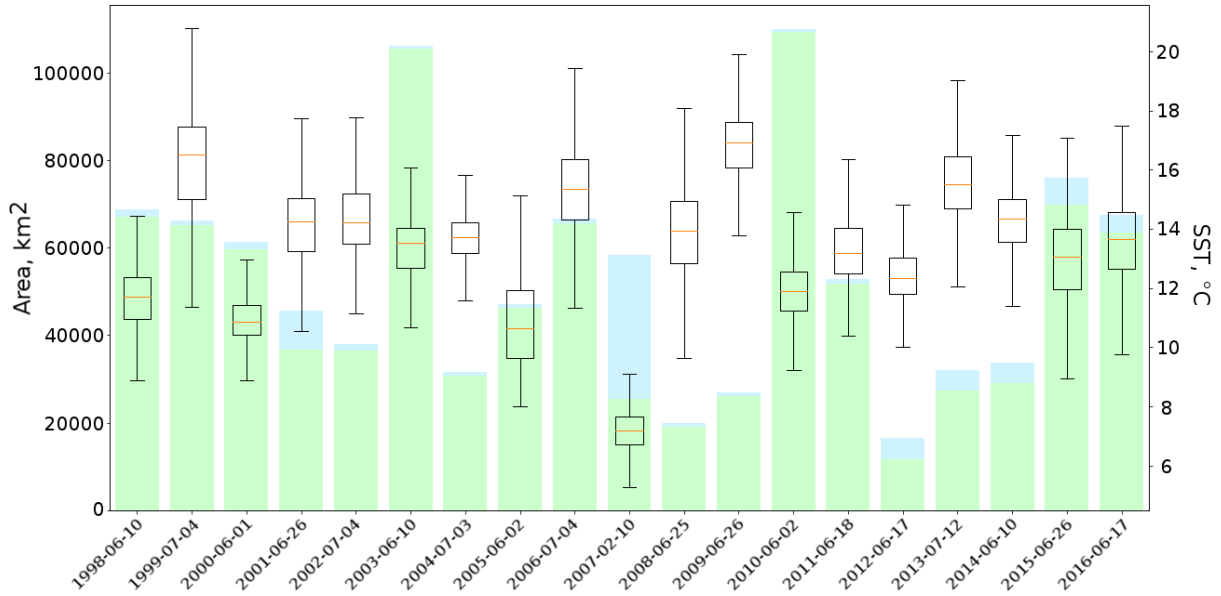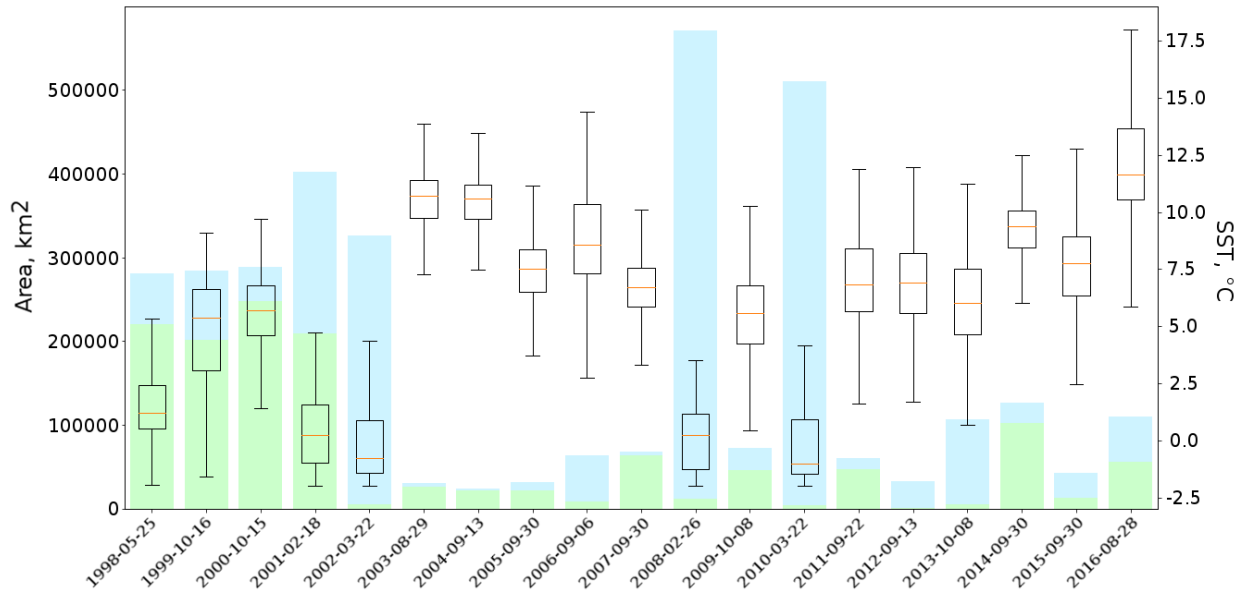**Figure S1: Statistical distributions of (*a*) SSS, (*b*) PAR, (*c*) ELD and (*d*) CS values inherent in the target seas for all observation years. Green, blue and black colour designates categories (*i*)-(*iii*), respectively (details are in the main text) The number of observations relevant to each category is specified below the horizontal axe.**

5

**Figure S2: SST values on the dates of peak blooms in the North Sea in different years. The bloom areas and areas masked by cloudiness are shown in green and blue colours, respectively.**



5    **Figure S3: SST values on the dates of peak blooms in the Bering Sea in different years. The bloom areas and areas masked by cloudiness are shown in green and blue colours, respectively.**