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‘Black Rocks’ I have added these two references for an updation of research work on St Mary’s Group of Islands

V.S. Hegde, SDM College, Dharwad - 580 002 replies

We thank K T Vidyadharan, for his careful reading, and useful suggestions on our paper. We feel sorry that we have missed the important paper which Dr Vidyadharan has mentioned in his comments. We thank him for providing us the details of the paper. It will be useful for our future work. We have sampled from Coconut Island, St Mary’s Island, Dariya Bahadurgarh Island and North Island. However, we have not collected any samples from the South Island. We have observed similar petrographic features which Dr Nambari and his coworkers have observed from the islands further south of the study area. We believe that our findings are strengthened with these additional information.

We thank Dr Vidyadharan for this valuable additional information.

References


S. Kanjilal, Formerly of Department of Geology, Banaras Hindu University, Varanasi – 221 005 comments

1 The authors have tried to demonstrate the nature of the Marakkanam coast sands in their totality through grain-size analyses, bivariant plots, Visher diagrams, and CM pattern. Thus, ab initio, this is indeed an attempt towards detailed sedimentological examination of the silica sands of the area. However, in order to enhance the ‘worth’ of the paper, the authors have covertly attempted to impress the readers by highlighting the fiscal value of such sands through a series of references on the ‘economics of white beach sands’ from different parts of India, which does not fall in line with the claimed purpose of writing this paper their apparent use of the terms ‘silica sands’ (title, and elsewhere) and ‘white sand’ (p 1362, c 1, para 1, line 15 etc) interchangeably, apparently serving as a tool towards this implicit attempt.

2 The authors have analysed samples from these segments. These cluster of samples were named respectively as Mudaliyarkuppam Group, Kakapallam Group and Agaram Group. The authors are probably not aware that the term ‘Group’ bears a specific lithostratigraphic connotation, and cannot be used in the manner they have put here.

3 The collected sand samples were from locations in and around the “Marakkanam Coast”, but in fact these are not so. Can the authors vouch that they have actually collected samples from the two lagoons and the interconnecting channel, and that the bottom sediments are truly ‘sandy’, particularly when the authors have recorded (p 1364, Mean, c 2, para 3 lines 2-3) that ‘Kakapallam is situated in an elevated zone’?

4 In spite of the above mentioned declarations about the sites of the three groups of samples, one my find an incongruity again by interpolating the location sites in Fig 1, on Fig 2 on p 1363. Anyone can see that three Agaram sample sites fall almost on a line (slightly subparallel to the coastline) which is proximal to the Kakapallam site. Further, not only the two “groups” of samples do not belong to the claimed locations (e.g. the two lagoons, and the interconnecting channel, respectively), most have come from western fringe of the southern “palaeo-barrier”, while the Pallampakkam site is situated actually on the “Mud Flat” to the western fringe of the northern lagoon (Fig 2)!

5 In the absence of a mineralogical study of the analysed...
samples, the readers are at a loss to follow the authors' contention towards labeling these as 'silica sands.' In my opinion, 'sand' refers to detrital material of size range 2–1/16 mm diameter, free of any mineralogical implication, and a 'silica sand' should comprise detrital sediments 'very high' in SiO₂. To declare the studied samples as silica sands is, therefore, unfounded till the detrital silica percentage is made available.

6. The authors' fancy of branding their "silica sands" as "white sands" is again questionable. In many geological formations white ( lithified) sands are encountered which are naturally white, free of any pigmentation and characterized by a near absence of any opaque heavies. The sediments analyzed in this work have ferruginous coatings which have been "removed" in their laboratory (p 1362, c 2, Methods, lines 9-10) ostensibly to make them look white!

7. I would also like to ask them about the reason behind removing "shells" from the analyzed samples.

8. The primary title, "Results and Discussion" (p 1362, c 2) should have been 'Discussion and Result' as per the order in the text. There are apparent discrepancies in the recorded observations vis-à-vis the geomorphological map (Fig 2) of the area. For example (i) what has been termed as "beach ridges" (p 1362, c 2, Beach Ridges) may be actually "longitudinal dunes"! Because, by definition a beach ridge is essentially a "continuous mound of beach material behind the beach heaped by wave or other action", which is not so in the present case. (ii) the location of the Teri sand dunes or their specific type (transverse or longitudinal) are shown over either of the two palaeo-barriers. I wonder if these are really dunes because the palaeo-barriers have been reported to have a "flat surface".

9. In Figs 3(a,b,c), 4 and 5-6 all the 40 collected samples are not represented. This selective investigation smacks a bias.

10. The mechanism of accumulation of coarse to medium silica sands at Mudaliarkuppam, near the eastern margin of the northern palaeo-barrier and bordering the mouth of the lagoon closely to a creek does not account for an "inland" source. Moreover, the apparent wind direction parallel to the coast must have also contributed material to form the "higher elevations" of this palaeo-barrier. The medium sized Agaram group sands have been thought wind borne drifted from the "higher elevations of Kakapallam area" lying to the NE of the former, implying a wind direction from NE to SW, parallel to the present coast line. This mechanism of a selective transportation is not acceptable, because winds capable of drifting medium grained particles would also drift finer ones (have the authors tried to account for these fines?) Besides, the Kakapallam group's elevation (max. 3 m) vis-à-vis the Agaram group's (more or less 1 m?), and their mutual proximity, do not lend much credence to the author's claim that the former group represents a channel bar environment and the latter a dune (p 1368, conclusion, c 2, lines 8-11). Want of dependable data from the proper Marakkanam locally has also occluded the actual scenario.

11. The authors have professed a "low energy condition" prevailing over the Agaram segment sands of "medium size". It is not clear if the statement has reference to the subsequent dune environment. I also wonder, how energetic a low energy condition should be in order to drift medium sized grains?

K. Anbarasu, National College, Tiruchirapalli - 620 001

replies

1. The silica sands of Marakkanam are extremely white in colour and hence the term white sand has been used in the text. The fiscal value of silica sands has been given only to indicate the economic importance of the material.

2. The term "group" has been used to indicate the group of samples collected in three regions of the study area.

3. Samples were collected in the elevated zone adjoining lagoons. The samples shown in Fig 1 were collected (mainly from palaeobarrier) on the boundary of Kaliveli and Yedayantittu Kaliveli lagoons where the region is elevated.

4. Pallampakkam samples were collected from a layer lying beneath the mud flat.

5. Geochemical analysis of silica sands of Marakkanam has been studied in our department and it has been established that SiO₂ percentage is around 99%. Since the objective of the paper is not related to geochemistry, the authors have not indicated the percentage and the term silica sand was used only after confirming the SiO₂ percentage.

6. Except two samples, all the samples are pure white in colour. Ferruginous coating observed in some samples due to the mixing of red clays from Cuddalore sandstone deposits was removed during pre-treatment.

7. The shells were removed only to understand the granulometric characteristic of silica sands.

8. The term beach ridge has been used to indicate the features of linear mound of sand behind the beach formed by wave action. Two series of beach ridges...
DISCUSSION

are shown in Fig 2. The western margin of Kalveli lagoon is bordered by alluvial plains which are slightly elevated region that has not facilitated for the development of mud flat. Teri sands are found to occur overlying the white sands and a discussion on the origin of the Teri sands is beyond the purview of the paper.

In Fig 3, only representative frequency curves have been given. Processes that are acting in and around the study area are complex as a combination of marine, lagoonal, Aeolian and terrestrial activities take place. Hence interpretation of statistical parameters will naturally vary from individuals.

Back barrier regions experience usually low energy conditions.


S. Viswanathan, IIT- Campus, Powai, Mumbai, comments

I wish to refer to the Tables 2 and 3 appearing on page 1200 and in Table 1 seven analyses of Type 1 and three of Type 2 basalts are presented. In Table 3 the average compositions of Types 1 and 2 are shown. The average values given are exactly the same as those of samples R0 and R1 of Type 1 Basalt. Will the authors explain the discrepancy?

Tapan Pal, Geological Survey of India, Kolkata, replies

There was some inadvertent mistake in Table 3 and Dr Viswanathan has rightly pointed out that I am very sorry for this mistake which has come out in publication form. While pasting average values of type 1 and type 2 lava, values of R1 and R2 samples were pasted in Table 3. I am sending here the average values corresponding Type 1 and Type 2 lava along with the values of individual samples as attachment. The plotting was done on the basis of individual samples and the interpretation was done on the plotting itself and the average values differ mostly on decimal positions.

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<th>R3</th>
<th>R4</th>
<th>R5</th>
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<th>B2</th>
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