



Evaluation Data Report

Investigative Workshop:

*Disturbance Regimes and Climate-Carbon
Feedback*

February 13-15, 2012

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Disturbance Regimes and Climate-Carbon Feedback

Workshop

Evaluation Data Report

Background

Introduction

This report contains evaluation data for the NIMBioS Investigative Workshop entitled “*Disturbance Regimes and Climate-Carbon Feedback*” (Carbon workshop), which took place at NIMBioS February 13-15, 2012. NIMBioS Investigative Workshops are relatively large (30-40 participants), focus on a broader topic or a set of related topics than Working Groups, attempt to summarize/synthesize the state of the art and identify future directions, and have potential for leading to one or more future Working Groups. Participants may include post-docs and graduate students with less experience in the particular topic than those participating in Working Groups.

The Carbon workshop comprised 41 participants, including co-organizers Maria Leite (Mathematics, Univ. of Toledo) and Yiqi Luo (Ecology, Univ. of Oklahoma at Norman; Director, EcoLab).

Organizer Pre-Workshop Description

Objectives: Disturbances have been recognized as a key factor affecting terrestrial biogeochemical processes but can be easily misinterpreted without considering the context of disturbance regimes. Many studies have been conducted to quantify impacts of individual disturbance events on ecosystem carbon processes. In general, one disturbance event, such as wildfire, usually triggers release of a large amount of carbon and then follows by recovery processes. It is important to recognize that any disturbance events happen in a context of disturbance regime in a region. If the disturbance regime does not change over time in a region (i.e. stationary), recovery processes after one disturbance event result in net carbon uptake that can fully compensate the carbon loss triggered by the disturbance event, leading to no net change in carbon balance over time. Similarly over space, the carbon loss triggered by the disturbance event in one area can be fully compensated by carbon gain by recovery in other areas in a region if regional disturbance regimes are stationary. Thus, disturbance impacts on biogeochemical cycles have to be interpreted in the context of disturbance regimes and their responses to global change.

Disturbance regimes can usually be characterized by disturbance frequency, severity, and extensity, and differ in different regions of the world. So far, the quantitative relationship between carbon-climate feedback and disturbance regimes has not yet been carefully explored. Climate change likely alters disturbance regimes (i.e. nonstationary). The nonstationary disturbance regimes trigger either net carbon releases from or uptake by terrestrial ecosystems,

feeding back to climate change. Mathematical models are needed to quantify stationarity of disturbance regimes and their feedback to global carbon cycles and climate change. This investigative workshop will bring together disturbance ecologists, biogeochemists, mathematicians, statisticians, and computer scientists to discuss various issues related to integration of disturbance ecology with biogeochemistry using mathematical and statistical approaches. The workshop will synthesize state-of-the-art information and identify future directions in the interface areas of disturbance ecology and biogeochemistry. It is anticipated that the workshop will lead to a NIMBioS Working Group to tackle more focused issues in this interface area.

Central Theme. Development of mathematical models that integrate disturbance ecology with biogeochemistry so as to predict future changes in disturbance regimes and their influences on carbon-climate feedback.

Organizer Post-Workshop Summary

No summary available at the time of report.

Evaluation Design

Evaluation Questions

The evaluation of the workshop was both formative and summative in nature, in that the data collected from respondents was intended to both gain feedback from respondents about the quality of the current workshop and also to inform future similar meetings. Several questions constituted the foundation for the evaluation:

1. Were participants satisfied with the workshop overall?
2. Did the meeting meet participant expectations?
3. Do participants feel the workshop made adequate progress toward its stated goals?
4. Do participants feel they gained knowledge about the main issues related to the research problem?
5. Do participants feel they gained a better understanding of the research across disciplines related to the workshop's research problem?
6. What impact do participants feel the workshop will have on their future research?
7. What changes in accommodations, group format, and/or content would participants like to see at future similar meetings?

Evaluation Procedures

An electronic survey aligned to the evaluation questions was designed by the NIMBioS Evaluation Coordinator with input from the NIMBioS Director and Deputy Director. The final instrument was hosted online via the University of Tennessee's online survey host mrlInterview. Links to the survey were sent to 38 registered workshop participants on February 16, 2012. Two local participants who were considered "observers" and were not present for the entire workshop were not included in the evaluation. NIMBioS Director Louis Gross, who was a

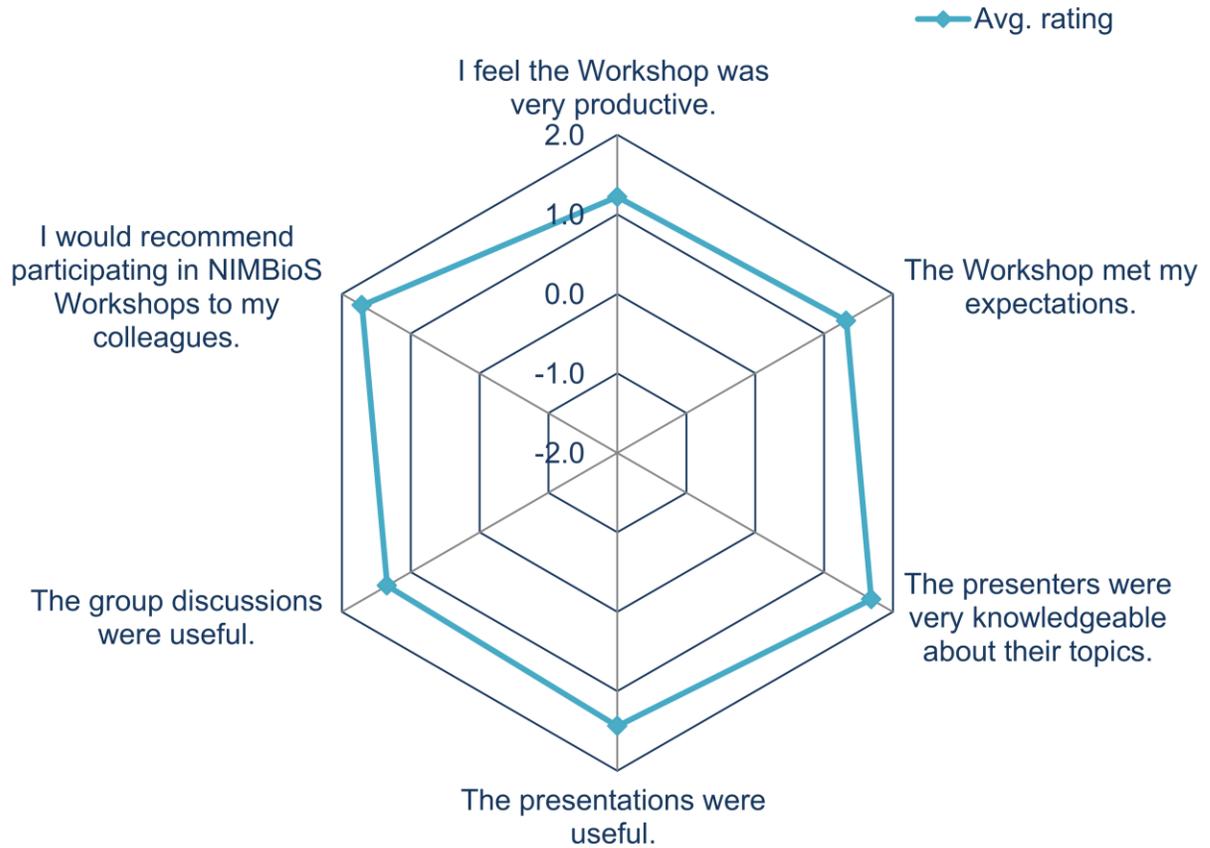
participant in the workshop, was also not included in the evaluation. Workshop organizers were sent evaluation forms, but were only asked questions about (1) connections made with other workshop attendees and (2) satisfaction with the way NIMBioS handled their event. These data are internal to NIMBioS and not reported here.

Reminder emails were sent to non-responding participants on February 23 and 28, 2012. By March 6, 2012, 34 of the participants had given their feedback, for a response rate of 89%.

Evaluation Findings

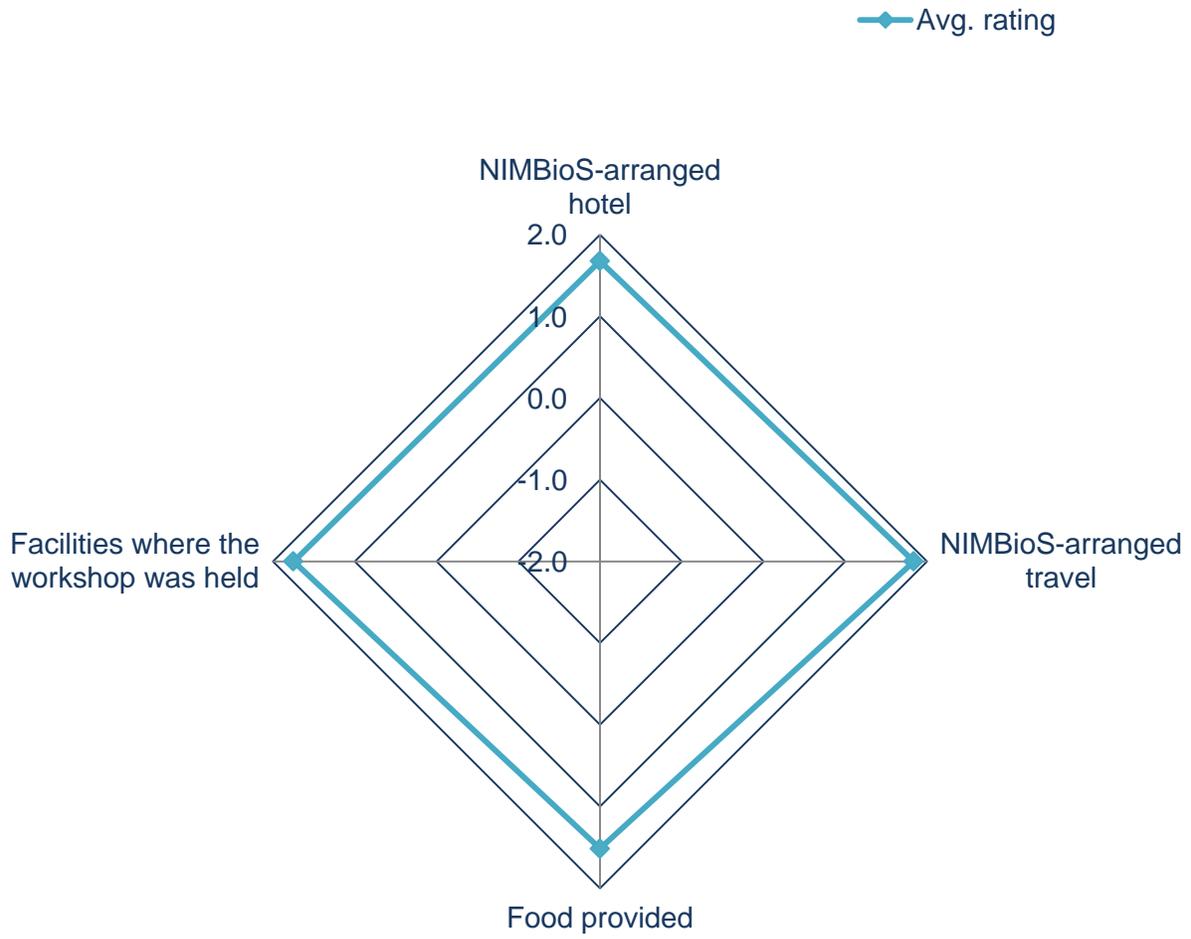
Overall Satisfaction

Figure 1. Satisfaction with various aspects of the workshop



Scored on a 5-point Likert scale from -2 to 2 for “strongly disagree” to “strongly agree”

Figure 2. Satisfaction with accommodations



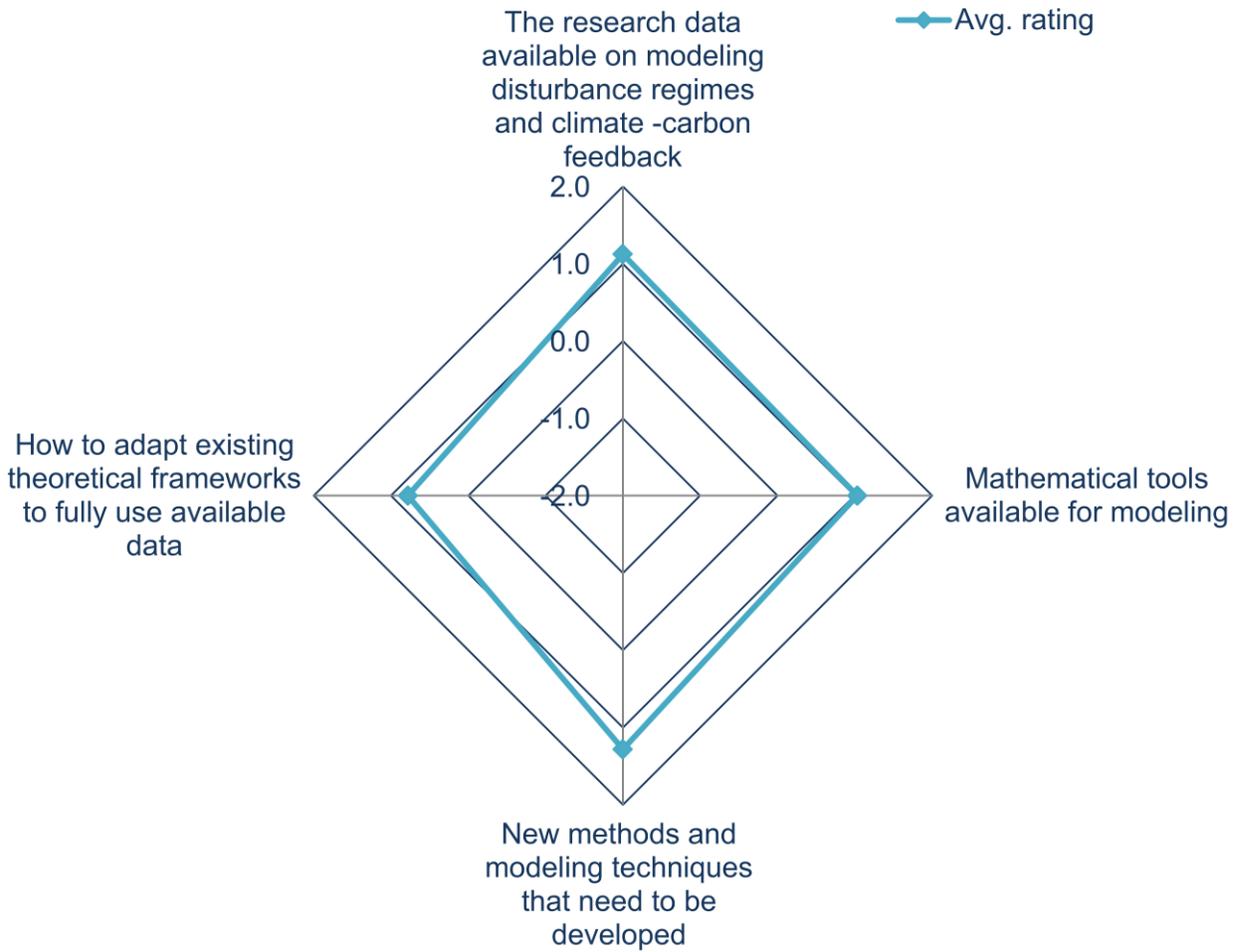
Scored on a 5-point Likert scale from -2 to 2 for “very dissatisfied” to “very satisfied”

Workshop Content and Format

Participant Learning

Figure 3. Participant learning

As a result of attending this workshop, I have a better understanding of:



Scored on a 5-point Likert scale from -2 to 2 for “strongly disagree” to “strongly agree”

Figure 4. Do you feel that participating in the Workshop helped you better understand the research going on in disciplines other than your own regarding the workshop's topic?



Comments

I am an outsider to the field, so for me it was very enlightening to listen to the experts and especially to be able to ask questions.

I felt the discussion groups that I was involved in lacked focus and meandered too much. And there wasn't vigorous participation in the discussion by all group members. I realize some of that is natural (due to personal styles and seniority, etc.) but a structure that encourages more brainstorming followed by a tighter focus could have led to greater productivity.

It was a great experience. Thanks for the opportunity to participate.

It was beneficial for me to see how mathematicians are approaching biological problems. It gave me some perspective on how their approaches could be brought to bear on questions I have and how data I have could be used to inform their efforts.

It was helpful to see the breadth and state of research of disturbance types.

It would be helpful if more time can be spent on mathematical models. Verbal descriptions of biological processes are useful but are often vague and not concrete (for me as a mathematician).

Longer breaks would be beneficial: people can talk longer and find new directions to collaborate. Thank you

This is a definite yes. I came with no prior knowledge of the topic, and left with some understanding of what could be done, with a very exciting possibility for research.

This is definitely one of the better interdisciplinary workshops I've attended over the past several years. I particularly like the fact that we may have smaller

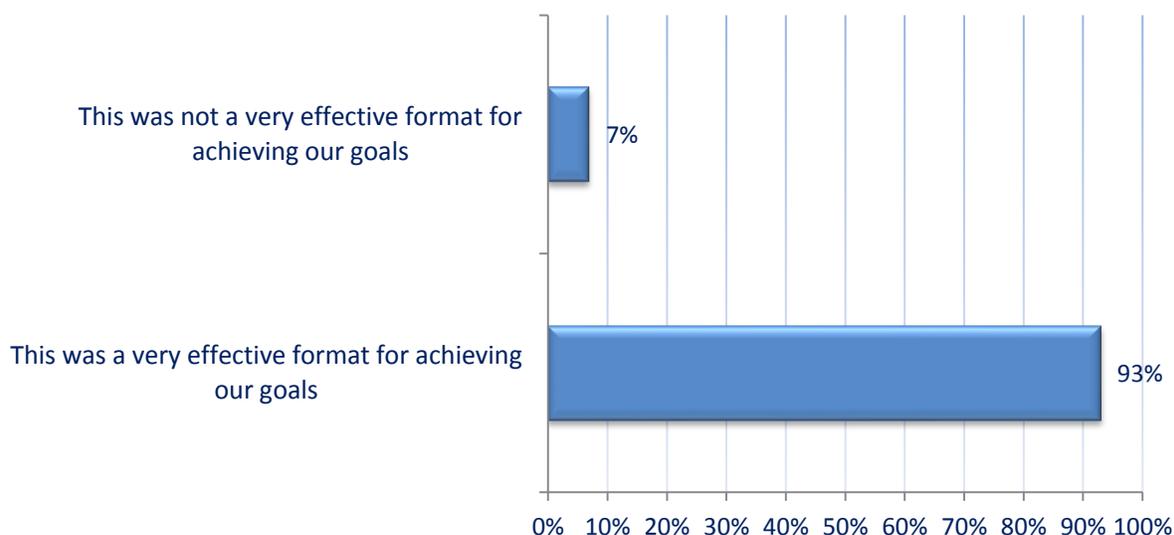
working groups to write papers etc... It takes time to cultivate collaborative relationships and to understand what others may have to offer. Without follow-up activities, interdisciplinary workshops tend not to be very productive in the end. Good thinking NIMBioS leaders...

Yes, but the group discussions were too unstructured and meandered aimlessly.

Yes, I would be much more apt to approach mathematicians (and I have more names and faces in mind) to contribute to improving (or simplifying) a regional carbon model.

Workshop Format

Figure 5. Effectiveness of workshop format



Format could be improved if:

(I think the format was moderately effective, and could use some tuning, but not a complete overhaul.) I would tweak the structure to: - make the presentations more about open problems rather than past achievements; - allow more brainstorming in the first half; - encourage wider participation by all attendees; and - allow any number of focus groups to form.

Most Useful Aspects of Workshop

A breadth of research in presentations.

Acknowledging the missing research aspects of the topic (disturbance quantification and representation).

Discussion between ecologists and mathematicians.

Discussions and interactions with colleagues.

Exposure to this area.

General picture on all kinds of disturbance and its contributions in CO2 output.

Group discussions.

How to use mathematic tools to address the impacts of disturbance regime shifts on ecosystem carbon cycling.

I found the group discussions to be REALLY useful because they were unstructured so that we had a chance to talk about the problems informally.

I gained some understanding of (at least some) components of the mathematical models used in climate modeling & what assumptions are made in building the models.

I thought the smaller, focused group sessions were most productive.

Interacting with new people.

Interactions between participants.

interactions during breakouts, meals etc. Potential collaborations from those interactions.

Look outside the box see what has been done in the area share the ideas

Meeting potential collaborators. Learning about some of the mathematical approaches to disturbance modeling.

Meeting with mathematicians.

Small group break out discussion.

The breakout groups and opportunities to speak one-on-one were most useful for identifying common ground and discussing topics.

The composition of the participants: ecologists and mathematicians, senior and junior people, academics and government. Also, the amount of time allowed for informal discussions.

The discussion groups.

The discussions.

The presentations and time to mingle.

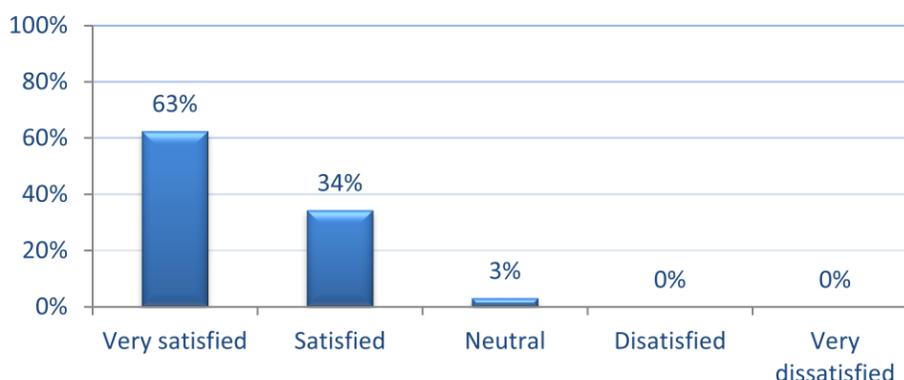
The spaced-out presentations and break-out groups were both very useful.

The work shop makes me more clear for the challenging problems in the field.

The workgroups.

Communication

Figure 6. How satisfied were you with the opportunities provided during workshop presentations and discussions to ask questions and/or make comments?



Comments

Excellent opportunities for large and small group discussion.

I think maybe the group leaders should be trained (nothing too rigorous, just given guidelines ahead of time) to encourage more balance participation and to guide the discussion better?

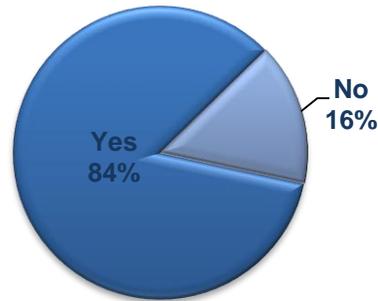
Often times a handful of senior people tend to dominate the discussions, which causes junior participants to shy away from contributing. I notice that when there were more junior participants in my group, the conversation became more dynamic and productive. Some other junior participants expressed similar feelings to me.

Set goals and questions for discussions.

Shorter presentations with more time for questions. There was often only a very few minutes to ask questions. Perhaps more informal presentations in smaller groups (short presentations with opportunity for immediate interaction within the group). Perhaps shorter discussion group sessions (not two hours) and more frequent change of topic and groups for more interactions. The focus of the group discussions was somewhat lacking, especially for the first discussion in this particular workshop. More directive discussion subjects would help advance more rapidly I think.

Progress Toward Goals

Figure 7. Do you feel the workshop made adequate progress toward finding a common language across disciplines for research on the workshop's topic?



Comments

Adequate but maybe not too much more. This is TOUGH, and difficult within the short time framework. But adequate progress, yes.

Based on the conversations I had with mathematicians, I think it was mutually beneficial for individuals from both groups to get a better handle on how others are approaching some fairly similar research questions.

However, additional workshops may be required to fully develop a common framework for continued research progress.

I'm not sure. I talked to a few mathematicians at the end of the workshop who felt they didn't adequately understand the ecological problems; and I also had the sense that the ecologists didn't know what mathematicians can do. So I guess the gulf between the two is still wide.

It helped, but again more structure to the discussions would have improved this aspect also.

It was a big topic and some common language shows up after spending a lot of time in group discussion

More time would have been good just devoted to mathematical models used. I still got a lot out of it though.

Impact on Future Research Plans

Figure 8. Do you feel that the exchange of ideas that took place during the workshop will influence your future research?



Comments

I am considering pursuing a new paper on disturbance in coupled models.

I think most definitely. I feel I can improve my research framework based on the exchange of ideas, and I have more precise ideas about the next crucial steps in my disturbance research program.

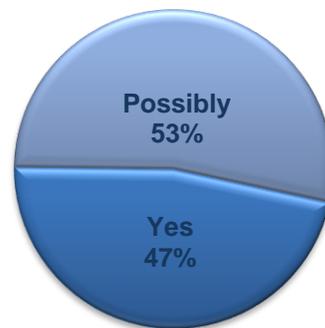
The big leaf theory looks interesting.

The concepts and methods that I was exposed to will be helpful to my research. Specifically, they will help to place it in a broader context.

The organizers put together a very good list of speakers who did an excellent job in giving us a good picture of the current-state-of-knowledge in the field. It will definitely influence my future research.

Impact on Future Collaborations

Figure 9. Did you develop plans for collaborative research with other Workshop participants?



Comments

A breakout group that I participated in plans to work on a collaborative analyses leading to a manuscript.

I am likely to join up with one of the synthesis groups (2) to work towards a manuscript, using my own work as part of a group of case studies on fire (if possible). Looking forward to this opportunity (with Hurteau and Hicke). ALSO have talked with two other individual researchers about the possibilities for future collaborations and we are going to keep in touch with each other's work. ALSO have some contacts for another idea that came up during a discussion group, and will investigate these contacts for future collaborations (people not present at the workshop).

I am not yet sure how much I will be involved in my group's plan. I did meet with 2-3 people with whom I might collaborate, but I'm not yet sure what priority that should take.

I might be interested in looking into CO2 dynamics.

I think some pubs will come out of this workshop. We will see if someone is willing to take the lead to push it through.

I'm involved with two smaller groups who plan to write synthesis papers.

Longer breaks would have benefited prospective collaboration.

Our break-out group made plans to pursue some individual research questions, but we did not identify people to be in charge of ensuring that we make progress.

Our group on the last day developed a plan for a manuscript that once complete will likely lead to further collaboration to resolve some of the issues we identified.

Planning to form a working group

Several subteams seemed to be forming around individual topics.

Suggestions for Future workshops

A clearer vision of potential products would have been useful.

Breakout sessions were a bit unfocused, perhaps because of the breadth of the topic covered.

From my previous experience: one-to-one discussions during breaks are useful.

Guidance in structuring the discussions. The organizers seemed at a loss as to how to do it...

Having a few more specific objectives early on may have helped to focus things earlier.

Having more people on mathematical modeling, who can facilitate interactions between biologists and mathematicians.

I liked the format very much, I wouldn't change anything.

I would have been better suited if there were earlier daily release times in order to reflect on the day's events.

I would reduce the number of presentations to a handful of higher level talks from biologists and mathematicians. Then I would have break out groups the first day to identify common questions and then follow that with breakout groups that are focused on one question. This would be followed by presentations and a new or refined set of topics and a reshuffling of the groups.

IMHO: - Replace the 2-slides-per-person introduction with something faster. - Load the talks towards the beginning; schedule the discussions & planning at the end. - Have the talks be not about "here's what I do," but "here are problems I need help with," or "here are my (mathematical) techniques that could help". (Several/many talks were trying to be that way but it felt like it was more about results/analysis/conclusions rather than open questions). - Instead of dividing into 4 focus groups, divide into N focus groups?

Increase discussion and decrease presentations. Or increasing number of days.

More direct focus for discussion groups.

More guidance in the discussion topics and research axes prior to the workshop

More time for informal discussion and more background talks in ecology for mathematicians.

More time for one on one interaction based on common interests.

Perhaps fewer presentations, though there were many excellent ones. Some were more useful than others but I know this is hard to control in advance by the organizers. Perhaps a more defined structure to the process of the workshop; it seemed somewhat fuzzy at times. It is good to be flexible, but a large group such as this also needs clear structure to advance in such a short time period.

Post a few relevant papers before.

Spend less time on presentations.

The idea of having all 30 participants introduce themselves with 2 slides didn't work out very well. Clearly there were 3 subgroups present: ecologists, climate change folks, and mathematicians (though, of course we were all into all 3 of these, we did have particular foci). I would have had each of the 3 subgroups meet and then introduce themselves as a set of people to strengthen this introductory part. In any case, it isn't worth too much time.

The short introductions using ppt slides didn't work too well. Perhaps better would be a concise template for a slide with fill-in blanks for basic introductory information. Too many people treated the introduction as an opportunity to give a mini-talk about their research, rather than a simple introduction of themselves and in what broad topical areas their interest lie.

While there were some really good and interesting people there, the composition of the group was not ideal for meeting the goals as stated. Although other interesting things may come out that don't exactly address the stated goals. Unfortunately i don't think the mathematicians contributed anything new or ultimately that will advance carbon-climate science. (The problem is not math-limited at the moment, but rather data limited).

Additional Comments

I think some folks were ready to commit to ongoing projects and I hope that workshop results will be shared and increase the chance that we will follow through on these.

Thank you for the great experience!

Though one can always improve, I very much appreciated this workshop, the diversity of participants, the workshop organizers (super), the NIMBioS site and organization. Congratulations to all involved in this particular effort. I would come back any time :)

Very good initiative and interesting topic approach.

We have developed collaborative relationships across disciplines, which otherwise is impossible.

Appendix

Disturbance Regimes and Climate-Carbon Feedback Workshop Evaluation Survey

Disturbance Regimes and Climate-Carbon Feedback Workshop Survey

Thank you for taking a moment to complete this survey. Your responses will be used to improve the workshops hosted by the National Institute for Mathematical and Biological Synthesis. Information supplied on the survey will be confidential, and results will be reported only in the aggregate.

Please check the appropriate box to indicate your level of agreement with the following statements about this workshop: (Very satisfied, Satisfied, Neutral, Dissatisfied, Very dissatisfied)

- I feel the workshop was very productive.
- The workshop met my expectations.
- The presenters were very knowledgeable about their topics.
- The presentations were useful.
- The group discussions were useful
- I would recommend participating in NIMBioS workshops to my colleagues.

Please check the appropriate box to indicate your level of agreement with the following statements. As a result of participating in this workshop, I have a better understanding of: (Strongly agree, Agree, Neutral, Disagree, Strongly disagree)

- The research data available on the workshop's topic
- Mathematical tools available for modeling
- New methods and modeling techniques that need to be developed
- How to adapt existing theoretical frameworks to fully use available data

Do you feel participating in the workshop helped you better understand the research going on in disciplines other than your own on the workshop's topic?

- Yes
- No
- Comments:

Do you feel the workshop made adequate progress toward finding a common language across disciplines for research on the workshop's topic?

- Yes
- No
- Comments:

Do you feel that the exchange of ideas that took place during the workshop will influence your future research?

- Yes
- No
- Possibly
- Comments:

Did you develop unanticipated plans for collaborative research with other workshop participants?

- Yes
- No
- Possibly
- Comments:

What do you feel was the most useful aspect of the workshop?

What would you have changed about the workshop?

How do you feel about the format of the workshop?

- This was a very effective format for achieving our goals
- This was not a very effective format for achieving our goals ->
- The workshop format would have been more effective if:

How satisfied were you with the opportunities provided during workshop presentations and discussions to ask questions and/or make comments?

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very Dissatisfied

Please indicate any suggestions you have for facilitating communication among participants during the workshop:

Please use this space for additional comments: