

## ***Interactive comment on “Freshwater in the Arctic Ocean 2010–2019” by Amy Solomon et al.***

### **Anonymous Referee #2**

Received and published: 10 January 2021

#### **R E V I E W**

of the manuscript (os-2020-113) entitled “Freshwater in the Arctic Ocean 2010-2019” by A. Solomon et al.

The manuscript major focus is on variability of Arctic freshwater in the 2010s. This topic is of high scientific importance. I have a few minor comments listed below. I recommend minor revision.

Comments: 1. My understanding is that the Beaufort Gyre is a part of the Amerasian Basin. The authors state otherwise (see abstract and II 120-125). 2. Page 12, line 247. Should “Sea” start with lower case “s”? 3. I tend to disagree with the statement II 309-311 (p. 14) that Polyakov et al (2020) did not provide evidence for the link between the Barents Sea imports and salinity (freshwater) change in the halocline of the eastern Eurasian Basin. See their Fig 12, upper panel which compares salinity of the eastern

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Eurasian Basin with salinity from the northern Barents Sea (lagged, led by one year). The time series show statistically significant link. This, plus well established pattern of the ocean circulation, provides reasonable evidence to state that changes in the eastern Eurasian Basin halocline show a fingerprint of changes in the upstream areas (notably northern Barents Sea). I suggest the authors modify this statement. 4. P. 15, l. 323: Please define surface waters: this percentage depends heavily on the thickness of the layer. 5. Same page, line 325. I tend to disagree with the statement that the wind is largely responsible for the subsurface horizontal redistribution of freshwater. If subsurface is defined as halocline, the circulation in the halocline is more like circulation in the Atlantic water layer and not the surface mixed layer. It is more complex and has a strong impact of topography and density.

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Interactive comment on Ocean Sci. Discuss., <https://doi.org/10.5194/os-2020-113>, 2020.

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