

# Climate Risks and Adaptation Meeting Notes

## Forest Sustainability and Agriculture Resilience

Nov 13, 2025 2:00 PM

| Topic                                      | Details |
|--------------------------------------------|---------|
| Nathan and Dongyang:<br>Hydroclimatic Risk |         |
| Newsletter content: research updates       |         |

Oct 9, 2025 2:00 PM

| Topic                                    | Details |
|------------------------------------------|---------|
| GEMS GeoCrop                             |         |
| Research Updates: Chad and Theresa CeDAR |         |

Sep 11, 2025 2:00 PM

| Topic                  | Details                                                                                                                           |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Research Updates: Raju | <ul style="list-style-type: none"><li>• Deforestation/ degradation/fires</li></ul>                                                |
| Y3 Project Planning    | <ul style="list-style-type: none"><li>• <a href="#">Program Dashboard</a></li><li>• Fill out Y3 Project Planning sheets</li></ul> |

Aug 14, 2025 2:00 PM

| Topic               | Details                                                                                                                           |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Research Updates    | <ul style="list-style-type: none"><li>• Q1 progress</li><li>• Immediate action items</li><li>• Areas of support needed</li></ul>  |
| Y3 Project Planning | <ul style="list-style-type: none"><li>• <a href="#">Program Dashboard</a></li><li>• Fill out Y3 Project Planning sheets</li></ul> |

|                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Decision Support Systems Meeting- Nathan and Angela | <p>The DeepSoil soil moisture product might be the best opportunity for linking with these decision support tools - either directly for the DAWN data viewer or integrating into some other data product (like field workability).</p> <p>The DAWN group is already very advanced in integrating ML and sub seasonal to seasonal forecasts, so there would be little value in an AI-LEAF project focused in that direction.</p> <p>Not a huge appetite for brainstorming new ideas / models that weren't fairly plug and play, so I'd suggest focusing on using this as an opportunity to gain users of the DeepSoil product and inform decision-making (if Shrideep and others are on board?).</p> |
| Plan for upcoming meetings                          | <p>Cadence<br/>Content- presentation rotations?</p> <p>September- Raju<br/>October- Chad and Theresa<br/>November- Nathan Dongyang<br/>December- Pat</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

**Jun 9, 2025 2:30 PM**

Adaptation-planning tools that farmers utilize, and whether there is some way to use AI (and seasonal forecasts?) to improve them in a way that would actually be useful for farmers.

Tools that farmers use to inform crop choice? Ag/Forest group is looking more long-range but is there low-hanging fruit?

Data farmers are using around growing degree days, how to develop emulators for decision making that revolve around growing degree day decision (planting date, harvest date, insect infestation, water deficit).

John Deere has tools right on their tractors, how do we incorporate AI right into these tools? A growing process of adaptation planning (similar but different from mitigation planning).

Not only decision tools that we can modify, but create a stronger planning framework. Current tools are not connected strongly to the planning process.

Possible to integrate with the GDD day and water deficit calculator?

AI would be handy in interpreting how all of these factors will affect them.

Collaborative geodesign

Have John Deere etc. demo how farmers use cutting edge technology.

<https://mygeohub.org/groups/u2u/tools>

<https://www.dailyerosion.org/>.

<https://sentera.com/>

Should we continue to go down the road of tools for specific farmers, or do we want to think about partnering with private sector to develop tools?

We don't want to leave farmers behind who can't afford these new tools!

Rose suggested - Extension could help to train the trainers on these tools using the specialists to help the farmers to understand these tools.

Bryan shared that one approach for delivery of information is OpenET: <https://etdata.org/>. This can be used across many different tools by a single developer who customizes it for a target audience.

We need examples of how federal funding is helping rural people and rural areas.

Irrigation Management Assistant <https://ima.respec.cloud/app/>

**Action:** Collect and compile a list of tools of agriculture and forestry resilience inks already in place.

Apr 18, 2025 3:00 PM

## Running Notes & Agenda

| Topic             | Details                                          | Speaker | Time     |
|-------------------|--------------------------------------------------|---------|----------|
| Group Name Change | Agriculture Resilience and Forest Sustainability |         | 1 minute |

|                             |                                                                                                                                                                                                                                                                         |     |            |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------------|
| Co-Creation Retreat         | Summary and <a href="#">Next Steps</a> from Emily                                                                                                                                                                                                                       | All | 15 minutes |
| Annual Meeting Presentation | <ul style="list-style-type: none"> <li>• <a href="#">Slide Deck</a></li> <li>• Who will be presenting in-person and on what topics?</li> <li>• Annual Meeting <a href="#">Agenda</a></li> <li>• Pushing All-Hands meeting to May 2 to practice presentations</li> </ul> | All | 45 minutes |

Mar 21, 2025 3:00 PM

| Topic                                            | Details                                                                                                        | Speaker | Time       |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------|------------|
| Finalizing agenda for climate risks retreat 3/28 |  CR&A Retreat 2025 - Agenda | All     | 55 minutes |
| Annual Report                                    | We are missing data for the CEDAR project and Forest Degradation project                                       |         | 5 minutes  |

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|              | <p style="text-align: center;"><b>Agenda for CR&amp;A Co-Creation</b><br/>March 28, 2025<br/>University of Minnesota, <b>Walter</b></p> <p><b>Goals:</b> Review project goals, audience, and outcomes<br/>understanding, informing policy, new tool development</p> <p><b>Pre-work:</b><br/>Prepare talks as assigned<br/>Complete quad charts as assigned<br/>Review materials shared before the retreat</p> <p><b>8:30 AM - 9:00 AM:</b> Breakfast</p> <p><b>9:00 AM - 9:10 AM:</b> Opening Remarks and Introduction</p> <ul style="list-style-type: none"><li>• Welcome, goals:<ul style="list-style-type: none"><li>◦ Improved understanding and ability to c</li><li>◦ research from policy to research applica</li><li>◦ Plans for coordinating and identifying op</li><li>◦ forestry given across differing temporal</li><li>◦ Discuss and potentially make decisions</li><li>◦ Preparing for the annual review meeting</li></ul></li></ul> <p><b>9:10 AM - 10:15 AM:</b> Participant Lightning Talks (2-3 s<br/>each - may depend on # of speakers)</p> <ul style="list-style-type: none"><li>• Share highlights of your most relevant climate r<br/>outreach<ul style="list-style-type: none"><li>◦ Historical evidence for adaptation (Nath</li><li>◦ <b>Spatial prediction forest carbon pools</b> (C</li><li>◦ <b>Deforestation/degradation</b> (Raju)</li><li>◦ Minnesota climate adaptation program</li><li>◦ Focus Group Findings on Perceptions d</li><li>◦ <b>Theresa Chen Methods</b></li><li>◦ <b>Junxiong Zhou Lidar ML model for estim</b></li><li>◦ <b>Vipin Kumar/Praveen Foundation Mode</b></li></ul></li></ul> <p><b>10:15 AM - 10:30 AM:</b> Break</p> <p><b>10:30 AM - 12:15 PM:</b> CR&amp;A Sub-project Overview an<br/>Angela) - present using Quad Charts</p> <ul style="list-style-type: none"><li>• Overview of current projects (10 minute overvie<ul style="list-style-type: none"><li>◦ Describe a 1-2 year overview of your pr<ul style="list-style-type: none"><li>■ What is it called (think of someth</li><li>■ What resources/student/staff/tec</li></ul></li></ul></li></ul> |  |  |
| Team Updates |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |

Mar 7, 2025 3:00 PM

| Topic                                            | Details                                                                                                        | Speaker | Time       |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------|------------|
| Finalizing agenda for climate risks retreat 3/28 |  CR&A Retreat 2025 - Agenda | All     | 55 minutes |
| Annual Report                                    | Is there someone who has been assigned from each cl                                                            |         | 5 minutes  |

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|              | <p style="text-align: center;"><b>Agenda for CRAA Co-Creation Retreat</b><br/>March 28, 2025<br/>University of Minnesota, <b>Walter Library Room 402</b></p> <p><b>Goals:</b> Review project goals, audience, and outcomes. (e.g., outcomes: scientific understanding, informing policy, new tool development, whatever)</p> <p><b>Pre-work:</b><br/>Prepare talks as assigned<br/>Complete quad charts as assigned<br/>Review materials shared before the retreat</p> <p><b>8:30 AM - 9:00 AM:</b> Breakfast</p> <p><b>9:00 AM - 9:10 AM:</b> Opening Remarks and Introduction: David Mulla</p> <ul style="list-style-type: none"><li>• Welcome, goals<ul style="list-style-type: none"><li>◦ Improved understanding and ability to communicate the collective impact of this research from policy to research applications</li><li>◦ Plans for coordinating and identifying opportunities to connect across crops and forestry given across differing temporal and geographic scopes</li><li>◦ Discuss and potentially make decisions on data used to inform modeling</li><li>◦ Preparing for the annual review meeting at CSU</li></ul></li></ul> <p><b>9:10 AM - 10:15 AM:</b> Participant Lightning Talks (2-3 slides, 5 minute talk + 2 minute discussion each - may depend on # of speakers)</p> <ul style="list-style-type: none"><li>• Share highlights of your most relevant climate risk / adaptation research, extension, or outreach<ul style="list-style-type: none"><li>◦ Historical evidence for adaptation (Nathan)</li><li>◦ <b>Spatial prediction forest carbon pools</b> (Chad)</li><li>◦ <b>Deforestation/degradation</b> (Raju)</li><li>◦ Minnesota climate adaptation program</li><li>◦ Focus Group Findings on Perceptions of AI and Climate Issues (Ailton)</li><li>◦ <b>Theresa Chen Methods</b></li><li>◦ <b>Jianrong Zhou Luluc 14C model for estimating forest biomass?</b></li><li>◦ <b>Vipin Kumar/Praveen Foundation Modeling</b></li></ul></li></ul> <p><b>10:15 AM - 10:30 AM:</b> Break</p> <p><b>10:30 AM - 12:15 PM:</b> CRAA Sub-project Overview and Discussion (Raju and Chad, Notetaker: Angelo) - present using Quad Charts</p> <ul style="list-style-type: none"><li>• Overview of current projects (10 minute overview, 10 minute discussion per project):<ul style="list-style-type: none"><li>◦ Describe a 1-2 year overview of your project plan in 10 minutes MAX including:<ul style="list-style-type: none"><li>▪ What is it called (think of something cool)</li><li>▪ What resources/student/staff/technical support you have &amp; need</li></ul></li></ul></li></ul> <p>imate risks subproject to upload the <a href="#">quad chart</a> and <a href="#">project brief</a> for the annual report?</p> <p>Due next <b>Friday March 14</b></p> <p> AI-CLIMATE Annual Report ...</p> |  |  |
| Team Updates |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |

Feb 21, 2025 3:00 PM

| Topic                          | Details                                                                                                                                                                                                                                                                                                               | Speaker         | Time      |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|
| In-Person Climate Risk Retreat | <p>Scheduled March 28, 2025</p> <ul style="list-style-type: none"><li>• Need headcount for room reservation</li><li>• 5 rooms</li><li>• Respond Yes to calendar invite</li><li>• RSVP to Google Form: <a href="https://docs.google.com/forms/d/e/1FAIpQLSf">https://docs.google.com/forms/d/e/1FAIpQLSf</a></li></ul> | Candace Hulbert | 5 minutes |

|                                                                                  |                                                                                      |                     |           |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------|-----------|
|                                                                                  | <a href="#">X9TzmOf1GrFj-tNgi9y iUt11L7-6oVRAp929Sm0OtE_vYw/vi ewform?usp=header</a> |                     |           |
| Annual Report Survey                                                             | Initial questions? Concerns?                                                         | Candace Hulbert     | 5 minutes |
| Subproject 1: Forest Benchmark Datasets Update                                   |                                                                                      | Raju and Chad       | 5 minutes |
| Subproject 2: CEDAR Update                                                       |                                                                                      | Theresa and Chad    | 5 minutes |
| Subproject 3: Deforestation/ degradation/fires Update                            |                                                                                      | Raju                | 5 minutes |
| Subproject 4: Crop hydroclimatic risk Update                                     |                                                                                      | Dongyang and Nathan | 5 minutes |
| Subproject 5: Adaptation-mitigation tradeoffs and crop-forest transitions Update |                                                                                      | Nathan              | 5 minutes |

Feb 7, 2025 3:00 PM

**Organizational:**

- 📎 Thrust 2: Climate Risks and Adaptation
- 📎 AI-C Climate Risks and Adaptation Team.xlsx
- 📎 Subproject Planning Sheets

**Attendees:** Jim, Raju, Candace, Natalie, Allison, Dongyang, Chad, Praveen

**Agenda:**

### Quick updates:

- Jim - updates cyber-realm -
    - AI-CLIMATE has a number of dedicated GPUs in Agate, the MSI supercomputer
    - Ben Lynch will be conducting a training session, which will be recorded to demonstrate how you can access these resources and others to train models.
    - The training session will be recorded, so if you cannot make it on the day of the session, you can view the recording.
    - Getting a lot of interest in ag-related communities of data center construction will have an impact on their lives.
    - Should we address these in our institute?
      - MN legislators - what will be the impact of a data center on the land we have for farming, water. What is the potential impact on jobs?
        - Bills - WA, MN, NY??
        - Popular articles
          - <https://www.nytimes.com/2024/12/25/technology/ai-data-centers-electricians.html>
          - <https://www.bain.com/insights/ais-power-surge-the-looming-data-center-energy-challenge-snap-chart/>
          - <https://www.route-fifty.com/infrastructure/2025/02/washington-governor-orders-team-study-data-centers-impact-energy-use-job-creation-and-tax-revenue/402798/>
          - <https://www.goldmansachs.com/insights/articles/AI-poised-to-drive-160-increase-in-power-demand>
          - <https://www.govtech.com/policy/minnesota-contemplates-extending-tax-breaks-for-data-centers>
          - <https://www.timesunion.com/capitol/article/new-bill-aims-curb-environmental-impact-ai-data-19971462.php>
          -
  - Jim Asked to give an update for the MN legislature
  - Ag Associations reaching out to Shawn.
  - Allison will look into it, and discuss at retreat
- 
- Nathan/Dyongyang - Irrigation, carbon benefits of adaptation -
  - Dyongyang - updated at the last all-hands meeting - optimizing, will have better results soon
  - Raju - Forestry, worked on forest burn area problem - recently submitted a paper; used existing benchmarked dataset -
  - Chad - Theresa and Chad are working on mapping carbon; using ML and AI approaches, starting to switch approaches, see if they can get carbon models to work...using a signal-type approach, and chugging away - meet weekly...
  - Natalie - is working with Travis and the MN robotics institute on a day camp middle school activity - Praveen is helping as well. July Day camp - may be looking for lab tours.
  - Praveen - planning to submit to a conference paper next week - KDD, round II

| Topic                                                                            | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Speaker             | Time      |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------|
| In-Person Climate Risk Retreat                                                   | <p>Scheduled March 28, 2025</p> <ul style="list-style-type: none"> <li>• Need headcount for room reservation</li> <li>• 5 rooms</li> <li>• Respond Yes to calendar invite</li> <li>• RSVP to Google Form: <a href="https://docs.google.com/forms/d/e/1FAIpQLSfX9TzmOf1GrFj-tNgi9y_iUt11L7-6oVRAp929Sm0OtE_vYw/viewform?usp=header">https://docs.google.com/forms/d/e/1FAIpQLSfX9TzmOf1GrFj-tNgi9y_iUt11L7-6oVRAp929Sm0OtE_vYw/viewform?usp=header</a></li> </ul> | Candace Hulbert     | 5 minutes |
| Subproject 1: Forest Benchmark Datasets Update                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Raju and Chad       | 5 minutes |
| Subproject 2: CEDAR Update                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Theresa and Chad    | 5 minutes |
| Subproject 3: Deforestation/ degradation/fires Update                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Raju                | 5 minutes |
| Subproject 4: Crop hydroclimatic risk Update                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Dongyang and Nathan | 5 minutes |
| Subproject 5: Adaptation-mitigation tradeoffs and crop-forest transitions Update |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Nathan              | 5 minutes |

Jan 9, 2025 3:00 PM

**Attendees:**

**Agenda:**

| Topic                                          | Details                                                                                                                                                                                                                                                                                                                                                                                                                            | Speaker          | Time      |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------|
| Data Inventory                                 | Angela will be joining our meeting for Data Inventory <ul style="list-style-type: none"><li>• Team Spreadsheet</li><li>• Spring scheduling</li><li>• Publications</li><li>• Event Attendance</li><li>• Quarter 2 milestones</li></ul>                                                                                                                                                                                              | Angela Walsh     | 5 minutes |
| In-Person Climate Risk Retreat                 | Scheduled March 28, 2025 <ul style="list-style-type: none"><li>• Need headcount for room reservation</li><li>• Respond Yes to calendar invite</li><li>• RSVP to Google Form: <a href="https://docs.google.com/forms/d/e/1FAIpQLSfX9TzmOf1GrFj-tNgi9y_iUt11L7-6oVRAp929Sm0OtE_vYw/viewform?usp=header">https://docs.google.com/forms/d/e/1FAIpQLSfX9TzmOf1GrFj-tNgi9y_iUt11L7-6oVRAp929Sm0OtE_vYw/viewform?usp=header</a></li></ul> | Angela Walsh     | 5 minutes |
| Subproject 1: Forest Benchmark Datasets Update |                                                                                                                                                                                                                                                                                                                                                                                                                                    | Raju and Chad    | 5 minutes |
| Subproject 2: CEDAR Update                     |                                                                                                                                                                                                                                                                                                                                                                                                                                    | Theresa and Chad | 5 minutes |

|                                                                                              |  |                        |           |
|----------------------------------------------------------------------------------------------|--|------------------------|-----------|
| Subproject 3:<br>Deforestation/<br>degradation/fires<br>Update                               |  | Raju                   | 5 minutes |
| Subproject 4: Crop<br>hydroclimatic risk<br>Update                                           |  | Dongyang and<br>Nathan | 5 minutes |
| Subproject 5:<br>Adaptation-mitigation<br>tradeoffs and<br>crop-forest transitions<br>Update |  | Nathan                 | 5 minutes |

#### Action Items:

Dec 12, 2024 3:00 PM

#### Attendees:

#### Agenda:

| Topic                                          | Details                                                                                                                                                                                                                           | Speaker          | Time       |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------|
| Data Inventory                                 | Angela will be joining our meeting for Data Inventory <ul style="list-style-type: none"> <li>Team Spreadsheet</li> <li>Spring scheduling</li> <li>Publications</li> <li>Event Attendance</li> <li>Quarter 2 milestones</li> </ul> | Angela Walsh     | 15 minutes |
| In-Person Retreat                              | March 28, 2025                                                                                                                                                                                                                    |                  |            |
| Subproject 1: Forest Benchmark Datasets Update |                                                                                                                                                                                                                                   | Raju and Chad    | 5 minutes  |
| Subproject 2: CEDAR                            |                                                                                                                                                                                                                                   | Theresa and Chad | 5 minutes  |

|                                                                                              |  |                        |           |
|----------------------------------------------------------------------------------------------|--|------------------------|-----------|
| Update                                                                                       |  |                        |           |
| Subproject 3:<br>Deforestation/<br>degradation/fires<br>Update                               |  | Raju                   | 5 minutes |
| Subproject 4: Crop<br>hydroclimatic risk<br>Update                                           |  | Dongyang and<br>Nathan | 5 minutes |
| Subproject 5:<br>Adaptation-mitigation<br>tradeoffs and<br>crop-forest transitions<br>Update |  | Nathan                 | 5 minutes |

#### Action Items:

Nov 14, 2024 3:00 PM

#### Agenda:

| Topic             | Details                                                                                                                                                                                 | Speaker | Time      |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|
| Retreat Follow-Up | <p>How did the event go?</p> <p>How do we want to structure these biweekly meetings moving forward?</p> <p>Team spreadsheet: I need emails for Ashritha Bugada's and Avery Driscoll</p> | Candace | 5 minutes |
|                   |                                                                                                                                                                                         |         |           |
|                   |                                                                                                                                                                                         |         |           |

#### Upcoming:

- ☐ Dec 12 meeting- Angela Walsh will be joining us for a data inventory (10 minutes)
  - ☐ Team Spreadsheet/Email List
  - ☐ Spring scheduling
  - ☐ Publications
  - ☐ Event Attendance

☐ Quarter 2 milestones

**Notes:**

**Discussion**

- In-person retreat to facilitate more collaborations
- Could be done in tandem with the annual review
- Could do 2 months before view- March
  - Doodle Poll for Friday March 28 or April 4
- Ask David Mulla, Ariel ortiz Bobea, and Pat keys
- 
- 

Oct 3, 2024 3:00 PM

**Agenda:**

- **Updates:**
  - Nathan did a great job presenting last Friday for the All-Hands! Thanks, Nathan!
  - New virtual retreat
- **New Time:** Please fill out the Doodle Poll so we can find a new time for our virtual retreat
  - <https://doodle.com/meeting/participate/id/dPr8zjla>
- **Virtual Retreat Planning:**
  - Update the climate risk agenda for a digital space- Emily Goff has an idea for this
  - Working meeting to fill out [project planning sheet for each subproject](#)
    - [KGML example](#)
    - [EWD example](#)

**Notes:**

- Set up meeting with Jun Jong
- 

Aug 19, 2024 10:00 AM

Send a follow up email to get a headcount of attendees

- Bharath
- Abe Davis
- Computer vision folks and foundational
- Ariel Bobeo
- Ying
- Get different expertise in group

Aug 19, 2024 10:00 AM

📅 AI-Climate: Climate Risks and Adaptation Bi-Weekly Meeting

Attendees: Nathan, Chad, David, Vipin, Raju, Jim, Candace

**Next steps:**

- Create a finalized separate agenda (Nathan and Raju)
- Select a new fall date
  - Cancel Monday labor day meeting

**Meeting Notes:**

Date selected for Fall retreat: Oct 18, 2024

Spent time finalizing agenda for Fall retreat

- Discuss Crop Forest Land Prediction
  - Future climate projections and impacts on crop yields; changes in water availability; changes in growing degree days; alternative cropping systems
  - Loss of tree species and how species will move
  - Put together existing data to identify gaps
  - Niche- Forest degradation from fire, insects, and pests
- Discuss data for developing models and benchmark datasets
  - Develop a spreadsheet with existing data
  - See example KGML worksheet  
[https://docs.google.com/spreadsheets/d/1Nc3gTDDP0YrKIGVT\\_cIVks9usp350e-r02HWd3eOOK/edit?gid=0#gid=0](https://docs.google.com/spreadsheets/d/1Nc3gTDDP0YrKIGVT_cIVks9usp350e-r02HWd3eOOK/edit?gid=0#gid=0)
- Need time to update milestone and metrics
  - Might need to do some of this work earlier since we only have one day
- Assigned subteam leaders to discuss topics for retreat

Aug 5, 2024 9:30 AM

📅 AI-Climate: Climate Risks and Adaptation Bi-Weekly Meeting

Attendees: Raju, Natalie, Nathan, David, Candace, Shawn, Robin

Goals: Team building, Projects, Metrics/Logic Model

**Reminders:**

- Please fill out [Doodle Poll](#) for AI-C CR&A Retreat in October  
*Thank you to Natalie, Nathan, and John for filling this out!*
- Please let us know your fall availability with this [Doodle Poll](#). We are just looking for your general weekly availability as classes begin in the fall.

**Possible people to add:** Yiqi (Added), Vipin, Tim Griffis, John Zobel (Added), Ying Sun (Added), Bharath Hariharan (added), Noah S (added), Ariel Ortiz-Bobea (added), Yao-Yi Chiang (Added)

- Candace can reach out to invite them to biweekly meeting and fall retreat

**Pre-work:** watch the lightning talks, 5-minute videos to help people easily join the team to reduce meeting time being spent on catch-up

Example: John Zobel Presentation: 📺 AI-CLIMATE 5-min talk.mp4

## Retreat Agenda Planning

- Example from KGML retreat 📄 KGMLSIG Retreat 2024 Agenda

Welcome and overview (Emily Goff + ?)

Lightning talks: 5-minute videos to help people easily join the team

Understanding climate risk and adaptation (Nathan)

- Risk framework: hazard, exposure, vulnerability
- Adaptation definitions
- What are the risks to crop systems? What are the risks to forestry systems? How do they intersect?

Cross-cutting theme: KGFM (Introduction by Li Cheng?)

Foundation model, ecosystem services, adaptation, mitigation, historical and future climates, tracking land use changes, productivity/economic features

Present on 5 of the subprojects (see below) to let people think about what projects they are interested in working on

Potential projects:

- Overview updated project ideas: ()
  - Describe a 1-2 year overview of your project plan in 10 minutes MAX including:
    - What is it called (think of something cool!)
    - What resources/technical support you have & need
    - How does what you have learned at this retreat change what you might be able to do?
- After all have shared (Emily):
  - Where are there obvious connections between projects?
  - Signup: where you can contribute and how

1. Forest Benchmark Datasets
  - a. Subproject lead: Raju and Chad?
  - b. Team:
2. Forest Biomass C/Models: Uncertainty, reduction, scaling
  - a. Subproject lead: Chad
  - b. Team:
3. Forests: Deforestation/degradation/fires
  - a. Subproject lead: Raju
  - b. Team:
4. Crops: hydroclimatic risk
  - a. Subproject lead: Nathan
  - b. Team:
5. Adaptation-Mitigation tradeoffs and Crop/Forest land transitions
  - a. Subproject lead: Nathan
    - i. Kansas paper as potential model
      1. Compile other papers, gaps
    - ii. Forest species transitions
      1. Forest degradation comes in here - risk of fires, pests
  - b. Team:

#### Cross Cutting themes

#### Foundational/shared data product discussion:

- ISIMIP?
- Training data
- Downscaled CMIP6
- Spatio-temporal variability of data
- spatial/temporal resolution / geographic scope

#### Update Milestones and metrics for the projects

 Project Planning Worksheet for Climate Adaptation & Mitigation

Need logic model for CR&A

#### Education and engagement (Candace and Natalie)

#### Roadmap Synthesis & Next Steps

- Coordination for coming soon events: AI for Ag Summit, KGML workshop, AI for Science symposium
- Future engagement with external stakeholders, such as Climate Smart Commodity projects and corporate partners (e.g Microsoft, NVIDIA, IBM, etc)

**Jul 22, 2024 9:00 AM**

**📅 AI-Climate: Climate Risks and Adaptation Bi-Weekly Meeting**

Attendees:

Agenda:

1. Discussion: Potential Sub-Projects (see [list](#))
  - a. Timeline
  - b. Milestones/Outcomes
  - c. Teams
  - d. Project [Template](#)
2. Moving Forward & Next Steps

Action Items:

**Priority 1: 5-10 Minute AI-C CR&A Team Presentations**

- Vipin and Nathan suggested having a series of short presentations at our upcoming weekly meeting August 5 to help get everyone on the same page and help strategize collaboration. This would also help for creating an agenda for the retreat.
- We should let everyone know about this now so they have some time to put a few slides together and so they can try to prioritize attending our next meeting.
- Let's assign a point person for sending out the email to the rest of this group for these presentations and the Doodle Poll. I am happy to coordinate if that would be helpful.

**Priority 2: AI-C CR5A Retreat in October**

- Based on Nathan's availability, I created a [Doodle Poll](#) looking at a full day event in October looking at Monday, Friday, Saturday, and Sunday as options. Let me know if you want me to expand the date range or cut any of the dates in October.
- We should spend the next month drafting an agenda for the retreat. We should dedicate our August 19 or September 2 meeting to creating that agenda.

**Priority 3: Consider Inviting Additional Collaborators**

- We also discussed possibly adding Justin Johnson and Dylan Millet (I hope I spelled that correctly) to these meetings as possible collaborators. Is there anyone else we should invite? Maybe additional graduate students or post-docs? Should we invite them to our next CR&A meeting?

**Priority 4: Fall Meeting Time**

- We should start polling everyone about their fall availability for a biweekly meeting. Let me know if you would like me to create this Doodle poll as well.

Jul 8, 2024 9:00 AM

📅 AI-Climate: Climate Risks and Adaptation Bi-Weekly Meeting

Attendees: rvatsavai@gmail.com James "Jim" Wilgenbusch Vipin Kumar Natalie Hunt  
rogutu@desu.edu Robin Sehler John Zobel Hyung-Sub Kim (hk948@cornell.edu)

Agenda:

1. Recap previous meetings
2. Discuss next steps

Notes:

1. **Recap Previous Meetings**
  - Overview of topics and action items from previous meetings.
2. **Discuss Next Steps**
  - **Recruit a Student:** Identified as a high priority.
  - **Forest Degradation and Land Change:** Discussion on current issues and research focus.
  - **Stakeholder Engagement:**
    - MN Forestry Council (Babcock)
    - Rose/Extension Outreach
  - **Advancing the State of the Art:** Exploration of how our efforts are contributing to advancements in forestry and land change.

Next Steps:

- **Draft Sub-Projects:** Before the next meeting, draft sub-project details and be prepared to discuss them on July 22. [Template](#).
- **Sub-Projects:** 1. Benchmark datasets for forest biomass/C, 2. forest degradation and forest fires, 3. Bayesian spatial forest biomass and carbon modeling, 4. Gaussian Process forest degradation and fire modeling, 5. Spatio-temporal Physics Guided Neural Net modeling, 6. Vision language modeling, 7. Mechanistic Light Modeling with SIF satellite imagery, 8. AI education module development, 9. engagement with Climate Smart Commodity projects

Jun 24, 2024 |

📅 AI-Climate: Climate Risks and Adaptation Bi-Weekly Meeting

Attendees: Chad Babcock rvatsavai@gmail.com nathan.mueller@rams.colostate.edu  
amc256@cornell.edu Shawn Haag John Zobel yl2735@cornell.edu

Agenda

1. Presentation, Chad Babcock

2. Discuss Sub-Projects for Year 2
  - a. Crop side (Ariel, Nate, John Zobel)
  - b. Forest degradation (Raju, Chad, Hyung-Sub [Yiqi student])
  - c. Milestones/Outcomes
  - d. Student Integration
3. Integration Efforts with EWD/BP

#### Notes:

- Discussion with Chad Babcock on forest modeling but has direct applications to ag
- What models? Machine learning, LSTM
- Forestry: do people predict species composition? long-term changes.

#### Path Forward:

- Scaling up models (use a student)
- Models: 1. Predictive and 2. computational complex stages
- Allison: Stakeholders - who would be interested in this? How would it address climate-smart agriculture and forestry?
- End-users: People who have statistical background and uncertainties for planning. Make more informed decisions, higher accuracy.
- WWF meeting was good. Waiting for next steps, if any, from WWF contact regarding additional resources.

#### Action Items

- Chad will start a Google Doc, and the team will begin working on a work plan for the project(s).
- Ask Chad about bringing in Forestry stakeholders

Jun 10, 2024 |

### AI-Climate: Climate Risks and Adaptation Bi-Weekly Meeting

Participants: AI-CLIMATE Institute UMN Allison M. Chatrchyan ao332@cornell.edu  
 Bharath Hariharan Chad Babcock crh232@cornell.edu Natalie Hunt John Zobel  
 Vipin Kumar Mueller,Nathan nathan.mueller@rams.colostate.edu Rose A. Ogutu  
 Ranga Vatsavai sangmi.pallickara@colostate.edu shrideep.pallickara@colostate.edu  
 Shawn Haag Yao-Yi Chiang Yiqi Luo Ying Sun

Attendees Today: Nathan, Rose, Candace, Raju, Chad; Allison unable to attend today.

#### Agenda

1. Confirm Leads & Students
2. Define Strategic Goals for Year 2
3. Discuss Sub-Projects for Year 2
  - a. Milestones/Outcomes

b. Project Teams  
4. Integration Efforts with EWD/BP

Notes

- Nathan:
  - Statistical -> simple ML -> KGML spectrum for yield prediction
    - Need better metrics of water stress for statistical and ML models
  - Crop / forest transitions
  - New postdoc starting
- Chad:
  - No staff on the project
  - Forest carbon mapping/modeling - remote sensing and machine learning
  - KGML to map forest carbon / uncertainties
- Rose:
  - Participating in the Education/Extension vignette
  - Get the information down to the farmer/public - what tools are out there? How to use them?
- Candace - working full-time on Education WD team with Allison and Johannes
- Raju:
  - 1 CS student coming in fall
  - ML and remote sensing time series
  - Interested in forest degradation - recent study that listed several failed projects - benchmark dataset
  - Next - KGML model for predicting forest degradation across the continent
  - Scientifically what is happening to these sites?
  - DOE 2030 biofuel policy
  - Change detection
  - Prediction of change using CDL
- Nate: This Group has two potential teams
  - Crop side (Ariel, Nate, Zobel)
  - Forest degradation (Raju, Chad)
  - Zobel and Nate together
  - Yiqi Luo (student to put on this project)

Action items

- ☒ ~~Angela Walsh - Please make sure research meetings are recorded~~
- ☐ Clarify how new students can be integrated into projects / any other personnel resources for Vignette 2
- ☐ Begin developing out projects