Reply to the N. H. Quang (Referee) comments

Thank you for your email dated (25 June 2018) enclosing your comments. We sincerely apologize for the great time it has taken us to respond to these comments and hope that a revised version of the manuscript will still be considered by you. We have carefully reviewed the comments and have revised the manuscript accordingly. Our responses have given in a point-by-point manner below. Changes to the manuscript are shown in green colour.

Ans: Of course, there are different methods and models were used for SSC, but each model has merits and demerits and also site-specific suitability. The present paper is aimed to generate a modelling of suspended sediment concentration using specific data namely Landsat 8 – OLI. The result derived from this model highly correlated to sediment deposition / erosion at the beach face (another part of research study completed) and compared to other models, the algorithm used in this study has proved as better one for OLI image analysis as per this concern. The significance of this study is generic algorithm used for OLI data analysis for SSC estimation.

Q: Root Mean Square Error or something like that to demonstrate that the model applied to your study site is feasible and reasonable.
Ans: RMSE calculation may not necessary for this algorithm based SSC estimation.

Q: Line 63: Wavelength between 0.5 and 0.8m.Those is wrong. They should be 0.5 and 0.8 micrometer
Ans: The statement has been updated with wavelength of 0.5 µm and 0.8 µm .

Q: Line 196: Extraction of suspended sediments: The authors used the existing model to extract Suspended sediments so What is the original?. Just applying the existing algorithm is not novel and cannot be called the Research article.
Ans: It is the first attempt to generate a model for SSC using OLI image analysis. The authors have not used the existing algorithm. The novelty of the research is the construction of new model and its effectiveness in analyzing suspended sediments concentration.

Q: Line 219: The authors estimated significant wave height but did not describe how to estimate it and which model to calculate the wave propagation. It is very important.

Ans: Estimation of Significant Wave Height is the another concept, in this present study, the output has derived using three datasets like wave energy (kJ/km^2), mean significant wave height (m), sea water density (g/m3) and acceleration due to gravity (m/s^2).

Q: Line 249 and 251: In order to monitoring the seasonal variability and movement of suspended sediment, only one time of the post-monsoon and pre-monsoon does't meaning. You cannot say this picture which can be a representative for a whole season.

Ans: SSC variability has been estimated at a particular day of two seasons (pre and post monsoons) that are the reprehensive time for maximum coastal hydrodynamic events as per the historical observation of tide, wave and wind datasets. Therefore the image acquired on or relative periods are used for SSC estimation at seasonal variability scale.

Reply to the PK Chaudhary (Referee) comments

We would like to thank the reviewer for their thoughtful review of the manuscript. Reviewer has raised important issues and the inputs are very helpful for improving the manuscript. We have revised our manuscript accordingly and highlighted in **Red colour**.

This article describe the seasonal variation in suspended sediment concentration along Thiruvananthapuram coast using remote sensing data. Authors also claim that movement of SSC during pre and post monsoon was monitored using wave direction and significant wave height data.

Comment 1:

In abstract high concentration of sediment is 92 mg/l. But in the corresponding figure the maximum value is 0.92 mg/l. Is there any validation of these values reported?

Reply 1: According to the reviewer suggestion, we have carefully gone through the values of SSC and it is 0.92mg/l.

Comment 2:

Very high concentration of sediment concentration is shown at -80 to -100 m depth in Figure 5. Then how can you write the conclusion as "the suspended sediments were indirectly proportional to bathymetry and distance from the shoreline and directly proportion to wave direction and littoral current at off-shore".

Reply 2: We have observed that, we are getting less evidence of SSC if are moving far beyond coast as well as at higher depth. Actually, the line should be; "We are getting higher suspended sediments concentration near the coast particularly at surf zone and having less bathymetry up to 50-100m, and it disappears with increase in bathymetry." Because the phenomenon of wave breaking and littoral current do not late the suspended sediments move far beyond the coast.

Comment 3:

No data on littoral currents also presented in the manuscript.

Reply3: There are no such data for the littoral current, but it is an essential observation to understand the phenomenon of suspended sediments along the coast, which has been observed on the field and by using the wave direction and compass clinometer.

Comment 4:

In the methodology the source of wave data is not mentioned.

Reply4: Yes, we admitted that it is very essential and we have added the process of estimation of mean significant wave height from the satellite data, which was taken from ERA interim.

Comment 5:

Reference to the annual rainfall (826 to 1456 mm) is to be added.

Reply5: We have missed this reference. It is added now [Meteorological Center, IMD, Thiruvananthapuram].

Comment 6:

September cannot be a post-monsoon for the Kerala coast. It is a monsoon month

Reply6:

Kerala has mainly two rainy seasons. The Southwest Monsoon that arrives in the month of July-August, i.e. called Edavappathy. November witnesses the arrival of the Northeast Monsoon. So we have taken September as post-monsoon.

Comment 7:

Figure 1. Depth Legend is wrong. +50 to -160 m. +50 m and -160 m is in Ocean. Also in the -20 m contour also shows it value as 0.

Reply7: We have taken GTOPO30 data with a horizontal grid spacing of 30 arc seconds. Also the nature of bathymetry is not uninform or may be undulated surface. So there will be higher elevation place according submarine topography. So that, there is 0m contour within -20m contour.

Comment 8:

Figure 4 shows the wave direction. Again pre-monsoon means which date & time? Again Figure 5 is for which date?

Reply8: It is an average reading of wave direction of several random days of both pre/post-monsoon. So there is no specific date and time.