

We thank the reviewer for the constructive comments and suggestions. We have addressed all raised issues in our response letter and the revised manuscript.

Specific comments:

It is only in the results section that details on the two typhoons Fengwong and Sinlaku are provided. This information should be noted earlier in the text. The two typhoons Fengwong and Sinlaku had dissimilar paths (please show typhoon Fengwong path in Fig. 4a, b). Typhoon Sinlaku for example after crossing Taiwan veered to the northeast over the study area. Different impacts on the surface chlorophyll distributions are observed in Figure 4. The authors should discuss in greater detail the regional differences due to the passage of the two typhoons.

Response: We have added the information of typhoon Sinlaku in the result section and discussed different impacts on biological responses due to the passage of the two typhoons in the revised manuscript. The detailed contents are shown as follows.

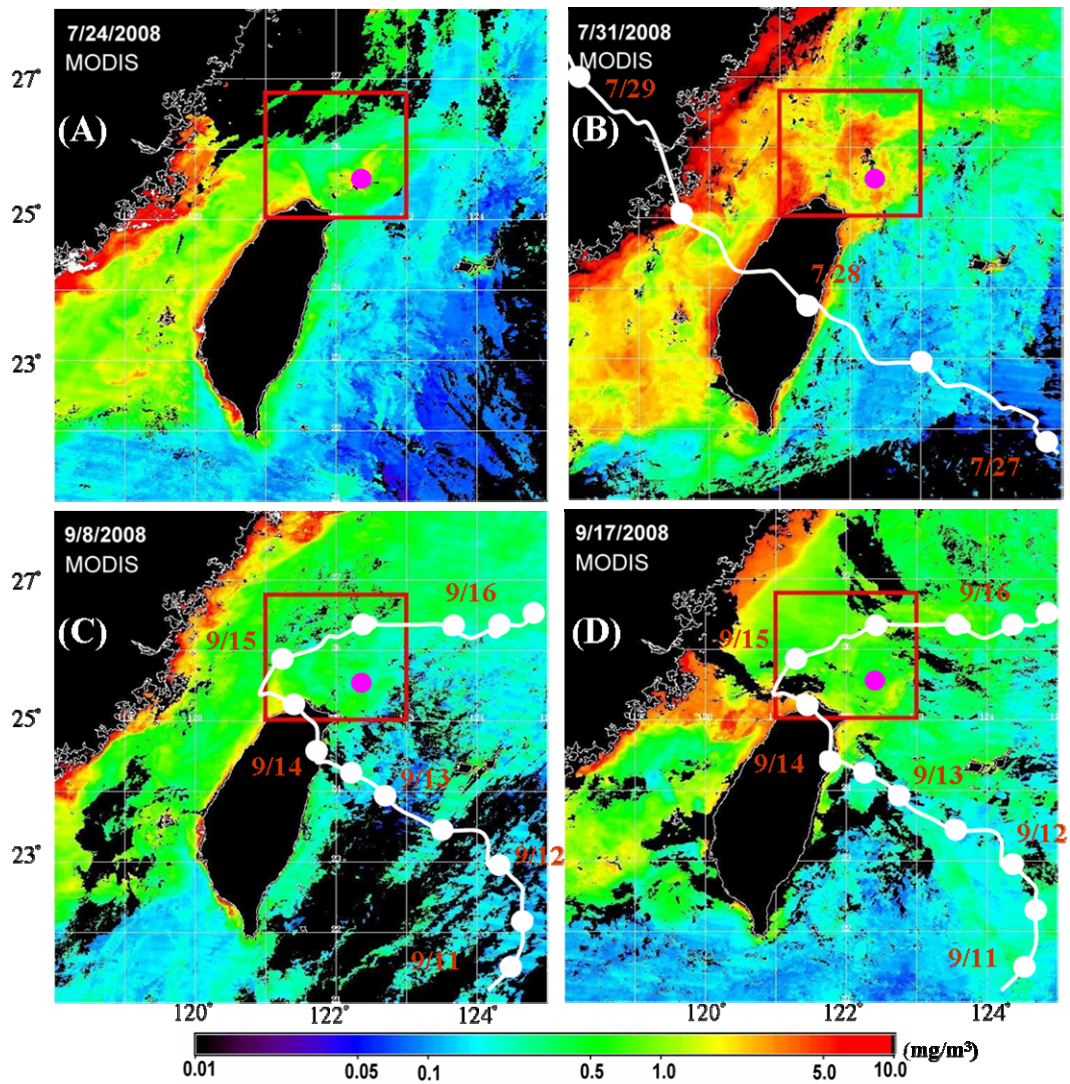
In the Results:

Similar surface water cooling phenomena were also found after the passage of typhoon Sinlaku. Sinlaku was a category 3 (sustained winds $\sim 51 \text{ m s}^{-1}$) typhoon in the western Pacific. Its sustained winds decreased to $>33 \text{ m s}^{-1}$ as it approached eastern Taiwan. The average daily SST decreased continuously from 28.6°C on 7 September to 26.5°C on 22 September, 2008 (Fig. 2A) and quickly rebounded to 27°C during 23-27 September. The maximum area ($17,876 \text{ km}^2$, on 17 September) of the cold water patch ($\text{SST} < 27^\circ\text{C}$) caused by typhoon Sinlaku was greater than that resulting from typhoon Fengwong (Fig. 2B). The area of the cold water patch quickly decreased to 1378 km^2 on 18 September and rebounded to 8056 km^2 on 22 September. The SST values of the SECS nonetheless showed water cooling after each typhoon.

In the Discussion:

Based on the recorded track (Figs. 4C and 4D), the center of typhoon Fengwong did not pass directly through the study area. Previous reports have indicated that upwelling and sea surface cooling are primarily observed along the typhoon track, or to the right of the typhoon center, suggesting that wind-enhanced eddy pumping and/or vertical mixing are major mechanisms involved in these phenomena [Lin, *et al.*, 2003; Shang, *et al.*, 2008; Walker, *et al.*, 2005; Zheng and Tang, 2007]. For example, enhanced phytoplankton growth to the right of a typhoon track has been reported in the Gulf of Mexico [Walker, *et al.*, 2005] and the South China Sea [Zheng and Tang, 2007]. The study area was close to the storm center of typhoon Sinlaku but to the

right of the track of typhoon Fengwong. Moreover, the two typhoons Fengwong and Sinlaku had dissimilar paths (Fig. 4B-D). Typhoon Sinlaku after crossing Taiwan (13-14 September) veered to the northeast over the study area. Tsai et al. (2008) reported that SST in the SECS changed abruptly when typhoons passed by Taiwan from the east or the west, and the complicated flow field off northeastern Taiwan could be dramatically altered by typhoons. The observed fast cooling after typhoon Sinlaku might be due to the upwelling of the Kuroshio subsurface water, then accompanied by Kuroshio surface water intrusion onto the continental shelf. Other factors such as Kuroshio instability, internal tide, impinging meso-scale eddies, etc., may also affect the flow field off SECS (Tsai et al., 2008). A better understanding of the relative importance of upwelling and mixing in the SECS will require more field observations. Furthermore, photosynthetic rates are probably limited by light (controlled by cloud cover) and the size of the phytoplankton population after passage of typhoons. Typhoon Sinlaku occurred approximately 7 weeks after typhoon Fengwong, and it appears that daily insolation was about 13% lower during the latter typhoon (<http://aom.giss.nasa.gov/srlocat.html>).



Technical comments Grammatical errors in the manuscript that the authors could easily identify and correct, including: Page 3525, L10: delete ‘of the’ Page 3526, L18: delete ‘were estimated’ Page 3530, L2: should be Fig. 3 instead of Fig. 3a Page 3531, L6: should be ‘did not display’ Figure 1: Missing labels; dates in Figure and legend not matching Figure 2: Missing labels

Response: All errors have been revised accordingly.

Fig. 1

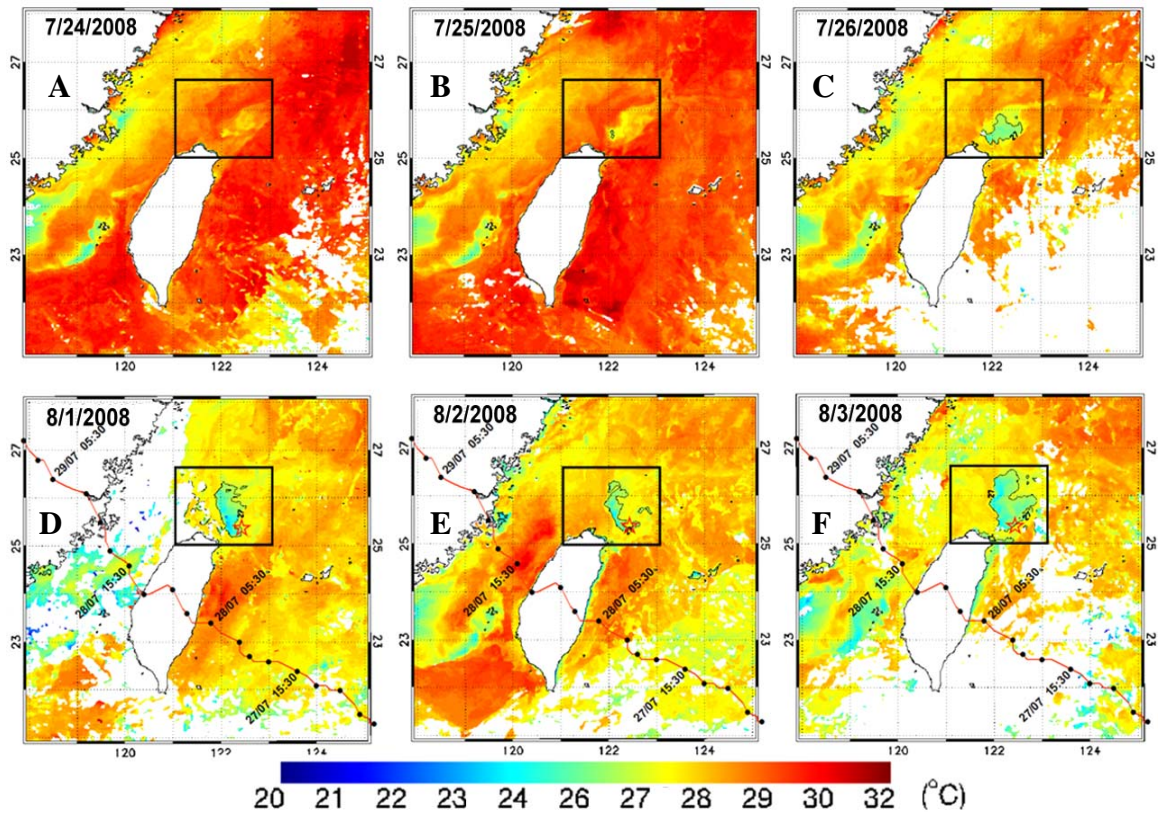


Fig. 2

