

Auto conductivity meter  
SBE

- ① 깃발 (깃발)
- ② radar reflector
- ③ VHF radio beacon

특 강 IV.

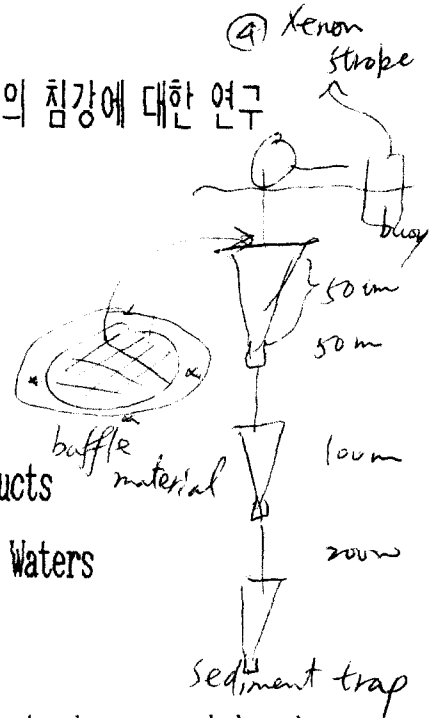
### 남극해와 Gulf of Mexico 표층수의 조류색소 및 그 분해산물의 침강에 대한 연구

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### Algal Pigments and Their Degradation Products in Southern Ocean and Gulf of Mexico Surface Waters

necessity ? -

Photosynthetic pigments and their degradation products in suspended and sinking particles collected from the Southern Ocean and NW Gulf of Mexico surface waters were measured using High Performance Liquid Chromatography (HPLC). The short-term variations in flux rates of chlorophylls and carotenoid pigments as well as their degradation products were compared at several locations in Prydz Bay, Antarctica, during austral summer 1987-88. In the NW Gulf of Mexico flux rates of algal pigments in a cold-core ring sampled in the fall of 1987 were compared with those in a warm-core ring sampled in the fall of 1988.

In Prydz Bay, chlorophyll a accounted for approximately half of the pigments measured. A series of five phaeophorbide a derivatives, which are probably produced by zooplankton grazing, were the dominant degradation products in porphyrins. Among the carotenoid pigments, fucoxanthin dominated in both water column and sediment trap samples. My pigment data showed that diatoms were the dominant component of the Prydz Bay phytoplankton community. My data also indicate that 19'-hexanoyloxyfucoxanthin-containing prymnesiophytes

(*Phaeocystis* spp.) was abundant in Prydz Bay in the austral summer of 1987-88.

The flux rate of chlorophyll a at Outer Prydz Bay sites was generally highest ( $20 \mu\text{gm}^{-2}\text{day}^{-1}$ ) at 50m, and approximately double the flux rates at deeper horizons, however, at Inner Bay sites, the mean flux rate of chlorophyll a at 200m was four times higher than that at the 50m. Such anomalously high fluxes at 200m imply that grazers were locally abundant between 100m and 200m at these sites closest to land, and this hypothesis is supported by visual evidence of lots of fecal pellets in the 200m trap. Turnover rates for algal pigments in Prydz Bay, computed as standing stocks divided by measured flux, were negligible (generally  $> 500$  days). Thus, suspended particulate material in Prydz Bay was not recycled rapidly.

Chlorophyll a was the dominant pigment in Deep Chlorophyll Maxima (DCMs) at all Gulf of Mexico sampling sites. However, among the carotenoids, 19'-hexanoyloxyfucoxanthin and 19'-butanoyloxyfucoxanthin were the dominant pigments rather than fucoxanthin. This indicates that prymnesiophytes and chrysophytes were the two most important components of the phytoplankton community of the NW Gulf of Mexico. While fluxes out of surface waters in the cold-core ring averaged five times greater than those in the warm-core ring, less than 1% of the standing stock of chlorophyllous and carotenoid pigments sank out of the upper 200m of either type of ring on any given day. As in Prydz Bay, this implies that standing stocks of suspended particulates were not recycled rapidly.