**An estimation of chlorophyll-a concentration**

**using Landat-8/OLI data in Hiroshima Bay**

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***ABSTRACT***

The Uwa Sea of Uwajima City and Utsumi of Ainan Town of Ehime Prefecture in Japan are very famous places for the birthplace of a perfect circle pearl. By a pearl farming, it is very important to grasp marine information correctly of the chlorophyll-a concentration and the seawater temperature etc. Previously, we examined a method for estimating chlorophyll-a concentrations using the linear combination index (LCI) of Robert Frouin et al. (2006) using Landsat-8/OLI data observed in the Uwa Sea in Uwajima City and the inland sea in Aitan Town, Ehime Prefecture. On the other hand, Hiroshima Bay in Hiroshima Prefecture is a very famous place for oyster farming. Similarly, in oyster farming, it is very important to correctly grasp marine information such as chlorophyll a concentration and seawater temperature. Therefore, we applied the previously developed method for estimating chlorophyll-a concentrations to Landsat-8/OLI data observed in Hiroshima Bay. As a result of investigating the correlation between the estimate of chlorophyll-a concentration by Landsat-8/OLI and the actual value measured by the Japan Coast Guard, the coefficient of determination was 0.523. In addition, the coefficients and indices of the estimation equation obtained from this correlation diagram are almost close to the coefficients and indices of the estimation equation developed previously. Moreover, since the range of the Chlorophyll-a concentration measured in the previously developed method is very narrow of 0.3–1.3 mg/m3, the estimation formula of the Landsat-8/9 data was corrected so that it can correspond to a wide range of 0.1-10 mg/m3 of the Chlorophyll-a concentrations using a simulation with the bio-optical model proposed by Andre Morel et al. (2001).

**Keywords:** linear combination index, visible, near infrared