

## Global size distribution of phytoplankton communities from space

\*平田 貴文<sup>1</sup>、増田 良帆<sup>1</sup>、鈴木 光次<sup>1</sup>、山中 康裕<sup>1</sup>

\*Takafumi Hirata<sup>1</sup>, Yoshio Masuda<sup>1</sup>, Koji Suzuki<sup>1</sup>, Yasuhiro Yamanaka<sup>1</sup>

1. 北海道大学地球環境科学研究所

1. Faculty of Environmental Earth Science, Hokkaido University

We developed a remote sensing methodology to estimate size distribution of various pigment-based phytoplankton groups such as diatoms, peridinin-containing dinoflagellates, haptophytes, cyanobacteria etc. Our estimation was compared with a local in situ observation to show an agreement between them. According to our state-of-the-art remote sensing methodology, global size structure of the entire phytoplankton community could be divided into three classes to the first approximation, agreeing well with a conventional classification based on historical in situ observations. However, in contrast to historical size classifications (Sieburth et al, 1978), i.e. pico-phytoplankton ( $< 2 \mu\text{m}$ ), nano-phytoplankton  $2\text{-}20 \mu\text{m}$ , micro-phytoplankton ( $> 20 \mu\text{m}$ ), we propose new size boundaries for these classes based on global satellite observation: pico-phytoplankton ( $< 1 \mu\text{m}$ ), nano-phytoplankton  $1\text{-}10 \mu\text{m}$ , micro-phytoplankton ( $> 10 \mu\text{m}$ ). Size-diversity index of a given phytoplankton group, defined by a difference between logarithmic maximum and minimum sizes of the group, was largest for haptophytes than diatoms. The maximum size-diversity of a given phytoplankton group was not necessarily correlated to its dominance in chlorophyll abundance either. Our results are expected to cast light upon global marine biodiversity and marine ecosystem analysis.

キーワード：植物プランクトン、生物多様性、サイズ、海色、生態系、海洋

Keywords: phytoplankton, biodiversity, size, ocean color, ecosystem, ocean