

Interactive comment on “The Roland von Glasow Air-Sea-Ice Chamber (RvG-ASIC): an experimental facility for studying ocean/sea-ice/atmosphere interactions” by Max Thomas et al.

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Overview: The manuscript “The Roland von Glasow Air-Sea-Ice Chamber (RvG-ASIC): an experimental facility for studying ocean/sea-ice/atmosphere interactions” by M. Thomas and co-authors describes the experimental sea ice chamber at the University of East Anglia. The manuscript provides a thorough overview of the design and capabilities of the Chamber and its attendant infrastructure. A series of experimental test runs have been carried out to benchmark the chamber behavior against mass balance, 1D models and to interrogate the internal consistency of instruments, including the techniques for measuring ice thickness. The manuscript is well-written and clearly

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laid out and, in my opinion, does an excellent job of featuring the Chamber and providing future users with valuable metrics they can use to design their experiments and test their results. It is clear that the facility is well-equipped for gas measurements as well as radiation studies – both very exciting and relevant phenomena to polar and sea ice research. The benchmark tests and presentation of data are all clear and easy to understand. My only comments have to do with the content and descriptions in Section 2 – the Facility Description. I suggest publication after some moderate revisions to Section 2, to help the reader to conceptualize the facility as it exists.

General comments:

I suggest the authors consider using the passive voice in the description of Section 2 paragraphs where the active voice has been used. Some sentences begin with phrases such as “We use” or “Our version” or “We set up”. In general, I am a fan of using the active voice, but in this case, I think it creates the impression of impermanence or haphazard decisions, when in fact, it is clear that both the design and implementation choices are well-thought out.

For example on Line 141, instead of “We use a weather station”, the section could begin with “Weather inside the Chamber is measured with a W600-UMB. . .”

Specific comments:

Suggest combining Figures 1 and 3 to make a single unifying diagram of the Schematic in a 3 x 2 panel configuration. Photos could be paired with the diagram that comes closest to revealing that perspective. Common features in the schematic could be annotated in the photos.

For the schematics, I would encourage more use of shading to distinguish the tank from the cold room (as was done in ‘view from above’) and different line thicknesses to help reveal tank and chamber outlines. Clearly indicate what is the chamber – this refers to the cold room and all its contents? It might be helpful to include some fan

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icons and tighten up the arrows and other graphic elements.

Line 199: Do “cold room” and “chamber” refer to the same physical enclosure?

I had some difficulty understanding what was referred to by “chamber” as opposed to “tank” and “cold room”. It might be helpful to explicitly define what is encompassed by the word “chamber” in the text and in the combo of Figures 1 and 3.

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