

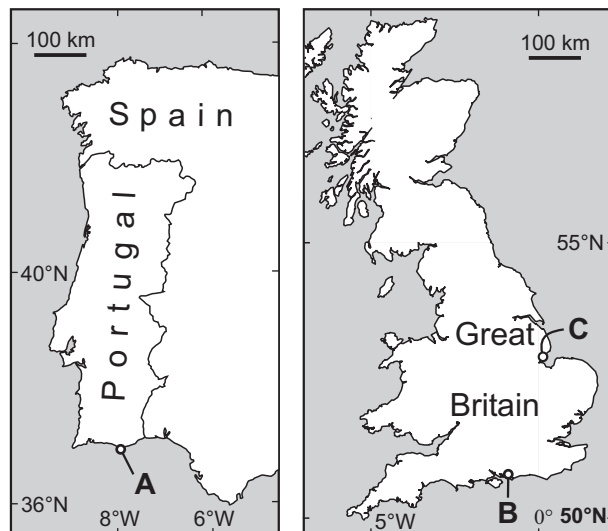


Fig. 1. Position of Ramalhete (A) in Portugal, and East Chidham (B) and Freiston Shore (C) in England.

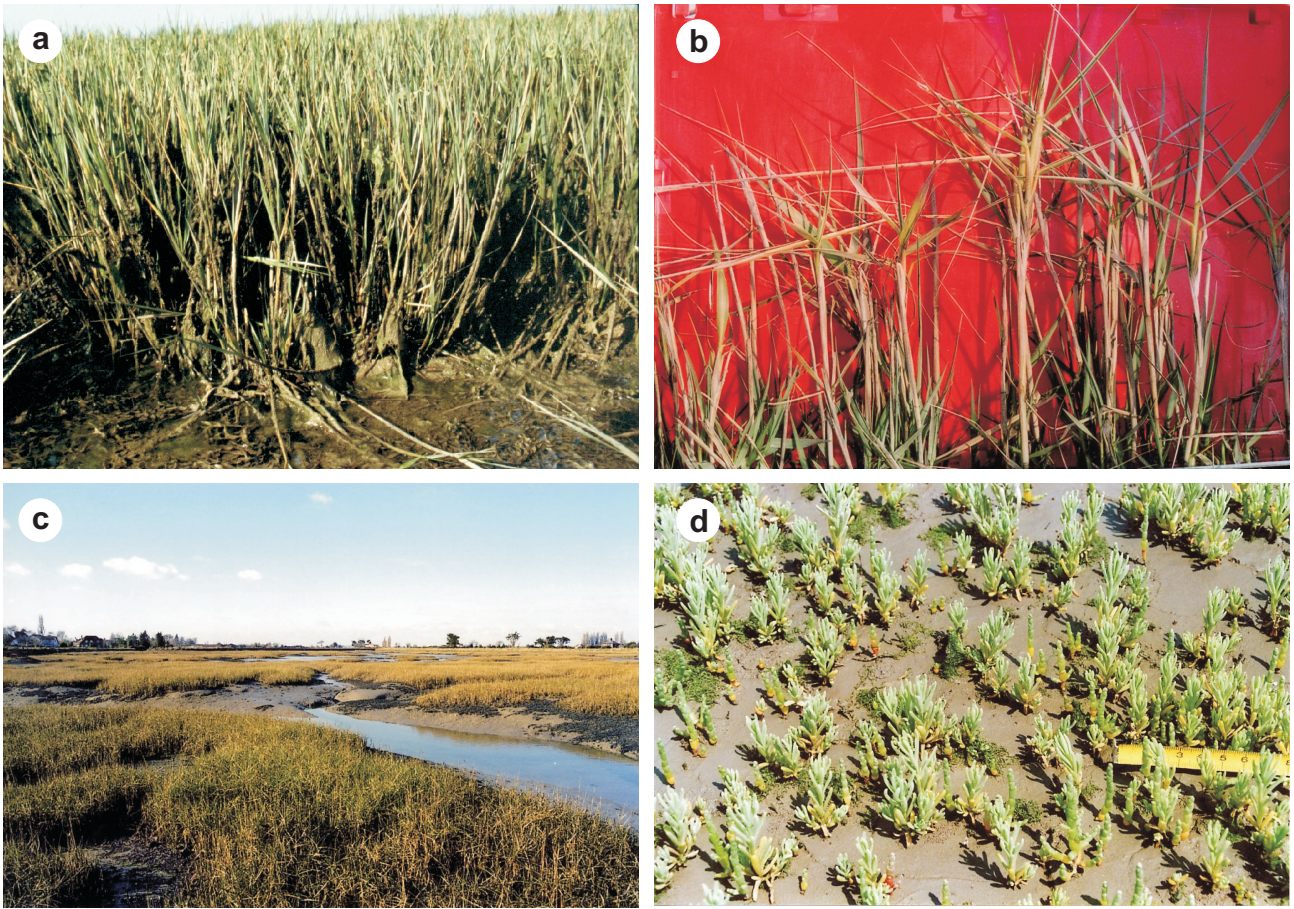


Fig. 2. Illustrations of studied salt-marsh vegetation. (a) *Spartina maritima* at Ramalhete; canopy height is 30 cm. (b) *Spartina anglica* in front of a red background, example of picture used to compute the lateral obstruction; picture height is 34 cm; picture depth is 10 cm. (c) *Spartina* marsh at East Chidham. (d) Low pioneer marsh with *Salicornia* sp. and *Suaeda maritima* at Freiston Shore; length of yellow ruler is 8 cm.

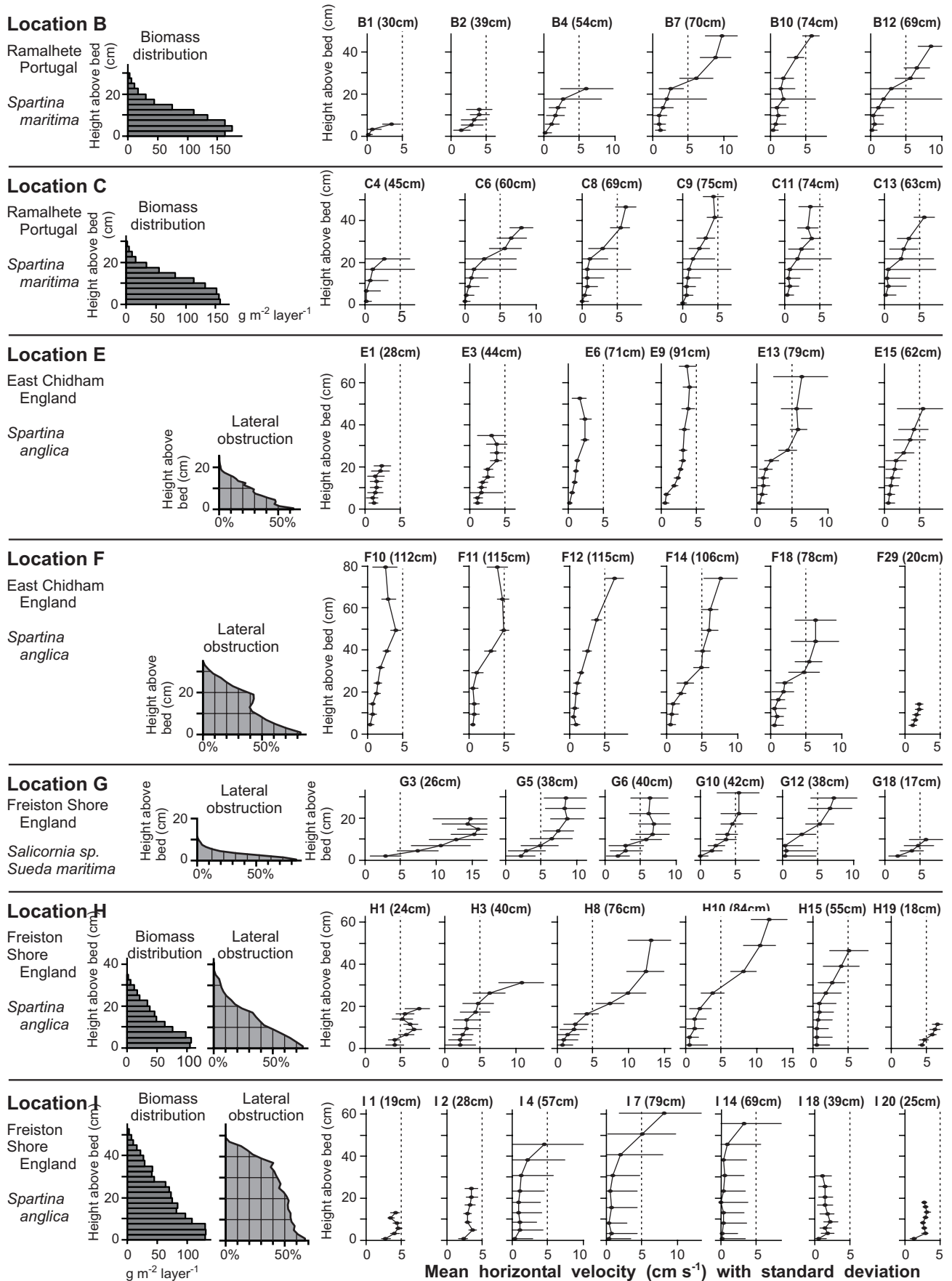


Fig. 3. Selection of profiles of mean horizontal velocity with i_u (or downstream standard deviation) presented as the error bars. Each velocity profile is labelled with its profile name (e.g., "B1") and, in brackets, the water depth during measurements. The vertical density variation of the canopy is represented on the left hand side by the vertical biomass distribution and/or by the lateral obstruction of a 10 cm thick canopy.

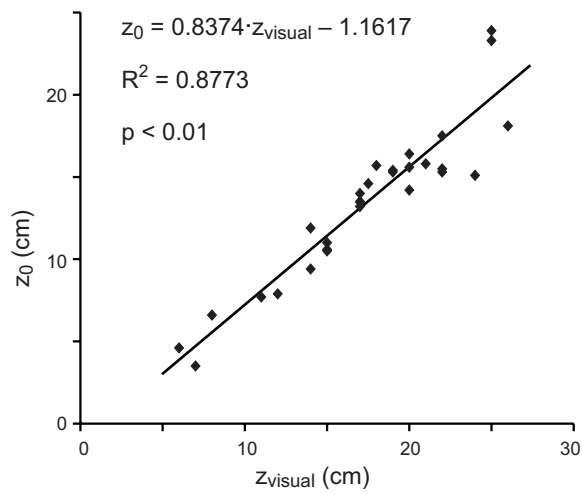


Fig. 4. Relationship between z_{visual} (lower limit of the skimming flow defined visually from the plots) and z_0 for all *Spartina* profiles with a skimming flow exhibiting a logarithmic velocity profile. The statistically significant linear regression is shown.

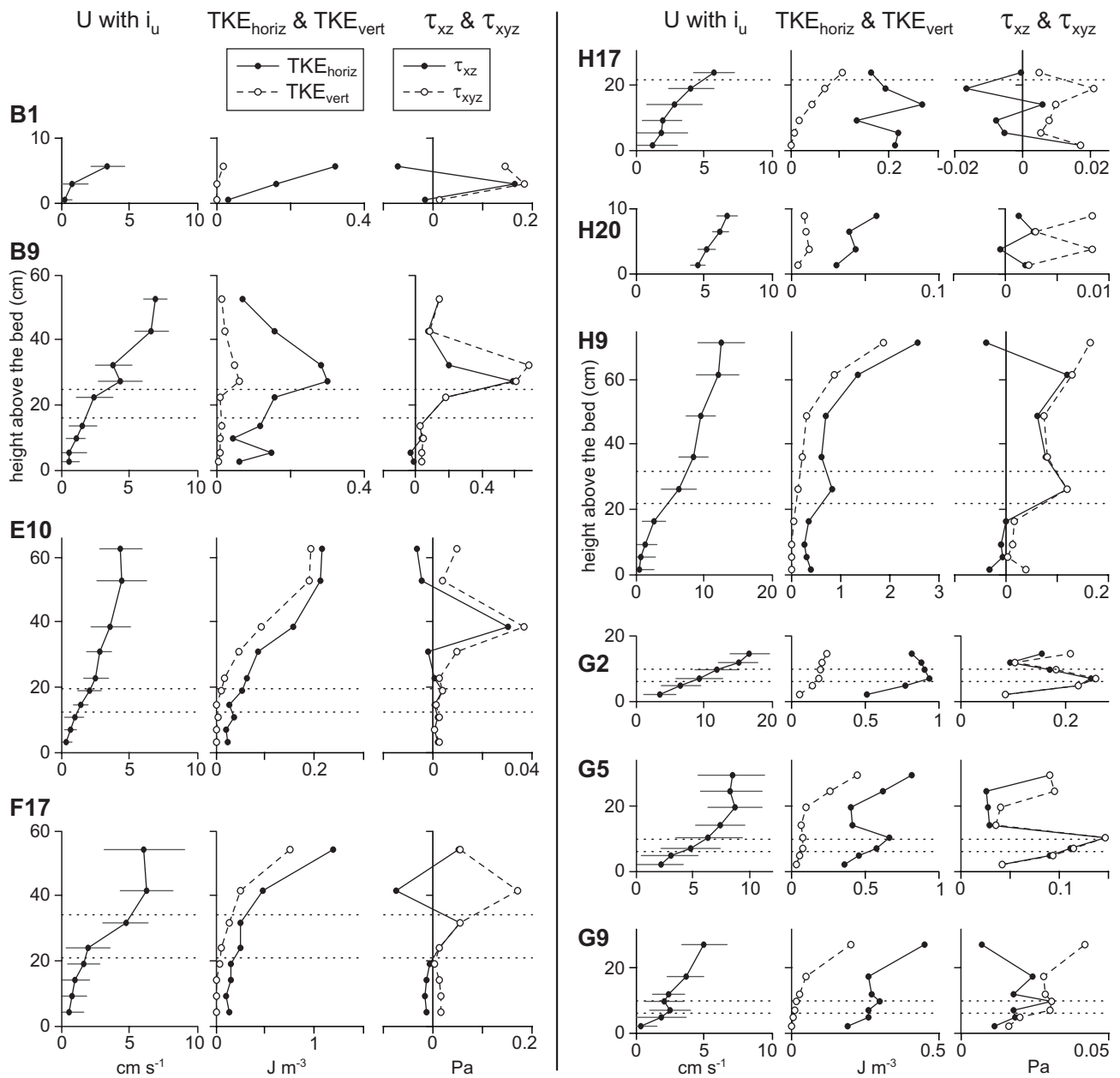


Fig. 5. Profiles of flow parameters: Mean horizontal velocity (U) with i_u (or downstream standard deviation) represented by the error bars, horizontal and vertical TKE, two dimensional and three dimensional Reynolds stresses (τ_{xz} and τ_{xyz}). The horizontal dotted lines mark the top of the dense canopy and the canopy height, respectively. Profiles B1 and B9 are in a *Spartina maritima* marsh; profiles E10, F17, H17, H20, and H9 are in a *Spartina anglica* marsh; profiles G2, G5, and G9 are in a *Salicornia / Suaeda maritima* marsh.

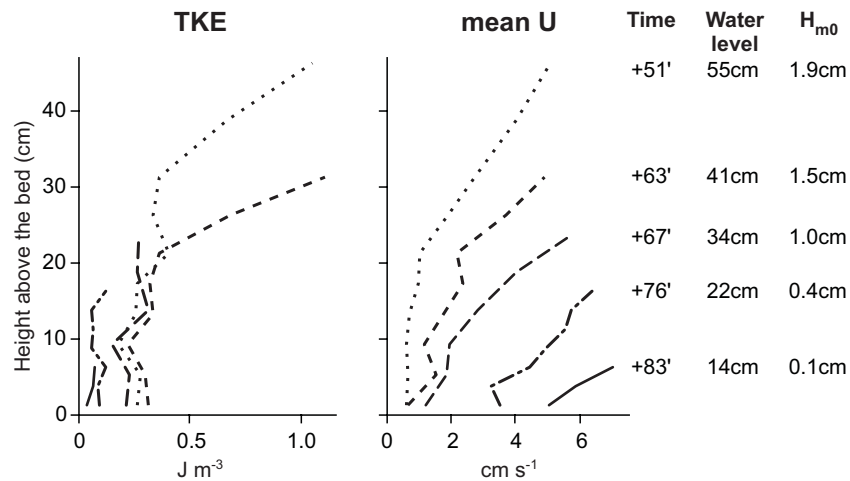


Fig. 6. Ebb flow during experiment H (*Spartina anglica*, 32 cm tall): 5 successive velocity profiles (mean U) with the corresponding profiles of turbulent kinetic energy (TKE). On the right hand side are shown the time in minutes after high water, the height of the water level, and the significant wave height (H_{m0}). The flow accelerated as the water level dropped, the associated reduction in TKE is probably not due to the velocity increase but the decrease of surface wavelets (shown by H_{m0}).

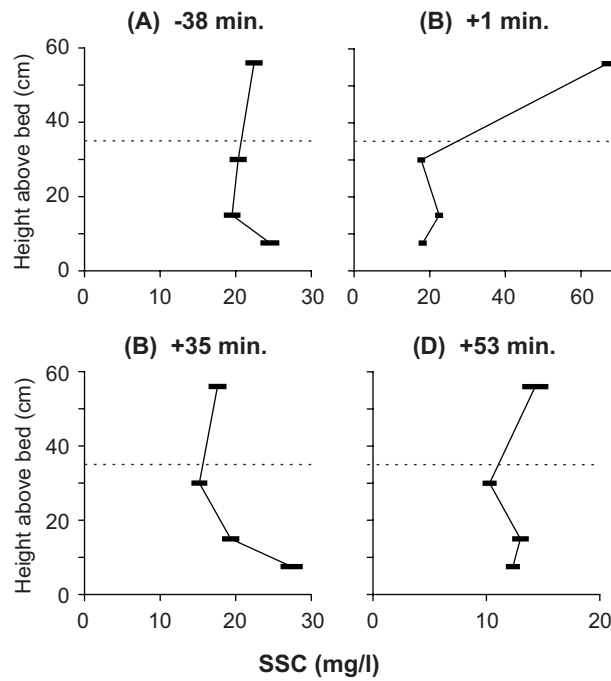


Fig. 7. SSC profiles measured in the salt-marsh at Freiston Shore during experiment H. The dotted horizontal line marks the canopy height. The time before/after high water is specified for each profile. The width of the markers indicates the accuracy of each measurement.