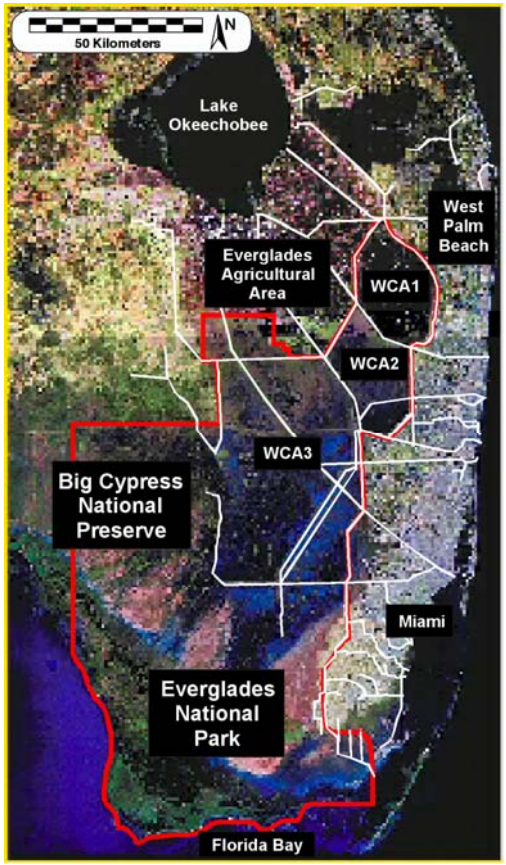
CERP RECOVER MRT comments:

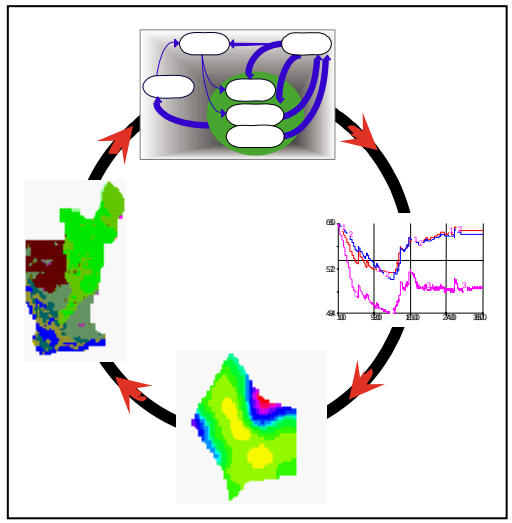
Responsiveness of ELM v2.5



Model Application Support Unit

Hydrologic & Environmental Systems Modeling Department

South Florida Water Management District



Independent Peer Review
August 1-2, 2006

All principal topics

Critical (negative) MRT reviewers' comments on ELM v2.1a, with follow-up action via ELM v2.5

Original comments and responses found in October 15, 2002 response document (http://my.sfwmd.gov/elm)

Level (subjective): 1 = High importance; 2= Moderate impact, documentation need; 3= Pointer to current documentation, possible documentation need

	References 2002 response document section number		References Full Documentation Report: Chapter# - Page# (Paragraph#)	
	Comment		**Response**	
Topic	*Level*	Summary	Status	Summary
General, conceptual				
	1	Model must be validated with 96-2000 data prior to application	Done.	ELM v2.5 is validated in this "classical" sense: 6-10 (5), 6-28 (1); but see 7-34 (1) discussing poor utilitiy of "classical" validation.
	1	Perform updated sensitivity analysis of model.	Done.	ELM v2.5 has comprehensive sensitivity analysis of all of the global and habitat-specific parameters: 7-6 (multiple pages)
	2	SFWMD should increase resources to this effort in order to meet the model goals.	No action.	SFWMD establishes priorities based on need of large variety of client needs. Some staff have been allocated to priorities other than ELM.
	1	ELM documentation needs to be improved.	Done.	See entire ELM v2.5 documentation report, and supporing information on http://my.sfwmd.gov/elm
	1	Extremely doubtful that ELM will work in marl soils.	Minimal action.	See 2002 document for detailed response. ELM v2.5 Model Performance Chapter demonstrates model utility: 6-1 (multiple pages)
Algorithms				
	1	Numerical dispersion of surface water constituents may introduce errors in water quality results.	Done.	See 2002 document for detailed response regarding dispersion uncertainties. ELM v2.5 has a scale-independent dispersion algorithm: 5-90 (5).
	1	Evapotranspiration algorithm is "archaic"	Done.	ELM v2.5 uses input data of potential ET, in common with other SFWMD regional hydrologic models: 4-17 (1). (But see 2002 document).
	1	Manning's n algorithm is "archaic"	No action.	See 2002 document for detailed response.
Data				
	2	Question on time-varying concentrations in boundary condition inflows.	Done.	Action was to document and further evaluate quality of inflow waters and associated constituent concentrations: 4-18 (4), 4-20 (1).
	1	Model has excessive parameter complexity.	Done.	Enhanced the documentation, quantifying that the actual complexity of the model parameterization is much less than was perceived: 4-13 (end); 7-27 (1).
Model Performance		Not part of MRT review, but submitted to RECOVER by US F&WS (Sept 2003)		
	1	Stage calibration statistics of ELM indicate calibration failure.	Done.	Disagree with summaries and interpretations of statistics. Improvements in performance documented in ELM v2.5: 6-1 (multiple pages)
	1	ELM fails to reliably predict historic total phosphorus concentrations throughout the greater Everglades region	Done.	Disagree with summaries and interpretations of statistics. Improvements in performance documented in ELM v2.5: 6-1 (multiple pages)
	1	Within the WCA-1 (A.R.M LNWR), there is a clear spatial pattern of site bias that demonstrated calibration failure.	Done.	Improvements in performance documented in ELM v2.5: 6-1 (multiple pages)

Topic: General, conceptual

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Topic: Algorithms

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	1	Manning's n algorithm is "archaic"	No action.	See 2002 document for detailed response.

Topic: Data

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Topic: Model Performance

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Discussion

Response table created prior to July 28, 2006 comments from Dept. of Interior (DOI)

- Those DOI comments appear to generally indicate a useful level of responsiveness
- DOI states that there are topics that ..."continue to be unaddressed (for examples, see recommendations of Dr. Matt Harwell..."
- Those examples appear to be reasonably-well addressed in ELM v2.5 documentation:

1. Need for a sensitivity analysis - Chapter 7
2. Demonstrate model performance along WCA-2A transect - Chapter 6
3. ELM compatible with the RSM? - Ecological algorithms compatible w/ RSM
4. Need more information on modeled P cycle - Chapter 5
5. Atmospheric P deposition unclear - Chapter 5
6. Parameters and complexity; specific parameters – Chapters 4 and 7
7. Inadequate staffing – multiple SFWMD mandates