



UNITED NATIONS  
UNIVERSITY

**UNU-WIDER**

World Institute for Development  
Economics Research

# AERC and UNU-WIDER's Online Course:

## *Climate Change Science and Modeling of Biophysical and Economic Impacts*

Innocent Matshe  
AERC

Alyssa McCluskey  
IClICS/UNU-WIDER

# Why course on climate change?

- ▶ Funds are being given to developing countries to include climate change in their analyses (biophysical and economic)
- ▶ Researchers do not have proper background in climate change to perform good analyses.
- ▶ Need for concise and relevant information from well respected researchers.

# Why online course?

- ▶ Reach larger number of participants
- ▶ Gather top experts to provide lectures
- ▶ Create course/format that can be updated and used multiple times.

# Concerns with online format

- ▶ Technical issues
  - Internet connection
  - Software/computer issues
- ▶ Participants ability to learn online
- ▶ Participants ability to connect to others/instructors



# Addressing online concerns

- ▶ Consulted with professional online educators on best way to run an online course
  - How to engage participants
  - Course Material – dealing with internet issues in developing countries (FTP site, sending out DVDs)
- ▶ Evaluated many different learning platforms
  - Used Blackboard CourseSites – no cost
- ▶ Experts vs one instructor



# Experts Vs One Instructor

- ▶ The climate change field is constantly changing with many views and biases.
- ▶ Instead of having one instructor lecture on the different aspects of climate change, have experts from each sector provide lectures on the latest thoughts/ideas.
- ▶ Have an instructor/course facilitator aid participants in discussion.



# Experts

- ▶ Adam Schlosser (MIT, climate science);
- ▶ Kerry Emanuel (MIT, cyclones and extreme events);
- ▶ Jim Neumann (Industrial Economics, sea level rise and storm surges);
- ▶ Kenneth Strzepek (MIT/CU, hydrology, extreme events, and water resources);
- ▶ Paul Chinowsky (CU, infrastructure modeling);
- ▶ Channing Arndt (UNU-WIDER, crop modeling).
- ▶ Sherman Robinson (IFPRI, CGE, PE modeling)
- ▶ Rob Davies (U of Zimbabwe, Market Failures, Discounting)
- ▶ James Thurlow (UNU-WIDER, Country level economic model)

# Course Overview

- ▶ A four week online course to address the current science and thoughts on climate change and its biophysical and economic implications.
- ▶ Created for professionals working in different disciplines that are being faced with addressing climate change in their work.
- ▶ The goal is to provide core knowledge of good climate science and best modeling practices.
- ▶ The course material includes readings, lectures, discussions, and a small final group project.



# Course Overview

**Part I:** The climate system including evidence and skepticism of climate change, climate change scenarios (SRES, GCMs) output and reliability, downscaling, and projections and how to use them.

**Part II:** The biophysical impacts of climate change including modeling of hydrology, flooding, and droughts; crop modeling; water resources modeling; and infrastructure modeling.

**Part III:** The economic impacts of climate change including greenhouse gas emissions, market failures, discounts, mitigation, CGE and PE models, and country-level economic modeling.

# Groups

- ▶ Participants were divided into groups of ~3–5 based on geographic location.
- ▶ Participants posted their answers to the discussion questions in their group discussion board.
- ▶ Participants completed a small final group project with their group.







# What is required to complete course?




- ▶ Participants must answer all discussion questions in their group discussion boards.
- ▶ Participants must comment on 1–2 other participant's post in their discussion board for each topic.
- ▶ Participants must complete the final group project.










# A Look at the Course Website: Homepage


 CourseSites: Alyssa McCluskey

CREATE COURSE   HELP   LOGOUT   SHARE |   

My CourseSites   **SBEI-CC2**    **SBEI-CC**    **SBI-CC**    Resources

  **Homepage** Edit Mode is:  OFF

▼ **Climate Change Science and Modeling of Biophysical and Economic Impacts** 

Homepage

Instant Messenger

Course Information

Your Instructors

Course Content

Course Resources

Discussions

▼ **My Groups**

► Discussion Group 2: Nigeria/Benin/Ghana

► Discussion Group 4: Ethiopia/DRC/Uganda


► Discussion Group-Economic Section

COURSE MANAGEMENT



▼ **Control Panel**

► Content Collection

► Course Tools



**AFRICAN ECONOMIC RESEARCH CONSORTIUM**  
Consortium pour la Recherche Economique en Afrique



**UNITED NATIONS UNIVERSITY**

**UNU-WIDER**

World Institute for Development Economics Research

## Climate Change Science and Modeling of Biophysical and Economic Impacts

**My Announcements**

Climate Change Science and Modeling of Biophysical and Economic Impacts

► Welcome Announcement

[more announcements...→](#)

**My Calendar**

No calendar events have been posted for the next 7 days.

[more calendar events...→](#)

# A Look at the Course Website: Homepage

## Welcome Announcement

Posted on: Tuesday, February 28, 2012



Welcome to the Climate Change Science and Modeling of Biophysical and Economic Implications Course! We look forward to your participation in the course.

This course is an outcome of the collaboration between the United Nations University - World Institute for Development Economics Research (UNU-WIDER) and the African Economic Research Consortium (AERC).

The developer for this course is Alyssa McCluskey from the University of Colorado Climate and Civil Systems Lab (CLICS) and UNU-WIDER..

Below are welcome messages from Channing Arndt, the External Project Director for Climate Change for UNU-WIDER and Innocent Matshe, the Director of Training for AERC.



Watch Video

### Welcome Message from UNU-WIDER's Channing Arndt

Duration: (4:36)

\*Note: If the video is breaking up often, it is a good idea to push the pause button and allow the video to download for some time before playing the video.



Watch Video

### Welcome Message from AERC's Innocent Matshe

Duration: (1:00)

Welcome again, and please look through the 'Course Information' and 'Course Content' Folders. NOTE: The best way to navigate the sections is to use the back arrow.

Posted by:

Alyssa McCluskey

Posted to: Climate Change  
Science and Modeling of  
Biophysical and Economic  
Impacts



# A Look at the Course Website: Navigation

Homepage

→ **Homepage:** announcements, calendar of assignments

Instant Messenger

→ **Instant Messenger** with other participants and instructor

Course Information

→ **Course Information:** description, syllabus, requirements, etc.

Your Instructors

→ **Your Instructors:** Background bios on all instructors

Course Content

→ **Course Content:** All assignments and material

Course Resources

→ **Course Resources:** Additional material, further reading

Discussions

→ **Discussions:** Discussion forums for each topic where participants can ask questions to instructors and the entire class

My Groups

→ **My Groups:** Each participant has access to one, smaller discussion group where they post their answers to the different discussion questions and comment on each other's posts (also group for final project)

Discussion Group 2:  
Nigeria/Benin/Ghana

Discussion Group 4:  
Ethiopia/DRC/Uganda

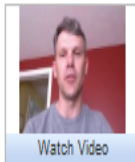
Discussion Group-Economic  
Section

# A Look at the Course Website: Example of Topic Material Presentation

## Climate Change Science by Adam Schlosser



### Climate Change Science Introduction



Introduction by Adam Schlosser

Duration: (1:37)

Watch Video

**Short Introduction Video of Lecturer:**  
Brief overview of lecturer background  
and what they will cover



### Climate Change Science Readings

## List of Required Readings

The following documents on the science of climate change have been provided by Adam Schlosser. Please read these documents before viewing the PowerPoint Presentation.

Document 1: Climate projections: *Past performance no guarantee of future skill?* (This document is intended only for the participants in this course and their own personal research use. It is not intended for circulation to others.)

Document 2: *The end of model democracy?*



### Climate Change Science Presentation

Please view the following presentation on climate change science provided by Adam Schlosser. It has been divided into 4 parts for easier downloading. Once you open the file in Powerpoint, you can start the slide show from the beginning and the presentation should play with Adam Schlosser's narrative.

Climate Change Science Lecture: Part I

Climate Change Science Lecture: Part II

Climate Change Science Lecture: Part III

Climate Change Science Lecture: Part IV

**List of Lectures to View (narrated  
PowerPoint presentations –  
trimmed to 15 minutes for easy  
download)**

**\*New Addition: Self Assessment  
Quiz (small set of T/F and multiple  
choice questions based on readings  
and lecture to highlight points in the  
material)**



### Group Discussion Question

DUE: November 2nd

After completing the readings and viewing the presentation, please visit your discussion group and respond to the following discussion questions:

- 1) You require information from weather forecasts and climate predictions to make a decision. Knowing that no model is perfect, would you prefer to consider: only one model deemed "the best"; a small collection of "better" models; or the entire collection of models (knowing they all contain some degree of "truth")? Why?
- 2) Given your response in 1) upon what basis would you evaluate reliability of the model(s) that you have chosen? Are you confident that all the model data you have comprehensively span the uncertainty of your required forecast/prediction?
- 3) You have been asked to conduct a climate change analysis and choose a set of GCMs. Your boss wants you to choose GCMs that best replicate the historic climate. Provide a short paragraph on why this is or is not a good idea.
- 4) Comment on at least one other participant's post in your discussion group (Due November 4th).

**Group Discussion Questions:**  
Questions participants will  
answer in their small group  
discussion boards

# A Look at the Course Website: Example of Group Discussion Board

## Thread Detail

The Thread Detail Page provides a complete view of the Thread and its contents. Options for viewing and managing the thread are located here. [More Help](#)

This is monitored by instructor(s) to make sure students are understanding material correctly

Search Alignments Refresh

Climate Change Science Discussion Question Alia Didier > Reply

Total Posts: 4 Unread Posts: 0

Message Actions	Collect
Select: All None	
Climate Change Science Discussion Question Alia Didier	ALIA Didier Yelognisse 11/2/11 12:52 PM
RESPONSE FROM DENIS MOUZOUN	Alyssa McCluskey 11/4/11 8:14 AM
RE: RESPONSE FROM DENIS MOUZOUN (Didier Reaction)	ALIA Didier Yelognisse 11/4/11 9:12 AM
RE: Climate Change Science Discussion Question Alia Didier	Greg Edame 11/29/11 2:30 AM
Select: All None	
Message Actions	Collect

Other Participants respond to Alia's post and create a discussion

## Alia's Answer to a Discussion Question

Climate Change Science Discussion Question Alia Didier >

Reply Quote Edit Set Flag Delete

Author: ALIA Didier Yelognisse

Total views: 23 (Your views: 9)

Posted Date: Wednesday, November 2, 2011 12:52:32 PM EDT

Edited Date: Wednesday, November 2, 2011 12:52:32 PM EDT

1)  
I would prefer to use the entire collection of models.  
Why?

As stated in the question all models contain some degree of "truth". And I can add that some model contain a degree of truth not captured by others. All models are based on a set on assumption and modeling strategies. Some can better predict for a given time period and for a given region than others. Even we can cannot be sure that using all model will nearly cancel out their error, many studies have demonstrated that even adding a poor model can improve a prediction (Knutti, 2010).

2)

I respond that I will choose all models. However if their number is so great I can use a strategy to select a representative number given the region on which I need my forecasts. Some model will perform well in predicting information for some regions than others. One strategy that I can use to select the "best" and evaluate the reliability of there is to rank all models in terms of their capacity to reproduce correctly historically data. For that purpose I can use the root mean square error (RMSE) or the sum of squared error of prediction using past information. And select the model with RMSE or SSE less than a given value. I'm not confident that the uncertainty is spanned. I think that it is almost impossible to comprehensively span the uncertainty of required for forecast/prediction. We just try to achieve an acceptable level of confidence. Using the selected models I think are the best and using appropriate aggregation method I can achieve this acceptable confidence level.

3)

Models are mostly built on historic data and are then used for prediction. So how can we be confident on the prediction of a model? One simplest way is to rely on its ability to replicates historic data with a minimum of error. With this argument it is better to use a set GCMs which replicate historic data and conclude that the boss idea is good. However I don't think so and can argue that all models have a part of truth which can be very helpful in improving the quality of prediction when added to the others. Sometimes one set of model can perform well in a time period because they consider well a particular event which others does not do but have other strengths. A recent study conducted by Raifen and Toumii (2009) have shown that there is no evidence that past performance- based model selection will deliver better results than the entire model.

Climate Change Science Discussion Question Alia Didier >

Reply Quote Edit Set Flag Delete

# What do participants get from course?

- ▶ Latest information/ideas on climate change from leading experts in the different disciplines
- ▶ Access to all the papers and lecturers to use in their own teaching/research.
- ▶ Learn where to get data and further information that was not covered.
- ▶ Gain new colleagues through their group discussion boards and final group projects.
- ▶ Access to a network of past graduates of the course
- ▶ Certificate of Participation

# AERC Perspective



# Why an AERC course on climate change?

- ▶ AERC's network system
- ▶ Enhances collaboration between researchers with similar interests
- ▶ Maximizes reach – Geographic dispersion of researchers, busy with their daily work
- ▶ Ease of 'buy-in' from policy makers
- ▶ Presently no dedicated material within AERC's training network
- ▶ Create mass interest and understanding
- ▶ Build a research agenda for CC work

# Obstacles

- ▶ Technology and technical
- ▶ Background of researchers and 'follow-through'
- ▶ Time allocation – both daily and total time allocation. Ideal would be AERC framework participation
- ▶ Capacity constraints – Most research units have quite a few staff
- ▶ Financial
- ▶ Communication (including single language researchers with limited english language skills)
- ▶ Remoteness

# Course Sessions Offered

- ▶ First session had 28 participants with 2 weeks online 1 week (economics) face to face in Cape Town
- ▶ Second and third sessions had ~20 participants with all 3 weeks online

# Choosing Participants

- ▶ AERC network
- ▶ Variety of disciplines
- ▶ Variety of locations
  - 17 different countries in first session



# Assessment of the course

- ▶ Interest was/is very high
- ▶ Clearly very successful – 25 of the applicants to follow-on call for research, applied
- ▶ Several proposals have been received within AERC's other research windows
- ▶ CC work has been included as a plenary session topic for the continent-wide AERC Conference
- ▶ Participants evaluations generally highly positive
- ▶ Most potential participants are willing to invest time to learn the material
- ▶ Academics find it useful as a way to organise themselves to teach the course or similar courses



# Student Success Rate

- ▶ From initial sign up to full completion of course had  $\sim 2/3$  participants complete the course
  - Drop out reasons
    - Illness
    - Family emergencies,
    - Other work – too busy – out in field
  - Some did complete coursework in following session

# What Past Participants Are Saying...

“This was my first time to attend the online course, the **communications and logistics** were very efficient, making it easy for learners.”

“The instructors were very useful and gave meaningful insights in all the questions addressed to them. In fact, they gave all known sources for the relevant materials on the topic where the question was raised. I was impressed.”



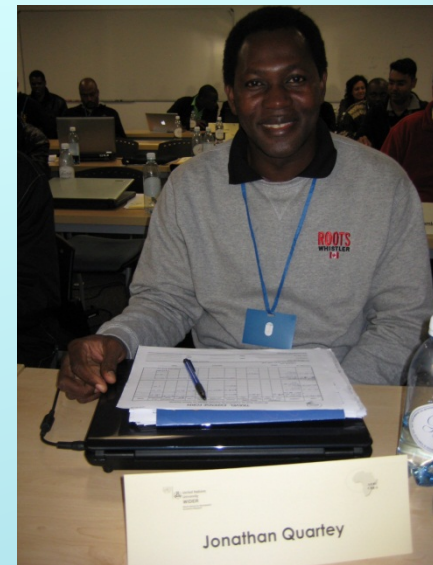
“Thank you for giving me the opportunity to learn more about climate change. The course has broaden my horizon as far as climate change is concerned.”

“The course content was very useful to me. I have learned a lot form it, and I recommend other people with interest on climate change to do the course.”



# How are Participants Using Material...

- ▶ On a team working with the local authority on climate change impacts on health in urban areas
- ▶ For a PhD proposal
- ▶ Writing a paper
- ▶ Using it in teaching master's course "Agriculture Policy and Trade"
- ▶ As literature for publishing a paper.
- ▶ In workshop presentations



# Main keys to success

- ▶ Quick response time to participants for technical issues
- ▶ Requiring discussion (comments on other posts)
- ▶ Feedback and interaction with experts
- ▶ Engaging and high quality materials

# What could be done better?

- ▶ Timing
- ▶ Course detail – generic
- ▶ Assessment of cohorts – differentiation
- ▶ Follow-up activities to incentivise research or other academic/practical work



# Future of Course

# Why offer this course for fee?

- ▶ There is a need for this type of course: past participants have gained a lot from the course and highly recommend it to others. We have gathered a set of comprehensive material to give one a rich background in climate change covering multiple aspects of the topic (science, biophysical, and economic)
- ▶ By requiring a small fee, it provides motivation, credibility, and commitment to the students while allowing us to continue to offer the course.

# ICliCS to take over course

- ▶ ICliCs will be the institute that will take over the online course with the ability to take in course fees, pay instructors/experts, and provide future development of the course.

# Next Steps

- ▶ Minor editing of course content
- ▶ Review of economic section
- ▶ Advertising
  - Audience of academics: teachers and researchers
  - Using UNU-WIDER network
  - Using AERC network
  - Universities
  - Past Participants

**Thank you**



# Extra Slides

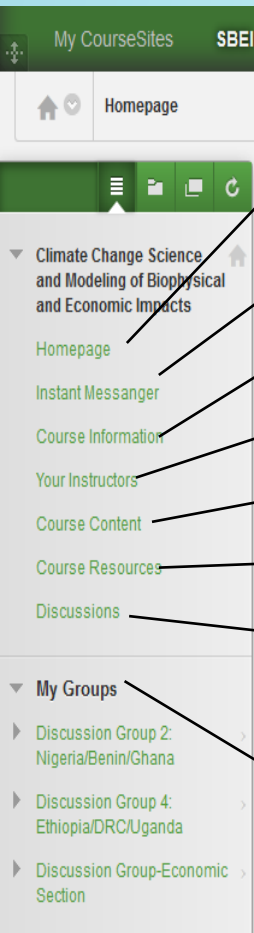
# How are Participants Using Material...

- ▶ “In Zambia the country has just come out of erection, in September 2011. I have been trying to find a route to the government bodies who can make use of the information gained from the course but because of no permanent staff in many offices, I am waiting for the dust to settle, so to say. On a positive note the CBU is carrying out a **project with the local authority on Climate Change impacts on health in urban areas. I am part of the team.**”
- ▶ “I have been fortunate enough to **use the material from the course while writing my PhD proposal.** Hopefully the project will be approved and I will use the material further over the next 3 years.”
- ▶ “I am **working on my paper** entitled" Effects of Climate Change on Agriculture in Swaziland. This paper will be proposed to different international journals for publication in 2012. **The course material is one of the sources of the paper draft. I just incorporated the climate change mitigation and adaptation policies into my master's course syllabus** for the Spring semester 2012. The course title is "Agricultural Policy and Trade". **I do believe that your course syllabus has equipped with all necessary tools for my teaching and publications purpose in this field.**”
- ▶ I have **used the material “as literature for my research papers.** The materials were up to date, as most of the study materials were references less than 2 years old.”
- ▶ I have **used the material “in Workshop presentations.** The materials were explicit and easy for the audience to understand.”

# What do participants get from course?

- ▶ Participants get the latest information/ideas on climate change from leading experts in the different disciplines (i.e. not just one lecturer covering all material, but specific experts from each topic) This is important for a topic with many different view points and constantly changing ideas.
- ▶ Participants have access to all the papers and lecturers to use in their own teaching/research. They also learn where to get data and further information that was not covered.
- ▶ Participants gain new colleagues through their group discussion boards and final group projects. This networking is important in this specialized field of study.
- ▶ Participants get access to a network of past graduates of the course that are involved in climate change research where ideas and latest happenings in climate change are shared.
- ▶ Participants receive a Certificate of Participation if they complete all the tasks of the course.

# A Look at the Course Website: Navigation



**Homepage:**  
announcements,  
calendar of assignments

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# Topic Discussion Board from Expert

CourseSites: Alyssa McCluskey

CREATE COURSE HELP LOGOUT SHARE

My CourseSites SBEI-CC2 SBEI-CC SBI-CC Resources

Course Evaluation

Groups

Tools

Help

## My Groups

Discussion Group 1: Mauritius

Discussion Group 2: West Africa

Discussion Group 3: Nigeria

Discussion Group 4: Eastern Africa

Discussion Group 5: Southeastern Africa

Discussion Group 6: South Africa

Discussion Group 7: Southern Africa

Discussion Group 8: Ghana

## COURSE MANAGEMENT

### Control Panel

Content Collection

Course Tools

Evaluation

Grade Center

Users and Groups

Customization

Packages and Utilities

Help

☐

Thread: My questions for Dr. Schlosser  
Post: My questions for Dr. Schlosser  
Author: Abraham Williams

Posted Date: May 4, 2011 11:44 PM  
Status: Published

Dear Dr. Schlosser,

In the document, Climate projections, the author's examined the principle of performance-based selection in observational context for temperature. They found that, there was no evidence of future prediction skill delivered by past performance-based model selection. What implication does this have for climate modelling and policy? Does the study suggest that other models be used? And does the study suggest that temperature targeting could be an important variable for climate policy?

On the paper, *the end of model democracy*, does the study suggests that a smaller range of models that are more efficient should be used rather than trying to combine the results of available models to form an ensemble average that gives all models equal weight?

In your presentation, you said the sun is the primary source of energy for the climate system. Does the earth constitute part of the climate system?

From the readings on *'Water and Climate Change Synthesis of the Science' with Dr. McCluskey*, I observe that teleconnections can lead to severe droughts in some region and heavy rainfall in others. Does this mean that climate change (CC) impacts are inversely related across regions? Let's say there is hurricane in region A, does it mean that a region, B, would over time, get the opposite impact of hurricane? Or if there is excessive flood in Region C, does it mean that region D would experience less rainfall leading to drought?

Also in your presentation, under the section *'Climate/Water-Cycle Connection'* you stated one of the importances of Clouds to include transporting water vapor to other locations. Does this transportation of water vapor by clouds a part of teleconnection activities?

Three gases were identified in your presentation under Trace gases: carbon dioxide, methane and nitrous oxide. However in your illustration about green house gambling, carbon dioxide constituted your major climate policy variable. Does this mean that for climate policy, methane and nitrous oxide are sought of converted into CO<sub>2</sub>?

Is stabilizing green house gases the major aspect of climate policy?

Are they different: climate policy and climate change policy?

Reply

Quote

Mark as Unread

☐

Thread: My questions for Dr. Schlosser  
Post: RE: My questions for Dr. Schlosser  
Author: Adam Schlosser

Posted Date: May 6, 2011 2:13 PM  
Status: Published

Hi Abraham,

The reading assignment on skill and future performance was mainly to highlight that one must be VERY careful when equating skill in predicting one variable under a specific time period directly translates to reliability in another period. For climate change, this becomes a more complicated issue, in that what you really want is to evaluate the models in simulating climate CHANGE and so we have to first observe that to evaluate the simulations. Fortunately, we have seen warming in the past century, but we also don't know for sure that the warming is completely attributed to human activities, though there is strong evidence to suggest that. In any case, models can get the right answer for the wrong reasons, and so after conducting your evaluation you have to consider that. My take from that paper is that it's a very difficult business trying to eliminate "bad" models via a skill metric. You consider all models as plausible futures. The only situation where I would be comfortable with not considering a model is if you know it is missing a key process or mechanism in its formulation. Then, you don't need a skill metric anyway.

The end of model democracy: My take from the paper is similar to above... it's difficult to determine which models you limit yourself to and averaging models (i.e. "model mean") will smooth out extreme conditions that are actually more important for impact assessments (even though they may be of low probability, the damages from that extreme increase the risk).

All of your interpretations regarding teleconnections are correct. You could have dramatically opposite conditions across the globe in response to a particular phenomenon... and the transport of heat and water (vapor) play a role.

A little confusion with the wheel labels: It only listed the CO<sub>2</sub> concentration associated with the "Policy" but the other greenhouse gases are included in the global temperature calculation (methan, nitrous oxide, and others) and these raise the "CO<sub>2</sub> equivalent" concentration to about 650 ppm (rather than 550 ppm of CO<sub>2</sub> only).

In the policy arena, most people view policy "targets" under two contexts: 1) Stabilizing greenhouse gas concentrations, or 2) Not exceeding a global temperature warming over the next century (for example, do not exceed 2 degrees Celsius by 2100). Both of these policies bring to bear different strategies and present different challenges.

In my talk: "climate policy" and "climate change policy" are synonymous... but they could mean different things in other situations.

Adam  
Adam

Reply

Quote

Mark as Read

☐

Thread: My questions for Dr. Schlosser  
Post: RE: My questions for Dr. Schlosser  
Author: Abraham Williams

Posted Date: May 7, 2011 3:57 PM  
Status: Published

Thank you so much Dr. Schlosser for answers. I am most grateful

TW Abraham



# Topic Discussion Board from Expert

CourseSite: Alyssa McCluskey

CREATE COURSE HELP LOGOUT SHARE

My CourseSites SBEI-CC2 SBEI-CC SBEI-CC Resources

Discussion Board > Forum: Questions for Adam Schlosser on the Science of Climate Change

Edit Mode is: OFF

## Forum: Questions for Adam Schlosser on the Science of Climate Change

Organize Forum Threads on this page and apply settings to several or all threads. Threads are listed in a tabular format. The Threads can be sorted by clicking the column title or the caret at the top of each column. [More Help](#)

Create Thread

Alignments Search Display

Thread Actions Collect Delete

	Date	Thread	Author	Status	Unread Posts	Total Posts
	5/8/11 3:39 PM	Question Adam Schlosser	Joseph Cabral	Published	0	4
	5/7/11 8:46 AM	Sifiso Ntombela	Sifiso Ntombela	Published	0	2
	5/6/11 8:30 AM	Question for Schlosser	Yaya Jallow	Published	0	3
	5/6/11 8:26 AM	Questions from Aida Tomo	Aida Tomo	Published	1	2
	5/6/11 3:21 AM	Questions for Adam	Alfred Moyo	Published	1	2
	5/6/11 12:29 AM	Dr. Isaac B. Oluwatayo	Isaac Oluwatayo	Published	2	3
	5/5/11 11:45 PM	Question for Dr. Schlosser from Jonathan	Jonathan Quarley	Published	0	2
	5/5/11 10:16 PM	Question from Paul Orebili	Paul Orebili	Published	0	3
	5/5/11 7:27 PM	Questions for Adam Schlosser	Dr. Henry de-Graft Acoquah	Published	1	3
	5/5/11 5:51 PM	Jacob Nunoo	Jacob Nunoo	Published	1	2
	5/5/11 4:39 PM	question for Adam	Nicola Ibramoggy Giva	Published	1	2
	5/5/11 4:14 PM	question to Adam Schlosser	Nicola Ibramoggy Giva	Published	2	3
	5/5/11 1:13 PM	Question for Dr Adam	A. S. Oyekale	Published	1	2
	5/5/11 11:32 AM	Question from Bruno Yawe	Bruno Yawe	Published	1	2
	5/4/11 11:46 PM	GCM	Indranarain Ramliani	Published	1	3
	5/4/11 11:44 PM	My questions for Dr. Schlosser	Abraham VWilliams	Published	2	3

Climate Change Science and Modeling of Biophysical Impacts

Homepage

Course Information

Your Instructors

Course Content

Course Resources

Discussions

Course Evaluation

Groups

Tools

Help

My Groups

Discussion Group 1: Mauritius

Discussion Group 2: West Africa

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