B512 Dynamics of Inorganic Nutrients in the Naktong River

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To understand the quality of water, we regularly monitored river water from midstream to downstream of the Naktong River. River waters was loaded with high N · P discharges from the Kumho River tributary. Ammonia, nitrate and phosphate concentration were 4~7mg N/l, 1.4~4.7mg N/l and 200~400μg P/l, respectively. Ammonia and phosphorus concentration exponentially decreased, on the other hand nitrate was maintained to be nearly invariable. DIN/SRP ratios were exponentially increased from middle zone to downstream. Their variations were related to the nutrient uptakes of phytoplanktons. As a result of water monitoring at the Naktong Estuary, nitrogen and phosphorus clearly showed seasonal patterns. Ammonia and nitrate were low concentration during blue-green algal blooms in summer, and phosphorus and silica were nearly exhausted during *Stephanodiscus* bloomings in winter. N · P concentrations of the Naktong River were largely influenced by the algal blooms or growth from midstream to downstream.

B513 Possible causal mechanism of Microcystis blooms in the lower part of the hypertrophic Nakdong River (Mulgum), S. Korea (from 1993 to 1996).

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Blue-green algal bloom in freshwater ecosystem often causes deterioration of water quality and health hazards. From the spring of 1993 to the summer of 1996, we conducted weekly sampling at Mulgum and examined the occurrence of blue-green algal bloom as well as physico-chemical variables related to bloom formation. Blue-green algal bloom dominated by Microcystis (over 90% of total phytoplankton community) was repeatedly observed during the summer except 1993 when high discharge was maintained. Throughout this study, we found bloom often occurred from the mid-July to September or October. The magnitude and frequency of rain in the end of June through early-July were the major factors resulting in the bloom. After the last major rainfall event, it took at least 2 weeks for Microcystis bloom to suddenly occur. After a heavy rainfall in the early summer, discharge sharply dropped and water temperature increased along with the increase of total irradiance. During the 2nd week, water temperature was increased from 23 up to 33℃. During this period, we observed a drastic increase in the density of Microcystis cell (from 10-102 cells/ml to 105-107 cells/ml). Since high concentration of TN and TP were maintained during the summer bloom (TN, 2.5±0.9 mg/l; TP, 155±98 μg/l; summer of 1994, 1995, and 1996), the elevated water temperature would be a major factor contributing to the Microcystis bloom. The changes of N/P ratio and pH/CO2, and other physico-chemical parameters before and during the Microcystis bloom will be further discussed.