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### Supplementary Material

#### **Unravelling pre-monsoon phytoplankton: pigment profiles and community structure in the western and central Bay of Bengal**

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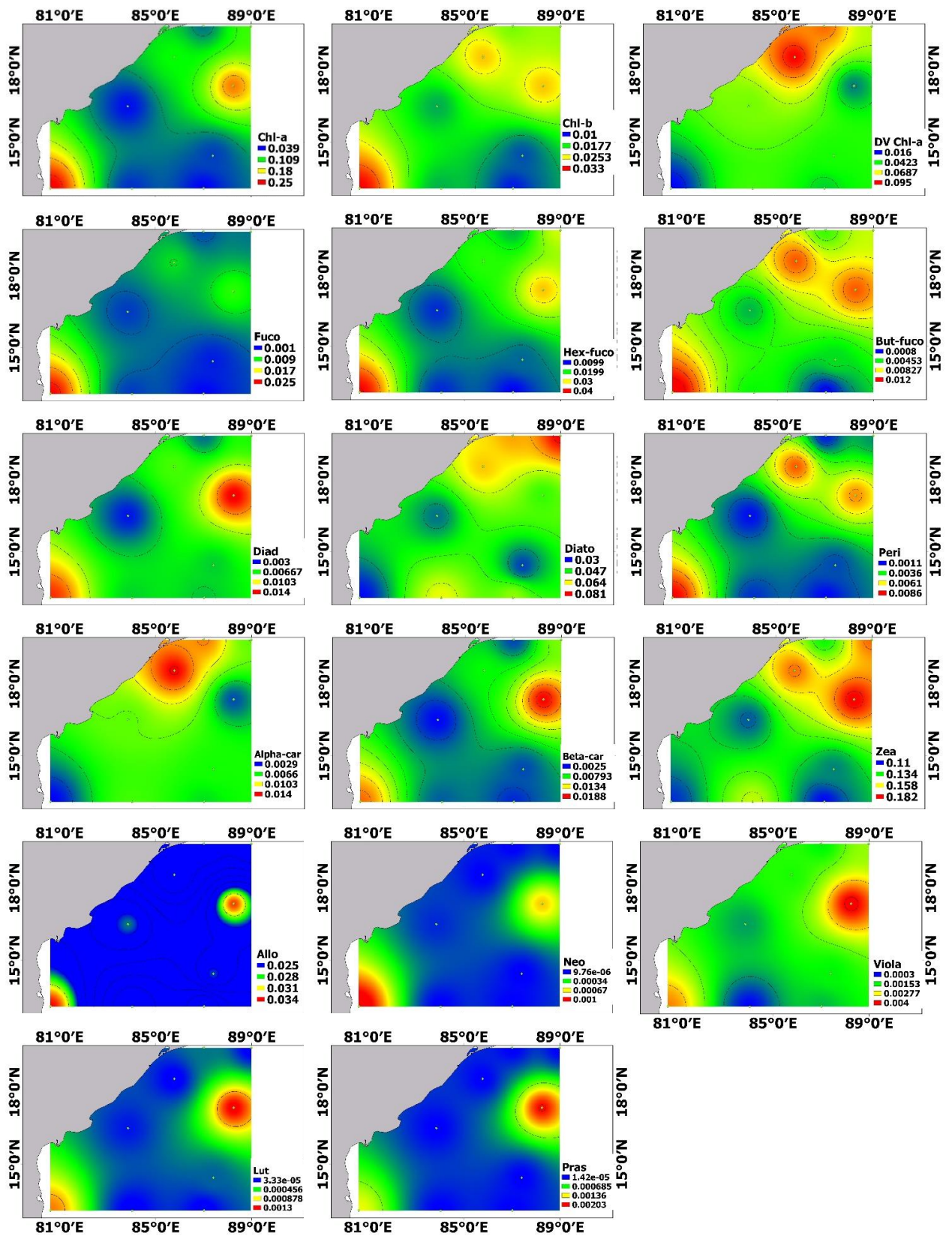
## Spatial distribution of phytoplankton pigments at the Surface and DCM

The spatial distribution of phytoplankton pigments at surface and DCM depth within the study area are shown in Fig. S1 and S2. The dominance of the pigments showed significant variations between the surface and DCM depth in the Bay of Bengal unravelling the difference in the existing phytoplankton community. The highest concentration of Chl-*a*, both at the surface (0.26 mg m<sup>-3</sup>) and at DCM depth (1.86 mg m<sup>-3</sup>), in the Bay of Bengal was recorded at S1. Excluding S1, an exceptionally high Chl-*a* concentration was observed at S6 (surface, 0.25 mg m<sup>-3</sup>, SCM-0.90 mg m<sup>-3</sup> and DCM-0.34 mg m<sup>-3</sup>).

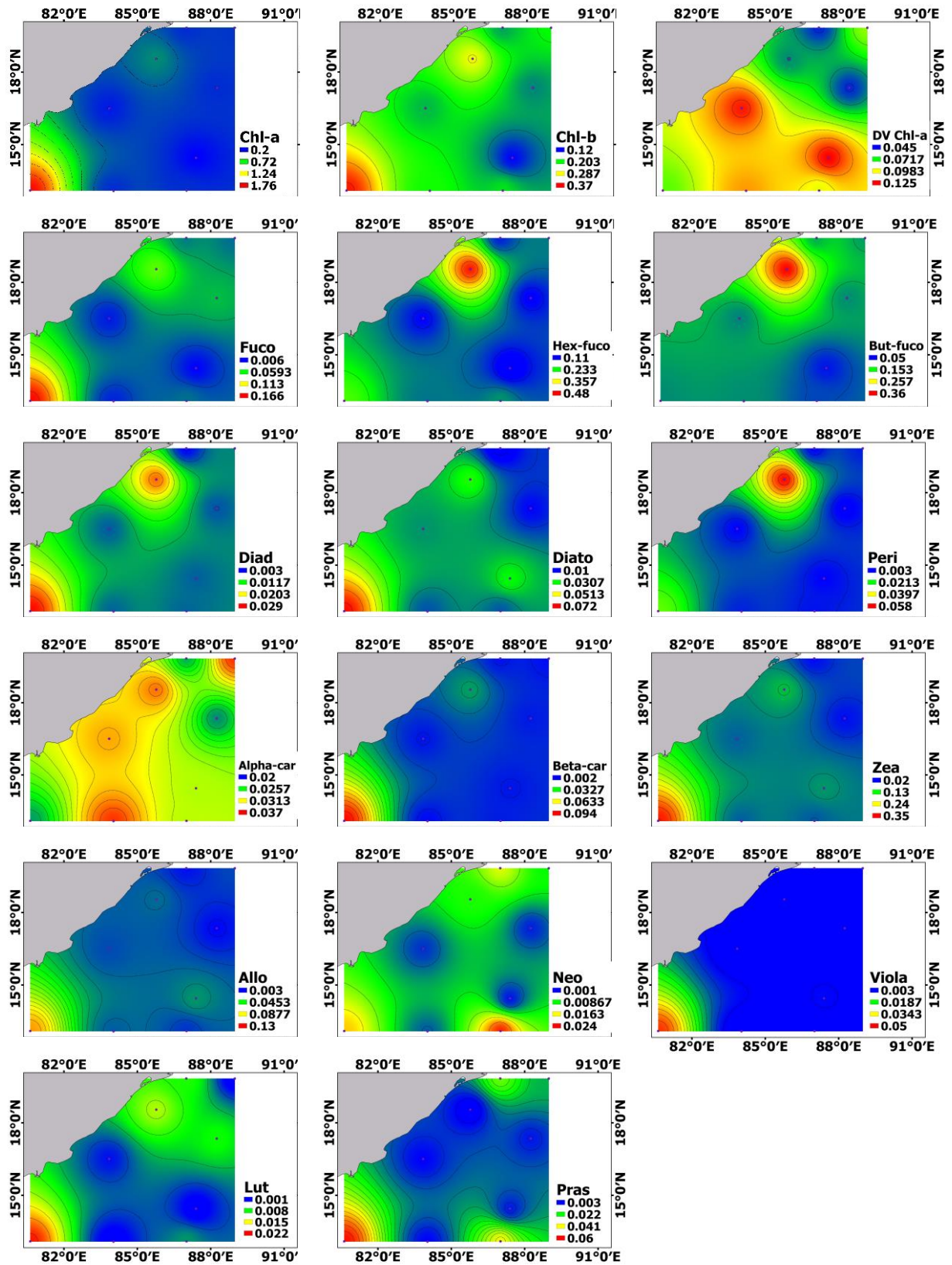
The study area showed a spatially dominating presence of DV Chl-*a* with surface concentrations varying from 0.02 to 0.1 mg m<sup>-3</sup>. At DCM depth, the DV Chl-*a* concentration ranged from 0.05 to 0.13 mg m<sup>-3</sup>. Among the sampled stations, surface waters of S3 were observed to have the highest abundance of DV Chl-*a* (0.1 mg m<sup>-3</sup>). Chl-*b* and Zea showed reverse trends in distribution. The concentration of Chl-*b* was observed to be very low (0.01 to 0.03 mg m<sup>-3</sup>) at the surface and higher at the DCM (0.12 and 0.36 mg m<sup>-3</sup>). Zea was observed in higher concentrations at the surface (0.11-0.18 mg m<sup>-3</sup>), and lower at the DCM depth (0.03–0.1 mg m<sup>-3</sup>) at all stations but S1.

Pras, Viola, Neo and Allo were found in higher concentration at S6 relative to all other sampled stations excluding S1 (Figure 5 and 6). Pras was almost absent in the surface waters of the sampled locations except S1 and S6, where the concentration was 0.001 and 0.002 mg m<sup>-3</sup> respectively. Whereas it was invariably present at the DCM depths of all the sampled stations ranging from 0.003 to 0.06 mg m<sup>-3</sup>. The concentration of Viola ranged from 0.0003 to 0.004 mg m<sup>-3</sup> at the surface and was almost absent at the DCM depth except for S1. By contrast, Neo was found in relatively higher abundance at the DCM depth (0.002–0.02 mg m<sup>-3</sup>) as compared to the surface. With very few exceptions, Allo marked its presence throughout the sampled area. Lut showed variable patterns of distribution, either absent or present in traces at the surface while being present at a higher concentration at the DCM depth.

Fuco, But-fuco, Hex-fuco, Peri, Diad and Diato were present throughout the study area in varying concentrations. The surface concentration ranges of Fuco, But-fuco, Hex-fuco, Peri, Diad and Diato were 0.001–0.025, 0.0008–0.013, 0.01–0.04, 0.001–0.008, 0.003–0.014 and 0.03–0.08 mg m<sup>-3</sup> respectively. At the DCM depth their concentration ranges were 0.007–0.17, 0.06–0.36, 0.1–0.47, 0.002–0.06, 0.003–0.03 and 0.005–0.07 mg m<sup>-3</sup> respectively. The distribution of Fuco across the sampled area followed a common trend (higher concentration at DCM compared to surface) even though their highest abundance was noted at S1 and S6. But-fuco and Hex-fuco were invariably found in higher concentrations within the DCM depth of the study area. Peri and Diad showed a markable presence at the surface and DCM depths of S1 and S6. The surface concentrations of But-fuco and Peri were observed to be highest at S1, S3 and S6. Diato was abundantly found throughout the study area, comparatively at higher concentrations in the surface waters of all stations except S1. Lesser abundance of Diato was noted at the DCM depth, except for S1.



**Figure S1.** Spatial distribution of phytoplankton pigments at the surface of Western and Central Bay of Bengal (The pigment concentrations used here is normalised with Chl-*a* concentration).



**Figure S2.** Spatial distribution of phytoplankton pigments at DCM depth of Western and Central Bay of Bengal (The pigment concentrations used here is normalised with Chl-a concentration).