Reply to the Comments of Anonymous Referee#1 Posted on 28 March 2019

- **Referee's Comment**

I do not think that the authors completely replied on "Role of cold core eddy in controlling / arresting the northward movement of cyclone Madi", particularly "the slow down of the northward movement of cyclone Madi and its final arrest was mediated by the presense of oceanic cyclonic eddy". The parameter "Feddy" could explain only the intensity change of a cyclone such as "positive" or " negative" feedback when a translation speed and oceanic parameters were given.

Author's Response

We wish to show to the reviewer the 3-dimensional response of the cyclone Madi in terms of SST cooling was a significant factor in Madi's rapid weakening (as also suggested by the eddy feedback factor which showed that the contribution of cyclonic eddy in reducing the storm intensity was 69%) by presenting the time evolution maps of difference of SST of 5th December (pre-cyclone SST) from each day starting from 6th December to 15th December (See Figure A in the previous page). to show the large SST cooling in the north (the location of cold core eddy).

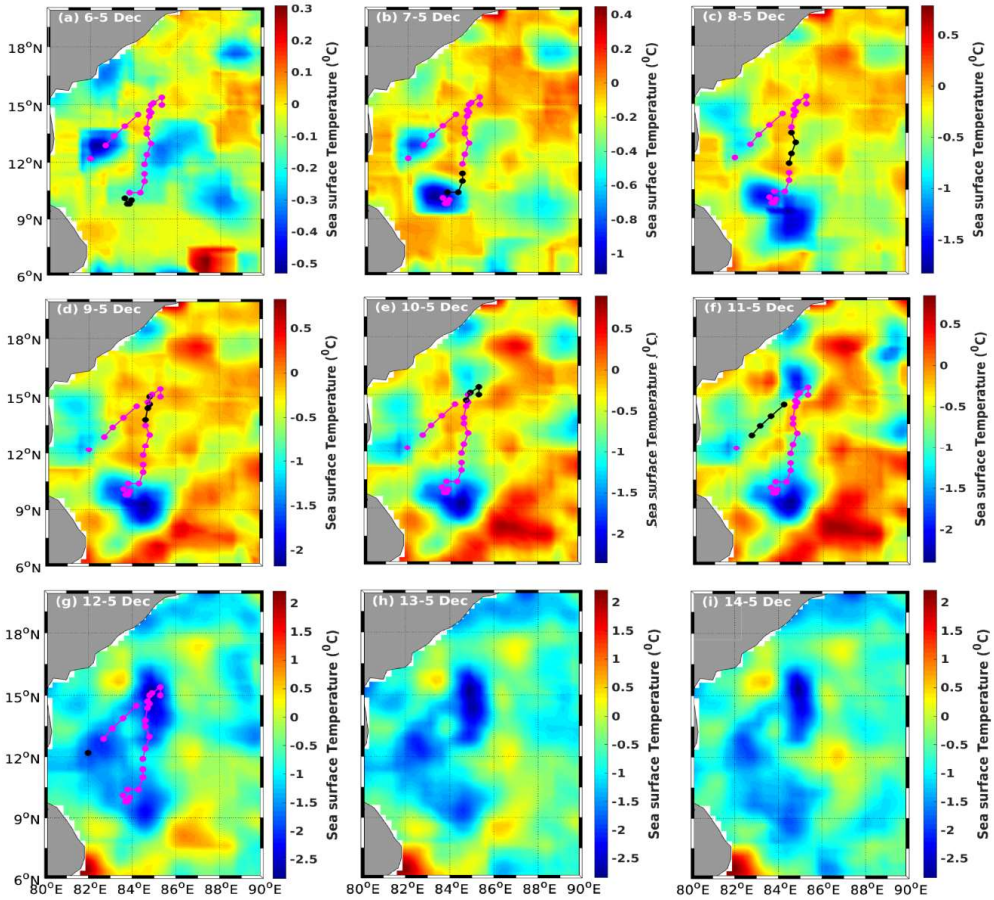

Figure A. Time evolution maps of difference of SST of 5th December (pre-cyclone SST) from each day starting from 6th December to 15th December.

The time evolution of difference in SST from 6th to 10th December showed a distinct cooling of 2 to2.5°C in the region of affected by the cyclone Madi. A comparison of these maps with Fig.3 of the manuscript clearly points that in the northern most region of the cyclone track, where there a cyclonic eddy was pre-existing; the cooling of SST was 2.5°C, which was 0.5°C colder than the rest of the region. The excess cooling of 0.5°C noticed in the eddy region lends support to the notion that the slow translation speed led to the further cooling of SST, which contributed to the weakening of the cyclone from VSCS to SCS, through negative feedback.

- **Referee's Comment**

I would like to argue that the authors need to study the effect of a cold eddy on the movement of a cyclone using another method such as numerical experiments by the coupled atmosphere-ocean model with/without a cold eddy in order to show evidence.
At least, it is unreasonable to conclude the effect of a cold eddy on the cyclone movement only with the data used in this study. Otherwise, the authors could find statistical evidence if they analyze the best track data.

Author's Response

The Reviewer's suggestion of numerical experiment to study the effect of cold eddy on the movement of cyclone is welcome, but it is beyond the scope of our present paper. As indicated in our manuscript at line 355, we recognise the lack of modelling studies as one of our limitation, which we intend to carryout in near future.

We beg to disagree with the reviewer that "it is unreasonable to conclude the effect of a cold eddy on cyclone movement only with the data used in this study". We have used all possible data, both in situ as well as remote sensing, and argued our case at a reasonable level.

- **Referee's Comment**

Descriptions of biogeochemical oceanic responses to a cyclone are improved with more quantitative descriptions. However, the authors could not provide evidence for the effects of a cold eddy on the cyclone movement, although the effects of a cold eddy on the cyclone intensity change became clear. Because the limit of the open status is 3rd April, I recommend rejection in the current discussion paper.

Author's Response

We have used all possible data, both in situ as well as remote sensing, and argued our case at a reasonable level. In spite of this, if the Reviewer wants to turn down our study just because it is only based on data analysis, is unfortunate.