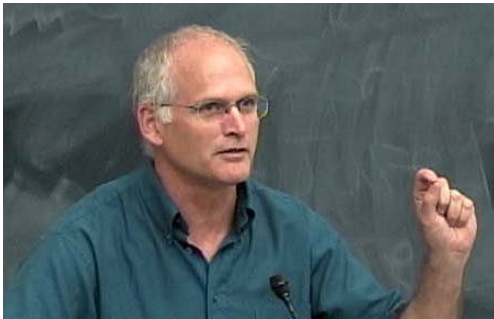


The Climate Literacy Ambassadors Community



A NASA GCCE Project

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CLIMATE LITERACY AMBASSADORS

Program Overview



**A three-tiered program to
train G6-12 Teachers to be
Ambassadors of Climate Literacy**

- 1) Workshops**
- 2) On-Line Course**
- 3) Virtual Community
of Climate Change Educators**

200 Educator Stipends for participating
40 additional stipends were available for graduates who
oversee student research projects in years 2 & 3



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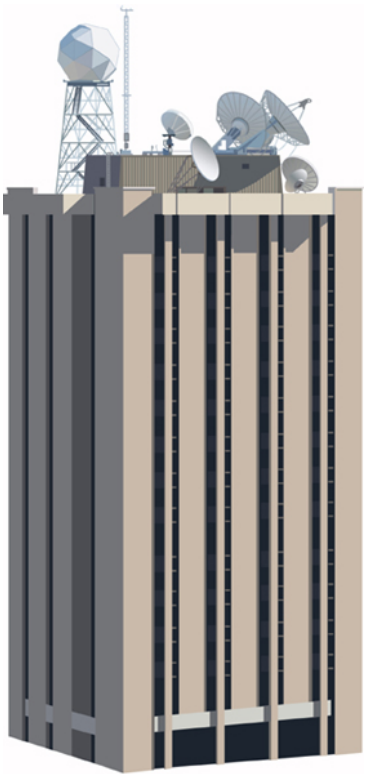
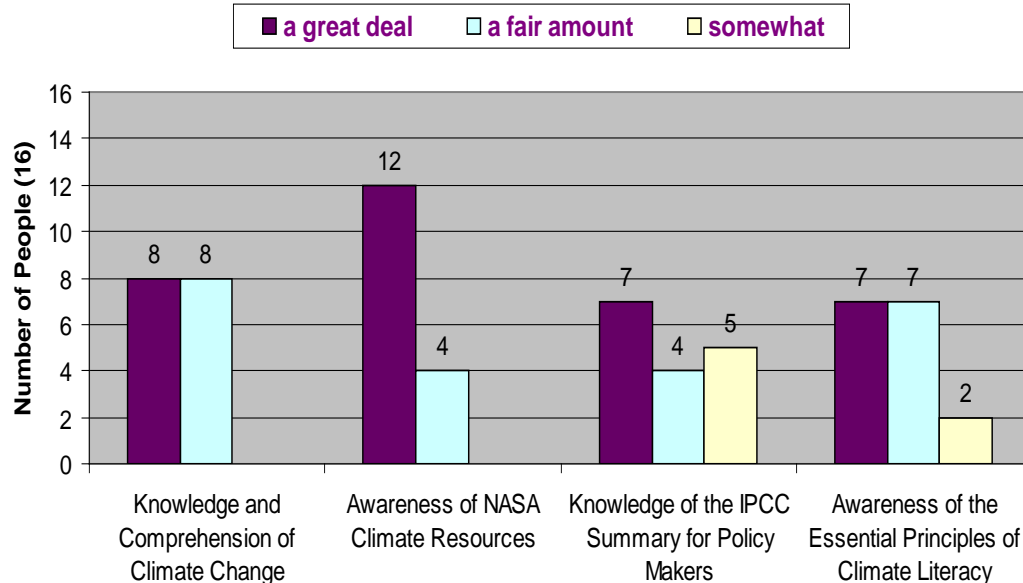
DEBUT Workshop May 2010

CIMSS kicks off
a GCCE project!



"One of the most interesting
and relevant workshops/in-service activities
I have experienced"

CLIMATE LITERACY AMBASSADORS MAY 2010 WORKSHOP
Evaluation Responses to Assess Benefits and Knowledge Gains





The first cohort of GCCE Climate Literacy Ambassadors included *Chuck Tennesen* from Dodgeville Wisconsin who developed a district-wide action plan detailing opportunities and incentives for students to investigate the size of their individual and/or household carbon footprints, compare with other cultural groups, and identify actions to reduce carbon pollution. This effort was coordinated with 350.org and the 10-10-10 global work party.

Over two dozen teachers and 800 students participated!

Educators and Community Activists can download the Dodgeville Action Plan from <http://cimss.ssec.wisc.edu/climatechange/nav/lessonplans/>

“Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has.”

Margaret Mead

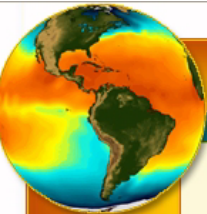


<http://cimss.ssec.wisc.edu/cia>



On-Line Curriculum

<http://cimss.ssec.wisc.edu/climatechange/>



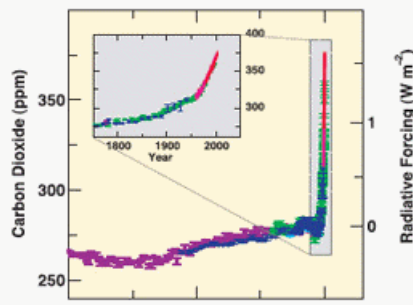
Global and Regional Climate Change

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Clarifying concepts, processes and graphs presented in the summary of the Physical Science Basis of the 2007 IPCC report on Climate Change.

Course Units

- OUR GLOBAL CLIMATE SYSTEM
- OBSERVATIONS OF CLIMATE CHANGE
- GLOBAL CLIMATE CHANGE
- CLIMATE MODELING
- REGIONAL CLIMATE CHANGE



Course content is consistent with *CLIMATE LITERACY: The Essential Principles of Climate Science* and is intended to clarify concepts and graphs in the 2007 Intergovernmental Panel on Climate Change (IPCC) *Summary for Policy Makers*. Developed for G6-12 science teachers, this material is freely accessible to all. Educators can also register through the UW-Madison to earn college credit and receive feedback.



*Updated in 2010 under the auspices of
NASA's Global Climate Change Education program*

- Funded by UW-Madison
- Based on feedback from 2007 teacher summit
- Developed collaboratively by four departments (CIMSS, AOS, Geology, CCR)
- Consistent with Climate Literacy Framework
- Clarifies IPCC report
- Beta version debuted 2008
- NASA 2010 GCCE support for updates, revisions & stipends for 200 teachers
- Credit OR Certificate



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Course Outline

Global and Regional Climate Change

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Course Outline

This course is divided into five units and sixteen lessons. When taking the course for professional development credit, participants are expected to work through two lessons per week.

Our Global Climate System

- 1) Life and Climate
- 2) Energy and Climate
- 3) Climate Regulators

Observations of Climate Change

- 4) Direct Observations of Recent Climate Change
- 5) Paleoclimatic Perspectives on Climate (Indirect Observations)
- 6) Past Climates – Natural Drivers

Global Climate Change

- 7) Human Influences on Climate
- 8) Panels, Protocols and a Common Misconception about Ozone
- 9) Probabilities, Uncertainties and Units used to quantify Climate Change

Climate Modeling and Future Scenarios

- 10) Models as Tools
- 11) Feedback Loops
- 12) Emission Scenarios
- 13) Projections of Future Changes in Climate

Regional Climate Change

- 14) Global Projections for Regional Climate Change
- 15) Climate Change Impacts in the Continental United States
- 16) Regional Mitigation & Adaptation Responses

Required Assignments

G6-12 teachers taking this course for college credit will be required to submit five lesson plans (1 per unit) relating course content to their grade levels using this [template](#).



Anyone who logs on and completes all the activities and quizzes from all 16 lessons can **generate and print a certificate of completion** indicating they spent 20 hours working through this web-based climate course.

5 Units & 16 lessons

- 12 to 20 hours total
- LOTS of activities
- Educators can earn 1 credit at reduced tuition rate (with stipends through our grant)

**Anyone can log in,
get a username & password
then print a certificate
of completion when finished
(about 20 hours)
- or- skip the log in to
access material at anytime**

<http://cimss.ssec.wisc.edu/climatechange/>

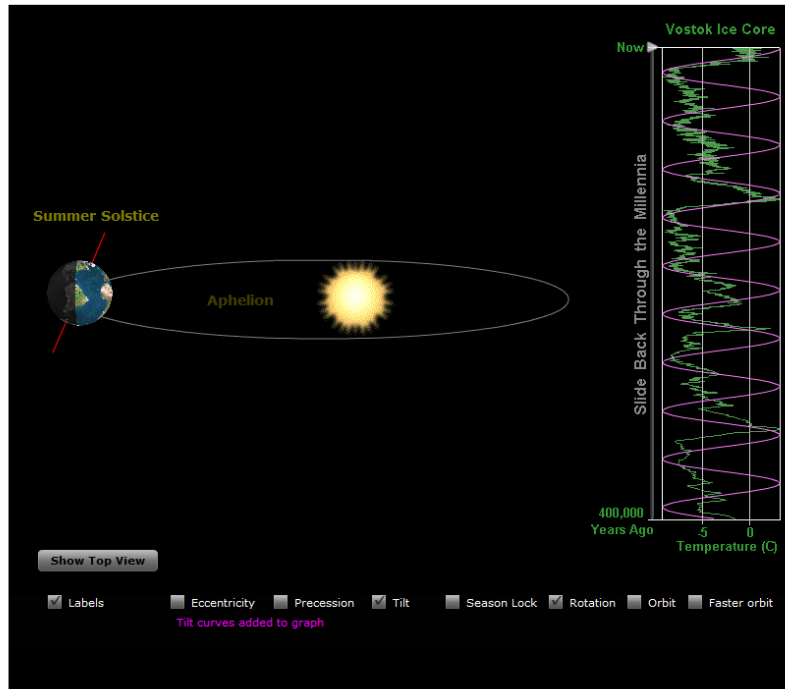


Climate Applets

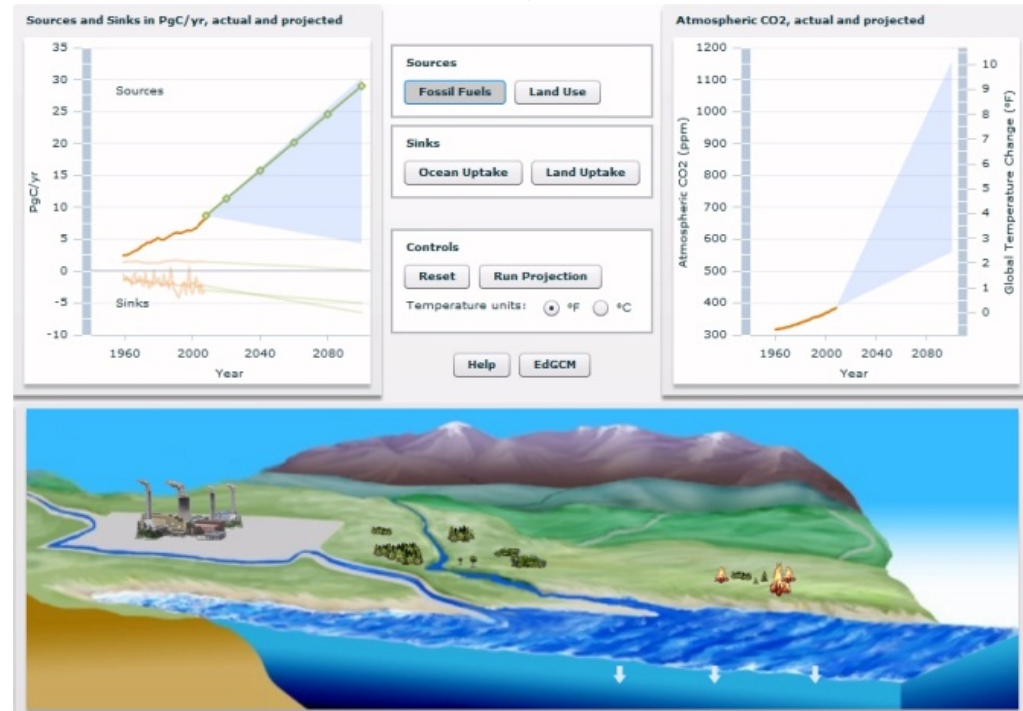
(related lesson plans available for download)



The Vostok Core & Milankovitch Cycles Climate Applet



Carbon Projection Applet



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Lesson Plans



- Teachers who take the course for credit are required to create 1 lesson plan (or a mitigation project) detailing ways to use course content in their classrooms.
- A template is provided.
- Completed lesson plans (or action plans) are posted as a resource for others.
- 40 lesson plans are available to date



ESIP Teacher Workshops



Knoxville Tennessee 2010



Santa Fe New Mexico 2011



Madison Wisconsin 2012

This project is leveraged at workshops held at the Federation of Earth System Information Partners (ESIP) summer meeting. In addition to a session specifically dedicated to the **Climate Literacy Ambassadors** project, ESIP workshops feature a strand dedicated to climate literacy.

2011 & 2012 Workshops at CIMSS



January 2011 (16 participants)



January 2011 (19 participants)



January 2012 (5 participants)



March 2012 (5 participants)

Why were the January 2011 workshops so much larger than the 2012 workshops ?

2011 Attack on Education



The Wisconsin State Legislature voted to eliminate collective bargaining for public employees in February 2011, curtailing benefits that had covered Wisconsin's public school teachers since 1959.

Hundreds of thousands protested at the State Capitol. Madison public schools were closed for 4 days straight.





Madison Teachers Inc.
Collectively We Decide, United We Act



- Over the summer, more than 4,700 school employees retired. (many were master teachers)
- 63% of school districts experienced a loss of teachers
 - 38% decrease in teacher aides
 - 33% decrease in support staff



So, what did this mean for our project?

Not surprisingly, our forum was nearly silent.
Also, **no one** took us up on repeated promotions
of the student research stipends.

So, we decided to ask a few questions ...



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Survey Results

(7 questions, distributed November 2011)

1. Has your confidence around teaching or discussing climate change increased as a result of participating in the NASA/CIMSS Climate Literacy Ambassadors project?

#	Answer		Response	%
1	Yes, a little		19	41%
2	Yes, a lot		26	57%
3	No, not much		1	2%
4	No, not at all		0	0%
	Total		46	100%

98% report increased confidence

2. Has the frequency that you teach or discuss climate change increased since you participated in the NASA/CIMSS Climate Literacy Ambassadors project?

#	Answer		Response	%
1	Yes, a little		23	50%
2	Yes, a lot		19	41%
3	No, not much		4	9%
4	No, not at all		0	0%
	Total		46	100%

91% report increased frequency



3. How often do you share information about climate change with students?

#	Answer		Response	%
1	Daily, or almost every day		6	13%
2	About once a week		17	38%
3	Once or twice each month		14	31%
4	Once or twice each semester		8	18%
5	Once or twice a year		0	0%
	Total		45	100%

4. How often do you share information about climate change with other teachers?

#	Answer		Response	%
1	Daily, or almost every day		5	11%
2	About once a week		9	20%
3	Once or twice each month		17	37%
4	Once or twice each semester		14	30%
5	Once or twice a year		1	2%
	Total		46	100%

5. Approximately how many lesson plans from the Global and Regional Climate Change web page have you used?
<http://cimss.ssec.wisc.edu/climatechange/nav/lessonplans/index.html>

#	Answer	Response	%
1	None	12	26%
2	Only the ones I developed	10	22%
3	A few	19	41%
4	Several	5	11%
	Total	46	100%

6. Have you instigated or participated in a climate mitigation project as a result of participating in the NASA/CIMSS Climate Literacy Ambassadors project?

#	Answer	Response	%
1	No	36	78%
2	Yes, please elaborate	10	22%
	Total	46	100%

Yes, please elaborate

public education project

Our committee sponsors a district-wide event each fall to coordinate with the 350.org international event.

My students promoted a 'walk to school' day to coincide with the national 'bike to work' day to raise awareness of personal responsibility for transportation choices.

reduced use of electricity and gas

I have a new job managing an energy reduction effort in MMSD called People.Power.Planet engaging staff in students in small energy saving actions (turn off lights)


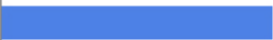


Replicating in entire school system, 17th largest in the country

The time I spent on developing my project has allowed me to use it as both a science concept and a writing project

GLOBE Project testing of new programs



7. Do you ever visit or participate in the CIMSS climate change forum or any other technology-supported virtual community of climate change educators?

#	Answer		Response	%
1	No (please indicate the main reason why not)		22	48%
2	Yes, sometimes.		23	50%
3	Yes, frequently - but I mainly just read discussions by other educators (please indicate which site(s) you visit)		1	2%
4	Yes, frequently - I like to post and participate actively (please indicate which site(s) you visit)		0	0%
	Total		46	100%

No (please indicate the main reason why not)	Yes, frequently - but I mainly just read discussions by other educators (please indicate which site(s) you visit)	Yes, frequently - I like to post and participate actively (please indicate which site(s) you visit)
Lack of time	CLN	
too little time		
we are in the midsts of rock and mineral units.		
I changed grade levels and have been developing curriculum for this class and have not had time.		
time		
Too many things to do		
Don't know about them		
not enough time :(
time constraints, unaware of opportunities		
There are so many periodic updates I receive through email from various environmental groups that I don't feel the need to seek still more info.		
lack of time		
Reassigned curriculum/standards		
no classes for it		
have visitied NASA o nly		
I haven't gotten to this part of my curriculum yet.		

LACK OF TIME !!!
(Responses are from WI, TN & NM teachers)



Based on survey responses

- We terminated the forum and maintain a listserve
- Re-purposed student research stipends for a technology lending library ... the CIMSS iPad Library!



CIMSS iPad Library

In 2012 CIMSS launched a new initiative to engage teachers and students in data acquisition and regional climate studies.

The **CIMSS iPad Library** loans iPads to science teachers for an entire school year! The first units were distributed at the **ESIP Teacher Workshop** where teachers also learned about climate-related Apps, including **SatCam**, an application for iOS devices where users collect observations of cloud and surface conditions coordinated with an overpass of the Terra, Aqua, or Suomi NPP satellite.



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Spanish Language Version

In 2012 the CIMSS/UW-Madison Global and Regional Climate Change course for G6-12 science teachers was translated to Spanish and can be accessed from a link on the course main page.

Cambio Climático Global y Regional

<http://cimss.ssec.wisc.edu/climatechange/Espanol/>

The translation was done by Juan Botella, a native Spanish speaker who teaches high school science in Wisconsin. Some of the activities are still in English, but all the content that explains the science behind the graphs and tables in the 2007 IPCC Summary for Policy Makers is completely translated. And many significant activities ARE available in Spanish such as the Carbon Projections Applet: (<http://cimss.ssec.wisc.edu/climatechange/Espanol/system/lesson1/CarbonCycleAppletSpanish>) created by Galen A. McKinely & Tommy Jasmin and also translated by Juan.



Cambio Climático Global y Regional

Inicio | Contenido del Curso | Recursos | Lecciones | Sobre Nosotros | English

Clarificando conceptos, procesos y gráficos presentados en el Resumen de las Bases Científicas del reporte del 2007 IPCC sobre Cambio Climático.

Unidades del Curso

- NUESTRO SISTEMA CLIMATICO GLOBAL
- OBSERVACIONES DE CAMBIO CLIMATICO
- CAMBIO CLIMATICO GLOBAL
- MODELACION DEL CLIMA
- CAMBIO CLIMATICO REGIONAL

El contenido del curso es consistente con COMPETENCIA CLIMATICA: Los principios esenciales de la Ciencia sobre el Clima tiene la intención de clarificar los conceptos y gráficos del Resumen para Responsables de Políticas del Grupo Intergubernamental de Expertos sobre Cambio Climático (IPCC) del 2007. Este material ha sido desarrollado para maestros de ciencias de grados G6-12, y es de acceso gratuito para todos.

Actualizado en el 2010 bajo el auspicio del
NASA's Global Climate Change Education program

*This translation and all other efforts related to this project were made possible from **NASA GCCE award number NNX10AB52A***



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2013 and beyond

- Educators will always be able to log in and earn a free certificate of completion (CEUs)



- CIMSS iPad Library will loan out units to teachers via the Climate Literacy Ambassadors Community and ESIP (Earth Science Information Partners)

We'd like to thank NASA for supporting this project.

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Guiding Principle:

Humans can take actions to reduce climate change and its impacts

Climate Literacy

The Essential Principles
of Climate Science

A Guide for Individuals
and Communities



Many actions have co-benefits



“Reducing human vulnerability to the impacts of climate change depends not only upon our ability to understand climate science, but also upon our ability to integrate that knowledge into human society.”

This presentation takes place on the eve of the 2012 Presidential election but **Climate Change** wasn't mention in the discussions or debates leading up to the election **until** Hurricane Sandy hit when a major politician finally supported one of the candidates because he would do a better job of “tackling” climate change.

With Bill McKibben garnering a standing ovation at GSA and Hurricane Sandy demanding society's attention, **now** is the time for the climate literacy community to work where “Where Our Deepest Passions Intersect the World's Compelling Needs”

