

# U2U Progress Evaluation #2

*December 15<sup>th</sup> Check-in*

UNIVERSITY OF MINNESOTA

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## **Methods**

Information on the progress of the U2U grant was primarily collected through phone interviews that were conducted in late December, 2011 and early January, 2012. PIs who had been cited as responsible for major tasks related to Objective 1 and Objective 2 at the Kansas City meeting and who had one or more major task that was expected to be completed within year 1 were asked to share about the progress they had made on those tasks, about who they worked with on those tasks, and about how they felt the work on the U2U Grant was going overall. Almost everyone initially contacted to be interviewed agreed to be interviewed. These interviews took between 10-20 minutes. They informed the updates noted on the majority of tasks, and they informed the notes on the working groups and the overall process. E-mails and conference call notes were used to fill-in missing information as well as to cross-check information.

## **Objective 1 and 2 Update**

There were a number of tasks related to Objective 1 and Objective 2 that were intended to be completed by the second evaluation check-in in December, some of which were originally supposed to be done earlier than that, by the August check-in. At the time of this check-in, a number of tasks were behind schedule. Some were behind because of developments that happened before the August check-in and some of them were behind due to new developments. Nonetheless, most PIs expressed confidence that the delayed tasks would not have any long term effect on the ability of the U2U group to meet its goals for the following year.

### **Objective 1**

Objective 1 aims to use existing data to develop a knowledge base of potential biophysical and economic impacts related to climate changes and to consider the relative risks they pose. In year 1, Objective 1 tasks involve the development of data sets and data modeling frameworks. While much progress has been made, some unanticipated challenges have slowed the completion of these tasks.

The progress made on each Objective 1 task that was projected to be completed in year 1 is described below. (These updates are also included in the table at the end of this document.)

#### Tasks that were expected to be completed by December 15, 2011

- *Identify data specifications for representative data series*

This task is behind schedule. While it was originally intended to use soybean data from various state trials, the yields from this series were significantly higher than those from NASS, which raised concern. It was therefore decided that they would also look at NASS statistics, and 1-2 NASS yield observations were collected for crops in all 12 states for the years 1981-2010. They will soon be put on the HUB.

- *Run crop simulation models*

A handful of models have been run using historical data, and the rest will be run in January, 2012. As it is quite an undertaking, a subcontractor was hired who specializes in systems. However, he has suffered from some poor health, which has slowed the process down a bit. A modeling system prototype is, nonetheless, expected to be done this spring. While there is not concern that this delay will have any long-term consequences, the issue of getting representative soil data still needs to be resolved.

- *Make 10-year, 4-km gridded LDAS data available in HUB*

While this task has been started, it is unclear who is responsible for completing it and what still needs to be done to complete it. Some data has been collected, but it may not actually be needed. The model's domain is also not fully established. Once the needed data is collected and the domain is set-up, the models will be run and data will be put on the HUB.

- *Complete Analysis of existing data to extract probabilities and linkages associated with ENSO data*

While it was expected that a good deal of this analysis would be done at this time, it turns out that this goal was overly ambitious. Currently, a student is working on the first phase

of analysis. Most of it should be done by mid-summer. The results will, at the very least, be published on the HUB, and hopefully will be worked on to the point that the results are ready for publication. Thereafter, expanding the scale of the analysis would be important.

- *Run crop simulation models using representative data series*

This task is somewhat behind schedule, as it has been more challenging than anticipated. As it requires states to collaborate, it has taken effort to get everyone on the same page. Setting up the models was also a difficult task, and a subcontractor was hired to help do it. At this time, all the data has been collected, a structure for how the data should go into the models has been established, and a handful of the models have been run. The rest will be done in January, 2012. While the simulations will initially be run on a historical basis, hopefully a platform to run all models will be set-up this spring and much more site-specific evaluations can be done. By April 15<sup>th</sup>, the nine sites should be completed, and a sensitivity analysis should be in the works to see how well the models are performing.

- *Publication-Overview article of meteorological aspect of U2U project*

This is being published as a chapter, and it is now on the publisher's timeline.

Tasks that were expected to be completed by April 15, 2012:

- *Develop framework for running gridded crop models in HUB and run models:*

The development of the model has been somewhat delayed for a couple of reasons. First of all, it had to be decided what the model was to produce, as different parts of the project need different types of data. The model ended up being reformatted in an attempt to fit everyone's needs. In addition, the type of data that will be used still needs to be worked out. In the upcoming weeks, input from the team should lead to a decision about the data, putting the framework on track to be completed on time.

- *Make 30-year, 4-km gridded LDAS data available in HUB*

There is a lack of clarity on who is responsible for this task. However, once the 10-year, 4-km gridded LDAS data is completed, finishing this task should be straightforward, as relevant decisions will have already been made for the 10-year LDAS data.

- *TeraGRID annual conference proceedings*

It is not clear whether or not there will be time to get an article together for the conference, which is in July. If an article is going to be sent, the models will need to be run beforehand, which requires that data be collected and that there is time to analyze it.

- *Publication-Field Days Article*

The data for the article has been collected, and a student has been hired to help with the analysis. The weather data now needs to be matched with the field work day observations before statistical analysis can be done. While the analysis has not started yet, it will be soon. The analysis is on track to be completed this spring.

- *Finalize list of activities for year 2 economic case studies*

This is on schedule to be done before year 2. At least three (possibly four) objectives have been identified. The case studies will look at issues concerning field work opportunities, sub-surface piling for drainage, how climate affects pre-harvest, and possibly at nitrogen rates and fertilizer application. (Cornell is working on the last objective, and ideally efforts will complement each other.) A student is working to pull together the economic framework of the case studies, which will be the basis of the economic component of the larger gridded analysis that will follow the development of DSTs.

## **Objective 2**

Objective two aims to understand how producers make decisions under uncertain climate projections, what type of information they need to make better decisions, and what are

effective methods for disseminating usable knowledge to them and to larger agricultural networks. In year 1, the primary Objective 2 tasks are the development and deployment of a survey targeting advisors and a survey targeting producers. In addition, during this year the groundwork should be laid for the network analysis and interviewing of climatologist.

The following overviews the progress made on the Objective 2 tasks projected to be completed in year 1. (These updates are also included in the table at the end of this document.)

Tasks that were expected to be completed by December 15, 2011:

- *Develop methods plan for Network Analysis*

The Network Analysis plan is still a work in progress. It has become a significantly bigger undertaking than what was initially outlined in the proposal. Much has been worked out, such as what demographic will participate. At the same time, much still needs to be worked out, such as how large a sample is feasible and what are reasonable boundaries for the network. A pilot is on track to be conducted this spring in Michigan. If the pilot is completed as planned, the network analysis will actually be ahead of track to be done in year 2, as it will already be tested and ready to go.

- *Finalize sampling strategy for Producer Survey with CAP*

The sampling strategy for the CAP Group is completed. Sampling selection criteria was developed with NASS.

- *Publication-Journal Article overview of U2U process and project*

This article is not yet completed, but it is in progress. It might be done by March.

- *Complete IRBs*

Some final IRBs for the Advisor Survey, Producer Survey, Network Analysis, and Climatologist Interviews have been submitted and some will be submitted as soon as

questions are finalized. Each university needs to submit an IRB independently, and the IRBs are therefore being completed on different schedules.

- *Gather names and addresses for Advisor Survey*

Most states' lists have been finalized, and a couple have a few more contacts that need to be added to their list.

- *Develop Advisor Survey*

There is a good draft of the Advisor Survey, but its development is a bit behind schedule. This is because it took many questions from the Producer Survey, which was not completed when expected (see "Producer Survey" below). Nonetheless, this also means that most questions have been pre-tested. A few questions, however, still need to be pre-tested. This should be done soon, and the final draft should be completed by the end of January.

- *Develop Producer Survey with CAP*

The Producer Survey has been developed. While it took longer than usual because of the collaboration with the CAP group, everyone agreed that this collaboration made the survey better. The questions were overviewed many times, and they were all pre-tested.

- *Design Interview Questions for Climatologist Interviews*

Interview questions are still in development. As many interview questions were shaped by questions on the Producer Survey, which was not completed by the original deadline, the completion of the interview questions took longer than expected. Questions will be finalized by late January.

- *Conduct Interviews*

As the questions still in development, the interviews are not yet completed. They probably will be done in February, 2012.

Tasks that were expected to be completed by April 15, 2012:

- *Deploy Advisor Survey*

The Advisor Survey will be deployed by the end of January, 2012. Each state does it independently, and different states are on slightly different timelines.

- *Deploy Producer Survey*

The Producer Survey is being deployed in the month of January, 2012.

## **Working Groups**

PIs have mainly been working with individuals who are on their same objective. Research assistants, post-docs, and other staff have also been hired to support the work of the PIs. Within each objective, many PIs work especially close with others who are working on a shared task. On top of communications between individuals, each objective also has a monthly conference call scheduled. They have had a couple of in-person objective meetings as well. Even though the objective groups are primarily working separately at this time, the Objective 2 group has made an effort to make sure the information they collect fits the needs of the Objective 1 group, and there is a monthly full-team conference call that makes sure everyone is aware of what both objective groups are doing. However, a number of PIs explained that, while things are going well now, the real test will be when the Objective 1 and Objective 2 groups start needing to work with each other in the upcoming months.

Additionally, the group is making progress engaging outside stakeholders. It has closely collaborated with the CAP group on the Producer Survey. A few PIs have also made connections with other projects going on at their own university and with projects at other universities that are related to the work of the U2U grant. Lastly, the group is now ready to involve the advisory committee, and the first meeting with the committee will be held in January.

## **Group Process**

Overall, feedback on the group process was positive. PIs stated that even though it is very hard to make such a big group work together effectively, communication is going well and most things are getting done in a timely matter. PIs on Objective 2 had particularly high praise for those with whom they collaborated. Regular phone calls were cited as one important way that the group stays in touch. Melissa's role as coordinator was identified as another noteworthy element to the group's success.

However, a few PIs raised some issues that might be cause for concern. One is that while it was not expected that all PIs would be engaged right now, a couple of PIs noted that those who do not currently have a role in the grant risk losing interest in it, which would be harmful to its long-term success. It was indicated that steps should be—and have been taken—to engage those who are not involved in the first couple years of the grant. PIs mentioned that burnout was another potential threat to long-term success, worrying about whether or not the current level of involvement of many PIs was sustainable in the long run. Another issue that surfaced from conversations with PIs on Objective 1 is that there seems to be some communication breakdown within the Objective 1 group. Some PIs were not clear on what others were working on or when they would get the data they needed. A couple others expressed there was a need for their collaborators to be more responsive.

<b>TABLE KEY</b>	 Intended to be completed.	 Intended to be in progress.	 On track to be completed later than expected.
	 Intended to be started.	 Not yet intended to be started.	 Actually completed.  No longer part of the plan.

**Objective # 1:** Use existing data to develop a knowledge base of potential biophysical and economic impacts related to climate changes and consider the relative risks they pose.

Tasks/Deliverables	Who	Start – end date	Aug 15	Dec 15	April 15	Notes
Identify data specifications for representative data series	Jeff	End 8/1/2011		 		9-14 UPDATE: Data specifications and a September 15 <sup>th</sup> deadline were sent out to all individuals collecting data. 1-5 UPDATE: While data specifications were identified and data was collected, it was decided that NASS data should also be used.
Collect representative data series (1-2 per state)	Ben-IN	end 8/15/2011		 		9-14 UPDATE: All representative data was due on September 15. As of September 26, this was completed and all but 2 states were posted on the HUB. 1-5 UPDATE: While data specifications were identified and data was collected, it was decided that NASS data should also be used, and observations from all 12 states were collected from 1981-2010. They will soon be loaded on the HUB.
	Atul—IL, KS	end 8/15/2011		 		
	Jeff—MI	end 8/15/2011		 		
	Roger—IA, NE	end 8/15/2011		 		
	Ray—MO	end 8/15/2011		 		
	Dennis—SD, MN	end 8/15/2011		 		
	Martha—ND	end 8/15/2011		 		

		11	●			
	Steve— OH, WI	end 8/15/20 11	●	● ★		
Identify data processing specialist	Martha and Steve		●			9-29 UPDATE: The data processing specialist was supposed to be hired with the funds for the Year 1 consultant. While this did not happen and there has yet to be a need, this should happen in Year 2.
Complete analysis of existing data to extract probabilities and linkages associated with ENSO data	Dev		○	●	●	9-14 UPDATE: The ENSO data analysis has been completed for Indiana, and further analysis will be done with data from the larger region by Dec 15. Parameters still need to be determined for this data analysis. 1-17 UPDATE: Dec 15 <sup>th</sup> was an overly ambitious deadline. This probably will not be completed until the summer.
Run crop simulation models (3 maize, 2 soy) using representative data series	Jeff, Atul, Dev	8/15/2011– 12/15/2011	●	●	●	<b>**UPDATED**</b> Can begin when representative data has been collected. This needs to be completed by the end of the year. 9-14 UPDATE: The crop models have been started, but milestones for running the model need to be defined. 1-5 UPDATE: A handful of these have been completed, and the rest will be done in January.
Develop framework for running gridded crop	Carol	6/1/2011 –	●	●	●	<b>**UPDATED**</b> 9-14 UPDATE: Output data collection has

models in HUB (and run models)		4/15/2012				<p>begun, and it will be made available in the HUB. It was decided that this output data was sufficient, and it was not necessary to run models in the HUB.</p> <p>1-5 UPDATE: The development of the model was somewhat delayed because it was unclear as to just what the models need to produce, as different parts of the project need different types of data</p>
Make <u>10-year</u> , 4-km gridded LDAS data available in HUB	Atul and Carol	end 8/15/2011	●	●	●	<p>9-14 UPDATE: This will not be done until October. Common parameters need to be determined.</p> <p>1-5 UPDATE: It is unclear what data is needed, who is working on this, and when it will be available.</p>
Make <u>30-year</u> , 4-km gridded LDAS data available in HUB	Atul and Carol		○	○	●	<p>9-14 UPDATE: This is on track to be done on time.</p> <p>1-5 UPDATE: It is unclear what data is needed, who is working on it, and when it will be available.</p>
PUBLICATION: Ag-climate decision calendar	Gene		● ★			<p>9-14 UPDATE: A decision calendar is being published for Iowa corn growers. There is interest in expanding the scope of this calendar in the future.</p>
PUBLICATION: Journal article detailing overview of U2U process and project	Linda		●	●	●	<p>9-14 UPDATE: This will be published in December.</p> <p>1-5 UPDATE: This article has not been completed yet, but it is in progress. It might be done in March.</p>
PUBLICATION: TeraGRID annual conference	Carol and Dev		○	○	●	<p><b>**UPDATED**</b></p> <p>Date for this conference has not been set, but it</p>

proceedings						typically occurs over the summer with applications/proceedings due in late spring. 9-14 UPDATE: It is unclear if there will be enough data to actually have an article together on time. 1-5 UPDATE: It is unclear whether or not there will be enough data to analyze in time to get an article together for the conference. However, there should be enough to at least have a poster prepared for it.
PUBLICATION: Overview article of meteorological aspect of U2U project	Dev		○	●		9-14 UPDATE: This is being published as a chapter. 1-5 UPDATE: This has been submitted to the publisher, and it is now on the publisher's timeline.
PUBLICATION: Fieldwork days article	Ben		○	○	●	9-26 UPDATE: The analysis of the field work days' data has not started yet, but should soon. Covariates still need to be determined. The economic analysis and hopefully physical analysis too should be completed by April. 1-5 UPDATE: The data for the article has been collected, and a student has been hired to help with the analysis. While the analysis has not started yet, it will be soon. The analysis is on track to be completed this spring.
Finalize list of activities for year 2 economic case studies	Ben, Ray, Jeff	End 4/15/2012	○	○	●	9-26: The economic case studies depend on output from other models and climate projections. As long as these things are done on time, the analysis of the case studies should be ready to be completed in Year 2.

						1-5 UPDATE: Most of the variables to be investigated have been identified, and the case studies are on track of Year 2.
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<b>Objective # 2:</b> Understand how producers make decisions under uncertain climate projections, what type of information they need to make better decisions, and what are effective methods for disseminating usable knowledge to them and to larger agricultural networks.						
Task/Deliverables	Who	Start –end date	Aug 15	Dec 15	April 15	Notes
Network Analysis						
Develop methods plan for network analysis	Maria	end 8/15/2011	●	●	●	Completed by “end of summer” (Actual analysis not performed until year 2) 9-14 UPDATE: This is still in development, but it is still on track to be deployed in March, 2012. 1-17 UPDATE: The network analysis has become a much bigger undertaking than what was originally proposed. While much of the plan has been determined, questions about the size of the sample and the regions to be sampled still need to be determined. A pilot should be done in the upcoming months, which would actually put the analysis ahead of schedule for year 2.
Complete IRB	Maria - MI		○	●		**UPDATED** Completed by “Fall 2011” (?) 9-14 UPDATE: There is a blanket IRB, but individual instruments will need to be approved in future. 1- 17 UPDATE: The final IRB has been submitted.
Advisor Survey						
Complete IRB	Linda - IN		○	●	●	**UPDATED** Completed by “Fall 2011” 9-14 UPDATE: There is a blanket IRB, but
	Maria –		○	●	●	

	MI					individual instruments will need to be approved in future. 1-5 UPDATE: The final IRBs still need to be submitted once the questions are finalized.
	Tonya – NE		○	●	●	
	Jean – IA		○	●	●	
Gather names and addresses for advisor survey	Tonya-NE		☺	●	●	**UPDATED** Completed by “Fall 2011” 9-14 UPDATE: Names have already been gathered. 1-5 UPDATE: This has been completed in most states, and lists that are not yet finalized will soon be finalized.
	Jean-IA		☺	● ★		
	Amber-IN		☺	● ★		
	Maria-MI		☺	● ★		
Report on web survey software at Iowa State	Jean		● ★			9-29 UPDATE: This was completed on time.
Develop Survey	Cody and Tonya					**UPDATED** Completed by “Fall 2011” 9-14 UPDATE: The survey development has started and will be done by December. 1-5 UPDATE: The development of the advisor survey has been slightly delayed because it was dependent on the development of the producer survey. It will, however, be done shortly.
Deploy Survey	Cody and Tonya		○	○	●	
Producer Survey						
Complete IRB	Tonya-NE		☺	● ★		**UPDATED** Completed by “Fall 2011”

	Jean-IA					9-14 UPDATE: An umbrella IRB has been approved, but will need to get survey approved once have questions finalized. 1- 5 UPDATE: The IRBs have been completed.
	Amber-IN					
	Maria-MI					
Sampling strategy w/ CS-CAP	Linda					9-14 UPDATE: The survey sampling strategy is almost completed. 1-5 UPDATE: This has been completed.
Survey development w/ CS-CAP	Linda					<b>**UPDATED**</b> Completed by "Fall 2011" 9-14 UPDATE: The development has taken longer than expected, but the survey is still on track to deploy the survey in January. 1-5 UPDATE: This has been completed.
Deploy Survey	Linda					9-24 UPDATE: The survey should be deployed in January. 1-5 UPDATE: The survey is being deployed this month.
Climatologist Interviews						
Complete IRB	Lois-IA	End 12/15/2011				<b>**UPDATED**</b> Added date to complete. 9-24 UPDATE: This will be done by January once questions are developed. 1-5 UPDATE: The final IRB will be completed when the questions are finalized.
Design Interview Questions	Lois	End 12/15/2011				<b>**UPDATED**</b> Changed date completed by because modeled after producer and advisor survey questions, which won't be done until 12/15. 9-24 UPDATE: This is still waiting on the

						<p>Producer Survey questions, from which interview questions will be developed. It probably won't be done until January.</p> <p>1-5 UPDATE: Because many questions came from the Producer Survey, their development was delayed, but will be completed by late January.</p>
Conduct Interviews	IA grad student		○	●	●	<p>9-24 UPDATE: Interviews will be done after the questions are developed.</p> <p>1-5 UPDATE: The interviews will probably be done in February after the questions have been finalized.</p>