

Interactive comment on “Assessment of variability of the thermohaline structure and transport of Atlantic water in the Arctic Ocean based on NABOS CTD data” by N. Zhurbas and N. Kuzmina

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Dear Referee #1,

We would like to make a small addition and answer Your comment #14 more correctly.

You write: 14. Lines 382-396. "Somehow the authors should take into consideration temporal change of water masses at the selected locations vs. spatial changes. They can do that by analyzing repeated NABOS CTD sections and compare temporal and spatial changes."

This paragraph is devoted to the analysis of the “signals” of the presence of different

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water masses in the various zones of the Basin. It is important to note here that a pronounced signal clearly indicates that the water mass has entered the area of observation. However, the absence of a signal indicates one of the following: a) the water mass did not enter the area of observation; b) it entered the area of observation being highly transformed, namely, mixed with other waters. We will insert a brief explanation in the text.

Focusing on the BSBW signal in St. Anna Trough (it can be assumed that the signal of 2009 is typical of BSBW), we are looking for a similar (based on T-S curves) signal in other areas of the Arctic Basin. And we analyze the data obtained in different years.

Briefly, our analysis comes down to the following results:

Based on the analyzed data, we obtained (to be precise) that the BSBW signal (the main part of the “knee”) either weakens strongly and distorted towards 126E (similarity is lost with a “perfect” knee signal; see Fig. 1 in the attachment), or is not observed at all at this longitude (Fig. 8 of the manuscript). We assume that such a situation is typical. It suggests that the BSBW and FSBW begin to mix intensively immediately after 103E. However, the FSBW signal is well identified at 126E and further along the slope of the Eurasian Basin (and even in the Makarov Basin), while we cannot say the same about the BSBW signal. Naturally, we also observed rare cases of deviation from the typical situation. For example, the observations were exceptional in 2002, when a rather intense BSBW signal was observed at 126E (see Fig. 2 in the attachment to the answer). The analysis of rare atypical cases is beyond the scope of this work. We will clarify our conclusions on the results obtained in the manuscript.

A detailed analysis of the spatial and temporal variability of the BSBW signal in the Arctic Basin (the presentation of results for all sections in different years, the criteria for recognition of the "knee" structure, etc.) is beyond the scope of this paper. Paragraph 3.1b is necessary to understand some of the results obtained in paragraph 3.1a.

Kind regards, Nataliya Zhurbas and Natalia Kuzmina

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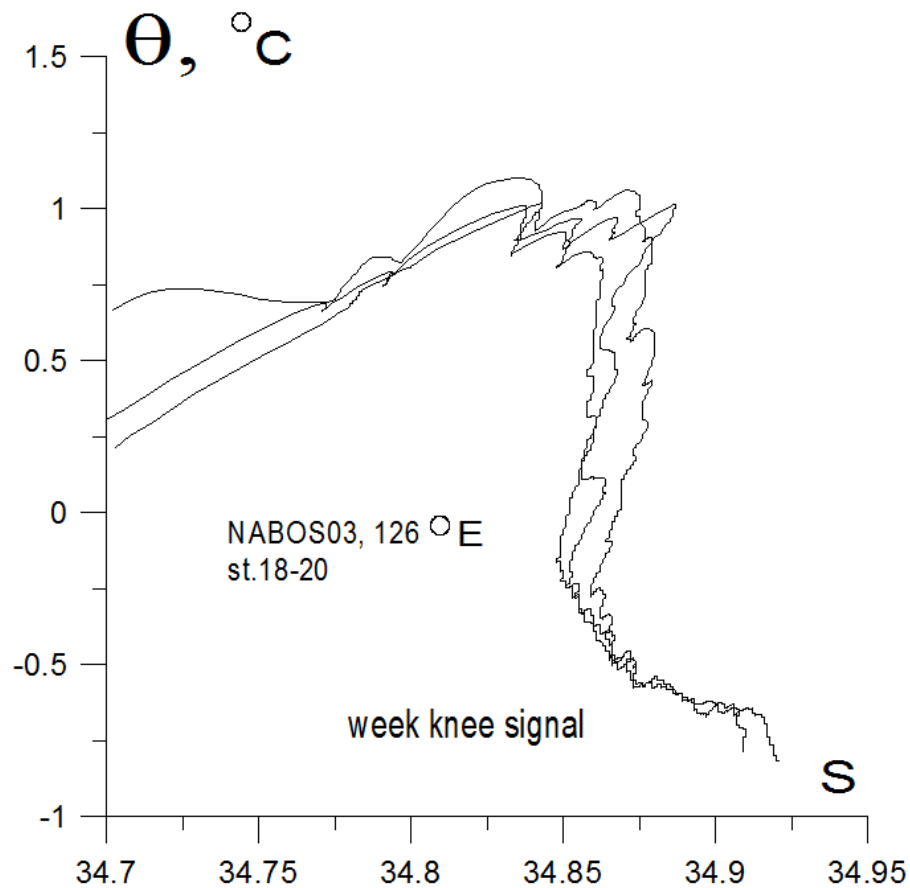


Fig. 1.

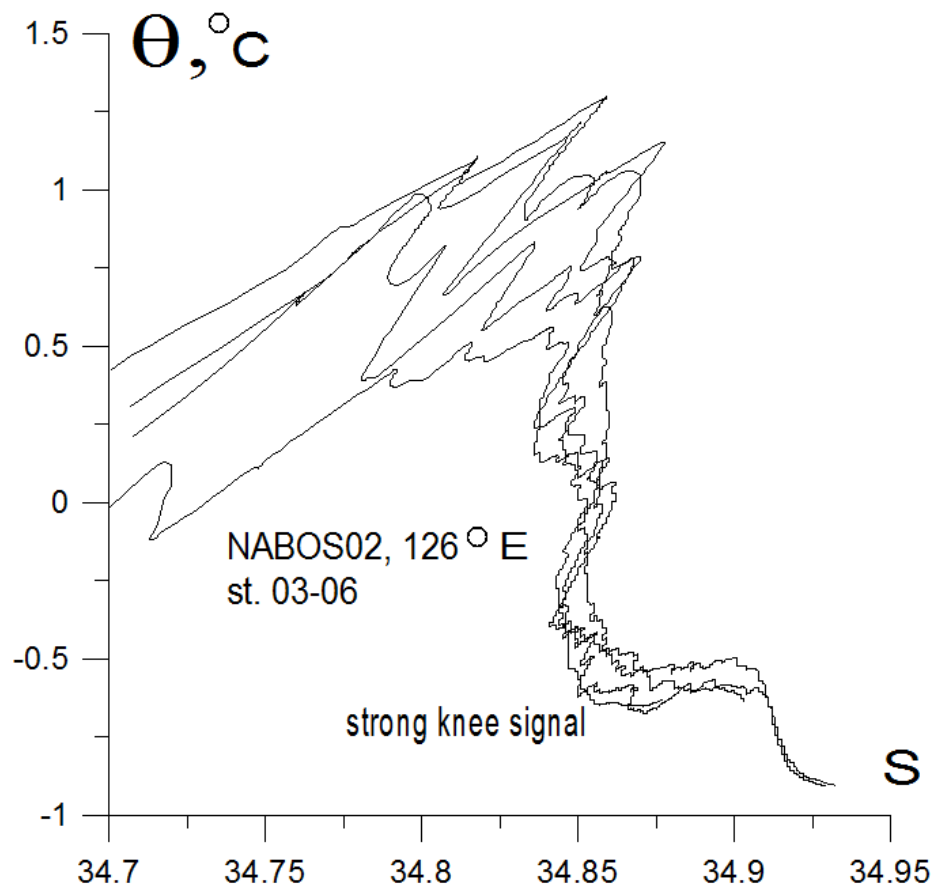


Fig. 2.