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Interactive comment on "Flux and accumulation of sedimentary particles off the continental slope of Pakistan: a comparison of water column and seafloor estimates from the oxygen minimum zone, NE Arabian Sea" *by* H. Schulz and U. von Rad

Anonymous Referee #2

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Review "Flux and accumulation . . ." by Schulz and von Rad

This manuscript aims at comparing fluxes observed in a series of short cores along a transect off shore Pakistan. Results are evaluated in the context of observations of several short sediment trap time series. This potentially allows evaluating the sedimentary fluxes in vertical versus lateral dimensions. The different components that together make up the sediment are separated into different -rather coarse- groups to

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further distinguish sedimentary sources. The data is presented however in a confusing manner. In its present form the manuscript is not suited for publication.

The manuscript suffers from several major flaws: -Overall organization of the paper is confusing. The paper would benefit from a more straightforward organization. First show the regional differences in the fluxes as a function of water depth or offshore distance. The sediment trap data (which has been published before) can be referred to in order to provide the context to explain the observed high fluxes close to the shelf. The key message is ultimately quite simple: resuspension and sediment transport during winter. The final evidence is lacking because of the terminated sediment series, which leaves some room for alternative explanations. -The figures are not up to publication standards and difficult to interpret. Figure one is ok, but the subsequent figures are very difficult to read. Figure 2 shows a few examples of sediment cores, presumably plotted versus depth? If the only purpose of this figure is showing that there is a distinct turbiditic layer that can be correlated across the shelf it would be better to show core pictures. Maybe keep 2D and add pictures to show correlations? Correlations shown in figure 3 are not very convincing for all cores, which is essential for subsequent calculation of fluxes. What is the evidence for the correlations plotted between e.g. 76KG and MC1, or 143KG and 72KG? In figure 4 it is not clear what is plotted on the y-axis. Not from the figure, nor from the caption. Possibly it is water depth. But why are these dots connected in that case? What is the difference between relative and percentage? No units are provided. Figure 5 is intended to show differences in fluxes against water depth (not indicated at axis). This mainly shows that the bulk AR controls all components. This should probably be the main conclusion. It is impossible for me to understand figure 6. Maybe replot as x-y graph, flux versus OC percentage? Figure 7 shows same as figure 5, plotted differently. -The figure has no references to literature after about 2000. This is strange as several high quality publications appeared after that. This should absolutely be updated. -The text needs a lot of attention and rephrasing. . ...

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More detailed comments P12417 The title is too long. P12418 L. 5 delete "to explore. . .topography" (this is not discussed in the text). L. 16 delete "in this. . .environment." L. 18-19 differentiate the components L. 19-20 Not for abstract (clogging of funnel) L. 24 Why "seems to be a function of water depth". It is a function of water depth, although not necessarily mechanistic.

P. 12419 L. 4-6 Rephrase L. 7-9 Nobody published on the Arabian Sea after 2000? L. 12-13 Rephrase L.20-21 Not a sentence. . ..??

P12420 L. 10-14 Not relevant. Delete L. 16 change "suitated" into "suited" L. 17 delete "on"

P12421 L. 4 Bacterial exposure does not stop at a certain depth. Change this into oxygen exposure L. 7 What is meant with "local productivity"? Benthic secondary productivity? Seems not relevant here. L18-20 What is poorly sorptive mineral matter? This is rather speculative and should be either supported by data or deleted. L. 23 Delete "will"

P 12422 L. 4 Specify size range looked at. L 15-26 Not relevant for this manuscript. Delete

P 12423 L. 1-2 Delete L. 5-6 Where does "respectively" refer to? L. 13 Delete "structure" L. 18-19 Change order L. 20 Rephrase L. 22 Not clear where "significance" refers to. Explain. L. 15-23. Seems not relevant here and might be deleted.

P 12424 L. 2 Change "followed within" to "correlated between" L. 8 Change "and" to "at" L. 9-11 Rephrase L. 18 Delete "up to" L. 21 Change "the" in "a" L. 22 Delete "finally" L. 22 Delete "possibly" L. 23 Delete "(see discussion)"

P 12425 L.2 change "age control" in "accumulation rates" and combine with 3.3 L. 10-18 This is not something that nowadays is presented as state-of-the-art sub-division into important sedimentray groups. It is also rather dubious whether this is adding anything to the overall discussion. . . If this is kept as a part of the manuscript it should

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be better explained what the added value is over just looking into TOC and CaCO3. Probably better to leave out completely. L. 20 Delete “at the BGR”. It is irrelevant where the cores were stored. . .... L. 23 Delete “alternatively” L. 24-25 This is not really daling with the physical properties with the sand fraction, but rather with the overall sediment physical properties.

P 12426 L. 2 change “the” in “a depth of” L. 11 Delete “and to . . .during” L. 12 add “related high productivity” after “monsoon” L. 13 Specify “narrow intervals” L. 19 add “at” between “determined” and “the”

P 12428 L. 1 Change “percent” in “wt. %” L. 11 Delete “that layer” L. 11 add “this layer” after “OMZ” L. 17 change “ideally applied” into “used” L. 18 delete “for core correlation” L. 23 change “in most case” to “by”, delete “extremely” L. 24 Delete “however” L. 24-26 Rephrase

P 12429 L. 1 add “greater” after “at” L.6 changes “dates” to “ages” L. 8 change “was” to “be” L. 17 add “somewhat” after “is” L. 25 add “to” after “restricted” L. 25 delete “depth” L. 26 add “to” after “down”

P 12430 L1. Not clear why this would be a causal relationship. Please explain or omit. L. 1 change “seen in” to “in line with the” L. 7- P1431 L. 13 The only publication on benthic foraminiferal faunas referred to is a German internal report from the 1970’s. Please update.

P 12432 L. 13 Sentence is not clear: “This of trend in. . .”. Rephrase. L. 17 change “deeper” to “greater” L. 17-19 Would you expect that? Strange argumentation. L. 25 Delete “also”

P 12433 L. 5-13 Rephrase L. 22 change “in” to “on” L. 26 delete “the” before “shallow”

P 12434 L. 5 Behind what? Not clear what is referred to. L. 12 change “down” to “lower on”, change “in” to “on” L. 14 delete “high vertical and lateral” L. 14 “due to”? Please explain causal relationship is not clear. L. 18 delete “when”, delete “next” L. 19 change

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"reason" to "explain L. 19 What is meant with "poor numbers"? Please explain. L. 28 Factor between 10 and 20. This is a rather large difference. . ...

P 12435 L. 3 delete "the settling" L 5-8 delete: speculation. L. 18 change "distant" to "away" L. 20 delete "period of an" L. 22 delete "may", delete "must have" L. 23 delete "have HFE received" L. 26 delete "may", change "on" to "that"

P12436 L. 3 delete "may", add an s to "argue", delete "the" L. 6 delete "the major source of material from" L. 7 add "provides the main source" after "depth" L. 8 explain what you mean with "atlas values"? Are your referring to a specific atlas? L. 16 "The elevated productivity near-shore" How do you know that? Has this been measured or is this an assumption. Explain or delete.

The figures are not of the expected quality for publication. All figures (except possibly figure 1) should be redrawn. Most figures are lacking titles at the axis. Fonts differ, also within figures. Figure 6 and 7 should be deleted.

Interactive comment on Biogeosciences Discuss., 10, 12417, 2013.