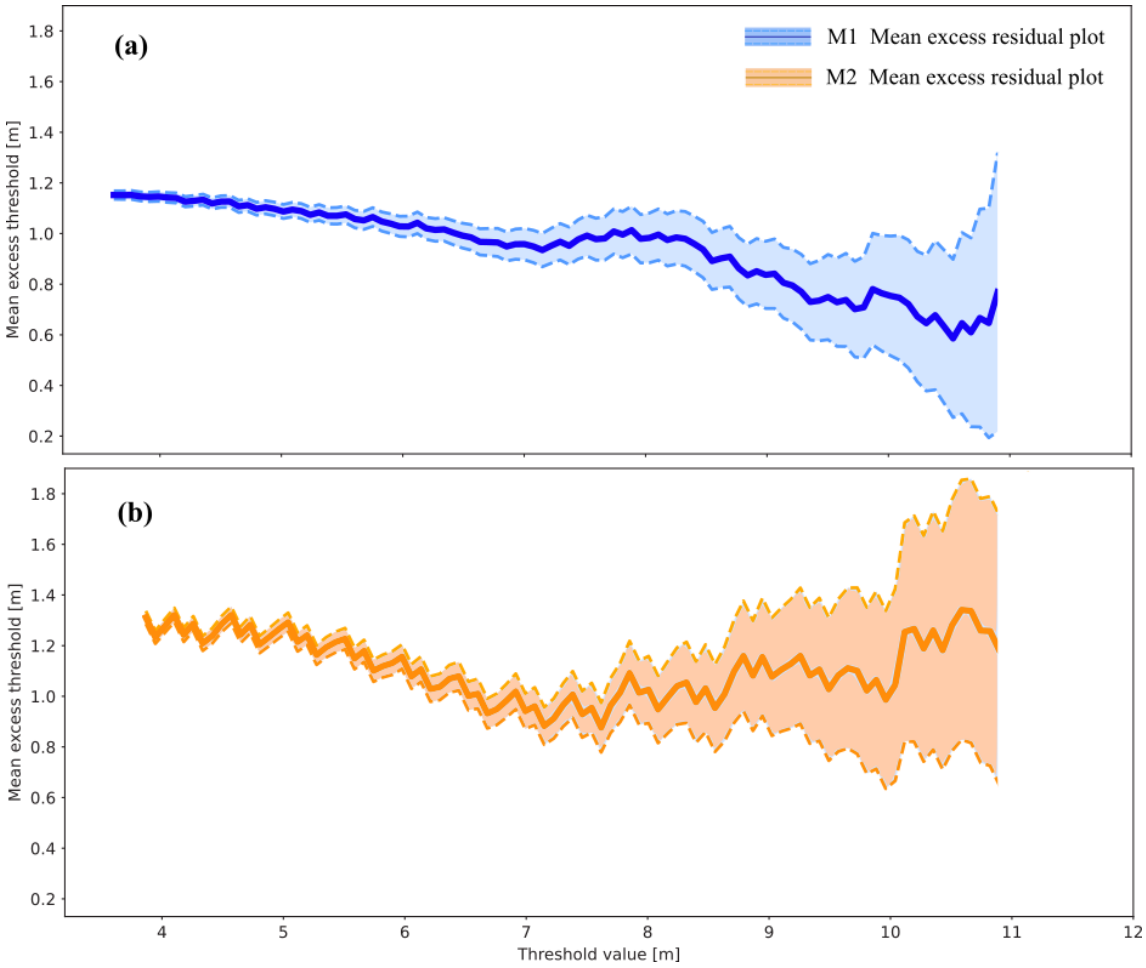


Figure S1. Mean residual life plot used to support threshold selection for a) M1 and (b) M2. The solid line shows the mean excess over threshold and the dashed lines indicate the 95% confidence interval.

Table S1. Lag-1 autocorrelation coefficients for monthly wave parameters and climate indices at M1 and M2 buoys.

Parameter	M1 (lag-1)	M2 (lag-1)
H_S	-0.257	-0.158
T_P	-0.205	-0.196
S	-0.457	-0.475

To assess the influence of spatial variability between the two buoy locations, a correlation analysis was performed using monthly aggregated wave parameters (H_S, T_P, and wave steepness) over the overlapping period 2007–2018. Results show a very strong correlation in significant wave height ($r = 0.97$), and high correlations for peak period ($r = 0.78$) and wave steepness ($r = 0.78$), all statistically significant ($p < 0.001$). These results indicate that both buoys are primarily influenced by the same regional wave climate, while the remaining differences can be attributed to local factors such as water depth and offshore exposure.

Table S2. Pearson correlation coefficients between monthly aggregated wave parameters from the M1 and M2 buoys over the overlapping period 2007–2018. All correlations are statistically significant at the 95% confidence level.

Parameter	Sample size (N)	Pearson correlation (r)	p-value
H_S	129	0.97	< 0.001*
T_P	129	0.78	< 0.001*
S	129	0.78	< 0.001*