Review of “Atmospheric Response to the Weddell Sea Polynya” by Wilbert Weijer, Milena Veneziani, Achim Stossel, Matthew W. Hecht, Nicole Jeffery, Alexandra Jonko, and Travis Hodos

Minor comments:

Lines 175-177:

“Wind speeds at the 10 m level (U10) are significantly reduced for ice-covered conditions. This is at least partly a result of enhanced surface friction over sea ice compared to the ice-free ocean177 (Andreas et al. 1984).”

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Isn’t it also possible that increased surface wind and wind stress curl could intensify the cyclonic Weddell gyre causing the relatively warm and salty Weddell Deep Water (WDW) to upwell as suggested in Cheon et al (2015)?

Lines 186-187:

“Integrated over the polynya area and over the year, the excess heat transfer is 114 EJ (1 EJ

187 = 10 18 J) and 87 EJ respectively.”

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“Integrated over the polynya area and over the year, the excess sensible and latent heat transfer is 114 EJ (1 EJ = 10 18 J) and 87 EJ, respectively.”

Lines 191:193:

“Although this difference only manifests itself in the months where the sun actually has a significant input (from August onward), the net heat uptake by the ocean increases by 67 EJ in polynya years.”

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I am not sure if “net heat uptake” is net short wave flux into the ocean or the net total heat flux into the ocean. Please clarify. If it refers to the latter, this sentence should be modified or should be moved to the later part of the heat flux discussion.

Figure 3:

Q(kg/kg)

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Probably, the correct unit is g/kg?