

## ***Interactive comment on “An analysis of the cloud environment over the Ross Sea and Ross Ice Shelf using CloudSat/CALIPSO satellite observations: The importance of synoptic forcing” by Ben Jolly et al.***

### **Anonymous Referee #3**

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A comprehensive study of the clouds over the Ross Ice Shelf and the Ross Sea is presented. Clouds are analyzed for different seasons and classified into types in order to identify relationships with synoptic fields of temperature, humidity etc. The manuscript shows some interesting results and can be published after minor revisions.

Line 162: I am a bit puzzled by the statement "Reported cloud phase is restricted to ice for cloud base temperatures below  $-38.5$  C, and mixedphase or liquid for temperatures above  $+1$  C". I would have expected mixed phase clouds between  $-38.5^{\circ}\text{C}$  and  $0^{\circ}\text{C}$  and liquid clouds above  $0^{\circ}\text{C}$ . Could you clarify?

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Line 225: "Comparison between the three products is generally rather good" - this is a subjective statement which should be replaced by something quantitative.

Line 438: I wouldn't have expected deep convection to be the predominant cloud type in the Arctic. Maybe this is simply a misnaming for a vertically extended cloud?

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Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2017-547>, 2017.

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