The Cryosphere Discussions

The Cryosphere Discuss., referee comment RC2
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Comment on tc-2021-136

Anonymous Referee #2

Referee comment on "Recent observations of superimposed ice and snow ice on sea ice in the northwestern Weddell Sea" by Stefanie Arndt et al., The Cryosphere Discuss., https://doi.org/10.5194/tc-2021-136-RC2, 2021

As with Referree 1, I was also a previous reviewer of an earlier ms on this topic.

The paper is a good representation of the observations on superimposed and snow ice formation in the Western Weddell Sea. With the beneift of Reviewer 1's posted detailed comments, I have only a brief comments to add.

On the argument that the conditions for melting of the snowpack in the Weddell Sea that would lead to a triggering of ice albedo feedback and widespread melting (the 'arctification" of the Western Weddell Sea), they may want to add an additional sentence or two. The diurnal freeze-thaw cycle that exists in the Antarctic because of its lower latitude can shift the energy balance from positive shortwave to negative longwave especially during late Jan and Feb as the daylight hours shorten away from the solstice. Along with the deeper snow cover in the Weddell Sea, the triggering of ice-albedo feedback may be delayed by this diurnal radiation effect.