

Empirical Modeling of Microbial Indicators at a South Carolina Beach

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Public concerns about water quality at beaches have prompted the development of multiple linear regression and other models that can be used to "nowcast" levels of bacterial indicators. Hydrometeorological and biogeochemical data from summer, 2009 were used to develop empirical models for enterococci (culturable and qPCR) at Surfside Beach, SC. The data were obtained concurrently with an epidemiological study that was conducted by EPA/ORD at the same area on the beach. A primary objective of this research was to compare and contrast the effectiveness of multiple linear regression models with other modeling approaches that were developed using a variety of available datasets for this site: (1) water quality data from sonde monitors located on the central transect of the beach study area; (2) meteorological and solar radiation data obtained at the beach and near the beach; (3) underwater spectral UV data obtained by automated sensors at the beach; (4) acoustic doppler current profile data at the central part of the beach; (5) UV-visible and dissolved organic carbon data from the swim area and swash; and (6) microbial data collected in the swim area and in the swash that drained into the swim area.