

Influence of the Changjiang River flood on *Synechococcus* ecology in the surface waters of the East China Sea

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The aim of this study is to elucidate how a Changjiang River flood affected the *Synechococcus* ecology in the surface East China Sea (ECS). During a non-flooding summer (e.g. 2009), phycoerythrin-rich (PE-rich) *Synechococcus* usually thrive near the outer boundary of the Changjiang River diluted water (CDW) coverage, while phycocyanin-rich (PC-rich) *Synechococcus* predominate inside the turbid CDW. In the summer 2010, a disastrous flood occurred in the Changjiang River basin, and the flooding subsequently expanded the CDW coverage to over half of the ECS. PE-rich cells showed a homogeneous distribution and a decline in abundance, while the spatial pattern of the PC-rich ones resembled the pattern from 2009. Based on the phycocyanin operon phylogeny, *Synechococcus* in the ECS were categorized into 5 groups, ECS-1 to ECS-4 and ECS-PE. In the summer 2009, ECS-2 dominated in the coast. ECS-3 and ECS-PE prevailed in the offshore waters. However, during the summer 2010, ECS-4 and ECS-PE became the dominant strains. The injection of plentiful anthropogenic pollutants and the enhancement of transparency appear to be the factors to alter *Synechococcus* assemblage after the flood.