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Deep through-flow in the Bight Fracture Zone and its imprint in the Irminger Sea
by Tillys Petit, Virginie Thierry, and Herlé Mercier

In this manuscript the flow of dense Iceland-Scotland Overflow Water from the Iceland Basin to the Irminger Sea through Bight Fracture Zone is investigated. The authors quantify the transport, mixing within the fracture zone, and impact on the Irminger Current.

I think this is an interesting paper that contributes to the understanding of the deep circulation in the North Atlantic and the importance of Bight Fracture Zone relative to Charlie-Gibbs Fracture Zone farther south. I only have a few minor comments that I hope the authors will consider before the paper is published.

Specific comments:

Line 89 and elsewhere:
Consider replacing "hydrology" by "hydrography", which may be more appropriate for the properties of sea water.

Line 106:
How deep do the shipboard ADCP measurements extend?

Line 110:
Do you mean absolutely-referenced geostrophic velocities, i.e., that the geostrophic calculation was referenced using velocity measurements rather than a level of no motion? Please clarify.

Line 113:
Another important distinction is that the lowered-ADCP measurements contain the total velocity field, not just the geostrophic velocities. Within a narrow fracture zone and near rough topography ageostrophic motions may be particularly prominent. As such, perfect agreement should clearly not be expected.

Line 130:
Drifting *into* the Irminger Sea may be more appropriate.

Line 139:
How was the salinity bias of 0.002 determined?

Line 146:
Figure 3 is mentioned in the text before Figure 2. Perhaps the order of these two figures should be changed.

Line 148:
Areas should be plural.

Line 148:
ISOW properties and ages in the interior of the Iceland Basin are likely very different than those near the core of the boundary current along the Reykjanes Ridge. Also, depth ranges are probably more meaningful than longitude bands, in particular in relation to the depths of the BFZ sills. I think the discussion in this paragraph could be more dynamically oriented by considering physical rather than geographical quantities that are more central for the dynamics governing the flow of ISOW.

Line 161:
Perhaps you could clarify how the sampling was inappropriate for calculating ISOW transports from this velocity section.

Line 169:
There's a mismatch between significant figures in the transport estimates and the percentage of transport represented, from one significant figure in the transport estimate (the error) to three significant figures in the percentages.

Line 173 and elsewhere:
You describe the flow of ISOW within the rift valley of the Reykjanes Ridge, to the northeast along the eastern side of the valley and to the southwest along the western side of the valley, as a cyclonic pathway. I would have envisioned something slightly different from the term "cyclonic", perhaps a better description could be found.

Line 194:
It is unclear whether the sill at 2150 m depth is the Eastern Sill or another sill located between the two sections.

Line 222:
Each of the western *basins* should be plural.

Line 249:
The unit of density should remain intact rather than be split across two lines.

Line 278:
It may be surprising that diapycnal mixing is more prevalent than isopycnal mixing. I think expanding this discussion by a couple of sentences explaining why this is the case would be enlightening.

Line 298:
It should be the *so-called* OVIDE section.

Line 309 and elsewhere:
The text changes abruptly from past to present tense without apparent reason. I suggest consistently using the past tense to describe past events and observations.

Line 314:
Floats should be plural.

Figure 1:
The white stars marking the eastern and western sills are difficult to discern, please make the symbols more visible. I think it would also be good to indicate the location of the sea mount mentioned in the text (line 67) on this map.

Figure 4:
I think it would be good to include a legend to panels a) and b).