

# SEASONAL VARIABILITY OF SUBMARINE GROUNDWATER DISCHARGE ALONG THE NORTH SHORE OF LONG ISLAND RESOLVED USING Rn-222

**Joseph Tamborski**

Department of Geosciences, Stony Brook University

Stony Brook, NY, 11794

joseph.tamborski@stonybrook.edu

Radon ( $^{222}\text{Rn}$ ) naturally occurs in groundwater by several orders of magnitude greater than surface waters and is an inert, nonreactive noble gas, making it an ideal tracer for assessing groundwater flow to the coast. Surface water  $^{222}\text{Rn}$  was measured *in-situ* along the north shore of Long Island, NY using a continuous RAD7 radon in air monitor (DurrIDGE). Measurements made in June and August of 2013 reveal spatially variable excess  $^{222}\text{Rn}$  activities that range from 37-251 dpm  $100\text{L}^{-1}$  in June and 45-156 dpm  $100\text{L}^{-1}$  in August. Although  $^{222}\text{Rn}$  activities are lower in August, calculated SGD rates are significantly higher, reflected in a greater gas transfer coefficient due to large wind speeds ( $>7\text{ m s}^{-1}$ ) during the August survey. Calculated SGD ranges from 2-10  $\text{cm d}^{-1}$  in June and 3-27  $\text{cm d}^{-1}$  in August. While there is greater uncertainty attributed to  $^{222}\text{Rn}$  degassing during the August survey, it is possible that the greater percentage of SGD in August was caused by a storm event in the days preceding the survey.

