

**CLAD Science Sub-Committee  
Spring NADP Meeting-Fort Lauderdale, FL  
The Sheraton Fort Lauderdale Beach Hotel, April 15-16, 2014**

**Tuesday, April 15**

**1:15 PM Welcome and CLAD Business (Jason Lynch & Jennifer Phelan)**

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- The participants introduce themselves:

In person: Cindy Huber (NADP), Rich Pouyat (USFS), Robin Dennis (EPA), Selma Isil (AMEC), Tim Sullivan (E&S), Doug Burns (USGS), Donna Schwede (EPA), Jill Webster (US FWS), Randy Waite (EPA), Murray Hilderan (SK MOE), Pierrette Blanchard (Env. Canada), John J. Jansen (Southern Co.), Eladio Knipping (EPRI), Chuck Sams (USDA- FS), Emily M. Elliott (U. Pittsburg), Rich Scheffe (EPA), Salim Belyazid (BCC AB Sweden), Kris Novak (EPA), Ellen Porter (NPS), Tamara Blett (NPS), Jennifer Phelan (RTI), Jason Lynch (EPA) Phone/ Online: Clara Funk (EPA), Jeff Hernick (EPA), Chris Clark (EPA), Linda Pardo (USFS), Tonnie Cummings (NPS), Kevin Horn (VA Tech), John ( ), Leonard L'Evin ( ), Arnout Schure ( ), Doug Baldwin ( )

- CLAD Fall Webinar Meeting Minutes – motion to accept minutes (Cindy Huber) with Doug Burns seconded the motion. Minutes were unanimously accepted. Notes will be posted online on the CLAD website. Please contact Jason or Jennifer with updates to CLAD mailing list.

- New CLAD listserv. Jason will distribute. Everyone should make sure that they check their spam email to ensure they receive CLAD emails.

**1:25 FOCUS Update**

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FOCUS (Focal Center Utility Study) is a project of CLAD that was initiated in the fall of 2010 following the guidance of UNECE to assemble a national critical loads database. Phase I was to put together a national database of CLs.

1. FOCUS Phase II (C. Huber)

- a. Recent accomplishments
  - i. Powell Center Proposal “Forecasting Forest Response to Nitrogen Deposition” was selected for funding (Aug. 2013)
  - ii. CL Database, Version 2.0 posted to NADP website (Nov. 2013)
  - iii. FOCUS paper published in Environmental Science & Policy (Apr. 2014)
- b. Working Group updates
  - **WG A** BC weathering and ANC-leaching (J. Phelan): recommendations will be reconsidered in FY14
  - **WG B** N Parameters (M. Fenn): Drew Bingham from NPS is synthesizing information re: NO3 leaching and N immobilization terms
  - **WG C** Soil-Vegetation Link (R. Warby, L. Pardo): working collaboratively with Powell Center team to develop database of soil chemistry and vegetation response
  - **WG D** Lichens (L. Geiser): effort now includes Eastern US and acidification effects (not just N) > 15,000 data points. CLs for most EcoRegions in database by end of 2014, manuscript planned
  - **WG E** Empirical CLs of N (L. Pardo, C. O’Dea): translating empirical critical loads to a finer resolution / have a pilot project underway that examines the interaction between climate change, N deposition, and pest disturbance in NE US
  - **WG F** Surface Water CL (J. Lynch, J. Cosby): 2,000+ new sites, tagged duplicate CLs

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- **WG G** Maintain and Expand National Critical Load Database (NCLD) (J. Lynch): Jason has increased the number of CL by 2000 and is resolving duplicate (tagging) critical loads for water bodies and stream segments to document different methods for critical loads at the same location (water body). Purpose of identifying CL is to ensure that the values aren't seen as unique different values that could be erroneously double counted / should have a count of number of people who have been able to download database. NCLD now posted on NADP webpage, call for new data. See item "2", below.
  - **WG H** Biodiversity CLs (UNEC Call) (C. Clark): see "D", below
  - c. Looking ahead
    - i. Facilitate coordination b/w FOCUS groups and Powell Center
    - ii. Document response to "Call for Data 2014"
    - iii. Anticipate updated CL database by fall 2015
    - iv. Have a new request to add CL to the database focused on surface waters
2. National Critical Loads Database (NCLD) (*J. Lynch*)
- a. NCLD (V 2.0) was released online in Nov 2013 with expanded and updated metadata, methods, and references and improved citation information linked in DB; expanded regional surface water CL table; added waterbody ID ("COMID", NHDPlus V.2); mistakes are being corrected as they are found.
  - b. Tim Sullivan made people aware of a new dataset for the SE U.S. for a large number of watersheds. He will pass along these data to Jason / Rich Scheffe made point of the need for recognizing date of critical load (is now within table within DB)
  - c. Anticipate NCLD V2.1 and short white paper with corrections soon
3. Forest Response to Nitrogen – Powell Center update (*C. Huber, L. Pardo*)
- Objectives:
- a. Step 1: Do analysis at plot-scale to evaluate relationships between soil chemistry and plant physiological responses to refine critical thresholds used in SMB critical loads
  - b. Step 2: a national scale empirical critical loads of N analysis to build in other factors (e.g., climate) / informed by plot-level critical thresholds
- Approach:
- i. Step 1: Assemble data from a large number of sources: literature public databases, individual researcher data; would like to have full datasets across N gradients; would like to identify data gaps for future research; request for people to identify and send Doug Baldwin and Cindy Huber datasets to support criterion threshold analysis; can get the list of the parameters that are included in the data "gathering" phase from Cindy or Doug; sites currently in database are mainly the NE and the west coast
  - ii. Step 2: Focus on FIA dataset; formally integrates the plot-level analysis into the N deposition gradient analysis; initial FIA database is compiled
  - iii. Uncertainty framework: would like to develop an uncertainty framework in empirical CL project; would like to use same framework in the N dep and plant diversity national analysis (other Powell Center project); based on 5-point "reliability ranking" based on number of sites, number of samples, representativeness of receptor / range of ecosystem covered, and strength of response
- c. Empirical critical loads for N synthesis coordination:
- i. There are many ongoing separate CL database

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- ii. Need to set up a coordination effort to set national CL including all receptors / communication system / propose twice yearly conference calls to address this
  - iii. Cindy and Jason will follow-up with Linda to go over how to move forward with empirical critical N loads synthesis
  - iv. Suggested session focused on empirical N critical loads in 2015 ESA
4. Report on UNECE CCE Mapping and Modeling meeting-Rome, 2014 (*C. Clark*)
- a. Good discussion of science related to evaluating CL/ impacts of N Dep on terrestrial diversity; summary of submissions from the participating countries
  - b. Take-homes:
    - i. Dose response and dynamic modeling data, good submission from across EU participants. Unfortunately, there were many different modeling chains and indices so not easily synthesizable. New objective to identify a method to use: “positive identifier species” to add to existing lists
    - ii. Not possible to identify general patterns of response / outcome of meeting was to develop an approach that could be adopted (common index and model). Requires positive identifier species (not too common and not too rare) that is intermediate abundance
    - iii. PROPS = database of probability of occurrence against a set of predictor variables (e.g., temperature, precipitation, soil N, etc.). Used a probability vs. abundance as a metric, VSD+ / PROPS came out as being the recommended modeling approach
    - iv. U.S. could potentially develop PROPS database using existing databases (e.g., FIA) and link to existing US biogeochemical model (e.g., Day-Cent, PnET-BGC, etc.)
  - c. Propose to discuss at Fall NADP mtg. suitability of VSD+/PROPS model chain platform for CLAD, driven by species in FIA, MAGIC, PnET/BGC).

\*\* Cindy Huber brought up question re: including a VSD training session/seminar within CLAD for a future meeting\*\*\*

### **2:30 Mercury Critical Load Discussion** (*D. Burns*)

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Background info on Hg and Hg and S cycling; Critical Level and Load projections in Europe (total Hg, not MeHg); Clean Water Act – 303(d) list of impaired waters, MN case study, Hg TMDL.

- 1. Status in the US:
  - i. Hg is the most common health risk for water bodies; Main source of Hg is atmospheric deposition (unless e.g., mining area); Coal burning is the main source of Hg; Hg is largely global circulation issue (not just U.S.); Large legacy pools in soils and oceans
  - ii. Monitoring network is already in place (MDN, AMNet, Hg litterfall network), but atmospheric models would be needed for Hg deposition and critical load evaluations
  - iii. Challenges: Global, not just U.S.; need to account for legacy pools, pre-anthropocene concentrations still under contention
- 2. Status in Europe:
  - i. LRTAP 1998 Heavy Metal Protocol which began in 2003
  - ii. Looking at metals combined – Cd, Pb, and Hg (but also looks at Cr, Ni, Zn, As, and Se); Use model – MSCE-HM / steady state, uncertainty in deposition estimates = 39% +/- 18%

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- iii. Defined different indicators: Human health; terrestrial and aquatic ecosystem functions (mainly by concentrations in soil, food, water, biota)
  - iv. Have critical loads set, but not sure the scientific justification of the CL values; Have transfer functions between deposition and biota, e.g., fish
  - iv. All calculations are done on total Hg, not methyl Hg. Currently (2000) high levels of Hg critical load exceedance (70%?). Future critical loads (2020) expected to remain similarly high
3. U.S. natural sources = volcanos, geothermal releases, forest fires
- v. Have been some case studies in states within U.S. (didn't get list), linked to TMDL approach and impaired waters
  - vi. MN case study with comprehensive evaluation of lakes - 2/3 impaired due to Hg / majority of Hg from atmospheric deposition (70% anthropogenic and 30% from natural sources) / only 10% from within state
  - vii. Challenges = CWA at state level, but large portion of Hg from out of state. Relevant policies in U.S.:
    - (1) EPA Mercury Air Toxics Standards rule (MATS) to regulate Hg emission in power plants
    - (2) Minamata Convention on Hg – controls trade, elimination of Hg products, controls on mining, limits Hg emissions / U.S. is a signatory (~92 countries) and the only country to ratify
5. Discussion: Is there a role for CLAD in taking on Hg, can we inform policies? Producing Hg CL maps and CL estimates can be a catalyst to stimulate discussion, investigations, and eventually inform policies. Discussion points:
- a. This is important topic, but is it CLAD's job? Perhaps another NADP sub-committee is necessary (sister to CLAD?) as it would be a pity to dilute the effort and talent in CLAD. Recommend developing a session for NADP Fall mtg to discuss as a wider group.
    - i. Tim Sullivan made point that it may not be necessary to start a process of "calculating" critical loads / first step would be to evaluate the existing databases to see which locations have fish Hg levels that are greater than the human consumption threshold. These could serve as the starting "critical loads"
    - ii. Rich Scheffe – made point that Hg datasets and data managers need a "user group" to help define how to produce deposition maps / should get some "preliminary" CL maps out there to stimulate discussion and interest in Hg
    - iii. Ellen Porter – NPS funded Hg methylation potential maps / as a case study, led to further evaluations / Hg CL are worth pursuing, but not to divert attention from N and S CL
    - iv. John Janson - brought up concern re: natural levels of Hg in fish. What are the natural levels? Need to get a better understanding of the natural levels as part of this process
  - b. If want to pursue Hg CL discussion, may want to include Dave Krabbenhoft or Dave Evers. Also folks from EPA OW TMDLs, Colin Eagles Smith (worked in parks in western U.S.)
  - c. Recommendation: Should develop a Hg session for fall NADP meeting (CL session with e.g., 3 Hg presentations). Jason, Jen, and Doug will work towards putting together presenters for special session

### **3:45 T-Dep Joint meeting** (*G. Lear, D. Schwede*)

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1. Introduction to T-Dep Model Output, <ftp://ftp.epa.gov/castnet/tdep>, Schwede and Lear (2014) paper in Atmospheric Environment on comparison with other estimation methods. Presentation from NADP T-Dep session will be posted on CASTNET FTP site and/or CLAD site.
  - a. Concerns: Suggestions for cross-walking CL estimates for studies done using different deposition methods? Additional modeling should not be required, suggest starting by comparing values per location
  - b. Discussion of how to use different deposition datasets in comparisons of CLs (and impacts on empirical vs. modelled CLs)
  - c. T-Dep is an evolution of a model, always improving. Next stage of TDEP is using “bi-directional” model. Should do comparison with AMON sites.
2. Contact: Gary Lear [lear.gary@epa.gov](mailto:lear.gary@epa.gov), Donna Schwede [schwede.donna@epa.gov](mailto:schwede.donna@epa.gov)

### **4:25 EPA’s Nitrogen Road Map** (*R. Waite*)

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Development of co-pollutant research strategy, resulting from SAB 2011 Reactive Nitrogen Report and the impetus for development of inter/ intra-agency workgroups to confront issues (ecologic and human health). EPA ORD was tasked with developing integrated N research program that spans 4 EPA offices: OW, OAR and Regions 8 and 10. Goal of strategy to reduce impacts of N and to develop models and tools

1. Process: 1) identify areas of concern/priority focused on eco impacts (multi-media approach), 2) identify tools needed to prioritize of select N reduction goals, 3) look at current technologies and regs to determine if they are effective, 4) look at new programs that could be developed to help communities and states achieve reductions, 5) define how to measure success
2. Generalized research path: synthesis, endpoints and thresholds, exposure, ecosystems services, climate change, CL exceedances, tools for prioritization
3. Gap Analysis: iterative process, identify research underway, identify missing research components, circulate summary for office’s review, prioritize missing research, collaborate with other agencies to fill gaps
2. Next steps
  1. Cross-office team analysis of research gaps, strategy by end of May. Core Team – co-leads (EPA ORD – Anne Rea), EPA OW (Mary Reiley), and EPA OAR (Randy Waite)
  2. Begin external collaborations with USDA and USGS to evaluate research gaps used to identify research priorities for FY 15/16

### **4:30 2014 Call for Data**

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1. Biodiversity update (*C. Clark*)
  - a. Phase I: synthesis of available data and information. Despite the lack of cohesive biodiversity and CL data, UNECE was happy to accept what we (the US) had as an initial data ‘submission’. Many of the major projects can and *will* be synthesized. US ‘submission’ includes lichen CLs, ForSAFE-Veg projects (RMNP, NE US, Appalachian Trail), N Gradient analysis across US, and Powell Center effort
  - b. Phase II: link the synthesis to biodiversity empirical data. Emerging plan for terrestrial systems that combines herbaceous, lichen and tree info. Momentum will start building in May.

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- i. Need a lead for aquatic systems (anyone in CLAD?). Should be an aquatic biodiversity specialist that could link changes in CL based on model analysis to evidence in empirical data.
2. Call for Data Overview (*J. Lynch*)
  - a. First call for data since 2010! Expanding existing NCLD database:
    - i. Surface water acidity: new projects DOC correction, endpoints (e.g. base cation surplus)
    - ii. Forest Ecosystem for Acidity: new projects and methods, endpoints (e.g. base saturation)
    - iii. Empirical Critical Loads for Nitrogen: new projects, endpoints
  - b. Add new CLs
    - i. surface water eutrophication (e.g. nitrate – Nanus et al, 2012)
    - ii. biodiversity
  - c. Chris Clark pointed out difficulty in determining transition from N enrichment to acidification – maybe total N?
  - d. Announcement and Rollout: stay tuned for email ‘blast’ to CLAD members on May 15, 2014. Due date will be the NADP-CLAD Spring meeting 2015!

### **5:00 RCN Proposal** (*R. Pouyat, J. Lynch*)

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1. Latest for CLAD to participate in NSF’s Research Coordination Network (RCN) is February 2015. Solicitation is out, funding is available but need to move fast!
  - a. Is this an opportunity that CLAD wants to move forward with? If so, need a steering committee to get going...

### **5:15 Adjourn for the day**

## **Wednesday, April 16**

### **8:15 Day 2 Introductions & Agenda Review** (*J. Lynch*)

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The participants introduce themselves.

### **8:25 Critical Load Maps Discussion** (*J. Lynch*)

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1. Update: National Critical Load Database (NCLD) contains national coverage for a number of layers (surface water acidity, forest ecosystem acidity, empirical CL for N)
2. Define and discuss objectives of the maps
  - a. Purpose: to educate (inc. to “inform” management and policy); to illustrate CLs in the NCLD; to identify data gaps and needs for additional research
  - b. Several major decision hurdles remain: For surface waters, maps are independent estimates of lakes or reach (NHDPlus) aggregated; for forest ecosystems, maps are 1 km grids with site-specific soil pits aggregated. In contrast, the Empirical CLs were mapped at EcoRegion I level and assigned range of CL values w/in each so values are not independent. Important to not over-represent data. Issues:
    - i. Where multiple values exist for same site/reach, use an avg value; and uncertainty is represented as a function of the number of values per grid cell. Discussion on use of

dynamic modeled values. For cells w no CL, need to identify areas without resources (i.e., areas without natural vegetation – excluding agriculture and urban)

3. Discussion:

- Suggestions: Assign CL value, as preliminary approach = take average. In future, could apply criterion/filter/hierarchical approach but concerns were raised re: the biases introduced if results in using steady-state model data in some cells and dynamic model in other cells
- Concerns re: losing consistency by averaging CL values in cells with multiple values vs. only representing a single value in cells with one CL value in a cell
- Concerns re: average approach and ironing out sensitive areas with averaging approach vs. mapping based on consistent approach
- Suggestion to use percentile approach / concern re: using percentile approach as misleading if values only come from a relatively small area of the cell, consideration re: including both steady state and dynamic modelling results because of time frames associated with each
- Proposed approach to adopt a single, most common methodology and using other methods to represent uncertainty around the CL from the most common method
- Concerns of re: different time frames of CL and ecosystem responses (especially when represent multiple critical loads within the same grid cell)
  - i. For waterbody acidity, selection of ANC critical criterion (20 or 50 ueq/L). Discussion on how and where to draw the line and apply CL from east to western US.
    - (1) For simplicity, could adopt ANC values by region, however, would be more accurate to better spatial differences in natural condition ANC/sensitivity / could using SSMB to estimate historic ANC (can be done in the east)
    - (2) \*\*action item = to do a pilot trial/calculation of SSMB to determine pre-condition and distribution of current ANC values by region\*\*\*
  - ii. Aggregation Statistic (European CL maps feature 5<sup>th</sup>, others map the 10<sup>th</sup> percentile of available data). Maps should reflect the most sensitive grid cells (propose 36x36 km grid). Can create a map where define uncertainty based on methodology by Pardo et al (2011), need to work on semantics for ‘reliability’ terminology (look to IPCC for extensive ‘certainty’ terminology). Concerns that “uncertainty” based on # of values per grid cell will change and be impacted by selected resolution level

4. Soil Acidity for N and S

- a. Based on single method applied across country
- b. Can be done at scale that estimates were produced (1x1 km) vs. aggregated (12 x 12)
  - i. If aggregate, could use the 5<sup>th</sup> and 10<sup>th</sup> percentile for 12 x 12 km grid
  - ii. Recommend using 1x1 km grid until get more data into the DB

5. Do we want to have a combined acidity map?

- a. Combined map that combines aquatic and terrestrial, but identifies which of the two is the most sensitive (lowest critical load)

6. Empirical Critical Loads for N

- i. Pardo et al. 2011
  - (1) No aggregation
  - (2) Aggregation of 4 end points to the ecoregion level 1
    - (a) Represented by min and max of the “low values” of the 4 indicators
    - (b) Concerns that not enough detail and buries the different indicators within the range / losing information in this approach

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- ii. Aggregate of 4 end points end points to the ecoregion level  
(1) Represented by statistics

\*\* group felt that it would be better to represent all 4 indicators and not try and aggregate the maps\*\*\*

- 7. Where to go from here? Take the feedback from today and make adjustments to maps then meet with workgroup members for feedback. Ultimately, goal to have a vote on the CL maps from the NADP executive committee at the 2014 Fall NADP mtg.

### **10:00 Critical Loads Projects: Status and Results “Round Robin” (J. Phelan)**

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Brief summary of critical load-related project(s) (focused on new projects and updates to current projects):

1. Pierrette Blanchard (Env. Canada)
  - a. Julian Ahern (Trent U.) starting collaborative committee in Canada with objectives of CLAD. Goal is to have a manual/ protocol for calculating and mapping CLs. Focus on oil sands region. Oil sands portal will host committee products.
  - b. Awaiting publication on global precipitation chemistry and deposition dataset. Will be available in special issue of Atmospheric Environment. Will send link to website with documents and data. Lots of supplementary material will be available.
2. Tamara Blett (USFS, Western US)
  - a. Projects to improve empirical critical loads, mainly in the west
  - b. Mesa Verde NP and Arches NP – N fertilization experiments (3-years) looking at vegetation and soils in desert ecosystem
  - c. Eddie Allen– Craters of the Moon impacts of N deposition on vegetation (invasive species) and soil / N deposition gradient in Santa Monica mountains – impacts of N deposition and fire on CL
  - d. PNW CL for nutrient enrichment in N. Cascades, Sierra Nevada, Olympic peninsula to determine NO<sub>3</sub> response thresholds of plankton (Nanus and Baron)
  - e. Regional studies that provide a lot of data re: thresholds for surface waters / working with scientists and Jason to determine how to use these data and adopt them within CLAD and database / mainly in West with some new work in the Sierra Nevada
3. Ellen Porter (NPS)
  - a. Wapping up Appalachian Trail study. Report out for peer review, anticipate publication in next 6 months / examined effects of acid deposition on soils, streams, vegetation and forest health along gradients of deposition
  - b. Smoky Mountains project w/ C. Driscoll, PnET BGC model for CLs. Nearing completion of Phase I
  - c. Analysis of CL near parks in west near oil and gas development. Work w/ T. Sullivan to refine L. Pardo’s empirical CL numbers and test applicability to specific areas.
  - d. Retiring soon! She’ll wave from the sunset...
4. Cindy Huber (NADP)
  - a. Linda Pardo’s pitch on Powell Center project on N response. Have support to work with data. Looking for more data, ideas. Please contact Doug Baldwin (at Penn State) or directly to Cindy and she’ll forward. (see notes yesterday for more info)
5. Chuck Sams (USFS)

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- a. Gathering data for MAGIC Model, monitoring data beyond Appalachians (extensive surrounding area) inc. water quality data and soil chemistry. Backlogged data should be available soon
6. Rich Scheffe (EPA)
  - a. NOx/SOx workshop: CLAD and development of databases have been tremendously helpful. Lots of interest in 'spreading the wealth' of indicators and incorporate more meaningful indicators regionally
7. Doug Burns (USGS)
  - a. Announcement that he will be chairing a session at AGU on atmospheric deposition ions and CL, requesting that session will be simulcast for people who cannot attend conference. Submit abstracts by August!
8. Salim Belyazid (BCC AB Sweden)
  - a. Research program QUARTZ – to review weathering rates and how they are recovering from acidification / focused on drivers and resolution of weathering
  - b. Have project focused on revision indicators to be better linked to ecosystem services
  - c. UNIS system to represent plant cover – would like to switch focus to indicator species of CL
9. Kris Novak (EPA)
  - a. NOx/SOx, soliciting information and ideas, email Kris, [novak.kris@epa.gov](mailto:novak.kris@epa.gov), or Tara Greaver, [greaver.tara@epa.gov](mailto:greaver.tara@epa.gov).
  - b. Looking for eco postgrads for ORISE program (bachelors or MSc). Email Kris.
10. Robin Dennis (EPA)
  - a. Finishing CMAQ runs (2002-2011), hoping to have data available end of June. Working with T-Dep w/ Donna Schwede. Working w/ John Walker (?) to help improve some processes w/in improve model
  - b. Donna is working w/ MOSAIC option turned on (CMAQ), will help with throughfall vs. total flux to canopy top
11. Rich Pouyat (USFS)
  - a. Powell Center, got some additional funding to work with FIA data
  - b. Has been involved with national climate assessment to identify indicators / CLAD should start considering how want to incorporate climate change in CL evaluations
  - c. Bob Musselman is retiring, unfortunately unlikely to be replaced
12. Jennifer Phelan (RTI)
  - a. ForSAFE-Veg to model impacts of Climate Change and N deposition on terrestrial diversity and N cycling in Sugar Maple/Beech/Yellow Birch in NE US w/ Chris Clark (EPA)
  - b. Evaluation of impacts climate change N-dep on forest composition for future forest stand composition and associated ecosystem services (w/ Chris Clark)
  - c. Comparison of historic, current and future deposition scenarios with CL
13. Tim Sullivan

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- a. Appalachian Trial transect: Have completed set of target load evaluations (aquatic – ANC 50 and soils as BS 12%) using MAGIC dynamic model out to 2100, all documented in report that will be released shortly
- b. EMDS: extrapolation of BCw rates using MAGIC and physiographic properties relationships in Appalachians, calculated CL and exceedances based on S deposition, partitioned by land ownership
- c. Habitat Squeeze: evaluated stream temperature and acidity stresses to establish habitat that is suitable for cold water species, conducted in Appalachians, next step is to evaluate “*what if*” climate change scenarios
- d. AQRV report: summarizing effects of ozone, nutrients, acidity, toxics on national parks

### **11:00 CLAD Business**

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1. Inter meeting Webinar Updates (*J. Phelan*): two successful so far! (N. gradient study, Chris Clark; Ecosystems framework)
  - a. Consensus to continue webinars, topic areas to focus on?
  - b. Rich Pouyat says someone in USFS could do a webinar / \*\*\*action item – send Rich a reminder email \*\*\*
  - c. OAQPS – Randy Waite/Tara Greaver to present probably approach to ISA and REA and what CLAD products would be helpful
2. Fall Meeting (*J. Lynch*)
  - a. Session focus to link CL and Hg
  - b. Invite attendees from the EU (VSD modelers?) and hold mini workshop – follow up with C. Clark
3. Critical Load Publications. Need citation and DOI, aim to update website quarterly. Send submissions when available to [lynch.jason@epa.gov](mailto:lynch.jason@epa.gov)
4. CLAD Annual Report discussion. Need to define main objectives of content (CALD/FOCUS) and define the target audience. Matrix of pros/cons of annual report format options:
  - a. Full length, formatted report
  - b. 1-2 page summary of Spring/Fall mtg. ‘round robin’ notes with contacts and external links. Linda volunteered the first round! Consensus vote yes (at least a variation of this option)
    - i. Suggestion that option 2 with a pre-determined template that would be adopted for each annual report. Work w Linda Pardo to develop template
    - ii. Email to CLAD members, inc. response date, and response template
  - c. Online “Digest” Facebook-like webpage. User-driven, user-updated. Would need volunteer to help set up and to houseclean. Caution about copyright issues.
5. CLAD Advisory Committee: Discussions underway on how best to steer CLAD and FOCUS workgroups and other issues.
  - a. NADP Deposition Maps: (see NADP special products link), found error in S+N deposition maps, products have all been taken down. Will re-post corrected versions soon. Notice to be sent to CLAD list serve.

### **12:00 Meeting Adjourn**