Analysis of in situ water temperature and satellite-derived sea surface temperature for Lian, Batangas

Regine C. Robles*[1], Jose Lorenzo M. Javid[1], Rechel G. Arcilla[1] and Wilfredo Y. Licuanan[2]

[1] Mathematics Department, De La Salle University

[2] Biology Department and the Br. Alfred Shields FSC Ocean Research Center, De La Salle University

*Corresponding Author: roblesreginec@gmail.com

Abstract: The Philippine coral reefs are currently threatened by increasing sea surface temperatures (SST), a major factor contributing to mass coral bleaching. SST monitoring is done with the use of situ temperature recorders and satellite-derived measurements. Due to its wide spatial coverage, high temporal resolution, and convenience, satellite-derived SSTs are now more frequently used as a substitute for in situ water temperatures. However, few studies have been dedicated to evaluate the accuracy of these substitutes, especially at depths relevant to reef corals. The objective of this paper is to examine the relationship of satellite-derived SST (NOAA) and in situ water temperature (THERM) of the 7 sites in Lian, Batangas monitored by the Br. Alfred Shields Ocean Research (SHORE) Center. Through ordinary least squares (OLS) regression, it was verified that a relationship exists between NOAA and THERM. The resulting regression model, which includes dummy variables for significant sites and station, yielded an adjusted R^2 of 76.79%. This level of explanatory capability is enough to suggest that satellite-derived SSTs may replace the in situ temperatures. Since satellite-derived data is readily available online, it will be more convenient for use in temperature monitoring and reef management.

Key Words: Sea surface temperature; OLS regression