

ホワイトキャップの海面被覆率と風速, その他の物理的要因との相互関係

菅野 進* 古島 靖夫** 千賀 康弘*** 杉森 康宏****,*****

Abstract

Whitecap coverage, which influences microwave and short wave radiation from the sea surface, is not only a non-linear function of the surface wind speed, but also is influenced by other physical parameters. Dependence of whitecapping on the wind speed, sea surface temperature (SST), surface air temperature (SAT), fetch and duration are discussed with data obtained by in-situ observation from a view point of atmospheric correction for ocean color sensors. The whitecap coverage was estimated by photographs taken from high altitude platforms. Wind speed, water and air temperature were measured synchronously with the photography, and their relationships with the coverage were analyzed, by principal component and multiple regression analyses. The results show that the whitecap coverage depends on the wind speed as pointed out by previous investigations but also varies with changes in SST, SAT, atmospheric stability and fetch. And it is found that the factors of whitecapping can be expressed with following three components; thermal stability of the sea surface, dynamic disturbance by the sea surface wind, development of wind waves. Finally, an effective empirical model which can estimate whitecap coverage with other "surface parameters", is proposed.