

Interactive comment on “Properties of baroclinic Rossby waves in the North Atlantic from eddy-resolving simulations of ocean circulation” by Sylvain Watelet et al.

Anonymous Referee #1

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The authors apply two dimensional signal processing to time/longitude model output of ssh variability. They identify westward propagation of features with a phase speed of 4.17 cm/s. The Rossby wave dispersion relation, taking a reasonable value for the baroclinic deformation radius, predicts a phase speed of 1.55 cm/s. The difference is consistent with previous observations that Rossby waves tend to propagate faster than free wave theory predicts. The authors then go on to try to relate the NAO to the Gulf Stream position and the excitation of Rossby waves.

The application of the 2DRT seems useful and valid. The problem of how mid-latitude Rossby waves are excited and influence the Gulf Stream is important. However, while

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I do not find any technical problems with this analysis, I also do not find it particularly enlightening. There just isn't enough new here, my recommendation is to reject the paper.

The authors cite several previous works that have identified Rossby waves north of 35N, so the point in the Abstract that this is the first time Rossby waves have been found that far north for such an extended period is not that novel.

There is little mention of the influence of the Gulf Stream on the wave propagation. Even though the meridional wavelength is likely large compared to the Gulf Stream width, the authors apply their analysis right in the latitude band of the strong eastward flow. What happens if the analysis is applied a little further to the south?

Analysis demonstrating a lagged correlation between GSNW and NAO is not new and the present analysis, while consistent with previous work, does not add much to the paper.

It was unclear to me how RT is used to generate a time series. Please expand on the discussion around lines 185.

The results in Figs 8 and 9 are interesting but unfortunately the lack of statistical significance makes this a less than compelling argument.

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