For keeling plots, collect 5 gas samples, 20 minutes apart, from each B and C chamber from the priming plots (e.g., B1B, B1C, B2B, etc).

Dates:

* 8/9/15
* 8/12/15
* 8/25/15
* 8/30/15

Procedure for each chamber, following a flux measurement with the LGR:

1. Organize your equipment. You should have:
   * A chamber marked B or C, depending on whether you are measuring from a B or C plot. Make sure the chamber’s septa are in good condition.
   * A syringe marked B or C (depending on the plot), with a stopcock and new 23 gauge needle
   * 5 vials labeled with the date, chamber ID, and keeling plot sample number (e.g., 8/9/15 3B-1; 8/9/15 3B-2; 8/9/15 3B-3; 8/9/15 3B-4; 8/9/15 3B-5)
   * A notebook with the following layout:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Time 1 | Time 2 | Time 3 | Time 4 | Time 5 |
| 1B |  |  |  |  |  |
| 1C |  |  |  |  |  |
| 2B |  |  |  |  |  |
| 2C |  |  |  |  |  |
| … |  |  |  |  |  |
| 6C |  |  |  |  |  |

1. Stand downwind of the chamber, hold your breath for 10 seconds, and place the chamber on the base, being careful not to breathe in the chamber.
2. Make sure there is enough water in the moat to make a tight seal. If not, add more water using one of the moat-filling LGR syringes.
3. Insert the syringe through one of the chamber’s septa and plunge 3 times to mix the air in the chamber. (When you plunge, don’t remove the air from the chamber; pull ~50 mL into the syringe, then inject it back into the chamber without pulling the needle out of the chamber port.)
4. With the needle still in the chamber port, slowly and evenly, draw 25 mL into the syringe and close the stopcock.
5. Write down the time (rounded to the nearest minute) in the Time 1 column of your notebook.
6. Inject the 25 mL into the first of your 5 vials (e.g., 8/9/15 3B-1), close the stopcock, and pull the needle halfway out (far enough out that you can’t see the tip of the needle poking into the vial through the stopper). Wait 20 seconds to allow the stopper to re-seal, then pull the needle the rest of the way out.
7. Repeat steps 4-6 at 20-minute intervals, using vials 2-5 and writing the sampling times in the corresponding columns. It is fine if you don’t sample at *exactly* 20 minutes; just make sure to write down the actual sampling time.
8. While doing the keeling plots, measure soil temperature at 5 depths: 5, 10, 15, 20, and 25 cm.

* Measure 2 temperature profiles per chamber, on opposite sides of the chamber, finding spots ~10 cm from the chamber base that haven’t already been poked.
* Use the short Aquatuff probe for 5 and 10 cm and the long Aquatuff probe for 15-25 cm.
* The short probe stabilizes quickly, but the long probe takes longer. With the long probe, wait until the temperature readout is stable for 1 minute.

1. Also take an air temperature measurement each time the LGR moves to a new block.

* Use the short Aquatuff probe.
* Make sure the probe is not in the sun and is not so close to you that your body heat influences its reading.
* Write down the temperature, which block the LGR is measuring, and the time.

1. When everything is done, store the gas samples in the cold room until bringing them back to Berkeley.

Notes on efficiency:

* Once the LGR person has finished a block, I start keeling plots for both chambers in that block, which end up spaced 2-3 minutes apart.
* It works well to do keeling plots on 2 blocks at a time, so that you have 4 chambers going at once. The LGR person usually takes ~40 minutes per block, so if you start keeling plots in block 1 after the LGR is finished there, you can start keeling plots in block 2 ~45 minutes later. Once the LGR is finished in block 3, you’ll be done with keeling plots in block 1 and can use those chambers and syringes for block 3. Just remember to change needles between blocks so that you don’t risk breaking a needle during sampling.
* If you start early measuring soil temperature in blocks 3 and 4 (before the LGR person starts), the timing should work out so that your temperature measurements don’t lag behind the keeling plot sampling.
* If you do 2 leapfrog blocks at a time like this, it should take ~6 hours to collect all the keeling plot samples.