The authors would like to express, again, their sincere thanks to both reviewers for their careful assessment. This document responds to each of the points raised. Reviewers remarks are in black, authors answers in blue. A “diff” file is also provided to enlighten the modifications made to the manuscript.

The line numbers given in the authors’ answers correspond to the ones of this file.

A very interesting and well written paper, a few small comments & thoughts:

- line 111: 'focusing the problem on the wake instabilities'. It's a detail, but it would be more clear if the authors make it 'far-wake instabilities'.

  Modifications in line 15: “far-wake instabilities”.

- line 494: To provide context for the conclusions, it would be helpful to summarize the tested Strouhal frequencies and normalized amplitudes in the conclusion section.

  Modifications in line 459: “heave (A_H = 0.03D ; St_H = 0.09), surge (A_S = 0.06D ; St_S = 0.11) and pitch ($A_{P0.14}$ = 4° ; $St_{P0.14}$ = 0.14 and $A_{P0.28}$ = 4° ; $St_{P0.28}$ = 0.28) motions”.

- Is it correct that the results in this paper find an amplification of wake displacement at lower Strouhal numbers (heave St=0.09 and surge St=0.11) than those for which Messmer et al. (2024) found optimal wake recovery (St=0.3-0.6)? A small note or discussion about that would be interesting.

  Indeed, in this paper the authors wanted to focus the study on realistic motions (second-order motions due to the response of the floater linked to mooring lines and anchoring characteristics), and not on optimal impact ones. Thus, the latter would provide higher wake parameter amplifications than those find here.

  Added to the article line 492: “The Strouhal numbers of the investigated motions are lower than those of maximal impact found in previous studies (Li et al., 2022; Messmer et al., 2024), one expects that applying such similar Strouhal numbers to our configuration would provide higher wake parameter modifications”.

- line 511: 'wake dynamics are' instead of 'is'

  Modifications in line 496: “are”.

- line 517 to line 522: This is a very interesting statement, and some thoughts come to the mind: The work of Bossuyt et al. (Floating wind farm experiments through scaling for wake characterization, power extraction, and turbine dynamics, 2023) studied floating turbine models that can move freely in a water-wind tunnel experiment. Thus, the turbines moved with a spectrum of frequencies and with all degrees of freedom simultaneously. Upon checking, the strouhal numbers seem similar to results here, but limited to 0.13, while the amplitudes are likely much larger. Severe wake displacements were registered in that work, though no comparison with static misalignment models was made. Checking if the results of Bossuyt et al. match the conclusions in this paper and confirm an amplification would give very interesting and helpful context about the sensitivity of amplification to single frequency motion. It is an important note to make in the context of this paper.

  Indeed, Bossuyt et al. (2023) found that wave conditions triggering pitch motions induce vertical motions of the wake centre, and that associated to yaw motions induce horizontal ones, which are consistent with the results found in the present paper. However, they experimented free-motion turbine models subjected to harmonic wave conditions, which results to approximately harmonic turbine motions (Fig. 19), closer to that is performed in

the present paper than to the actual range of amplitudes and frequencies of full-scale motions. Indeed, regarding Schliffke et al. (2024) (Fig. 2), the motion spectra of the full-scale wind turbine do not present any specific frequency peak.