

## **CONTRIBUTION TO THE MODELING OF THE PROPAGATION OF WASTEWATER : CASE OF ANTSIRANANA BAY (North of Madagascar)**

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The Antsiranana Bay (North of Madagascar) is subject to a serious problem of marine pollution due to the increase of wastewater coming from various sources such as industries, hotels, hospital, ... .etc. The bay has great potential for artisanal fishing as it supplies the population of the city of Diego-Suarez and other surrounding municipalities.

This study was conducted in November of 2017 as part of the fight against spills of wastewater and plastic waste in the bay. This study concerns the modeling of the diffusion of wastewater pollution in the Bay of Diego-Suarez, hence the idea of a numerical study to understand the different phenomena that govern the dispersion of pollutants and to predict the level of degradation. the quality of its waters and its fisheries resources. This process is studied using the advection and continuity equation, which expresses the principle of mass conservation of a fluid in motion. A Fortran calculation code was made by viewing the results by Origin at two-dimensional (2D), the objective being to validate the chosen calculation model and the boundary conditions used to evaluate the risks caused by marine pollution. After the tidal conditions were met, the results showed that the wastewater dispersion occurred at 14 days in the bay. This makes it possible to consider setting up direct monitoring of sea quality, establish an early warning system in the future and greatly improve knowledge of the state of coastal waters.

Keywords: Antsiranana Bay – Marine pollution – Advection and Continuity equation - Modeling – Fortran