

**Subject:** RE: data request

**Date:** Wednesday, November 30, 2016 at 11:20:58 AM Pacific Standard Time

**From:** Schaeffer, Sean Michael

**To:** Todd-Brown, Katherine E

Kathe,

I have bulk C content for all these samples at the start of the incubation.

I had to dig through my notes and spreadsheets for this one ☺ For days 316 and 388 of the incubation, the caps were left on the indicated number of days (9 and 70 respectively). The CO<sub>2</sub> flux rate on the worksheet is the total CO<sub>2</sub> accumulated over that time, divided by the number of days the caps were left on (giving g CO<sub>2</sub> g<sup>-1</sup> soil d<sup>-1</sup>). The rest of the incubation days, the CO<sub>2</sub> flux rate is from a 24 hour accumulation (1 day).

I found my original experimental approach write up and I'm attaching it. It's not 100% accurate, but it should give you some idea of what I did.

Sean Schaeffer  
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Email: sschae5@utk.edu

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**From:** Todd-Brown, Katherine E [mailto:katherine.todd-brown@pnnl.gov]

**Sent:** Tuesday, November 29, 2016 6:13 PM

**To:** Schaeffer, Sean Michael <sschae5@utk.edu>

**Subject:** Re: data request

Sean,

Do you have the soil organic carbon density for the Canyonlands and Nevada FACE data? (Again, raw replicate values would be awesome)

Do you have the time stamps for when these gas draws were taken and how long they were capped for? (I did notice the notes on the 300+ day reads were multi day caps).

Thanks,

-Kathe

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Katherine Todd-Brown

Linus Pauling Distinguished Postdoctoral Fellow  
Pacific Northwest National Labs  
(509) 371-6547

**From:** "Schaeffer, Sean Michael" <[sschae5@utk.edu](mailto:sschae5@utk.edu)>  
**Date:** Tuesday, November 29, 2016 at 11:42 AM  
**To:** Kathe Todd-Brown <[katherine.todd-brown@pnnl.gov](mailto:katherine.todd-brown@pnnl.gov)>  
**Subject:** RE: data request

Coffee Wednesday sounds great! Know a good place to meet?

I pulled together those data for you real quick. This should be the final data, I also included the stuff I sent to Christina. Let me know if you need anything else or have any questions.

I would be happy to be a co-author on a paper with you! I have a bunch of biogeochem data that might go with the incubation data. I'm attaching the paper we published from this site. The incubation data in the paper is from a separate long-term incubation I did for N mineralization.

Best,  
Sean

Sean Schaeffer  
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**From:** Todd-Brown, Katherine E [<mailto:katherine.todd-brown@pnnl.gov>]  
**Sent:** Tuesday, November 29, 2016 1:01 PM  
**To:** Schaeffer, Sean Michael <[sschae5@utk.edu](mailto:sschae5@utk.edu)>  
**Subject:** Re: data request

Sean,

AGU: I will be at AGU this year. Would you like to grab coffee on Wednesday morning? Or plan to do lunch sometime?

Canyonland datasets: Yes! Those datasets sound ideal. I'm actually flying out to meet with the Columbia folks next week (Bob Carpenter and Milad Kharratzadeh), would it be possible for you to send over the data set before the end of the week? Bob is one of the authorities on Bayesian model-data integration and is a key developer of STAN. They are really excited about soil carbon models as a application for this program and I'm excited they are so generous with their time to train up non-stats folks on this. Finally, would you like a co-authorship on this paper? I would hope that you could contribute to the writing as well as providing data sets, the interesting part of this study is going to be the biogeochem interpretation not the statistics :D.

TN agg soils: I would want to talk with you a bit more about how you would expect the allocation and decay rates to vary along these treatments but I think doing a MCMC model-data integration study with this could be interesting. Particularly because you have such a long incubation here. In theory once we have the analysis set up it would just be a question of applying it to a different data set which shouldn't be too hard.

Thoughts?

-Kathe

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Katherine Todd-Brown

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**From:** "Schaeffer, Sean Michael" <[sschaef5@utk.edu](mailto:sschaef5@utk.edu)>  
**Date:** Tuesday, November 29, 2016 at 8:56 AM  
**To:** Kathe Todd-Brown <[katherine.todd-brown@pnnl.gov](mailto:katherine.todd-brown@pnnl.gov)>  
**Subject:** RE: data request

Kathe,

Well, I have two datasets from my phd work. One of them Christina worked on for that paper. The other is from a series of invaded and non-invaded grasslands (cheatgrass invader, C3 and C4 natives) in Canyonlands NP. Both data sets are 400+ days long and include CO2 production rate and d13C of respired CO2.

I also have a 600+ day incubation dataset from a long-term (35 yrs treatment) agroecosystem experiment in western TN. The treatments are till/no-till, wheat/vetch/no cover crop, 0/30/60/100 kg N ha<sup>-1</sup> fertilizer application (full factorial design). I only have CO2 production rate data for this one.

All datasets are replicate reads (3-4 reps per treatment). Soils were incubated at 25-30 deg C and at 50-60% water holding capacity (pretty much ideal conditions).

It would be super cool if someone could do something with those d13C data because you could partition C sources along with pool size I think.

The TN data is from a MS student of mine who just finished and hasn't published yet. However, I would be very interested if you could do some C-pool partitioning with it. Right now, Candace has just used exponential curve fits (2- and 3-pool). Of course I have no idea how much I'm asking for here 😊. Please let me know what you think (co-authorship would be a given).

That's probably more than you wanted to know, but if any of these data might be useful to you and your

colleagues, please let me know. If you are going to AGU in a couple weeks, I'd be happy to sit and chat about this.

Best,  
Sean

Sean Schaeffer  
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**From:** Todd-Brown, Katherine E [<mailto:katherine.todd-brown@pnnl.gov>]  
**Sent:** Monday, November 28, 2016 3:17 PM  
**To:** Schaeffer, Sean Michael <[sschae5@utk.edu](mailto:sschae5@utk.edu)>  
**Subject:** Re: data request

Certainly! I'm working with collaborators at Columbia (statisticians) to conduct a power analysis asking how many soil carbon pools and what kinds of connectivity (independent, cascade, or feedback) structure is supported by different data streams. We were hoping to reproduce some of the analysis in the Schadel manuscript with a slightly different method to provide a baseline of comparison.

Basically we are looking for very boring incubation experiments (replicate reads, not aggregated means) with CO2 flux (carbon age, or fractionation measurements would be a nice bonus). If we can get our hands on a diverse set of soils incubated under 'ideal' temperature and moisture conditions, that would be perfect.

Thoughts?

-Kathe

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Katherine Todd-Brown

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**From:** "Schaeffer, Sean Michael" <[sschae5@utk.edu](mailto:sschae5@utk.edu)>  
**Date:** Monday, November 28, 2016 at 11:46 AM  
**To:** Kathe Todd-Brown <[katherine.todd-brown@pnnl.gov](mailto:katherine.todd-brown@pnnl.gov)>  
**Subject:** RE: data request

Katherine,

Sorry for my later reply. I'd be happy to share those data with you. Could you tell me what you would like to do with it? It may be that I have other data that might be interesting.

Best,  
Sean

Sean Schaeffer  
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**From:** Todd-Brown, Katherine E [<mailto:katherine.todd-brown@pnnl.gov>]  
**Sent:** Monday, November 21, 2016 6:16 PM  
**To:** Schaeffer, Sean Michael <[sschae5@utk.edu](mailto:sschae5@utk.edu)>  
**Subject:** data request

Dr Schaeffer,

I'm writing to see if you would be willing to share the incubation data from this 2013 *Oecologia* manuscript (Schädel, Christina, Yiqi Luo, R David Evans, Shenfeng Fei, and Sean M Schaeffer. "Separating Soil CO<sub>2</sub> Efflux into C-Pool-Specific Decay Rates via Inverse Analysis of Soil Incubation Data." *Oecologia* 171, no. 3 (March 2013): 721–32. doi:10.1007/s00442-012-2577-4). Christina Schaedel suggested that you might be the person to contact for this.

Best,  
-Kathe

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Katherine Todd-Brown

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