

### Monsoon and Nutrient Supply

It breezes gently from the southwest in summer; it blows fiercely from the northeast in winter. The monsoons not only bring terrestrial nutrient materials or pollutants, at the same time it is also the main stirring force that mixes oceanic surface water. The mixed layer refers to the depths at which water is fully mixed by the force of the wind. The mixed layer of the South China Sea is at a depth of about 20-30m in summer; in winter, the mixed layer deepens to 70-80m. In other words, in winter more nutrients are stirred into the euphotic zone. Microalgae can grow even more in winter than summer because in winter the temperature of the surface water in the South China Sea is still quite high. In high altitude regions, because winter storms are extremely intense, in addition to low temperatures, the mixed layer can reach 200-300m. However, also because of low temperatures, it is difficult for phytoplankton to grow. They must wait for the warmth of early spring to utilize the high levels of nutrients provided by the mixing process during winter to multiply immensely. We call this phenomenon spring bloom.

