



## **Mesoscale and submesoscale processes from the Geostationary Ocean Color Imager (GOCI)**

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The Geostationary Ocean Color Imager (GOCI) continuously monitors the northeast Asian waters around Korea with 500 m horizontal resolution. These high resolution ocean color data enable us to study submesoscale processes much smaller than 10 km as well as mesoscale ones. Two regions, one in the southwestern part of East Sea (128-134°E and 35-39°N) and the other in the western Pacific south of the Kuroshio (132 - 142°E and 25 - 29°N), were selected. We then conducted spectral analysis using the bootstrapping method for summer and winter, respectively. At scale greater or equal to 10 km during summer in both areas the wave number spectra follow  $-5/3$  power law for inverse energy cascade as predicted by the surface quasi-geostrophic theory. In winter the spectrum becomes flatter due to mixed layer instability. The effect of the mixed layer instability (the degree of flattening) is greater in the East Sea where the available potential energy is greater. At scales less than about 5 km, the spectral slope is flatter in all cases. In East Sea in this small scale the power law is consistent with forward enstrophy cascade, but in the western Pacific the slope is significantly flatter than that for forward enstrophy cascade. Seasonality is notable in the East Sea, but not in the western Pacific.