Future scenarios

David Foster, HFR
Nancy Grimm, CAP
Chuck Hopkinson, PIE
Karen McGlathery, VCR
Dan Reed, SBC
Evelyn Gaiser, FCE
Emery Boose, HFR
Ben Ruddel, CAP
Patrick Beurgeron, NWT

Phil Robertson
Barbara Bond
Morgan Grove
Darrel Jenerette, CAP
Dawn Browning, JRN
John Chamblee CWT
Emily Stanley NTL
Julia Jones AND

Initial discussion/roundtable: what are some issues?

General:
• bringing people into the picture, in terms of management of natural ecosystems or incorporating landscapes in which people are present,
• Coastal systems: sea-level rise, increased storm frequency and magnitude, cities on coasts, legacies of past land-use changes on modern resilience, restoration projects as experiments or adaptation mechanisms
• Inland ecosystems: water availability—snowpack, rain packaging; changing uses of working lands (biofuels, agrarian transition, ex-urbanization, urbanization). Scenarios incorporating legacies and changes in governance and decision making.
• Capitalize on data availability, standardize approaches/methods, consider both intra- and inter-regional change

Question: Are the best practice for adaptation to climate change context dependent?
Use intra- and inter-regional comparisons
Slow change vs. episodic events
Are scenarios the best way to identify adaptation strategies? (ans: yes, they must be coupled)

Raw notes from Roundtable:
DF, HFR: Continuing scenario work incorporating humans
CH, PIE: Regional perspectives on land use /land cover, e.g., legacies of erosion and sedimentation from early 1900s land use on salt marshes in the 2000, and how they interact with climate change, sea level rise
KM, CVR: coastal/sea level rise, frequency/magnitude of storms
DR, SBC: “Coastal squeeze” land-water interaction conflicts/human use/natural resources
EG, FCE: Restoration and climate change, best strategies?/using scenarios framework
EB, HFR: LULCC and climate change, forests
BR, CAP: Built environment, land transformations, demographic change, urban heat island, inland urban/drought
PR, KBS: Agrarian transitions, how decisions shape agrarian landscapes, biofuels industry impacts.
BB, AND: Willamette 2100 project, regional resources, ENVISION framework, ULTRA and snowpack
MG, BES: Adaptation and sustainability, urban coastal, decisions, implementation, lags, e.t., methods for his-res LC; data standardization and common analyses
DJ, CAP: Tradeoffs: water-energy, water heat mitigation
DB, JRN: LULCC/urbanization, shrub encroachment, seasonality of precip, “working landscapes”
JC, CWT: Combine Climate change, exurbanization, water quantity and quality, historical LULCC, econometric analysis, land markets.
JJ, AND: Linking LTERs (mostly headwater) to downstream cities in terms of streamflow
Brainstorm ideas/questions

1. Legacies of historical sedimentation on current, future trends in coastal systems
2. Legacy effects and path dependencies
3. Mechanisms of adaptation
4. Past → future (scenarios in a testable time frame)
5. What is the spatial unit of analysis?

Themes

1. Deeper time: changes in landscapes that have occurred may dwarf what will occur
2. Legacies condition the present responses
3. Loss of foundation species/restoration return of these
4. Restoration, intervention
5. What mechanisms for adaptation? Constraints. For example, central question of Portland ULTRA is that governance institutions (e.g. land use planning) create framework within which adaptation to change occurs, or not.
6. Coastal: climate change vs. demographic change (future development in coastal Georgia, Virginia as a result of built up South Carolina and Florida)
7. Inland: water/climate change, demographic change

Another round of discussions? We aren’t prepared for the big proposal (and we don’t know what the opportunities are, yet)
Looking at past, how are decisions made? Not based on scenarios, but on past events.

Next steps:

Scenario synthesis
- Individual site work
- Bringing in non-LTER participants
- Coming out with tangible products
- Retrospective analyses
- Using scenarios as hypotheses, developing long (medium)-terms tests.

NEXT STEPS FOR SCENARIOS
SYMPOSIUM AND WORKSHOP
- Using a common protocol for constructing scenarios among different projects, different questions – the LTER approach (further refine)
- Build on existing data and our long-term approach
- State-of-the-science book as an end-product of the symposium/workshop
- Organized around challenges
  - Water supply
  - Coastal systems
  - Biofuels
  - Land use/urbanization/regional
- Other groups to incorporate: RISAs, NOAA, City sustainability managers, governors groups.

➔ The LTER niche is:
- regional/interface between human system and wild ecosystems
- long-term data
**Scenarios teams for proposals**

1. Forest (macrosystems proposal already in)
2. Grassland/agricultural/biofuels (WSC at NTL; new proposal under energy solicitation?)
3. Urban (the ULTRA network)
4. Coastal systems (macrosystems proposal in, no scenario per se)

**Alternative**

- Topic across all: Water availability. Perhaps a synthesis under WSC competition?
- Regions – focus scenarios on regions, all ecos types represented

**Info sharing across the network**

- how many people have or will have scenario-building activity in your LTER proposal?
- Remember to consider data availability, data on legacies at sites/regions
- Can there be some hierarchy or organization structure to what things are varied in scenarios (part of protocol)