

Interactive comment on “Transport of AABW through the Kane Gap, tropical NE Atlantic” by E. G. Morozov et al.

Anonymous Referee #3

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This paper presents an interesting topic and the observations that it describes are a potentially useful contribution to our understanding of the deep flow in the Atlantic, particularly as regards the significance of the passages connecting the various plains and basins. Unfortunately, the treatment of the observations is cursory and does not support the conclusions in an acceptable manner. The paper is also in need of a thorough scientific and technical editing treatment. As a result, I do not consider this paper to be publishable in Ocean Science at this time.

I agree with the major points brought up by Anonymous Reviewers #1 and #2, particu-
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larly that not all of the data that were available to the authors were used in the analysis (e.g. the other two current meters), and some data that were used were not shown (e.g. the LADCP profiles). The paper is very short, and certainly would have room to show the vertical and horizontal structure of the flow such as would be obtained from fully utilizing the CTD and LADCP data to support the conclusions as to velocity structure and total transport through the Gap.

There are also discrepancies between the conclusions drawn in the text, and the figures. For example, it is stated in both the abstract and the text that the maximum velocity reached in .21 m/s, yet the velocity time series in Fig. 5 does not show the velocity reaching this magnitude. Presumably this is due to the rotation of the velocity into an along-gap direction for the figure, but if so this should be clearly stated.

The all-important transport results are not backed up by a suitable discussion of computational methods and error analysis. This is the potentially most significant result to come out of this data set, and needs a far more careful and transparent treatment than is given.

Specific comments:

1. The abstract is too short, and fails to mention the most important result, which is the mean transport through the Gap, although it gives the variability.
2. The introduction needs to include a longer and more organized discussion of what is already known about the deep regional flow from the literature, and how the new observations will add to the body of knowledge in a significant way.
3. The measurements section suffers from a lack of organization, and should be divided into two sections. First, the data should be fully described, with locations of instruments and a mooring diagram (with bathymetry), computational methods, error analyses, etc. Then the next section should describe the results, and be greatly expanded to include all of the data available.

4. The conclusions, like the abstract, are too short and again fail to note the main result, the mean transport through the passage. The most important results should be better organized, and more fully discussed and compared with what was previously known.

5. As I recommend a complete revision and expansion of the paper, I will not give detailed editorial comments at this time. Suffice it to say that the paper will benefit from using the services of an experienced scientific editor.

In conclusion, I regret to state that I do not find this paper suitable for publication in its present form - it will require a thorough revision and expansion to use all additional data that are available, and a detailed description of the methods used to arrive at the conclusions, which are at present not well supported. I would be happy to provide another review at such time as it is needed.

Interactive comment on Ocean Sci. Discuss., 10, 539, 2013.