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PRELIMINARY TEST OF ERTS-1 IMAGERY FOR IMPROVING DEFINITION OF NATURAL STREAMFLOW

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ABSTRACT

Historical streamflow data, which were routinely collected at gaging stations, have been transferred to ungaged sites with varying degrees of success by relating statistical flow parameters to physiographic characteristics of a drainage basin. The basin characteristics that are most easily extracted by automated techniques from ERTS-1 imagery include open water, infrared-reflecting vegetation, snow, and massed works of man. In preliminary tests, using two small basins in the Chesapeake Bay area of Maryland and Delaware, the percent of basin areas occupied by open water and infrared-reflecting vegetation was determined from ERTS imagery and checked by aerial photography. The two basins, which were selected from a group of about 20, represent extremes in their hydrologic response to precipitation. The percent of basin areas was correlated with the residuals of multiple-regression equasions that were developed to relate streamflow characteristics to basin characteristics that, in part, were measured from topographic maps. Results of this correlation were encouraging; however, a more thorough test is needed.