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MONITORING ESTUARINE CIRCULATION AND OCEAN WASTE DISPERSION  
USING AN INTEGRATED SATELLITE-AIRCRAFT-DROGUE APPROACH

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(E76-10010) MONITORING ESTUARINE  
CIRCULATION AND OCEAN WASTE DISPERSION USING  
AN INTEGRATED SATELLITE-AIRCRAFT-DROGUE  
APPROACH (Delaware Univ.) 2 p HC \$3.25

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V. Klemas, G. Davis, H. Wang  
College of Marine Studies  
University of Delaware

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## SIGNIFICANT RESULTS

There exists an urgent need to better understand the Continental Shelf environment because of economic pressures to extract oil and other resources; to increase the harvest of food; to continue using it for waste disposal; and to route ships or conduct smallcraft rescue operations effectively. The large concentration of population in the coastal zone and the accompanying increase in utilization pressure is likely to have deleterious effects on the shelf regions. The offshore-onshore transport rates of pollutants, sediments and nutrients strongly influence the ecology of the coastal zone. In order to keep the environmental impact within acceptable levels, it is important to understand the circulation and exchange processes on the shelf.

The Eulerian method of measuring simultaneously the current direction and speed at preselected points in the water column requires many ships and current meters when synoptic measurements over large coastal areas are to be made. Therefore, an inexpensive, integrated drogue-aircraft-satellite approach has been developed which is based on the Lagrangian technique and employs remotely tracked drogues and dyes together with satellite observation of natural tracers, such as suspended sediment. Results presented include current circulation studies in Delaware Bay in support of an oil slick movement model; investigations of the dispersion and movement of acid wastes dumped 40 miles off the Delaware coast; and coastal current circulation. In each case the integrated drogue-aircraft-satellite approach compares favorably with other techniques on the basis of accuracy, cost-effectiveness and performance under severe weather conditions.