

We thank the anonymous reviewer for taking the time to review our manuscript and for their positive comments. We address each comment below. Throughout, our response is in green, the reviewer comments are in black, deletions from the manuscript are in red, and insertions to the manuscript are in blue.

We also added the data sheet for the photodiodes to the SI, which we mistakenly omitted in the first instance, updated the affiliations, added a link to the final version of the supplementary information, and fixed some typos.

Response to reviewer 1

Review of manuscript entitled “The Roland von Glasow Air-Sea-Ice Chamber (RvGASIC): an experimental facility for studying ocean/sea-ice/atmosphere interactions by M Thomas et al. This manuscript describes a state-of-the-art laboratory facility for preparing laboratory grown sea ice in a setting that can be exploited for process study. The manuscript should be of high interest to the scientific community. The text is well written, concise, accurate, and the figures are appropriate. I have no concerns about this manuscript and recommend it be published almost as is. I have only a few, very minor comments and a few questions for the authors:

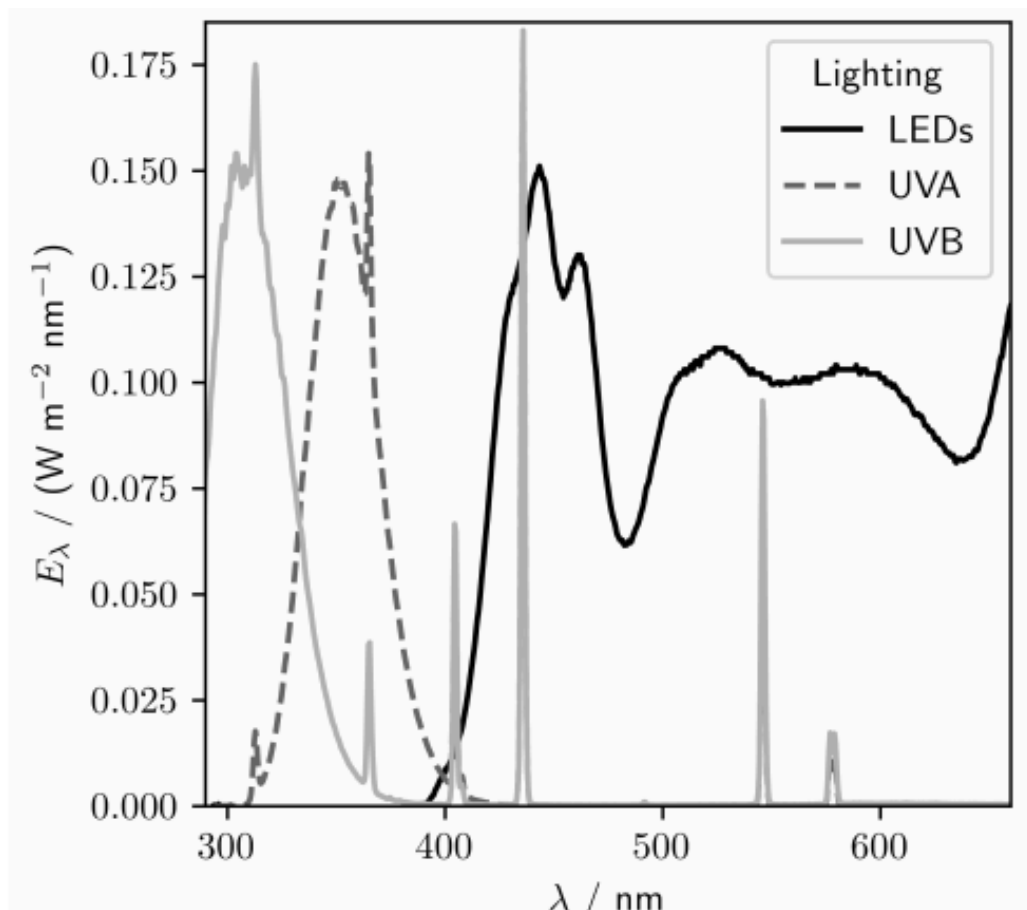
105: “carrying out measurements” instead of “measuring”?

We have amended the text

The RvG-ASIC has a suite of instruments for ~~measuring in~~ carrying out measurements of the experimental ocean, sea ice, and atmosphere (Table 1).

Fig.2 impossible to distinguish line shades / colors

We have amended the figure



413, 414: “air temperatures” are “high” or “low”, not “warm” or “cold”

We have amended the text

What is the thickest ice that can be grown in this facility? The text says it can be 20cm and still be floating. It’s not clear whether the ice can be grown thicker?

We have added some more information to the text

the surface floods (e.g. Rysgaard et al., 2014), resulting in a shiny, liquid surface layer. Sea ice, fast to the tank walls, has been grown up to 25 cm thickness, and could potentially be grown thicker. With insufficient side heating and insulation the ocean

How is ice growth prevented in the side tank? I assume the side tank is insulated on top, but it’s not stated explicitly.

We have added some information to the text

joined to the main tank, connected by four 100 mm holes (Figure 1). This side tank – capped with a lid – is never allowed to freeze over entirely and so provides a path for sample lines into the ocean, a path for cables that does not interfere with the sea-ice/atmosphere interface, and a free path for water displaced by volume expansion upon freezing. The main and side

When sea ice grows, brine rejection at the growing interface necessarily increases the salinity of the ocean, or in this case, in the tank water. I wonder if the side tank in this laboratory setup could be used to help ameliorate this shortcoming associated with a finite-depth tank?

This is a good idea and a possible use of the side tank. However, we have not explored this possibility and feel it is too early for us to say something useful about this.