

Dear Arvind Singh,

I am pleased to submit the final version of the manuscript "Circulation timescales of Atlantic Water in the Arctic Ocean determined from anthropogenic radionuclides".

I would like to address the minor comment of referee #2:

"As I pointed out in my first review, the depth range chosen for the Atlantic layer is different between sections 3.1 (Figure 3) and 3.3 (Figure 5). The authors changed the range in section 3.3 to be consistent with the Atlantic Water definition give in Table 1, which is helpful, but they did not change it in section 3.1, or in Figures 5 and 6. If the goal is to discuss different parts of the Atlantic layer (e.g. FSBW vs. BSBW), it would be helpful to define this in Table 1 rather than defining it as one whole layer."

Reply: The depth range in Fig. 3 was chosen to give an overview on I-129 and U-236 concentrations in the core of the Atlantic layer, which we here considered to be represented by samples between 250 and 300m depth. In the surface plot, it is only reasonable to show samples from a certain depth layer, rather than including the whole water column of the Atlantic layer. This also holds true for Fig. 6. Therefore, also the discussion of Fig. 3 (section 3.1) and Fig. 6 (second part of section 3.3) focuses on the same depth layer (the depth range referred to on p.10, line 256 should actually read "250-300m", this has been changed). In both cases, the distribution of results across the Arctic Ocean is described.

In contrast, the objective of Fig. 5 is to give an overview where the different Arctic basins plot in the domain of Gamma and Delta isolines of the TTD model hence samples from the entire Atlantic layer were included. The depth range in the caption of Fig. 5 was corrected to "250-800m".

I hope this response sufficiently addresses the comment of referee #2.

Yours sincerely,
Anne-Marie Wefing, on behalf of all co-authors