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**Chiara Mocenni\*** (mocenni@dii.unisi.it), **Emiliano Sparacino**, **Antonio Vicino** and **Jorge Passamani Zubelli**. *A Spatially Distributed Model for the Water Quality Evolution of a Lake with a Rough Boundary: The Serra da Mesa Case.*

We consider an ecological model of water quality accounting for the time evolution of the distribution of algae and physicochemical variables of the Serra da Mesa basin. The model is described by a set of reaction-drift-diffusion partial differential equations and is driven by several exogenous inputs, such as wind velocity and direction, water temperature, and solar radiation.

Due to the roughness of the domain boundary, a preliminary boundary extraction using a curvelet algorithm was performed. Then, the model was simulated in an approximated domain, where the contour has been reconstructed by estimating a set of Recurrent Fractal Interpolation Functions, aimed at preserving its fractal dimension structure.

Simulations are combined with time and space data in order to estimate the parameters of the model. The proposed algorithm is based on a two step identification procedure, where the RHS reaction parameters are recovered first and then used for estimating the LHS diffusion and transport parameters. Comparison of the results at different accuracy levels are presented and discussed. (Received February 13, 2008)