

REVIEW OF PREDICTIVE MODELS

Traditional methods for quantifying bacteria in beach water can take 18–24 hours for a result.

Predictive models using environmental and weather conditions can predict bacteria levels on the day of sampling. We reviewed the use of these models to predict water quality at freshwater beaches in temperate climates.

OVERVIEW

We found 53 studies that created models published up to December 2020. 83% were from the USA.



ACCURACY

19 studies measured accuracy of their models. Models were on average 81% accurate and almost always performed better than traditional methods.



ENVIRONMENTAL VARIABLES

The most frequently used variables in final models were rainfall, turbidity, wave height, wind speed, and wind direction.



FUTURE RESEARCH

Most studies linear regression techniques. More research should be done into more advanced methods such as Bayesian networks and Artificial Neural Networks which show promising improvements in accuracy.

