Comment on bg-2020-491
Anonymous Referee #2

Referee comment on "Impact of typhoons on particulate and dissolved $^{137}$Cs activities in seawater off the Fukushima Prefecture: results from the SOSO 5 Rivers cruise (October 2014)" by Michio Aoyama et al., Biogeosciences Discuss., https://doi.org/10.5194/bg-2020-491-RC2, 2021

Comments on "Impact of typhoons on particulate and dissolved $^{137}$Cs activities in seawater off the Fukushima Prefecture: results from the SOSO 5 Rivers cruise (October 2014) (bg-2020-491)"

Recommendation: Accept, with major revisions noted.

General comments: I reviewed the manuscript "Impact of typhoons on particulate and dissolved $^{137}$Cs activities in seawater off the Fukushima Prefecture: results from the SOSO 5 Rivers cruise (October 2014) (bg-2020-491), submitted by Aoyama et al to Biogeosciences. The authors measured $^{134}$Cs and $^{137}$Cs in the dissolved and particulate samples contaminated by the Fukushima Dai-ichi Nuclear power plant (FDNPP1) accident, which presented some new data. Their spatial distribution reflected the mixing of coastal water and open-ocean water. The $^{137}$Cs/$^{134}$Cs activity ratio derived from FDNPP accident is used to trace the source of riverine particle, which is very interesting. They also discussed the impact of typhoons on particulate and dissolved $^{137}$Cs activities in seawater off the Fukushima prefecture, but did not give a clear picture about the impact of typhoon on $^{137}$Cs activities in seawater. The novelty of this study needs to be improved. Additionally, decisions made with respect to data presentation combined with grammatical and other organizational errors result in a MS that lacks clarity and is difficult to follow. It is necessary to polish this manuscript by a native English speaker. Therefore, it is recommended to be published after major revisions.

Specific comments
- Line 14: What is indicated by the dissolved activities.......? $^{137}$Cs or $^{134}$Cs?
- Line 18, “ranged from....to ......” means a range of variation, so the uncertainty in this sentence that “the ranged from 0.01±0.00 to 0.12±0.01” is redundant? Please note this in the MS.
- Material and methods: What are the detection limits of $^{134}$Cs and $^{137}$Cs?
- Lines 169-171, this sentence (the ratio of particulate $^{137}$Cs activity concentration......) is
confusing, please rephrase it.

- Lines 179-181. This sentence is too long and needs revise to improve clarity and the flow....

- Lines 206-211, what’s meaning that "data not shown or figure not shown"? Add in the Supporting information?

- Discussion section: The discussion was not enough and some conclusions are soft or from conjecturing, for example, “this pattern might reflect complex physical processes.....”(lines 210-211); “Possible explanation of this finding are that the radiocaesium in the coastal seawater........”(Lines 236-239). Additionally, API would be sufficient to support the conclusion that high $^{137}$Cs activity concentrations caused by the typhoon events, what about is the particle flux?

- Conclusions section: The conclusion section seems long with too much information on some discussion that appears unnecessary. The conclusion should be rephase.

- Data availability: it should be moved in the Material and methods?

- References: please unify the format of periodicals. For example, Scientific Reports (Line 349); J. Radioanal. Nucl. Chem. (Line 356).......  

- Figures: these figures are not clear, please redraw.... For example, fig.2 and fig.9.

**Technical corrections**

- Line 36: ‘Nishihara et al. (Nishihara et al., 2012)’ should be ‘Nishihara et al. (2012)’.

- Line 43: ‘Miura et al. (Miura et al., 2020)’ should be ‘Miura et al. (2020)’.

- Line 57: ‘(Nagao et al., 2014)’ should be ‘Nagao et al. (2014)’.

- Line 115: ‘...the Low Level Radioactivity Laboratory At some stations, ....’ should be ‘...the Low Level Radioactivity Laboratory. At some stations, .....’.

- Lines 128, 320, 324: ‘Dataset of $^{134}$Cs and $^{137}$Cs activity...’ should be ‘Dataset of $^{134}$Cs and $^{137}$Cs activity...’.

- Line 188: ‘......in the rivers, indeed Naulier et al. (Naulier et al., 2017)’ should be ‘......in the rivers. Indeed, Naulier et al. (2017)’.

- Line 224: ‘Tsurutal et al., (Tsuruta et al., 2014)’ should be ‘Tsurutal et al. (2014)’.

- Line 227: ‘1.06 (+-10%)’ should be ‘1.06 (±10%)’.

- Lines 314-316: ‘7-day, 5-7day’ should be ‘7-days, 5-7days’.

- Line 409, delete the Japanese language

- Lines 358-359, 410, 416, 420, 423, Superscript: $^{137}$Cs

- Table1, “+-” changes “±”