

GROUNDWATER FLOW AND TRANSPORT MODELING

Application to Submarine Groundwater Discharge, Coastal Wetland Hydrology, and Deep Well Injection

Water is a high commodity in southeastern Florida and surrounding areas along the coast of Florida. Freshwater is needed to restore the Everglades Wetlands, but is also lost to surface water drainage and potential submarine groundwater discharge. There are also progressing concerns, such as the injection of wastewater into the Boulder Zone of the Lower Floridan Aquifer and possibility of the injected wastewater "floating upward" due to density driven flow. All of these issues complicate the management of groundwater resources along the coastal region where competing needs such as flood protection and adequate water supply must be satisfied. SEAWAT (Guo and Langevin, 2001) is a variable-density flow and transport modeling code that has been used to successfully model coastal systems to deal with issues such as submarine groundwater discharge and coastal wetland hydrology. SEAWAT also has the potential to be used in deep well injection because the injected wastewater is of less density than native groundwater.