Dear Dr. Kleinherenbrink,

Thank you so much for once again looking over our paper so thoroughly and providing great comments. We have followed your recommendations which has lead to a better manuscript.

Best regards,
Dyre

Review of "Observing sea ice flexural-gravity waves with ground-based radar interferometry" by Dammann et al.

General comments: I think the authors handled my comments appropriately. I am looking forward to a longer continuous time span of measurements with a GRPI, because it seems promising. I only have one last comment and a few technical corrections.

We agree, we are looking forward to aquiring more data as well

Specific comments In line 420 it is stated that more analysis is required to investigate potential applications like determining wave properties that can lead to fracture and destabilization. In the first paragraph of the introduction some properties of IG waves in ice are mentioned and that waves can induce fracture and break-up. However, I see no explicit reference that IG waves, considered in this paper, can cause fracture and break-up.

Although we analyze infragravity waves in this paper, we suggest that the GPRI-approach can likely determine wave properties of swells as well. We have now clarified this in the conclusions by stating: "While the results discussed here show promise, the acquisition of longer time series and different types of waves is required to investigate potential applications. In this work, we analyzed infragravity waves, but the GPRI, with its high measurement frequency, can likely determine wave frequencies and amplitudes of ocean swells that can lead to ice fracture and destabilization."

Technical corrections

Line 39-42: Rephrase these two sentences to include satellite radar altimetry (it is described in the Collard et al. (2022) paper as well).

Good point. Done

Line 56: "we here" à "we demonstrate in this paper" or something comparable.

Done

Line 98: "The observations are interpreted as coming from a narrow (one-dimensional) strip, as … azimuth" or something similar.

Agree, that is more correctly stated. Done

Line 105: "convert to…" something wrong with the sentence.

This has been changed to: ". Then, we interpret the progressive $\Delta\Phi$ over 30 s, convert to vertical displacement according to Equation 1…"

Line 107 and line 108/109: Subsetting on coherence appears to happen twice. Remove from one sentence.

Good catch. Removed one

Line 198: Here and on some other locations “ice-covered” like in the previous sentence.

Done

Line 211: “We also model”

Done

Line 271: Start with “Although…”

Done

Line 384: “likely due in part to”, resphrase

Done

Line 415: “resulting in different wave propagation” feels like something is missing, please elaborate

Definitely. This has now been changed to: “In addition to identifying wave period, speed, and amplitude, it can possibly help provide insight into how these properties change over a few hundred meters as a result of variations in the ice cover.”

Line 415: “particularly powerful”, maybe tone down the sentence a bit: particularly useful or suitable

Done

Line 417: “Here, furture deployments…” This sentence looks vague, rephrase. What does “here” refer to?

Removed “here” as unnecessary

Line 420: “determine wave frequencies and amplitudes” à “determine wave properties”

Done

Supplementary material: units on the axis are missing

Added