The Everglades Landscape Model (ELM) explicitly integrates fully dynamic flux equations of hydrology, nutrients, plants, and soils within a hydro-ecological 'unit' model. The dynamic ecological interactions among hydrology, biogeochemistry, and plant biology (Fitz *et al*. 1996) are critical to understanding and predicting changes within this ever-changing wetland system. Imperative to understanding landscapes such as the Everglades is the acknowledgement of spatial heterogeneity. In the ELM (Fitz *et al*. 2011, Fitz and Paudel 2012), ecosystem dynamics are made spatially-explicit by considering the flows and interactions across habitat types that are heterogeneously distributed across a regular model grid. The processes internal to grid cells can vary according to habitat type, each of which may have different hydro-ecological parameter sets. Flows of water and nutrients among grid cells are thus affected by changes within cells of the habitat mosaic, and this pattern can change over time as cumulative conditions in grid cells become more favorable for one habitat vs. another. The ELM incorporates both overland and subsurface groundwater flows, coupling the surface and ground water exchanges at each time step. Managed flows transport water and nutrients through the network of canals and levees, explicitly simulated in ELM via interactions between raster grid cells and canal/levee vectors. These managed flows have major impacts on the spatial pattern of nutrient loads and distribution - and thus the ecology of the landscape.

Water management for the SERES restoration options were simulated by the SFWMM v6.0, and the ELM v2.8.6 used SFWMM output of daily water control structure flow data for all of the structures within the greater Everglades model domain. Those managed flows drove the ELM hydrologic dynamics within the canal vectors and marsh grids. All water inflows from external sources into the model domain were assigned either constant concentrations for each structure, or, in the case of STA-2 and STA-3/4, daily phosphorus concentrations were used from simulations of the DMSTA. Those daily total phosphorus concentrations generally had 36-year mean concentrations of <10 mg/L; all other STA inputs into the ELM domain were assigned constant concentrations of 10 mg/L, but there are inflow sources that are not treated by STAs and thus were assigned higher phosphorus concentrations. These and other water management details are documented in the water control structure database queries and canal/levee maps that are specific to each SERES OPT scenarios (http://www.ecolandmod.com/projects/ELMreg500SERES/index.html#DataSpecific).

A variety of hydro-ecology and eutrophication Performance Indicators were available to make relative comparisons among restoration OPTions, detailed at http://www.ecolandmod.com/projects/ELMreg500SERES/index.html#PIs. These included 1) peat gain/loss rates, 2) phosphorus accumulation rates, 3) soil phosphorus concentrations, 4) soil porewater phosphorus concentrations, 5) surface water phosphorus concentrations, 6) surface water flow tracer (chloride concentrations), 7) surface water flow velocities, and 8) surface water depths. The primary metrics involved domain-wide maps which display the output of a particular model variable for a) the restoration scenario OPTion, b) the baseline (either ECB or CERP0) scenario, and c) the difference between the two scenarios. Each map includes a brief table quantifying the marsh area that exceeds two target criteria. Two temporal scales of aggregation were generally used: one that calculated a Period Of Simulation (POS) mean value for a variable, and another that provided "snapshots" (RAW) of a single month's mean at the end of the dry season and at the end of the wet season for an average rainfall year (1978), a dry rainfall year (1989), and a wet rainfall year (1994). In evaluating the relative performance of different OPTions, it is important to not place excessive emphasis on a single monthly snapshot because of its very brief time scale: rather, consider the POS values in conjunction with all of the temporal snapshots. All graphics of Performance Indicator results are found at http://www.ecolandmod.com/projects/ELMreg500SERES/index.html#ResultsAlts.

Fitz, H.C., Debellevue, E.B., Costanza, R., Boumans, R., Maxwell, T., Wainger, L. & Sklar, F.H., 1996. Development of a general ecosystem model for a range of scales and ecosystems. Ecological Modelling, 88, 263-295.

Fitz, H.C., Kiker, G.A. & Kim, J.B., 2011. Integrated ecological modeling and decision analysis within the everglades landscape. Critical Reviews in Environmental Science and Technology, 41 (6 supp 1), 517 - 547. DOI:10.1080/10643389.2010.530572

Fitz, H.C. & Paudel, R., 2012. Documentation of the Everglades Landscape Model: ELM v2.8.4: Ft. Lauderdale Research and Education Center, University of Florida. http://www.ecolandmod.com/publications/