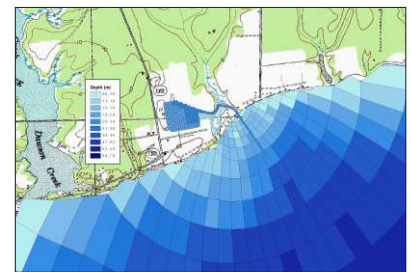
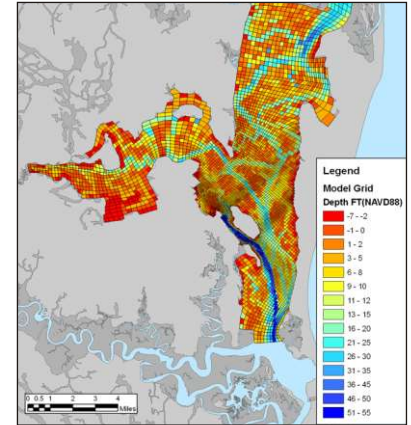


Modeling Capabilities

ATM has offered modeling as a core service since the firm's inception. Our modeling experts are proficient in the development, application, and review of a broad range of tools that simulate all aspects of the hydrologic cycle. ATM provides modeling support services for environmental impact evaluations, Environmental Impact Statements (EIS), NPDES permitting, TMDL development, stormwater master planning, water and wastewater design, coastal erosion studies, waterfront design, sedimentation studies, and municipal consumptive supply.

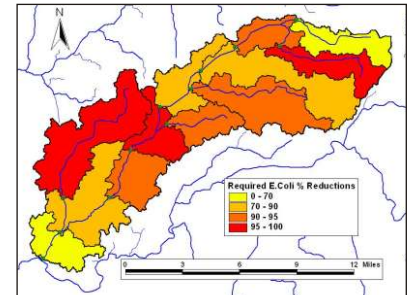
Hydrodynamic Modeling

The ATM Modeling Team has a long history of developing, applying, and reviewing cutting-edge hydrodynamic modeling systems to predict circulation and transport in the coastal and estuarine marine environments, as well as freshwater river, lake, and reservoir environments. Modeling studies are performed in concert with monitoring programs or data gathering efforts to supply model calibration data and are used to validate model predictions. Examples of hydrodynamic models used include EFDC, MIKE21, WQMAP, RMA2, HEC-RAS, and RIV1.



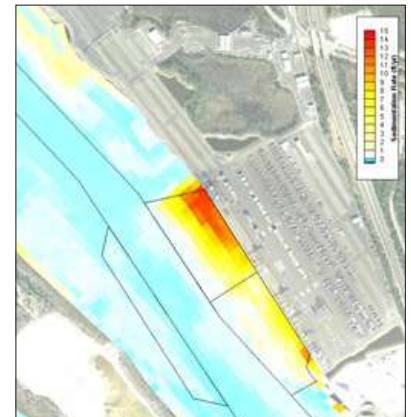
Pollutant Transport Dispersion Modeling and Water Quality Modeling

ATM provides modeling support services for pollutant transport and water quality assessments in rivers, lakes, reservoirs, estuaries, and oceans using 1-D, 2-D, and 3-D models. Models utilized include EFDC, MIKE21, WQMAP, WASP, CE-QUAL-RIVI, CE-QUAL-W2, CEQUAL-ICM, QUAL2E, CORMIX, MIKE ECO Lab, and VisualPLUMES.



Watershed Hydrology and Loading - TMDL Studies

ATM provides both steady-state and dynamic evaluation of watershed hydrology and pollutant loadings. Models utilized by ATM include SWMM, SWAT, PLOAD, BASINS/HSPF, LSPC, WAM, and WMM (Watershed Management Model).



Sediment Transport Modeling

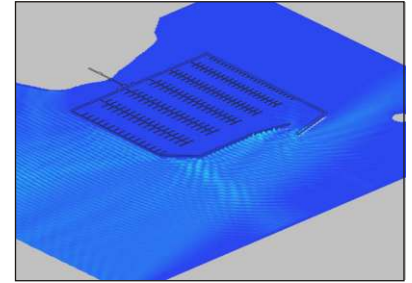
ATM uses sediment transport models to understand and predict an area's sedimentation dynamics. These models allow us to quantify and minimize required dredge volumes and associated costs for design and maintenance projects, as well as evaluate potential environmental impacts resulting from dredging operations. Models utilized include EFDC, SSFATE, STFATE, LTFATE, and MDFATE, as well as custom applications of sediment transport formulas.

OVER

Modeling Capabilities

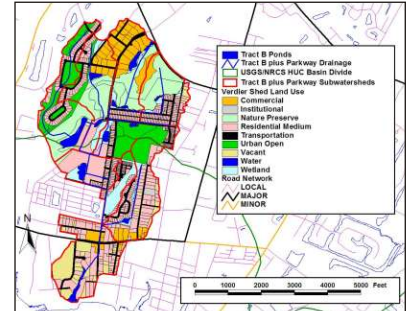
Coastal Processes Modeling

ATM assists coastal communities and resource managers by developing models to analyze the local wave climate and resulting forces, evaluate potential erosion problems, or optimize the design of structural applications or beach nourishments. We work with clients to effectively predict storm impacts, quantify project benefits, design protective features, and determine potential environmental impacts of the project. Models utilized include CGWAVE, BOUSS2D, SWAN, STWAVE, COBRAS, GENESIS-T, DNRBS, and SBEACH models, among others.



Stormwater Modeling

ATM has extensive experience in the application of various hydrologic/hydraulic models in the development of watershed management plans, stormwater master plans, and stormwater designs. We have applied these models throughout Florida and the Southeast in conditions ranging from coastal watersheds to karst geology to the Everglades. Models utilized include SWMM/EXTRAN, ICPR, HEC-1/HEC-HMS, HEC-2, HEC-RAS, and POND5.



ATM Natural Resource Impact Modeling

ATM's ecological modelers use GIS-based technologies (including ArcGIS and ERDAS IMAGINE) to create ecological extensions to standard water quality models. Analyses are based on extensive field observations and geospatial analyses that define the biotic community structure and its underlying interrelationships with water quality. The result is a powerful, integrated approach to environmental system assessment. ATM also uses MIKE ECO Lab to create custom ecological models, which can be used to simulate almost any ecological process.

