I enjoyed reading this new version of the manuscript: it is now well-composed and the importance of physical processes and 238U variability on the estimation of downward 234Th export fluxes is clear. I recommend acceptance following minor revisions.

- Introduction

Line 43. There are many more studies investigating the elemental export fluxes. Please add "e.g." [Bhat et al., 1968, etc.]

Line 50. and "is" [thus strongly scavenged..]

Line 55. You can also add Si to the list C, N, P, trace metals.

Line 55. I also would add "e.g." [Bhat et al., 1968, etc..] as it is a succinct list of studies investigating elemental export fluxes.

Lines 74-75: I think this paragraph break is not necessary. Both paragraphs speak about advection and diffusion effect on 234Th fluxes.

Line 75. I think you can delete "that" and add "to" [be included..]

- Methods

Lines 140-147: Please mention why Mn would be a problem during the ICP MS analyses of 229Th /230Th ratios.

Line 149: Why do you use 1N HNO3? Usually ICPMS analyses are made with 2% HNO3 (i.e. 0.3N).

Lines 164-166: The recommended time interval between two visits is of >2 weeks. What would a time interval of maximum 4.5 days imply for your study?

Lines 175-185: I understand the depth for estimating the export fluxes is only of little relevance, but please, indicate at which depths you estimated the fluxes here and why these depths: 100m (for comparing with other studies) and 5-20m below the ML (not exact ML because of sampling logistics).

Lines 205-207: Please give the values of the Coriolis parameter (f) and the water density (ρ) you used and from where they come from.

Line 223: Please, precise how you estimate the upwelling rate from the vertical velocity (w)? By interpolation between 0 and 240m?

Lines 236-237: Please mention where these velocities can be found. In Lüdke et al., in review?

Lines 246-247: Which other cruises are you referencing?

Line 251: "At most CTD stations": for which stations do you not have microstructure profiles?

Line 255: Which value did you use for the stratification (N) and from where does it come from?

Line 277: Why do you use $\tau_{1/2}$? Please remove ½ if not needed.

Line 284: Please precise the surface layers are until 30m for M136 and 50m for M138, and explain why these depths.

- Results

Line 305: Total 234Th "activities"

Line 310: Please cite Table 1, where equilibrium depths are showed.

Line 326: Why do you use top layers as top 30m and top 50m? If you agree with one of my previous comment this will be explained in the Methods (line 284).

Line 397: Within the *upper* (?) 27 and 33m layer at *offshore* (?) deep stations

Line 415: please provide again the depths of the surface layer.

Lines 420-421: I think this paragraph break is not necessary. Both paragraphs speak about horizontal advection and diffusion effect on 234Th fluxes.

- Discussion

Line 443: Delete recent (it was 14 and 9 years ago already!)

Line 446: "a minute increase" is not clear. Do you mean that even a short-term oxygenation event, of the order of the minute, could release U from the sediments? If it is the case, please re write.

Lines 461-479: The explanation is not yet clear. Understanding how U (or Fe) reduction and remobilization could occur "at the same time" was not straightforward at first reading. Please, make a clear distinction between the ocean-sediment interface where O_2 concentrations can increase, realising U; and the suboxic/anoxic sediments where U is reduced and trapped.
Is there a study you could cite to support that a strong El Nino event (such as the one preceding your cruise) could induce an oxygenation event large enough to release U (lines 472-473)?

Line 503: In order to easily compare with GP16, please give the values you estimated here.

Line 505: same comment: please say how much were upwelling fluxes accounting for in your study.

Figure 2: Please add in both the caption and legend what the red line corresponds to.