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POND DYNAMICS/AQUACULTURE COLLABORATIVE RESEARCH SUPPORT PROGRAM



## RESEARCH REPORTS

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SUSTAINABLE AQUACULTURE FOR A SECURE FUTURE

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**Title:** Generation of daily and hourly solar radiation values for modeling water quality in aquaculture ponds

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**Abstract:** A stochastic model has been developed for generation of daily and hourly solar radiation values that can be used as inputs in a water quality model for aquaculture ponds. The daily solar radiation values are generated based on the monthly probability distribution of the daily clearness index. The monthly probability distributions are obtained from an incomplete historical daily solar radiation data set collected from fish pond sites. The hourly solar radiation values are estimated by breaking down the generated daily value using an empirical equation from the literature. The model has been applied to locations in Thailand, Honduras, and Rwanda. The length of historical data for the different locations ranged between six and eight years. The generated values show good agreement with the measured data. This model can be used to generate solar radiation values for locations having scant historical information.

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