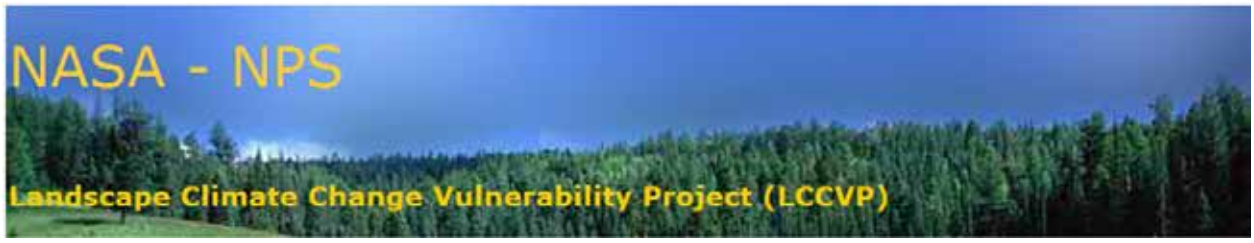

Introductory Core Team Meeting – Notes

Date: Tuesday, 11/13/2012

Time: 7:30 – 10:00 AM (EST)

Location: Renaissance Asheville Marriott (Asheville, NC)

Takehomes from Meeting – To Do's:

1. Compile new project team email list
2. Identify top priority scientific papers that integrate elements of LCC-VP; identify authors

Agenda

1. New participants / ideas / suggestions for field trip
2. Group updates
   a. Andy
   b. Tony
   c. Nate
   d. Dave/Sarah
   e. Patrick/Tina/Scott
   f. John
   g. Bill

Meeting Notes

New participants / ideas / suggestions for field trip

- From Woods Hole
  - Tina Cormier – RS and GIS technical
  - Scott Zolkos – LiDar, water quality and chemistry
- From MSU
  - Nate Piekielek – Phenology, WBP (NCCSC)

    - Regan Nelson, Erica Garrotte (EPSCoR)
    - Linda Phillips, Sondra Torma
- Outline ideas for papers by group and synthesis papers
    - How do we pull everything together from this project?
- Suggestions for local projects
    - John G.
        - N deposition air inputs but not coming out the watersheds; where is it going? Opportunity for Forrest modeling?
        - Good water quality data from lots of streams
        - Micro-climatology – moist north facing appear to be more resilient to warming and provide refugia
        - Amphibians and herps conservation
        - Grassy balds – small proportion of the park but high biodiversity, globally rare

Summary of progress by group

Andy / MSU

- MSU – Linda Phillips, Sondra Torma
- EPSCoR – Regan Nelson, Erica Garrotte. Statewide ecological forecasting by Steve Running; trying to cast as ecosystem services.
- NCCSC – Impacts group, Barry Noon, Diane Debinski, Bill Lauenroth; Nate funded on this.
    - Funded by Dennis and Jeff.
    - Meeting in Ft Collins day before ROMO
    - Ben had breakfast with Tom & Andy at YELL science meeting.
- Recent meetings
    - Apr – Whitebark pine subcommittee
    - May – NCCSC
    - July – YNP / GTNP cons priorities (Tom O)
    - Nov – ZSL, WCS, IUCN PA symp
    - Nov – NCCSC impacts group
    - Nov – ROMO
    - Jan – YCR
- Ann Rodman – now in charge of climate program. Dave Hallack has different view – wants to start with step 3 – what are mgmt. opportunities then back to science. Will be interesting to see how this evolves.
- VA of PACES for 57 Parks
    - Impacts of climate, invasive plants (NPSpecies), and land use change in PACES (Uses PACES from Cory's work); from IUCN mtg: Lots of interest in PACE concept for PAs worldwide

- Cumulative impacts – PACE based in large part on LUC exposure – now adding climate and invasives
- Then add biome shifts – Anndregg, Allen et al., etc = tree dieoff, etc.: what % of parks are projected to undergo a biome shift (under this particular analysis, few/now shifts in eastern parks)?
- Biome shifts – Rehfeldt et al. 2012 – what proportion of parks undergo biome shifts?
- Some parks with high climate change show now/few biome shifts – sensitivity
- Management paradigms: naturalness vs. future condition
- Possible case study: Pac NW (thought to have high adaptive capacity? In historic range of variation – manage for naturalness) vs. SAMO (future condition)

Tony & Andy

- GYA climate and climate change
- Comparing weather station vs. 4 km PRISM data. See strong warming in stations. Warming, less pronounced, in grids (1981-present)
- Most gridded warming at higher elevations
- Compared to McFarlane et al. (2010) – high res map of WBP mortality – seems to be highly correlated with high rates of warming

Nate

- Bioclimate niche modeling = 5 spc
- Stat models 4 life history stages
  - Have climate data and some response data identified
  - Will acquire additional response data, develop models, forecast
- Phenology – focus on green patches
  - Patch dynamics of forest phenology
  - Methods – NDVI
  - Current conditions described
  - Will forecast, possibly expand to ROMO, look for collaborations Use for climate refugia?

Dave T. and Sarah R.

- 30-m res land use (63 classes) across the US
  - Based on housing density, PAD, transportation, employment etc.
- Degree of human modification and/or landscape integrity
- Cleaning up NLCD impervious surface at national scale
  - Reduce % urban area by up to 50% in places by removing linear features (i.e. transportation corridors)
- Comparison of soils datasets and fine-scale resolution of SSURGO, STATSGO etc.
  - What underlies TOPS algorithms?

    - Compiling datasets nationally from ESRI by HUC-8
        - Includes soil-water holding capacity
- 1:24k scale NHD to create 30-m resolution with complete flow-paths linked etc. for GNLCC first as pilot study
- Connectivity as component of adaptive capacity
    - Account simultaneously for changing climate and land use on connectivity
    - Run multiple scenarios to determine uncertainty
    - Run for multiple levels of biological organization
    - Velocity of climate change like ?? Science paper
        - Crosby and Lawler UW interested as well
    - Connectivity as flow-accumulation model
    - Assemblage models based on co-occurrence of species assemblages
        - Have a pronghorn model for western US
        - Nested approach of terrestrial generalists to species assemblages; also by biome type?

Patrick J. and Woods Hole

- Link changes in composition to changes in ecosystem process (ET, stream flow, carbon uptake etc.)
- Iverson and McKenney already done modeling for eastern spcs
    - Summarize existing knowledge
- High-res modeling at park unit scale (800m)
- Northern expansion of slash pine potential habitat in Iverson data
- Contraction of sugar maple from Iverson data
- Spruce-fir suitability down to ~13% by 2065-2099 in GRSM
- Upcoming
    - Sub 1km pixel downscaling based on topographic complexity?
    - Link structure and composition using lidar
    - Build working relationships at GRSM, other parks and agencies

John G.

- ClimateSmart group – follow-up to Glick et al.
    - Climate adaptation book
    - Stein and Glick main editors, Gross lead on 2 chapters
        - How to use vulnerability assessment?
        - How to monitor under CC?
    - DeBeaurs phenology proposal using NPS data
    - Downscaling model selection? Consequences etc.
        - Ryan Boyles NC State climatologist
        - Southeast CSC producing evaluation of downscaling techniques

        - Dettinger constructed analogs best for use in the west
        - Dynamic down-scaling probably going to be used for water stress in SE
    - Enduring refugia work persistently green areas as refugia
        - Marc Anderson
        - S. Dobrowski
            - Micro-refugia Global Change Biology (2011)

Bill Monahan

- WBP range-wide modeling setting context for GYE work
    - Simple physio-informed model based on June max T, % sun, and soil
    - Does good job of explaining current range-wide distribution of WBP, including major/minor components of distribution and new translocation sites in northern BC
- ROMN limber-pine similar effort as WBP vulnerability
    - ROMN mentioned in LCC-VP proposal but WBP does not occur that far south; Limber closely related to WBP and interest in learning what aspects of VA are/are not transferrable to Limber (via principal of niche conservatism)
    - Using park-based inventory data and PRISM to build niche-models
    - Projected to future using PRISM-downscaled CMIP5 models
    - Useful for guiding conversation with managers about new research needs and possible management scenarios