Response to Reviewer Comments

We thank the reviewer for their careful reading of the revised manuscript and for their constructive comments. Below we provide a point-by-point response to the remaining clarifications and corrections requested. All changes have been implemented in the revised manuscript and are visible in the tracked-changes version.

Ln 101–104

Comment: The framework of Häfner et al. does not impose a binary threshold r = 0.6 for rogue wave occurrence. The occurrence probability of rogue waves is a monotonic function of r (see Cicon et al., 2024). Please clarify.

Response: We have revised lines 101–104 to explicitly state that the probability of rogue wave occurrence increases monotonically with crest–trough correlation r, consistent with Häfner et al. (2021b) and Cicon et al. (2024). The text now clarifies that $r \approx 0.6$ is not treated as a binary threshold, but rather that high r values are common in general sea states. We emphasize that the novel contribution of this study lies in the temporal evolution of r (a dip below ~0.5 followed by rapid recovery), rather than in the use of a fixed r threshold.

Ln 160

Comment: It is important to stress that a spectral model cannot capture rogue waves explicitly. Please define what you mean by 'capture'.

Response: We have clarified the meaning of 'capture' by explicitly stating that phase-averaged spectral models do not resolve individual wave realizations or isolated extreme crests in time and space. The revised text now explains that such models represent the sea state statistically through spectral moments and envelope-based extreme-value expectations (e.g., ⟨Hmax⟩), rather than explicit rogue wave events.

Ln 188

Comment: Fedele (2016) and Gemmrich & Garrett (2008) define rogue waves based on the classical threshold of 2.2 Hs. Please correct.

Response: We have corrected the text to distinguish clearly between the classical rogue wave definition ($Hmax \gtrsim 2.2$ Hs), as used and discussed by Fedele (2016) and Gemmrich & Garrett (2008), and the operational criterion $Hmax/Hs > 2.0$ adopted in this study. The revised manuscript now explicitly states that the 2.0 Hs threshold is used for consistency with the FOWD dataset and modern operational practice, while acknowledging the historical 2.2 Hs definition.

Ln 273–277

Comment: It is confusing that rogue waves are analyzed based on FOWD, followed by a statement about evaluating envelope/statistical diagnostics from phase-averaged models. Please clarify.

Response: We have clarified that rogue wave identification is performed exclusively using in situ FOWD buoy observations. The revised text now explicitly states that phase-averaged spectral models (ERA5 and ECMWF CY47R1) are not used to detect rogue waves, but are sampled conditionally at the same locations and times to evaluate envelope-based and statistical diagnostics of the modeled sea state corresponding to observed events.

Ln 301

Comment: The stated summer values (40–80 events) along the West Coast do not match Figure 1c. The figure shows 60–140 events in both winter and summer, with lower values in southern or central California. Please correct/clarify.

Response: We have revised the text to reflect the spatially resolved pattern shown in Figure 1. The manuscript now clarifies that during summer, rogue wave occurrence remains elevated in the northern West Coast (Oregon and Washington, typically ~60–120 events per season), while central and southern California exhibit substantially lower values. This correction removes the impression of a coast-wide summer minimum and aligns the text explicitly with the spatial gradients visible in Figure 1c.

Ln 357–362

Comment: The higher Hmax values in models and reanalysis are likely due to different methods of calculating Hmax. Envelope-based maxima exceed individual-wave maxima (see Fig. 1 in Cicon et al., 2024). Please add this to the discussion.

Response: We have expanded the discussion to explicitly explain the methodological difference between buoy-derived Hmax (maximum realized individual wave height from zero-crossing analysis) and model-derived ⟨Hmax⟩ (expected maximum envelope height). The revised text now references Cicon et al. (2024, Fig. 1) and clarifies that envelope-based maxima can exceed individual-wave maxima, which explains why models may show slightly higher Hmax values despite underrepresenting rogue wave occurrence.