Ocean Science
Discussions

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Interactive comment on "Buoyancy-driven effects on turbulent diffusivity induced by a river plume in the southern Brazilian shelf" *by* Rafael André Ávila and Paulo H. R. Calil

Anonymous Referee #3

Received and published: 5 August 2018

The manuscript presents new observations in a poorly surveyed region, focusing on La Plata River Plume, Southwestern Atlantic Ocean. The data is certainly worthwhile of exploration due to its uniqueness and inherent value, but the manuscript at present form is not ready for publication. First, a goal was not clearly pursued: I felt that the paper was limited to simply presenting statistics of the data and did not provide a meaningful discussion, with insights on the broader significance of the observations for the dynamics of the region and how that fits into the existing literature, regional or from elsewhere. Second, the authors did not provide thorough information about the dataset and analysis: how exactly was the turbulence data set collected? how many profiles were taken? Certainly, more detail needs to be provided so the reader can

be assured that turbulence was resolved at the scales the authors claim they resolve. Third, there are major problems regarding the analysis and methods. For example, velocities estimated using thermal wind balance are not a proper way to estimate vertical shear for Richardson Number calculations, as by definition, they only account for the geostrophic portion of the flow, missing out the ageostrophic part, which could be dominant. If the authors want to estimate Richardson Numbers with field observations, they should obtain velocities using ADCPs. Finally, the text is poorly written in terms of structure and grammar, while it did not properly acknowledge the relatively large body of literature in the region (e.g. Matano, Combes, Palma, etc).

Interactive comment on Ocean Sci. Discuss., https://doi.org/10.5194/os-2018-66, 2018.