

M A Y 2 0 1 2

# the Carbon TIMEs



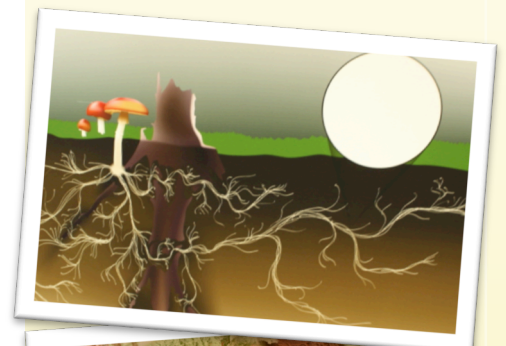
## Andy's Message

As we wrap up our initial year of pilot testing, we will be using all the information that you have given us to start revising and improving the Carbon TIME units. We are studying all the comments you have made through the Wiki site, as well as the interviews and written assessments and your focus students' work during the units. We are developing LOTS of ideas about how to improve and focus the units, and we will be sharing those with you as we work on revisions.

We are also excited about the work we will be doing on revisions and supports for the investigations over the summer. With the help of several Carbon TIME teachers, we are planning to develop more robust and reliable protocols, sample data sets that you can use with your classes, and some videos showing people doing the investigations. We will be sharing those with you in the fall, too.

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## Carbon TIME Cohort 2

Here is a list of our returning teachers and new teachers who together make up the Carbon TIME cohort 2 for the 2012-2013 school year. Welcome everyone!

### New Teachers

Amy Smith – Harper Creek Middle School (MI)  
 Chris Chopp – Kalamazoo Area Math & Science Center (MI)  
 Jenn Sportsman – Ernest Righetti High School (CA)  
 Jess Moyer – Bellevue High School (WA)  
 Lisa Boyer – Santa Ynez High School (CA)  
 Marty Buehler – Hastings High School (MI)  
 Melissa Haag – Union Colony Preparatory School (CO)  
 Stacy Marostica – Eaton Middle School (CO)  
 Terry Grant – St. Paul's School for Girls (MD)



Staci Marostica



Amy Smith & Chris Chopp

### Returning Teachers

Becky Drayton – Gobles Middle School (MI)  
 Cathy Hoyt – Union Colony Preparatory School (CO)  
 Cheryl Hach – Kalamazoo Area Math & Science Center (MI)  
 Cooper Hatton – Newport High School (WA)  
 Debi Kilmartin – Gull Lake Middle School (MI)  
 Kami Bolinger – Newport High School (WA)  
 Kathy Kingsley – Owings Mills High School (MD)  
 Liz Ratashak – Vicksburg High School (MI)  
 Marcia Angle – Lawton Middle School (MI)  
 Mary Grintals – North East Middle School (MI)  
 Nate Manning – Bellevue High School (WA)



Debi Kilmartin,  
 Marcia Angle,  
 & Holly James



Becky Drayton  
 & Liz Ratashak

## Student Interview Protocol Changes

Just a reminder that before you do clinical interviews of your 2 focus students, check our website to be sure you have the most current teaching protocol! **The most current revision is dated May 16<sup>th</sup>.** One recent change is that we re-ordered the protocol so that the more detailed questions are at the end. If your interview goes to an hour in length, don't worry about finishing the protocol, you may stop at 1 hour. That way you only need one tape, and won't fatigue yourself and your student!



## Notes from the Field

by Cindy Jatul, Roosevelt High School, Seattle

*The benefits of using carbon time are mainly related to the collaborative practice used to implement the curriculum. Having the chance to plan the units with two other teachers at my school was very helpful. We frequently (2-3 times/week) checked in with one another about what we needed to do to prepare student materials, set up labs, and prepare assessments. We then looked at data together to see how well students were getting the concepts related to respiration, photosynthesis and decomposition. Using Carbon Time and NCOSP (similar curriculum) has really helped me to better teach the tracing of carbon and energy through ecosystems and relating the tracing of carbon to climate change.*

*A few years ago I assumed that students understood the difference between energy and matter by the time they got to 10<sup>th</sup> grade. Once I realized they did not really have a clear grasp on the important*

*distinctions it helped to have curriculum that has students get into the habit of applying the laws of conservation of matter and energy! I especially liked using soda lime to get mass data on CO<sub>2</sub> loss as students frequently discount gas as being matter. The lab that was most effective in demonstrating this concept was the decomposition lab involving jello.*

*The biggest downside to using Carbon TIME was the difficulty in accessing teaching materials. There were too many places to go on web page, and having student materials divided up by materials vs. handouts was confusing. Administering all the pre and post tests was also time consuming and I had to add my own assessments as well.*

Thanks for your feedback, Cindy! Your suggestions will help us improve the Carbon TIME project.

## Human Energy Systems

Draft 1 ready to go this Friday, May 25!

### Lesson 1 – The Keeling Curve

Why is CO<sub>2</sub> increasing in the atmosphere?

How do we use organic carbon?

### Lesson 2 – Fossil Fuels

What are fossil fuels?

### Lesson 3 – Lifestyle Choices

Extreme Makeover: Lifestyle Edition!

### Lesson 4 – Jigsaw Activity

Lifestyle Choice	Country	CO <sub>2</sub> Emissions (lbs/yr/person)	Weight in School Buses	Volume in School Buses
A	United States	44,000 lbs	1.75 buses	157 buses
B	China	9,500 lbs	0.4 buses	34 buses
C	Ethiopia	220 lbs	0.01 buses	0.75 buses
D	France	14,600 lbs	0.6 buses	52 buses

NOTE that the lifestyles of people in each country include transportation, home, electricity, and food, but also rely on other things that cause CO<sub>2</sub> emissions, such as roads, factories, and public buildings.

## Who you gonna call...

### Staci Sharp – Project Manager

If you have questions about cameras, mailing things, unit materials, consent forms, gift certificates, workshops, travel, or any other logistical question, you can contact Staci Sharp, the Carbon TIME project manager. Staci has all the answers!

Staci's email: [sharpst5@msu.edu](mailto:sharpst5@msu.edu)



### Jenny Dauer – Postdoc Researcher

Jenny is a postdoctoral researcher who has been working on the Carbon TIME project for two years. In addition to many other roles on the project, Jenny has been working to improve the interview protocol and the materials and methods of the investigations. If you have questions about the interviews or investigations, Jenny would be glad to help!

Jenny's email: [dauerjen@msu.edu](mailto:dauerjen@msu.edu)

### Hannah Miller – Grad Student

Have a question about how to use the wiki or the feedback forms? You can contact Hannah, who works to maintain the wiki and collect your feedback.

Hannah's email: [hkm@msu.edu](mailto:hkm@msu.edu)



## Carbon TIME Logo Competition!

Carbon TIME needs a logo! We invite you to submit a digital logo for the Carbon TIME Project to us **by July 31st**. The image will be used on our website, wiki, facebook, and documents. Ideally, the logo should include something about carbon transforming processes at local and global scales. Carbon TIME students are also invited to participate. The person who submits the selected logo will receive a geeky gift!

## Notes from the Field II

By Liz Ratashak & Mary Grintals

### Liz Ratashak – CarbonTIME themes in genetics and evolution

I have one more unit to do "decomposers". This month I've been delivering material in genetics and evolution. I have tried to continue some themes, such as tying macroscopic evidence to internal processes on the microscopic and atomic molecular scales. I'm still thinking about ways to help my students track their own progress as they develop deeper level thinking. I'm looking forward to collaborating with others in the research group about ways to assess understanding to fit into standards based grading.

### Mary Grintals - Mealworm experiments with her middle school students

The mealworm experiments were my students' first experience with scatter plots. Students were asked to consider either data representation for either worm type. Once they formulated their questions, they were given the opportunity to look at the experiment itself and used the lab data sheet to determine a possible answer.

Some student questions:

**Question:** On the Wax Worm plot, how did the food gain mass but the worms lost mass?

**Answer:** We think that some worms turned into pupa and the pupas might weigh less than the worms and the food was counted with feces.

**Question:** On the meal worm data Sample 1-2 and 3-5-N food mass, why did only these lose food mass?

**Answer:** none so far

**Question:** Why did 7-5 S's worms lose so much more mass than the other groups wax worms?

**Answer:** We think that 7-5-S lost so much more



mass because their wax worms turned into pupa faster.

**Mary's Observations:** The food mass gained in the end, because we hit two very humid days. They haven't figured that out yet, but they will tomorrow! 7-5-S lost so much mass because a high percentage of the worms died. This will also be attributable to water mass. So I'll have to draw their attention back to water again.

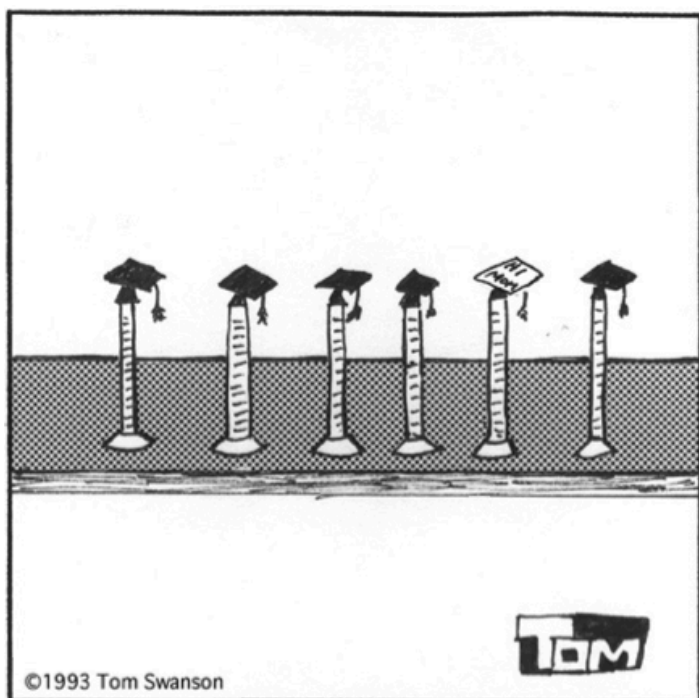
# Spotlight on the... Transcriber!



Do you ever wonder where all that student work goes to when you mail it back to MSU? It goes straight to David van Deurs, our data transcriber. His role in the Carbon TIME project is to transcribe student responses on pre and post tests and organize them into excel spreadsheets so they can be coded and analyzed by the Carbon TIME researchers. "One of the most difficult things about transcribing is deciphering student handwriting. When the students write in cursive and put an answer that is completely wrong, it's difficult to guess what they're trying to say because they don't use words we expect them to use." David also mentioned that he can sometimes guess what the students have been learning about immediately before they took the assessments. For example, if the word "plasma" shows up in 15 responses to questions about matter cycling, David concludes that the students may have been learning about plasma in science class recently... David just graduated from LCC where he studied computer game design, and is hoping to transfer to MSU in the fall. He is also helping us revise the Carbon Game cards. Thanks for all your hard work, David!



## Carbon TIME Comics



Graduated Cylinders

## Carbon TIME Links

### Environmental Literacy Website (materials)

[http://edr1.educ.msu.edu/environmentallit/publicsite/html/cc\\_tm\\_1112.html](http://edr1.educ.msu.edu/environmentallit/publicsite/html/cc_tm_1112.html)

### Wiki (feedback)

<http://carbontime.wikispaces.com/>

### MSP Website (pre and post tests)

[http://ibis-live.nrel.colostate.edu/dh\\_msp.php?WC=/WS/MSP/Home.html](http://ibis-live.nrel.colostate.edu/dh_msp.php?WC=/WS/MSP/Home.html)

### Facebook (share resources, announcements)

<https://www.facebook.com/groups/179507025481693/>

### Twitter

<https://twitter.com/#!/CarbonTIME>