Imagen que contiene instrumento, estacionaria, lápiz, interior

Descripción generada automáticamente

Figure SI1

Gráfico

Descripción generada automáticamente con confianza media

Figure SI2

Gráfico, Gráfico de dispersión

Descripción generada automáticamente

Figure SI3

Gráfico

Descripción generada automáticamente

Figure SI4

Gráfico, Gráfico de líneas, Gráfico de dispersión

Descripción generada automáticamente

Figure SI5

**Supplementary figures captions**

**Fig. SI1.** Swash observations extracted from timestack images (blue bars). Setup from S2006 formulation (red bars) and XBEACH (green bars), both for PDP (top) and CLM (bottom panel). The sum of both components represents the wave runup (in m).

**Fig. SI2.** Time series of nearshore waves recorded by the AWACS (gray) and the selected cases modelled by XBEACH (green and red dots). The black dots indicate the periods when timestack images were available.

**Fig. SI3.** Scatter plot of modelled Hs (m) with SWAN vs observations in PDP (left panel) and CLM (right panel).

**Fig. SI4.** Validation of the XBEACH model outputs in Cala Millor along a cross-shore transect of wave observations by Infantes et al., (2012). The location of the wave observations is indicated by the red dots (P1 to P4) in the upper panel. The lower panels show the comparison of observed and modelled Hrms (in m) for the four observation points. The corresponding RMSE (in m) is included in the insets for the simulation with the calibrated vegetation module (R).

**Fig. SI5.** Calibration of XBEACH vegetation module for PDP (left panel) and SNB (right panel). Observed and modelled swash are compared in the absence of seagrass (blue), considering Cd=0.20 (green), Cd=0.10 (red) and Cd=0.05 (black).