

Dear Summer Institute 2019 Participants,

We're excited to meet you all on Sunday! Our institute's theme this year is "Climate science in the age of realized climate change."

The Summer Institute is a chance for us to build connections between current and former fellows, to let everyone see the current state of exciting climate and global change science, and to ask where our science is going in the future. We realize that the new fellows celebrated here will likely experience a different career arc than past fellows, because their careers will likely span a time when many aspects of the Earth system are manifestly changing. The last 30 years of climate science can be seen as an extended period of preparation for a slow global experiment, asking: based on our current knowledge, how do we think the world would change under higher CO levels? Current postdocs will be watching that experiment in action. And as climate itself changes, the nature of climate science almost certainly also changes. So this year our theme involves looking forward and asking: how will your work evolve as the global experiment begins producing data?

We hope this week allows you to take a broad view of current science, with talks from 12 current and recent fellows and six former fellows and senior scientists, on subjects as broad as ecology to turbulence. We'll also have three discussions focused on aspects of our forward-looking theme: on how climate science itself responds to the age of visible signal, on finding the balance between fundamental and applied science, and on potential societal actions to mitigate climate change and whether and how scientists play a role. We'd like you to try to connect the two timescales throughout, to ask where you are going next. What questions, problems, and techniques will characterize your work over the next twenty or so years? New questions may require breaking down traditional disciplinary boundaries, so think broadly.

There will be plenty of time for informal discussions, because Steamboat Springs is a beautiful place to hang out and you'll have the afternoons free to do that.

To Summer Institute is always a fabulous experience, but to maximize its benefits, here are some logistics and requests:

1. **Reflection.** As you prepare your talk, try to imagine yourself 20 years from now. Will your current research question be answered? Will the physical/biological system you are studying be changed, and how? What work will seem most important for your future self? Spend a few minutes at the end of your talk looking forward.

2. **Science talk timing and target:** In preparing your talk, be mindful that the audience will include scientists with a broad range of expertise and even some non-scientists. Try to make your talk accessible to all. Avoid or at least define jargon; include a plain-words statement of what you are working on and why; and explain how your work fits into the bigger picture. All talks are 25 minutes, bundled into sessions of two or three followed by 30 minutes of discussion. It's best to

use minimal slides and spend longer on each slide rather than cram in detail that the audience can't fully absorb. Note that you should expect some questions during the talk, so leave time for that. For those in the audience, try to keep during-talk questions to just clarifications on the topic at hand. We'll use the discussion at the end to link them together. It's ideal if the people giving talks in each group are able to meet up beforehand (over breakfast?) to run over their key ideas and (to the extent possible) coordinate a bit, so that we can highlight links and relate our work to each others'.

3. **Panel discussions:** We will have three panel discussions loosely framed around issues that concern the future of climate science. Some seasoned scientists and invited experts will lead off with introductory remarks (perhaps 20 minutes total), and then we will open up the discussion for all to participate (70+ minutes). We hope these discussions are lively and informal. They are also your chance to ask questions of senior people in various fields, so don't be shy about using the opportunity to educate yourself.

4. **Session chairs.** We have randomly assigned current or recent postdoc to be session chairs (this week is all about building a community). The only responsibilities of a chair are to keep the speakers on-time, and to facilitate the open discussion at the end of the session.

5. **Engagement:** We ask that you remain fully engaged during the sessions, arriving on time, staying for the duration, and avoiding computers or phones during the talks. There is a long break each morning when you can check email. In the afternoons, we hope you'll use the free time to hike or explore or just hang out together.

Looking forward to seeing you in Steamboat!

David Battisti

Liz Moyer