

Characteristic Response of the OSMI Bands to Estimate Chlorophyll *a* in the East China Sea

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Relationship between chlorophyll *a* in the East China Sea and spectral bands (412, 443, 490, (510), 555, (676, 765) nm) of OSMI (Ocean Scanning Multi-Spectral Imager) including the profile multi-spectral radiometer (PRR-800) was studied. The values of remote sensing reflectance (R_{rs}) at the bands corresponding to the field chlorophyll *a* in the East China Sea were much higher than those in clear waters off California, USA. In case of the particle absorptions related to the chlorophyll *a* concentration at the spectral bands (440, 670 nm) were much higher in the East China Sea than the ones in the clean waters off California.

The normalized water leaving radiances (nLw) at 412, 443, 490, 555 nm of OSMI and field chlorophyll *a* in the East China Sea were correlated each other. According to the results, the relationship between field chlorophyll *a* and nLw 410 nm in OSMI bands was the lowest, whereas that between the field chlorophyll *a* and nLw 555 nm in the bands was the highest.

Reciprocal action between the field chlorophyll *a* and the band ratio of the OSMI bands (nLw_{410}/nLw_{555} , nLw_{443}/nLw_{555} , nLw_{490}/nLw_{555}) was also studied. Correlation between the chlorophyll *a* and the band ratio (nLw_{490}/nLw_{555}) was highest in the OSMI bands. Relationship between the chlorophyll *a* and the ratio (nLw_{443}/nLw_{555}) was higher than one in the nLw_{410}/nLw_{555} . The difference in the estimated chlorophyll *a* (mg/m^3) between OSMI and SeaWiFS (Sea Viewing Wide Field-of-View Sensor) at the special observing stations in the northern eastern sea of Jeju Island in February 25, 2002 was about less than $0.3 mg/m^3$ within 3 hours.

It is suggested that OC2 (ocean color chlorophyll 2 algorithm) be used to get much better estimation of chlorophyll *a* from OSMI than the ones from the updated algorithms as OC4.