

ABSTRACT
SUBMARINE GROUNDWATER DISCHARGE AND ITS ASSOCIATED
NUTRIENT FLUXES IN HARMFUL ALGAL BLOOMS-PRONE
SORSOGON BAY, PHILIPPINES

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Submarine groundwater discharge (SGD) is an important material pathway of nutrients from the land to the sea as it can rival river inputs. Nutrient delivery through SGD has been associated with occurrence of harmful algal blooms (HABs). This study determines the magnitude of SGD and its associated nutrient fluxes in Sorsogon Bay, an economically important fishing ground in the country which has been plagued by blooms of *Pyrodinium bahamense* var. *compressum* for many years. Twelve manual Lee-type seepage meters were laid out in four transects that extended 150 m into the bay. Periodical seepage waters were collected continuously for 36 hours, from which nutrient samples were subsampled in the first 24 hours. The integrated seepage flux of the transects range from 10.8 to 25.0 L min⁻¹ m⁻¹ with an average of 17.0 L min⁻¹ m⁻¹. Estimate of the total SGD for the whole bay is 1.7 x 10⁶ L min⁻¹ which is 121% of the river discharge during low flow river conditions assuming that the SGD flow rate in the study area is the same everywhere else in Sorsogon Bay. Nutrient flux values for DSi, PO₄, and DIN were calculated to be 4.3 x 10⁵ mol d⁻¹, 5.8 x 10³ mol d⁻¹, and 3.3 x 10⁴ mol d⁻¹ which translate to 22%, 159%, and 117% of the riverine nutrient fluxes, respectively. These results suggest that nutrient contribution from SGD is clearly significant to the nutrient budget of the bay. Hence, it should be considered in studying the HAB dynamics of Sorsogon Bay and possibly, in other HABs – impacted areas.