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AN INTEGRATED APPLICATION OF REMOTE SENSING, DIGITIZATION, AND COMPUTER PROCESSING TO THE ANALYSIS OF MULTIPLE TIDAL DRAINAGE NETWORKS

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Processing of remotely sensed data by digitization and computer analysis permits development of a large quantitative data base describing geomorphology of tidal drainage networks in the Duplin River, Sapelo Island, Georgia. These previously unavailable data permit comparison of drainage morphology between fluvial and tidal systems, as well as of variations of drainage morphology within the Duplin tidal system. Laws of fluvial drainage composition were found to be inoperative in the tidal system, presumably due to differences in flow directions, system instability, and environmental uniformity within the tidal system. Ebb tidal dominance displayed by network morphology agrees with development of ebb-oriented channel bottom structures and flow measurements. The high marsh-low marsh environmental subdivision appears to be a major factor in determining drainage type, probably due to the confluent change of many sedimentological variables at that transitional boundary.