

The Agricultural Model Intercomparison and Improvement Project

FIFTH GLOBAL WORKSHOP

FEBRUARY 25 - 28, 2015 UNIVERSITY OF FLORIDA GAINESVILLE, FLORIDA









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Washington State University, USA

World Meteorological Organization, Switzerland







GATES foundatio



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ACKNOWLEDGEMENTS

AgMIP would like to thank the University of Florida, Gainesville for hosting the Global Workshop and providing meeting support. We extend special thanks to Carolyn Cox and her team for assisting with meeting logistics. We also thank the team at the Emerson Alumni House for their dedication and attention to detail.

AgMIP sincerely appreciates the contributions of the over 200 participants. We also thank the volunteers, including Jose Guarin, Ixchel Hernandez, Kirsten Paff, Rubi Raymundo, Roberto Tinella, and Li Xhang for their time and effort to make the workshop a success.

AgMIP 5TH GLOBAL WORKSHOP

"Don't stop thinking about tomorrow," Jack Payne, Senior Vice President of Agriculture and Natural Resources at the University of Florida, recommended in his opening address to more than 200 scientists convened for AgMIP5 - the 5th Global Workshop of the Agricultural Model Intercomparison and Improvement Project (AgMIP) on February 25, 2015. The Fleetwood Mac quote exemplified what he hoped the agricultural, climate, and economic modelers before him would consider as they discussed results and future research at Emerson Alumni Hall in Gainesville.

Over the next three days participants from 31 countries and more than 100 institutions around the globe participated in plenary and breakout sessions with the goal of improving assessments of future agriculture and food security.

"One reason we are having this workshop is that we don't necessarily agree on how to design the best tool," continued Payne. "You each specialize in modeling particular components. We need to integrate those models to simultaneously account for climate, soil, pests, water and all the other factors that go into raising food for a hungry planet."

AgMIP is a global community of scientists modeling impacts of climate change and other stresses on agricultural systems and food security. It has developed standard methods of research using the latest technology to link climate, crop and economic models to



AgMIP Co-PIs left to right, James W. Jones, Cynthia Rosenzweig, John Antle, and Jerry Hatfield

simulate the vulnerabilities of, and adaptive strategies for, regional agricultural systems. These assessments provide information about future crop yields and economic conditions, such as income and poverty rates, which can help agricultural decision-makers plan for the future. In addition AgMIP teams have formed to intercompare and improve global gridded models, global economic models, crop specific models – including new efforts to incorporate pests, diseases, biofuels and other components of agricultural systems.

AgMIP5 was preceded by an AgMIP workshop on Pests and Diseases, and followed by an AgMIP workshop on Regional Research underway in Sub-Saharan Africa and South Asia. In addition, two special ses-



Plenary session at AgMIP5

sions were held prior to the official AgMIP5 start. An Introduction to AgMIP session was led by Alex Ruane, AgMIP Science Coordinator and Climate Co-Leader, together with other AgMIP Co-Leaders in Stakeholder Interactions, Economics, and Crops to provide newcomers with information about the organization and activities that have been evolving since AgMIP's inception in 2010. In addition a Stakeholder Interaction session was led by Wendy-Lin Bartels and Amy Sullivan – Co-Leaders of AgMIP's new Stakeholder Liaison unit – to inform underway planning for AgMIP's second phase of regional research, supported by UK aid's Department for International Development (DFID).

After Payne's inspirational launch of the workshop, the four AgMIP Co-Principal Investigators Cynthia Rosenzweig, James W. Jones, Jerry Hatfield and John Antle welcomed the group. Two keynotes followed, the first by Ghassem Asrar, who serves as AgMIP Steering Council Co-Chair, on major challenges for society.

"AgMIP and its network of international experts have established a solid science foundation for assessing the impacts of climate variability and change on agricultural systems and food security in less than a decade," commented Asrar. He continued, "The AgMIP regional focus on assessing the risks and resiliency of the agricultural systems to the combined effects of environment socioeconomic, and other human factors will be of great interest to a broader community of stakeholders in the ensuing decade."

Steering Council Member Martin van Ittersum, Wageningen University then provided a second keynote addressing major challenges for the modeling community.

Following the keynotes the session focused on the current state of AgMIP research, organization and planning with talks by Rosenzweig and leaders of a number of AgMIP research groups.

Thursday, February 26, began with a morning devoted to exploring the topic of next generation knowledge products, models and data. A keynote by Antle and Stanley Wood (Bill and Melinda Gates Foundation) on Next Generation (NextGen) Knowledge Products and Models informed parallel breakout groups that met immediately after. The groups discussed questions and use cases provided in agenda about NextGen models, data and information technology from the point of view of five different use cases ranging from farm extension workers in Africa advising smallholder farms, to management consultants working with commercial operations using precision agriculture.

In the afternoon workshop participants shifted gears and considered models, tools and linkages for sustainable farming systems. Hatfield introduced the afternoon's goals that included developing plans for an integrated framework to model sustainable agriculture systems, interaction between AgMIP and other initiatives, stakeholder interaction process, and activities for the coming year. Steering Council members Julie Howard (Food Security



Ghassem Asrar (left) and Martin van Ittersum (right)



Hlamalani Judith Ngwenya, South Africa, AgMIP Stakeholder Liaison Team member



Julie Howard addresses the plenary session



Alessandro Moscuzza, Farah Riza (Stakeholder Liaison, Pakistan), and Muhammad Asfaq (L-R) at Stakeholder Liaison Session

Expert Consultant) and Peter Craufurd (CIMMYT), gave keynote presentations on stakeholder needs and modeling for sustainable farming systems. The group then divided into 6 breakout teams that discussed questions pertaining to sustainable farming at different scales. (See agenda)

"AgMIP can help define the basic metrics – what constitutes a sustainable system? How can we measure the sustainability of mixed crop-livestock systems, and measure and include ecosystem services and nutritional impacts in more traditional agricultural systems models?" posed Howard. An evening reception on Thursday included poster viewing and the launch of the just-published two-part volume "Handbook of Climate Change and Agroecosystems: The Agricultural Model Intercomparison and Improvement Project (AgMIP) Integrated Crop and Economic Assessments". Part One of the Handbook presents an overview of AgMIP, the new methods for the regional integrated assessments, and describes some of AgMIP's other initiatives including global gridded modeling, simulation of crop pests and diseases, site-based crop-climate sensitivity studies, and scaling. Part Two highlights the results of the AgMIP Regional Research Teams in Sub-Saharan African and South Asia using the new methods. (Poster abstracts available at http://www.agmip.org/5th-agmip-globalworkshop-posters)

Friday, February 27th, was structured around the theme of coordinated global and regional assessments. The day's goals were to share results, identify requirements to integrate across scales, and develop strategies to include factors not currently included in assessments. Three keynotes started the day; John Porter, AgMIP Steering Council, spoke about where we go after AR5. Ex Officio Steering Council Members Steve Shafer (US-DA-ARS) and Alessandro Moscuzza (UK aid-DFID), then addressed stakeholder needs for global and regional assessments. Regional breakouts followed where participants discussed questions related to the state of agricultural modeling in their regions. (See agenda)



Dilys MacCarthy (left), West African Regional Research Team PI, contributes to discussion with Angela Kong, Paolo Colangelo, and Patricia Masikati, Co-PI of the Southern Africa Livestock Regional Research Team.

We need other means to talk to policy people than using simulation models," explained John R. Porter in his keynote. "Policy people are interested in questions such as changes in the frequency of damaging events, how much it will cost, how many people will be affected – current simulation models struggle to provide this information. Using methods that extract the essential messages out of models will help us form a bridge from models to policy.

On Friday afternoon the participants discussed the development of a position statement and then broke into AgMIP work groups organized by discipline. The groups used the time to discuss components required for coordinated regional and global studies, identify the flow of useful information, interact among disciplines and scales to ensure fruitful linkages and compare messages from various regional assessments.

On Friday evening a group of participants attended a hands-on demo of FACE-IT, an NSF-sponsored Framework to Advance Climate, Economic, and Impact Investigations with Information Technology led by Cheryl Porter, AgMIP IT leader, and Joshua Elliott, AgGRID leader. FACE-IT developers have created applications and workflows to assist modelers with their simulations.

Saturday morning the AgMIP workgroups met once again to wrap up their planning for the coming year. The concluding workshop plenary session included reflections from Jean-François Soussana, AgMIP Steering Council Co-Chair, and AgMIP's four Co-PIs discussing what was learned and plans for the future.

"The Global Workshop provided the AgMIP community with the opportunity to set three main priorities for the next three years," Rosenzweig said of AgMIP5. "Developing next generation models and knowledge products, pathways to sustainable farming systems, and coordinated global and regional integrated assessments of climate change and food security."

Following AgMIP5, and a birthday celebration for Jim Jones, a special session on AgMIP regional research in Sub-Saharan Africa and South Asia convened. Regional Research Team (RRT) members and available AgMIP Steering Council members learned about improvements to AgMIP Protocols for Regional Integrated Assessments, led by Ruane, and plans for Research in regions, led by Pls of the RRTs. The following morning, the RRTs, Pls and Leaders continued with an intensive work session to advance planning and actions for the next phase of work in the regions.

"It is impressive to see how vibrant the AgMIP community is and what is emerging in this bottom-up initiative with a minimum of bureaucracy," commented Steering Council Member Martin van Ittersum.

AgMIP5 and its related workshops proved to be a successful platform for "thinking about tomorrow" – combining people and models to anticipate food security for a world of 9 billion.



Eduardo Gelcer and Ixchel Hernandez report back from Latin America and Caribbean breakout group.



Moorea Brega and Sander Janssen at Reception and Poster Session.



Piara Singh, Davide Camarano and Wiltrud Durand at the Regional Research Teams meeting.



Emerson Alumni Hall on the University of Florida Campus in Gainesville, Florida

WORKSHOP GOALS

- 1. Share results, review progress, and enable AgMIP groups to interact and plan
- Prioritize Next Generation knowledge products and model improvements for sustainable farming systems and climate change impacts and adaptation
- Advance strategy for coordinated global and regional assessments of climate change impacts on food security for the IPCC 6th Assessment Report

THEMES

Knowledge Products and Models

Sustainable Farming Systems

Coordinated Global and Regional Assessments

All Plenary sessions will be held in the Presidents Ballroom

OVERVIEW

Day 1 Wednesday Morning –
9:00-10:30 – AgMIP RRT Meetings with Stakeholder Unit
10:30-12:00 - Introduction to AgMIP (optional)
9:00-12:00 - Work Groups Meet (self-organized, optional)

Day 1 Wednesday Afternoon - State of AgMIP

Day 2 Thursday Morning – Next-Generation Models Day 2 Thursday Lunch – Work Groups Meet Day 2 Thursday Afternoon – Sustainable Farming Systems

Day 2 Thursday Evening - Reception and Poster Viewing

Day 3 Friday Morning – Coordinated Global and Regional Assessments

Day 3 Friday Lunch – Work Groups Meet

Day 3 Friday Afternoon – Work Groups Planning

Day 3 Friday Evening – AgMIP-FACE-IT Session

Day 4 Saturday Morning – Work Groups Planning and the Path Forward

Day 4 Saturday Afternoon –

Sat. pm – Sun. am AgMIP RRT Work Groups Meet Work Groups Meet (self-organized, optional)

DAY 1 - WEDNESDAY, FEBRUARY 25TH





8:30 am: Registration & Check-in, Poster Check-in 9:00 am – 10:30 am: Classroom SSA and SA Regional Research Team attendees meet with Stakeholder Unit

9:00 am – 12:00 pm: Work Groups Meet (self-organized; optional)

10:30 am - 12:00 pm: Classroom

Introduction to AgMIP (for newcomers, optional) – Alex Ruane, Jonathan Winter, Sonali McDermid, Roberto Valdivia, Davide Cammarano

11:30 am – 1:00 pm: Lunch

- Work Groups Meet (self-organized)

Opening Plenary – State of AgMIP

1:00 pm: Welcome

Jack M. Payne, Senior Vice President of Agriculture and Natural Resources University of Florida, Gainesville

1:10 pm:

Welcome, Introductions, Workshop Goals, and Goals for Day 1 – *Jim Jones, Cynthia Rosenzweig, Jerry Hatfield, and John Antle*

1:30 pm:

Keynote 1 – Major challenges for society: Ghassem Asrar

2:00 pm:

Keynote 2 – Major challenges for modeling community: *Martin van Ittersum*

2:30 pm:

State of AgMIP – Cynthia Rosenzweig

3:00 pm: Afternoon Break

3:15 pm:

Crop Model Intercomparisons and Improvement – *Ken Boote* and Peter Thorburn

3:35 pm:

Economic Model Intercomparisons and Improvement – John Antle and Keith Wiebe

3:55 pm:

Key Interactions and Cross Cutting Themes – *Frank Ewert, Roberto Valdivia, and Daniel Wallach*

4:15 pm:

Climate Scenarios and Tools - Alex Ruane and Sonali McDermid

4:35 pm:

AgMIP advances in IT for model-based assessments – *Cheryl Porter* and Sander Janssen

4:55 pm:

Key partners and new initiatives – *Jerry Hatfield* and *Wendy-Lin Bartels*

5:15 pm:

Charge to Workshop – **Cynthia Rosenzweig,** Jim Jones, Jerry Hatfield, and John Antle

5:30 pm: Adjourn 6:30 pm: Steering Council Dinner

8:30 am:

Registration & Check-in, Poster Check-in

Morning Plenary – Toward NextGen Knowledge Products, Models and Data

8:30 am:

Reconvene Day 2 and Goals – Cynthia Rosenzweig, Jim Jones, Jerry Hatfield and John Antle

8:45 am:

Keynote 3: NextGen Knowledge Products and Models – *Stanley Wood and John Antle*

Groups will consider creating assessment impacts with specific use cases (see below.)

9:15 am: Discussion

9:45 am: Charge to NextGen Breakouts -

John Antle and Jim Jones

Morning Breakout Sessions – Parallel Breakout Groups:

- 1. Use Case 1: Farm extension in Africa Sander Janssen and Hlami Ngwenya
- 2. Use Case 2: Developing and evaluating technologies for sustainable agricultural systems – *Roberto Valdivia and Lieven Claessens*
- 3. Use Case 3: Investing in agricultural development projects that support sustainable agricultural systems – *Peter Thorburn*
- 4. Use Case 4: Management support for precision agriculture *Bruno Basso and Jerry Hatfield*
- 5. Use Case 5: Supplying food products that meet corporate sustainability goals *Dave Gustafson and John Porter*
- 6. Global Economics Hermann Lotze-Campen and Keith Wiebe

10:00 am:

NextGen Question 1: Use Cases and Knowledge Products

- What knowledge products would be needed for the NextGen Use Cases (specific examples)?
- What data would be needed as inputs?
- What model components would be needed to support knowledge products?
- How would model outputs be linked to knowledge products?
- Are there current examples to learn from?

Floating Break

11:15 am:

NextGen Question 2: Integration platforms and IT

- Review and improve the AgMIP integration platform prototype for each Use Case
- How could app developers and modelers collaborate?
- What data would be needed to implement these knowledge products?
- Are there current examples to learn from?

12:00 pm:

Parallel Groups Report Back

12:45 pm: Lunch GROUP PHOTO

Work Groups Meet (self-organized)

Task Group Lunch - Coordinated Global to Regional Assessments

Use cases					
	1	2	3	4	5
	Farm Extension in Africa	Developing and evaluation technolo- gies for sustainable intensification.	Investing in agricul- tural development projects that support sustainable intensification.	Management support for precision agriculture.	Supplying for products that meet corporate sustainability goals.
Farming System	small-holder	small-holder	small-holder	commercial corp	commercial corp
Information User	Farm advisor	Agricultural research team/program	Analyst/adviser	Management consultant	Corporate analyst
Beneficiaries	Farm family	Research institution/ farm population	NGO & clients	Farm business	Agri-business firm
Outcomes	Improved livelihood (income,nutrition, food security)	Improved technology	Sustainable technology	Income, soil conservation & water quality	Profit, risk manage- ment, sustainability objectives

Afternoon Plenary – Modeling for Sustainable Farming Systems

2:20 pm:

Afternoon Goals - Jerry Hatfield

- Develop plans for integrated framework to model sustainable agriculture decisions
- Facilitate interaction between AgMIP and other initiatives
- Further stakeholder interaction process
- Finalize plans for upcoming year

2:30 pm:

Keynote 4: Stakeholder needs for sustainable agriculture decision-making – *Julie Howard*

3:00 pm:

Keynote 5: Modeling needs for sustainable farming systems – *Peter Craufurd*

3:30 pm: Discussion

Afternoon Breakout Sessions – Tools and linkages for Sustainable Agricultural Systems

3:45 pm:

Charge to Sustainable Agriculture Breakout Sessions – *Jim Jones*

Sustainable agricultural systems breakouts will be organized according to scale of analysis. We envision about six breakouts, each addressing similar questions for the associated scale of analysis, including:

- 1. Field/Farm Scale Davide Cammarano
- 2. Landscape/community Scale; agro-ecology or watershed scale – *Philip Alderman*
- 3. National Scale Claas Nendel
- 4. Global Biophysical Scale Christoph Müller and Joshua Elliott
- Industry perspectives (e.g., vertical integrated production, processing, transportation, marketing/distribution systems) – Dave Gustafson and Moorea Brega
- 6. Global Economic Scale Hermann Lotze-Campen

4:00 pm: Afternoon break

4:15 pm:

Sustainable Farming Systems Breakouts Questions:

- 1. What are representative components for each scale of analysis, and what are the main attributes of those components?
- 2. What are the key indicators that one would need to estimate for systems at that scale regarding production, socio-economic, and environmental sustainability? Who cares about the different indicators and why?
- 3. What models are needed to analyze the agricultural system at the selected scale of analysis? Are there examples where all or some of the production, economic, and environmental metrics of agricultural systems are being addressed? What biophysical models are needed? What socioeconomic models are needed?
- 4. Who cares about sustainable agricultural systems at the designated scale being considered (e.g., what stakeholders)? What information would be needed and at what time and space scale? Do knowledge systems exist such that model-based analyses can meet the information needs of these stakeholders?
- 5. What gaps exist between the needs and current capabilities? What would you recommend regarding filling those gaps?

5:45 pm:

Parallel Breakout Groups wrap-up

Evening Reception

6:00 pm:

Report back, Reception, and ASA Handbook launch in plenary room (Presidents Ballroom) with AgMIP Poster Session

Morning Plenary – Coordinated Global and Regional Assessments

8:30 am:

Reconvene and Day 3 Goals – *Cynthia Rosenzweig*

- Share global and regional assessment results
- Identify requirements to integrate across scales for consistent climate impact assessments
- Develop strategies to incorporate important factors not currently included in assessments

8:45 am:

Keynote 6: Where do we go after AR5? – *John Porter*

9:15 am:

Keynote 7: Stakeholder Needs for Global and Regional Assessments –

Steve Shafer and Alessandro Moscuzza

9:45 am:

AgMIP Coordinated Regional and Global Studies for IPCC AR6 – *Cynthia Rosenzweig*

Regional Assessments – Alex Ruane

Global Biophysical Assessments – Joshua Elliott

Global Economics – *Hermann Lotze-Campen*

10:20 am:

Discussion

10:35 am:

Charge to Morning Breakout Sessions – Designing Coordinated Global and Regional Studies – *Cynthia Rosenzweig*

- What are the major studies of food security and agricultural impact driving planning in region?
- How do global-scale assessments (crop/economic) compare with local-scale assessments?
- What are the driving mechanisms for differences in food security assessments?
- What are major data and resource limitations for integrated assessment of your region?
- What is needed from each region to enable global-scale studies?
- What external inputs and results (e.g., from global-scale studies) are required to assess food security and agricultural impacts within your region?
- What initial steps would facilitate a coordinated assessment for the next IPCC?

10:45 am: morning break and poster viewing

Morning Breakout Sessions – Coordinated Global and Regional Assessments

11:00 am:

- Regional Breakout Groups
- A. Sub-Saharan Africa Patricia Masikati
- B. South Asia V. Geethalakshmi
- C. North America Jerry Hatfield
- D. Latin America and Caribbean *Roberto Valdivia*
- E. Europe Frank Ewert
- F. East Asia/Oceania Peter Thorburn
- G. Global Economics Hermann Lotze-Campen

12:00 pm: Plenary report back and discussion

1:00 pm: Lunch

- Ozone Work Group Development Lunch
- Poster Viewing
- Work Groups Meet (self-organized)

Afternoon Plenary: Coordinated Global and Regional Assessments (cont.)

2:20 pm:

Development of Position Statement – *Cynthia Rosenzweig*

2:50 pm:

Discussion on Coordinated Global and Regional Assessments

3:10 pm:

Charge to Work Groups: Alex Ruane

- Determine the major components required for coordinated regional and global studies
- Identify the flow of useful information across scales
- Interact among disciplines and scales to ensure fruitful linkages
- Compare major messages from various regional assessments

3:20 pm: Afternoon break and poster viewing

Afternoon Breakouts – Planning for coming year

3:45 pm:

AgMIP Work Groups:

- A. Global Economics Keith Wiebe
- B. AgGRID Joshua Elliott and Christoph Müller
- C. Coordinated Climate-Crop Modeling Project (C3MP) – Alex Ruane and Sonali McDermid
- D. Integrated Regional Assessments John Antle and Roberto Valdivia
- E. Crop Model Intercomparison and Improvement
 - i. **Crop Model Group 1: ET processes** The Crop-Water-ET Group will organize initial activities, identify specific data sets, and plan protocols for conducting multimodel intercomparisons against data on ET, soil water balance, and water-limited growth, and to evaluate individual modules for predicting water-related processes within existing model platforms. Most of the initial data is on maize; therefore the AgMIP-Maize Modelers and Maize Model Improvement Group are invited to join. – *Ken Boote*
 - ii. Crop Model Group 2: Soils and Crop Rotation – Results of crop rotation-sequence simulations will be reviewed, to illustrate the value of carry-over of soil C and N, soil water, and crop residues to the sub-

sequent crops in multi-year simulations, especially contrasted to seasonal year simulations with no carry-over. Plans for new efforts will be made. – *Bruno Basso*

- iii. Crop Model Group 3: Multi-model intercomparison- AgMIP crop-specific teams (wheat, rice, maize, sugarcane, potato) will present results of multi-model intercomparisons with the goal of understanding how and why models vary in response to climatic factors. Lessons learned about variation, model structure and processes will benefit existing and new crop teams as they test multiple models against observed data. New teams are invited. – Senthold Asseng and Peter Thorburn
- iv. Crop Model Group 4: Extreme Response – The goal of this breakout is to explore a new initiative to define and document extreme events (prolonged drought, flooding, heat stress during reproductive growth) and model improvements needed for modeling production under climate extremes and climatic variability. – *KPC Rao*
- v. Crop Model Group 5: Pest and Disease model intercomparison – Results from the Pest and Disease Modeling Workshop will be discussed and new initiatives explored for developing AgMIP teams that will compare different approaches for predicting yield losses to pests and diseases for assessing impacts and adaptation. This includes possibly initiatives on coupling pests and crop models as well as other options to assess pest and disease impacts. – Karen Garrett
- vi. Crop Model Group 6: Modular model development – Advances in modules and incorporation of improved modules within existing crop model platforms will be discussed, including ways to advance in areas such as ozone effects or nutrition or stressor areas where crop models may be deficient. – *Pierre Martre*
- vii. Crop Model Group 7: Livestock and Grasslands – Jean-François Soussana
- F. Data, Decision Support Systems and IT Cheryl Porter and Sander Janssen
- G. Aggregation and Scaling Frank Ewert

5:30 pm:

End-of-day plenary report back and discussion 6:15 pm: Adjourn

Morning Plenary:

8:30 am: Charge to breakouts

Morning Breakouts – Work Group Wrap-ups

8:45 am:

AgMIP Work Groups wrap-up sessions:

- A. Global Economics Keith Wiebe
- B. AgGRID Joshua Elliott and Christoph Müller
- C. Coordinated Climate-Crop Modeling Project (C3MP) – Alex Ruane and Sonali McDermid
- D. Integrated Regional Assessments John Antle and Roberto Valdivia
- E. Crop Model Intercomparison and Improvement
 - i. **Crop Model Group 1: ET processes** The Crop-Water-ET Group will organize initial activities, identify specific data sets, and plan protocols for conducting multi-model intercomparisons against data on ET, soil water balance, and water-limited growth, and to evaluate individual modules for predicting water-related processes within existing model platforms. Most of the initial data is on maize; therefore the AgMIP-Maize Modelers and Maize Model Improvement Group are invited to join. – *Ken Boote*
 - ii. Crop Model Group 2: Soils and Crop Rotation – Results of crop rotation-sequence simulations will be reviewed, to illustrate the value of carry-over of soil C and N, soil water, and crop residues to the subsequent crops in multi-year simulations, especially contrasted to seasonal year simulations with no carry-over. Plans for new efforts will be made. – Bruno Basso
 - iii. Crop Model Group 3: Multi-model intercomparison- AgMIP crop-specific teams (wheat, rice, maize, sugarcane, potato) will present results of multi-model intercomparisons with the goal of understanding how and why models vary in response to climatic factors. Lessons learned about variation, model structure and processes will benefit existing and new crop teams as they test multiple models against observed data. New teams are invited. – Senthold Asseng and Peter Thorburn
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- v. Crop Model Group 5: Pest and Disease model intercomparison – Results from the Pest and Disease Modeling Workshop will be discussed and new initiatives explored for developing AgMIP teams that will compare different approaches for predicting yield losses to pests and diseases for assessing impacts and adaptation. This includes possibly initiatives on coupling pests and crop models as well as other options to assess pest and disease impacts. – *Karen Garrett*
- vi. Crop Model Group 6: Modular model development – Advances in modules and incorporation of improved modules within existing crop model platforms will be discussed, including ways to advance in areas such as ozone effects or nutrition or stressor areas where crop models may be deficient. – Pierre Martre
- vii. Crop Model Group 7: Livestock and Grasslands – Jean-François Soussana
- F. Data, Decision Support Systems and IT Cheryl Porter and Sander Janssen
- G. Aggregation and Scaling Frank Ewert

10:00 am:

Report back from AgMIP Work Groups – Plans for coming year

Closing Plenary – The Way Forward

10:45 am:

Position Statement Discussion – *Cynthia Rosenzweig*

11:00 am:

Reflections from Steering Council Co-Chair – Jean-François Soussana

11:30 pm:

What we've learned and where we are going – Cynthia Rosenzweig, Jim Jones, John Antle, Jerry Hatfield, Alex Ruane, and Carolyn Mutter

12:00 pm: Adjourn Steering Council Lunch

1:30

Afternoon – Working Sessions (self-organized, optional)

SA & SSA Regional Research Team Sessions (Saturday afternoon & Sunday morning)

12

PARTICIPANTS

FIRST NAME	LAST NAME	ORGANIZATION
Ashfaq	Ahmad	Department of Agronomy, University of Agriculture, Faisalabad - Pakistan
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Jonathan	Anaglo	University of Ghana, Legon
Saseendran	Anapalli	USDA-ARS
James	Anderson	University of Florida
Erik	Andrejko	The Climate Corporation
John	Antle	Oregon State University
Sotirios	Archontoulis	Iowa State University
Muhammad	Ashfaq	University of Agriculture Faisalabad
Ghassem	Asrar	Pacific Northwest National Laboratory/Joint Global Change Research Institute
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AgMIP's mission is to improve substantially the characterization of world food security as affected by climate variability and change, and to enhance adaptation capacity in both developing and developed countries.

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