Highest priorities for model development and scaling up in East Coast region

We need all types of models:

- Conceptual vs. numerical model
  - need conceptual models to develop numerical models
- Empirical vs. mechanistic
  - interpolation vs. extrapolation
  - need empirical models first to feed into development of mechanistic models
- Need models on regional (East Coast) scale and at scale of individual wetland/estuarine systems
- Satellite algorithms
  - use for model forcing and evaluation

What can/should models do for us:

- Identify gaps in observations
  - yesterday's list of priority observational studies was largely based on model results (respiration and lateral exchange)
- Provide organized scheme for pulling together disparate observations (interpolator/extrapolator)
- Relative impact of different processes (sensitivity analyses)

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Scaling up thoughts:

Satellite algorithms:

- Need to develop algorithms to use new hyperspectral information that will be available in coming years/decades
  - new CDOM, DOC, chl, PP algorithms
  - estimate quality of OM exported from wetlands

OOI:

- 150km x 150km box on shelf
- Is essentially a SWAT team for the shelf, just like we suggested we need a SWAT team for the estuaries
- If models can reproduce OOI observations in this region, this will be a good test of the model
- Can probably use other information (DO, physical, etc…) to get NEP

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Characteristics of next generation of models:

- Nesting is key (must be two-way)
- Include biogeochemistry into state-of-the-art assimilative physical circulation models
- Improved benthic models (sediment diagenesis) in large-scale models
- SAV modeling needed (lateral growth of bed; two-way interactions are important)
- Marsh modeling…