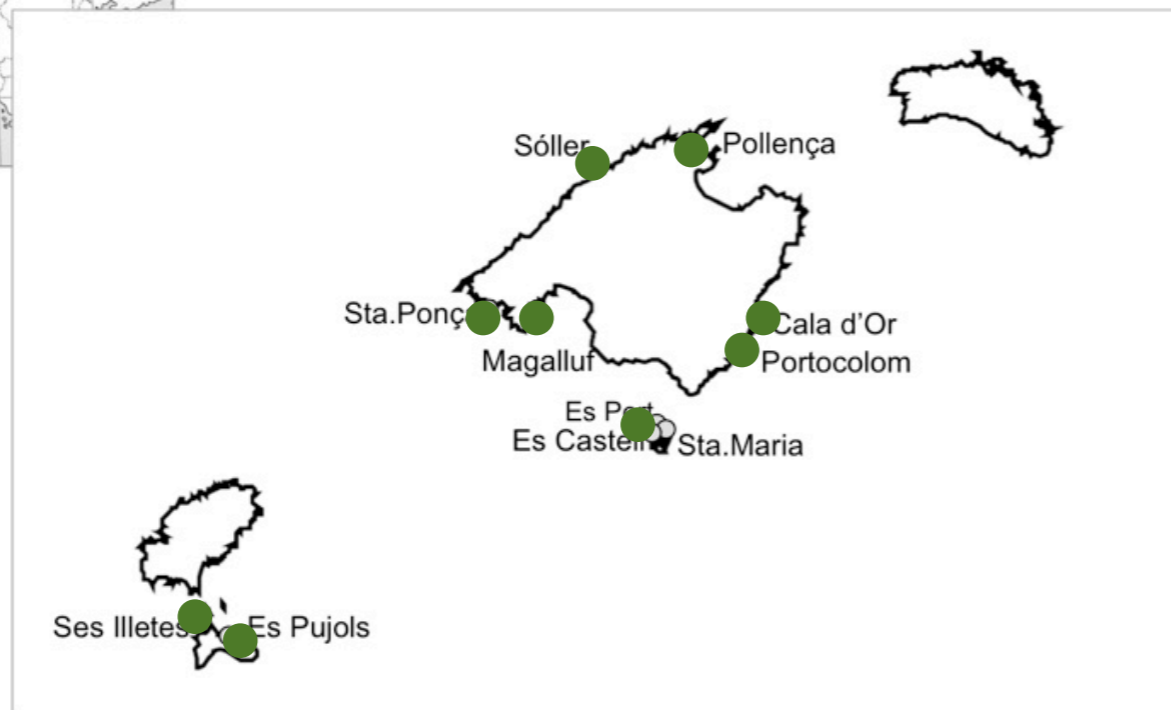
- to assess the effect of human pressure on C_{org} burial rate in *P. oceanica* meadows since 1900



Study sites



Balearic Islands (W Med.)



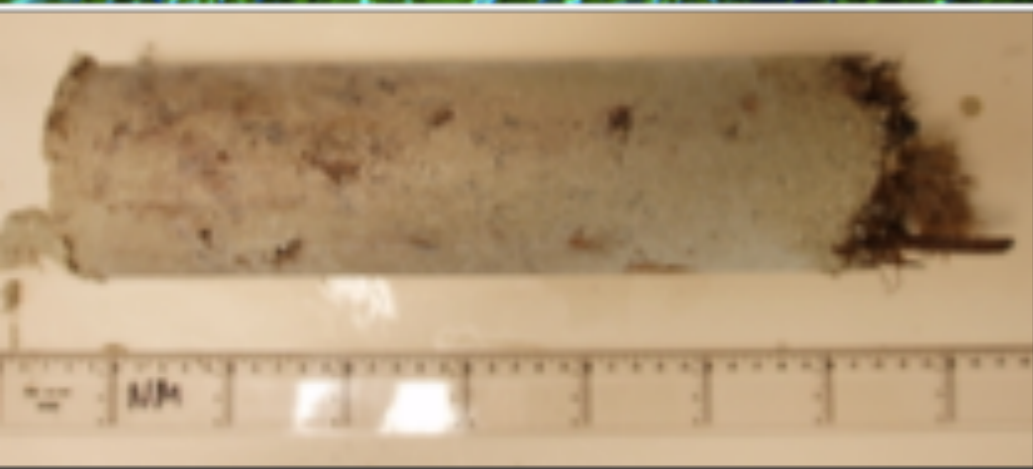


Methods

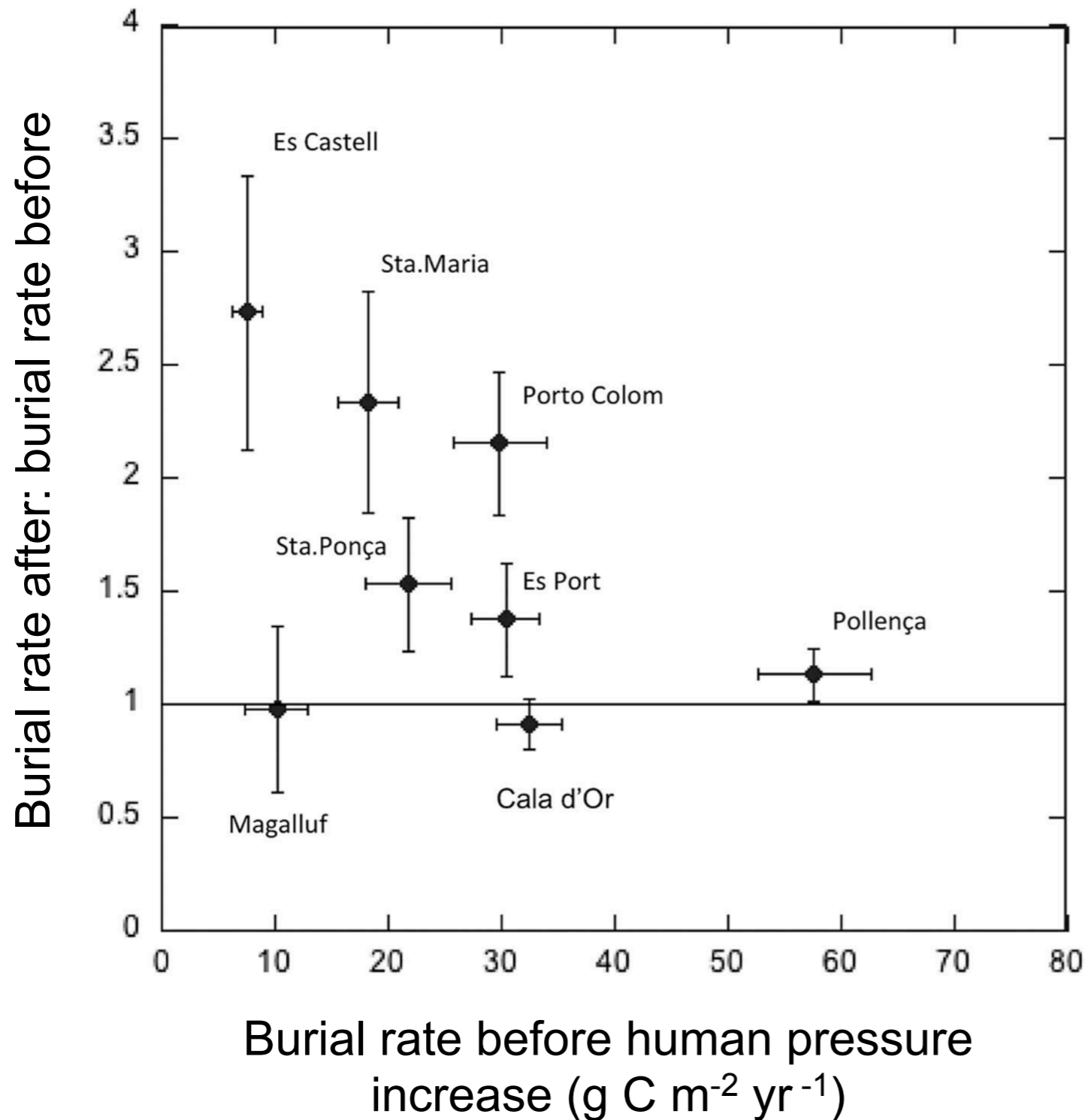
3 cores per site
cores length: 17-45 cm
sediment slices 1-2 cm

sample analyses:

- sediment C_{org} conc. and density
- $\delta^{13}C_{org}$ and N of sediment, *P. oceanica* and seston
- sediment age (^{210}Pb)



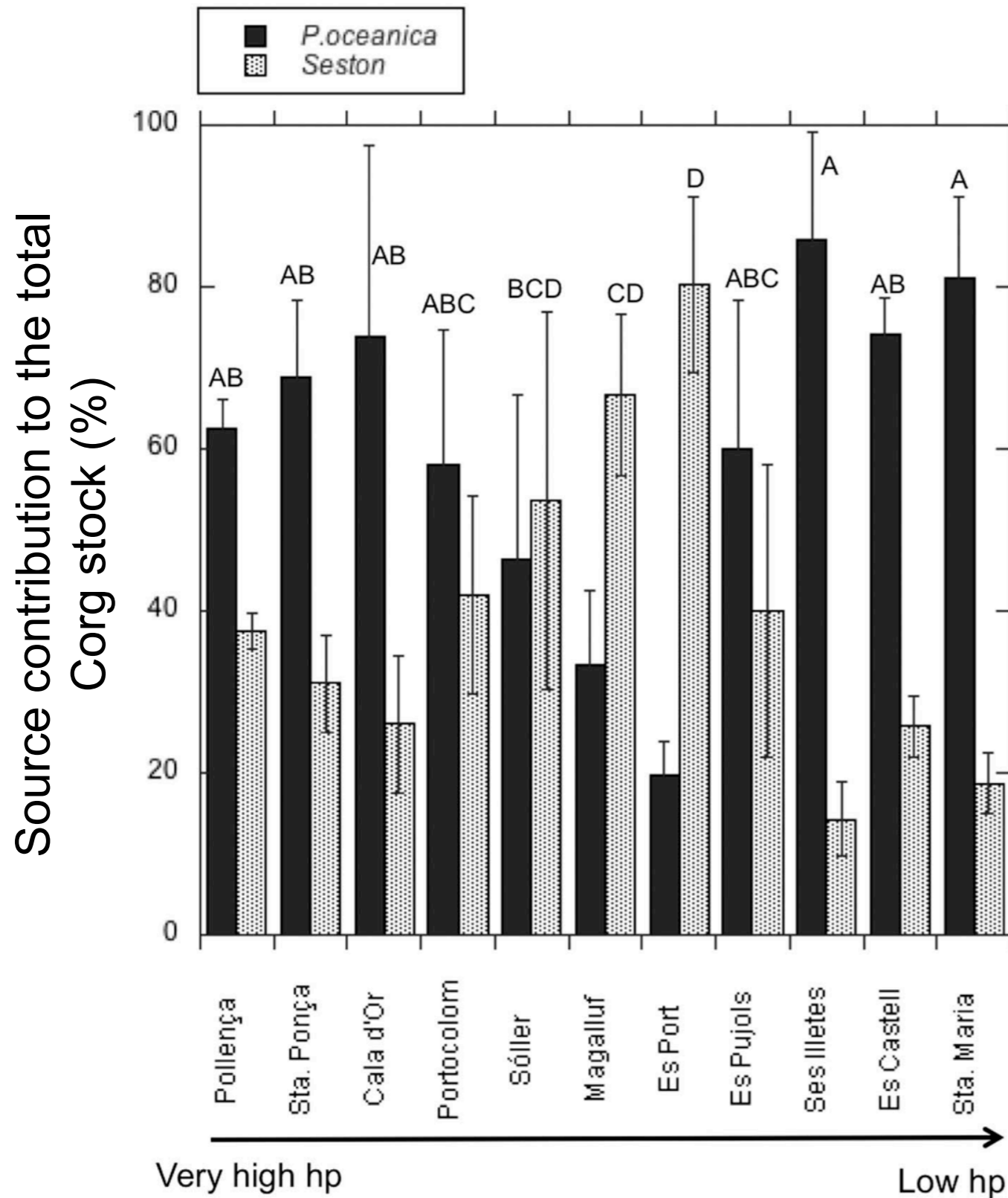
C_{org} burial rates increased by 69 % since the onset of increasing human pressure



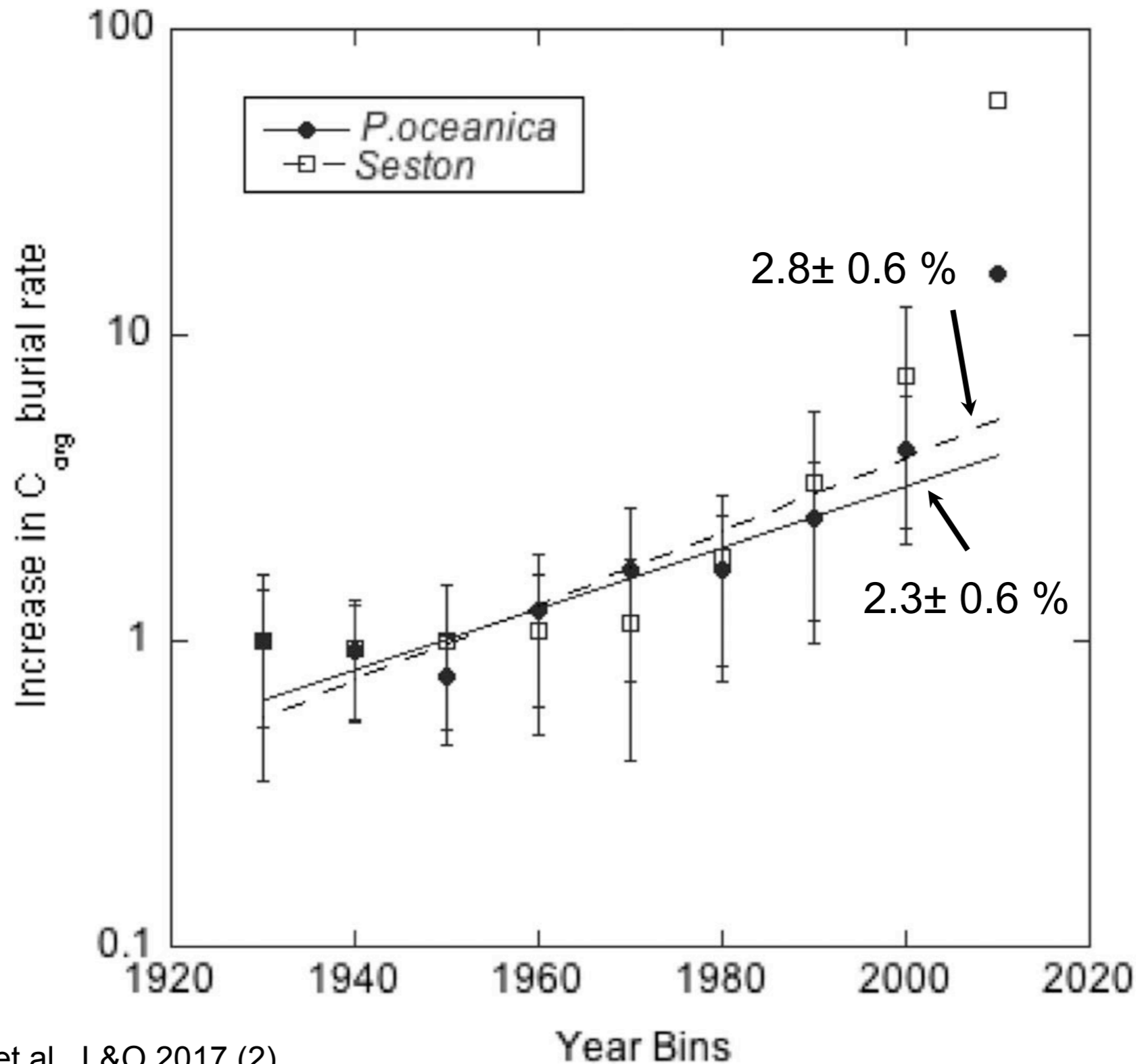
C_{org} burial before: 26 ± 7 g C m⁻² yr⁻¹

C_{org} burial after: 38 ± 9 g C m⁻² yr⁻¹

On average, larger contribution of seagrass (59%) than seston to C_{org} stocks in the region



Faster acceleration of sestonic than seagrass carbon burial



CONCLUSIONS

- The increase of human pressure has enhanced C_{org} burial rates in Balearic seagrass meadows for the last decades.
- Coastal eutrophication derived from anthropogenic pressure probably has enhanced seston derived C_{org} burial in seagrass meadows of the region.
- The recent enrichment in sestonic carbon towards present might imply a weakening of the carbon deposits, as they may become easier to remineralize and, thus, more vulnerable to disturbances.