



Change of Phytoplankton Ecosystem After Construction of the Three Gorges Dam in East China Sea in Spring and Autumn, 2004

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Distribution characteristics of phytoplankton community was investigated along PN line during spring and autumn of 2004, in order to estimate the biomass and composition of phytoplankton community in the East China Sea (ECS). In spring, a plume of relatively less saline (<34.4 psu) water occupied the upper 30m, except St. P1 and P2, which indicates an upwelling centered at the slope. Nutrients were depleted in the surface water and a dome structure of high concentration of nutrients centered at St. P8 was observed along the slope upto 50m depth. In autumn, water column was well stratified below at 100m depth. The highest Chl *a* concentration measured as 382.00 ng/ℓ in spring and 274.14 ng/ℓ in autumn by HPLC analysis. Seasonal variation of abundance of phytoplankton was also confirmed by the decrease of concentration of Chl *a* about 20% in autumn, compared to those in spring. A decrease in Chl *a* upto 70% was

observed at the shelf compared to the previous studies, but there was no significant change at offshore (Kuroshio Water). In spring, predominant groups were prymnesiophytes (Hex-fuco) and crysophytes (But-fuco) at offshore and prymnesiophytes, crysophytes and prasinophytes (Chl *b* + Pras) at the shelf. In autumn, predominant groups were cyanophytes (Zea) and chlorophytes (Chl *b*) at offshore and chlorophytes (Chl *b* + Viola) and prymnesiophytes at the shelf. The maximum abundance of *Synechococcus*, *Prochlorococcus* and picoeukaryotes was approximately 4.8×10^4 , 22×10^4 , 0.9×10^4 cells/§ć in spring and 2.4×10^4 , 13.4×10^4 , 0.5×10^4 cells/§ć in autumn by FCM. Seasonal variation in abundance of picoplanktons was also observed. The total abundance of picoplankton, especially picoeukaryotes and *Prochlorococcus* were higher 14%, 18% respectively in autumn compared to those in spring. Variation of abundance of *Synechococcus* and picoeukaryotes were insignificant, but the abundance of *Prochlorococcus* was increased by a factor of 3, compared to the previous studies.

The results of this study showed that a decrease in abundance and change in composition of phytoplankton from bacillariophytes to nanoplankton (prymnesiophytes, crysophytes) at the shelf. And high abundance of *Prochlorococcus* and increased contribution from *Synechococcus* and picoekaruyotes to the biomass of total phytoplankton compared to previous studies was confirmed at the shelf. This result implied influence of kuroshio was expanded in ECS compared to the past.