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**DETECTION OF TURBIDITY DYNAMICS IN TAMPA BAY, FLORIDA USING  
MULTISPECTRAL IMAGERY FROM ERTS-1**

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**ABSTRACT**

In 1970, Congress authorized the deepening of the Tampa Bay channel (Rivers and Harbors Act of 1970) from 34 to 44 feet. In order to determine the effects of this deepening on circulation, water quality, and biota, during and after the construction, the U. S. Geological Survey, in cooperation with the Tampa Port Authority, has collected data and developed a digital simulation model of the bay.

In addition to data collected using conventional tools, use is being made of data collected from ERTS-1. Return-Beam Vidicon (RBV) multispectral data were collected, while a shell dredging barge was operating in the bay, and used for turbidity recognition and unique spectral signatures representative of type and amount of material in suspension. The processed data integrated with other modeled parameters provide an overview of the dynamics of turbid material during dredging periods. A three-dimensional concept of the dynamics of the plume was achieved by superimposing the parts of the plume recognized in each RBV band. This provides a background for automatic computer processing of ERTS data and three-dimensional modeling of turbidity plumes.