

Coweeta LTER 2017 Winter Meeting Notes
2-3 February 2017

Forest Service Research Update (Elliott)

Ongoing studies

- Rhododendron removal study
- Long-term network (e.g. climate station, weirs, veg permanent plots, eddy flux tower)
- Long-term watershed studies
- USGS gauges + FIA data
- AFRI Sustainable Bioenergy Program
- JFSP wildland fire effects modelling effort

New studies

- AFRI proposal funded for WS31 treatment, WS32 reference
 - Evergreen shrub removal + Rx fire (repeated); rhodo would be cut in fall 2017; fire treatment in spring 2018
 - Looks at how treatment impacts water supplies, productivity, and biodiversity
 - Measurements
 - Weirs and climate station
 - Soil and stream chemistry
 - Microclimate
 - Vegetation
 - Tree water use (sapflux)
 - Subcanopy eddy-covariance systems
 - Aquatic insects
- Quantifying role of USFS land in providing surface drinking water
- 2016 Wildfires
 - CHL – streams (Q, T, sediment, chemistry); synoptic stream chemistry
 - Plans for vegetation, soils, birds

LTER Network Update (Jackson)

Goals for meeting – work on synthesizing existing data/studies; think about positioning ourselves for other grant opportunities

- Before she retired, Saran Twombly wrote the Baltimore and Phoenix LTER and said to get rid of social science; After she retired, the PIs went back to NSF, and NSF said to ignore Saran's guidance and continue social science work
- LTER working group continues to say that NSF is committed to LTER; last year there were competitions for 2 new marine sites and 1 new desert site; Seviellta applied and will be the new desert site.
- It is only speculation, but Jackson thinks that perhaps there will be announcement in 2018 for another eastern deciduous forest site. If this happens, He reasons there are 4 sites that would be competitive: Oak Ridge, Fernow, Duke Forest (mostly a pine forest), and Coweeta.
- There is widespread sentiment among people who review these proposals that think we should be led by a forest ecologist. It would make sense to bring someone in who is a prominent ecologist to become the new lead PI.

- We have at least 2.5 years for salaries for LTER staff/techs.
- If we write grants, we need to keep in mind to write in costs to existing infrastructure (dorm, UGA internet, lab).
- New CZO competition in 2018. Bolstad suggested we think about putting together a framework for a CZO.

Long-Term Data Curation Plan for Coweeta LTER (Herndon)

- Currently 213 datasets
- LTER Network Data Portal: 183 datasets
- Journal articles: 1,362
- Theses & dissertation: 336
- Remainder: 659

LTER Network Level Management

- In 2016, split into 2 organizations:
 - LTER Network Communications Office (NCO) housed at National Center for Ecological Analysis & Synthesis, U.C. Santa Barbara
<https://nco.lternet.edu> or <https://www.nceas.ucsb.edu/>
 - Environmental Data Initiative (EDI), a distributive organization run out of the NTL LTER site, University Wisconsin-Madison
<http://environmentaldatainitiative.org/>
 - Most “useful” information and data portal still accessed at: <https://lternet.edu/>
- Will work with NCO to provide “lasting” information and summaries relating to CWT’s history, research projects and topics, and key findings.
- Will follow Shortgrass Steppe (SGS) template, which was decommissioned in 2010.
- Focus and goals of EDI are to provide the following to the larger community of NSF Programs:
 - Environmental data archiving through the current and planned future developments of the Provenance Aware Synthesis and Tracking Architecture (PASTA), which is a member node of DataONE
 - Data management support through outreach and developing targeted training for the broader environmental research communities
 - Best practices documentation of how to economically and efficiently manage data in order to accelerate the data life cycle

Coweeta Data Management Strategy During the Wind-Down

- CWT will continue to upload all processed and available data to PASTA throughout the wind-down period
- We will also thoroughly review all datasets within PASTA to ensure accuracy and functionality
- Since 2008, CWT & GCE have collaborated on database development and data processing tools; taking advantage of having two LTER sites within the same academic institution
- GCE has graciously offered to provide hosting and data archival services for CWT after site decommissioning
- Technical details: GCE will host two virtual machines on a physical server located in Marine Sciences on UGA campus, leaving them operational at least through 2021

- This will also allow for data and systems archiving that can easily be accessed in the case of any future Coweeta based research
- This will allow for CWT to have a site-level website with static site history and research projects summaries (trimmed down informational pages) - keeps us from going dark!
- Website will also have a functioning data catalog, bibliography, and other resources
- Other remaining services currently provided will be removed (e.g., intranet services)
- Project specific information and Data files can be provided to PIs, USFS, or possible secondary hosting on Warnell servers to provide easy access to raw data and supporting files
- Only the dataset files within PASTA will serve as the official research datasets!

Breakout Sessions

Hillslope Meeting

Worked on developing flow time series for the 8 hillslope sites for calculating nutrient loads and testing hydrologic models. Rhett and crew measured cross sections and local slopes, and Rhett worked up rating curves with Manning's equation with n values calibrated to salt dilution flow measurements taken by Jack Webster. Calculated n values were very high, ranging from 0.1 to 0.28. Two streams featured out-of-bank flows during the monitoring period.

- WS14 – terrible rating curve. Scale the gage data instead. Charles compared the scaled gage data to the data generated from the rating curve and stage measurements – scaled gage data looks much more reliable.
- QLZ LiDAR will come out in spring. This can be used to extend x-sections for the two streams that experienced out-of-bank flows.
- Needed drainage areas to convert flows to depth/time. Paul provided the drainage areas.
- Shannon determine land cover for the hillslope sites.
- Rhett and Jack will continue to work on flow records and then send out a “final” set.

Subsurface Hydrology Meeting

- Look at placing or using existing wells in WS7 to assess residence time.
- Need two different types of tracers – one at ridge and one midslope
- Look at CFC dating – Neil Plummer
- Look at Ciaran Harmon dating technique
- Bring in Dave Generaux – look at his Coastal Plain dating
- Apply tracers in wells drilled through clay layer.
- Rhett sent out a Bromide injection idea following the meeting.

Intensive Watershed Meeting

- Jack and Rhett presented summaries of their analysis of DIN export, hydrologic variation among the watersheds, sediment exports, and specific conductivity variation among the watersheds (Powerpoints distributed before the meeting). Rhett proposed that we examine the "watershed response" data (algae, stream biota, and channel conditions) in a single paper using Jack's and Rhett's analyses and papers as background.
- The group noted that we have too many important environmental variables and too few streams. Need to reduce the dimensionality of the problem. Suggestions: run correlation

analysis of all the environmental variables and MDNS and find some composite axes with which to evaluate the data.

- We summarized the watershed response data: 2 yrs salamander data. 2 yrs fish data. 4 yrs algal data. 1 yr focal taxa (there is no year with all responses measured).
- After going through Cathy and Maura's preliminary analysis of the algal data (PPT distributed before meeting), the group had several suggestions. First, the algae data should be pooled across years. Second, Maura should look at the unexamined inorganic data to see if it provides insights. Third, toss the weird autotrophic index values and pool those values across years as well.
- David needs TSS and sediment load data from Rhett, and he wants to run the bank erosion model (maybe Jake can run it?). Rhett is meeting with Jake on Wednesday.

Rhododendron Removal stream manipulation meeting

- Rhett's crew GPSed the tops and bottoms of the study reach in January. Seth took the points and revised the map. He sent the new map out on February 3. It looks great!
- David now has all the channel width data, which he will summarize. He will also calculate the study reach slopes using LiDAR. We will put these data into the common site description table.
- Rhett still plans to have a draft of the temperature response manuscript for review this spring.
- When is the last sampling anticipated by each stream researcher?:
 - Fred October 2018
 - Reduced intensity temperature monitoring for summer 17 and 18
 - Kelsey – Benthotorch algal sampling thru 2018
 - Kelsey has all the community data she needs
 - Salamanders through summer 17
 - Seth will sample focal taxa summer 17
 - Kelsey will continue to sample the leaf litter baskets
- All stream researchers find Rocky Bald useful as a second reference. None of us have time to incorporate Rocky Bald as another treatment at this point. Unanimous consensus was to ask Kitty NOT to burn Rocky Bald until after November 2018.
- After the meeting, Kitty spoke with Chelcy about the burn plan. The USFS would still like to get Rocky Bald burned as soon as possible so that the riparian plot treatments aren't too far out of sequence with the upslope plot treatments. Therefore, they will keep Rocky Bald in the burn plan. We'll just see what the weather brings, but we may lose our second reference this year.
- The temperature data and Maura's algal data indicate that the stream responses to rhododendron removal are highly patchy – that treatment effects are only seen where there is a gap in the overhead canopy, moreover, they are very brief lasting only an hour or so while the sun passes through the canopy gap. We realized that we do not have a canopy dataset that captures this variability. After a long discussion with Paul Bolstad, we decided the best approach to characterizing the variability of solar insolation was to employ hemispherical photography at 10m intervals down the channel.
- We need to get a hemispherical canopy photography system and shoot every 10m. Seth is investigating and pricing systems. We'll need to spend some time taking photos this summer.

Climate vs Land Use discussion

- New Proposal: We need to look at variation in stream communities among forested headwater streams differing in climate due to spatial climate variability.
- Assemblage differences in forested stream assemblages across spatially-driven differences in precipitation, elevation, aspect, and mean annual temperature.

Terrestrial Ecology Discussions

- **LTER III: Gradient Study:** 1) Update on status of Long-term Gradient C and N paper being led by Knoepp. Paper is being revised after Miniat input. Will be sent to remaining co-authors soon. 2) Update on sampling status. Winter 2016-2017 represents the final collection of litterfall and overstory inventory data (almost completed at time of LTER meeting, has since been finished). 3) Future of Gradient plots: Clark has included these measurements in submitted grants in hopes of continuing them. 4) Clark is working on the data using a joint modeling approach, which includes species combination with specific traits to model changes in community due to changing climate. **Soil Moisture Gradient:** Bolstad described briefly the status of the plots that have been installed by Jason Love and LTER techs and the measurements being made on each plot.

Social Science Discussions – Meredith, Brian, and Steve met at the meeting, but I don't have any notes from their discussion yet.