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# Participation guide for the Climate Dynamics group at UC Santa Cruz

## Overview

*Purpose of this guide*
This document outlines general expectations and guidelines for participating in the Climate Dynamics group. This guide is a living document that will be shaped by feedback from all group members. We also hope this document will provide useful insight to prospective group members as they weigh their options.

*Mission Statement*
Our group seeks seek to understand how atmospheric circulations, ocean interactions, radiative transfer, and land surface processes control regional and global climate. To carry out our investigations, we use a combination of hierarchical numerical modeling, theory, and observational analyses. Theories addressed at understanding large-scale climate dynamics help us interpret changes in past, present, and future climates. A core part of our mission is to recruit and train early career scientists. We support members who aspire to apply their skills in various realms, including academic research, education, science communication, and public policy.

*Commitment to a respectful, inclusive, and harassment-free work environment*
This group is committed to providing a supportive and inclusive work environment where all members can thrive and realize their full potential. All members are expected to be familiar with the values and expectations outlined in the Earth and Planetary Sciences Principles of Community (https://eps.ucsc.edu/about/diversity/principles-of-community.html). In pursuit of these ideals, we will employ several proactive measures, including training sessions, dedicated group discussions, and the implementation of clear communication channels for providing feedback and reporting problematic behavior.

*University resources*
EPS Graduate Handbook - https://eps.ucsc.edu/graduate/grad-handbook.html
Academic Calendar - https://registrar.ucsc.edu/calendar/academiccalendar.html
Graduate student and postdoc salary table - https://apo.ucsc.edu/compensation/salary-scales/index.html

## Expectations and responsibilities

Below is a brief overview of what is expected from each group member. This non-exhaustive summary establishes a baseline for individual conduct and responsibilities.

Everyone
- Cultivate an inclusive and supportive work environment
- Produce transparent and reproducible research
- Be receptive to feedback and critique

Faculty advisor (i.e., Nicole)
- Define the scope and direction of the group's research
- Obtain funding to support research
- Provide scientific mentoring to each group member via regular meetings
- Provide timely feedback on research progress
- Oversee the publication process
- Guide graduate students through their matriculation process
- Organize group meetings and activities
- Provide access to professional network
- Provide letters of reference

As a faculty member, Nicole is also expected to
- Teach and develop courses
- Serve the university and the broader scientific community
- Conduct her own research

Graduate students
- Understand degree requirements and maintain good academic standing
- Work with faculty advisor to develop a research plan
- Prioritize research and thesis work
- Be organized and develop a sustainable time management system
- Be in regular communication with faculty advisor
- Be proactive in seeking advice and guidance
- Take initiative and develop independence as a scientist
- Participate in group meetings
- Attend departmental seminars
- Apply for graduate fellowships
- Prepare and submit manuscripts for publication

Postdocs
- Produce research and write papers
- Present research at conferences
- Prioritize collaborative research with faculty advisor
- Be in regular communication with the group and faculty advisor
- Participate in group meetings
- Lend research expertise to the group
- Provide mentorship to more junior group members
- Be proactive in seeking advice and guidance
- Plan for the future

Undergraduate students
- Be eager to learn
- Ask lots of questions
- Prioritize coursework and degree requirements

## PhD program timeline and milestones

The EPS Grad Handbook is a valuable resource for all students in the department. Below is a description of norms within our group.

*Year 1*
Coursework[1]; select research topic and begin research (read lots of papers with an eye for interesting research questions); apply for graduate fellowships[2].

*Year 2*
Coursework; complete first research project; write manuscript and submit to a peer-reviewed journal.

*Year 3*
Begin second research project; select a qualifying exam committee; write qualifying exam proposal[3]; present research at a conference; take qualifying exam.

*Year 4*
Continue second research project; present research at a conference; write manuscript and submit to a peer-reviewed journal; meet with dissertation committee; begin third research project.

*Year 5*
Continue third research project; present research at a conference; write manuscript and submit to a peer-reviewed journal; write dissertation[4]; defend dissertation.

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[1] Graduate school represents a transition to research-based work and away from the course-based work typical of undergraduate education. Therefore, course selection should complement individual research and career goals. A meeting will occur in advance of fall quarter in which the student will discuss their course plan with Nicole and the graduate program advisors.

[2] While PhD students are admitted with guaranteed funding for 5 years, there are a number of advantages to applying for fellowships. External funding leverages group resources and gives the awardee a greater degree of intellectual autonomy. Grant writing is also an important professional skill for an academic career and helps refine research ideas and plans.

[3] The qualifying exam proposal is comprised of five chapters: an introduction describing the overall goals, objectives, and methods of the dissertation research; a complete manuscript of the first research project; a proposal of the second research project including preliminary results; a proposal of the third research project; and a summary including a timeline and deliverables. See the EPS Grad Handbook for length guidelines. A draft of the proposal must be submitted to your primary advisor at least one month before the qualifying exam, and a revised draft of your proposal should be submitted to your committee at least two weeks before the qualifying exam.

[4] The PhD dissertation is a scholarly contribution to knowledge, which embodies the results of original and creative effort by the student. It is comprised of approximately 5 chapters: an introduction, at least three chapters each representing a distinct research project, and a conclusion. A complete draft must be submitted to your primary advisor at least one month before the defense, and a revised draft of your dissertation should be submitted to your committee at least two weeks before the defense.

## Further guidance

These additional guidance are intended for graduate students and postdocs who are primarily affiliated with our group.

*Individual meetings*

At the beginning of each quarter, Nicole will schedule weekly meetings with each group member. These are opportunities to discuss research progress, course selection, professional development, and anything pertinent to your experience at UC Santa Cruz. Group members are welcome to schedule additional meetings as needed.

*Group meetings*

We currently have group meetings biweekly. These are intended to be informal, low-stakes opportunities for everyone to share and receive feedback on their work and to discuss the literature. Everyone is expected to share updates on their work and lead/participate in the discussion.

*Additional modes of communication*

Slack may be used for informal discussions. Official correspondence (e.g., regarding travel reimbursements, vacation requests, scheduling of annual reviews, etc.) should be sent via email.

*Presence on campus*

All group members are encouraged to have a regular presence on campus. Being present in the office is important for building relationships with your colleagues and for catalyzing ideas. Each group member is free to create a work schedule that fits with their obligations, so long as it includes some time on campus every week (unless on leave or vacation). For instance, working on campus for a few hours each day or every other day is acceptable. Remote work may be accommodated on a limited basis, provided these plans are discussed with Nicole in advance. Since UC Santa Cruz has strict policies governing remote work, there is no guarantee every request will be approved.

*Vacations and Holidays*

Conducting research can be a mentally exhausting and emotionally draining experience. While it is essential to work hard and push your limits, it is equally important to allot time to relax and rejuvenate. Without timely breaks for recovery, it is difficult (arguably impossible) to sustain a productive and rewarding career in our field. Everyone should allocate breaks into their schedule and take full advantage of university holidays.

University holidays occur on a handful of days throughout the year (e.g., Labor Day, Veterans Day, Thanksgiving Holidays), and are indicated on the university calendar https://registrar.ucsc.edu/calendar/academiccalendar.html. Holidays are *not* synonymous with breaks from instruction. Group members are expected to work during instructional breaks, excepting university holidays, unless they have made prior arrangements to take vacation.

Group members are invited to take 15 days of vacation each academic year. The vacation year starts at the beginning of fall quarter and ends the day before the start of the next fall quarter. Requests for taking multiple days of vacation at a time should ideally be made to Nicole several weeks in advance.

*Conference travel*

Scientific conferences are valuable opportunities to share our work, hone our communication skills, and network with colleagues outside of UC Santa Cruz. The major meetings for our field include the annual AGU Fall meeting, the AMS Conference on Atmospheric and Oceanic Fluid Dynamics, and the CFMIP Meeting on Clouds, Circulation, Precipitation, and Climate Sensitivity. Please keep an eye out for smaller conferences, workshops, and ad hoc meetings that often provide more worthwhile experiences. Additionally, all conference presentation abstracts must be approved by the faculty advisor prior to submission.

Group members will receive support to attend one conference per year if presenting; this support will cover expenses directly related to the trip (e.g., flights, transportation, lodging, food, and registration fees). Expenses are reimbursed post travel and all receipts must be presented. UC Santa Cruz does not provide a per diem for meals and only reimburses actual expenses. Please book your lodging as soon as you know you will be attending a conference as availability becomes very limited. The university's travel and reimbursement policies are available at https://financial.ucsc.edu/pages/travel_process.aspx. Requests for reimbursement are processed using CruzFly (https://financial.ucsc.edu/Pages/Launch_CruzFly.aspx).

If you intend to combine personal travel or other non-UCSC business travel with your trip, you must provide a cost comparison showing the cost of traveling directly to/from the business destination vs. the cost of added stops/alternate destinations on the day you book your actual flight. The lesser of the two costs will be reimbursed. Reimbursement will not be made for additional or incremental expenses incurred as a result of travel for personal purposes.

*Laptops and workstations*
In general, group members are not expected to pay for any resource that is essential to the fulfillment of their work. Graduate students and postdocs are entitled to a laptop or desktop workstation, and related accessories. Any equipment purchased using the group's research funds is owned by university and should be treated as such. Each desk in the lab comes equipped with an ergonomic Office Master task chair (model YS88). The following video demonstrates the available adjustments https://youtu.be/h__HSoNCnNU.

*Computational resources*
Our group has access to lux, an NSF-funded High Performance Computing (HPC) system at UC Santa Cruz. We also maintain a small Linux server, maddox, for exclusive use by our group. The maddox system features 2x 18-core Intel XEON E5-2697V4 CPUs, 256GB RAM, and 2x 200GB SSD drives. It also features a 16x 6TB RAID storage system configured for 58TB of usable space. In general, personal computers should be used for routine work that is not computationally demanding. Computationally intensive tasks should be handled on lux (or NCAR or DOE systems). Moderately intensive tasks may be handled on maddox. Accessing HPC systems requires the campus VPN (https://its.ucsc.edu/vpn/index.html).

The official lux documentation is available at https://lux-ucsc.readthedocs.io/. The documentation provides valuable information for using the system, including the Slurm workload manager. Particular attention should be paid to the policies for login node use: https://lux-ucsc.readthedocs.io/en/latest/policies.html#login-node-usage.

*Outreach and service*
Our group supports and encourages participation in any service activity that advances the interests of our scientific community. Such activities may include scientific outreach, serving as a student representative on a department committee, and contributing to groups that advance equity and inclusion. We believe participation in these activities is essential to maintaining a healthy scientific enterprise, and we aim to recognize individuals who make the effort to do so. As with any voluntary commitment, group members should use discretion when allocating time for these activities and ensure that their involvement does not adversely affect their other academic obligations.

*Publications and authorship*
When it is time to publish the results of a project, the individual who conducted the majority of the research is expected to be the lead author. The lead author is responsible for drafting the manuscript and guiding it through the peer-review process. All manuscripts should be prepared in LaTeX; the University offers free software licenses for Overleaf (https://www.overleaf.com/). As the faculty advisor, Nicole will oversee this process and generally cover the publication expenses.

Our policy is that anyone who substantially contributes to the conceptualization, design, or execution of the project should be invited to be a coauthor. Further, any individual who offers significant intellectual input on the analysis, interpretation, and presentation of the results may be invited to be a coauthor. These criteria are only starting starting points for these discussions, and there are many nuances to consider. We recommend broaching these conversations with the relevant parties as early as possible.

Since coauthorship implies an endorsement of the substance and quality of the manuscript, each coauthor is expected to review and provide feedback on the manuscript. In turn, the lead author must carefully consider and address their suggestions. As with any collaborative project, there will be disagreements and lively debates; learning how to navigate these interpersonal disagreements is part of the educational process. Nicole is available to provide counsel, mediate conflict, and run interference if another senior scientist is involved.

Group members are supported in their involvement in additional collaborations, however, graduate students should always prioritize their thesis work and postdocs should prioritize their research with the faculty advisor.

*Documenting research*
A core mission of our group is to conduct impactful scientific research that is transparent and reproducible. Any research paper published by our group should include sufficient detail that an informed reader may follow the methodology and recreate the paper's findings. Ideally, all relevant numerical code and processed data should be uploaded to publicly accessible repository. Additionally, everyone is encouraged to maintain a regular log of their research progress, the frequency and level of detail to which this is done is left to individual discretion.

Since much of our work is numerical and involves writing many lines of code, it is essential to keep these files organized and well-documented. We should avoid relying on a messy code that "works" but is impossible to decipher or debug.

*Letters of reference*
Nicole is available to provide a letter of reference for any group member. If you are requesting a letter for the first time, please provide one month of notice—the earlier the better. If Nicole has already written a letter for you, then a one week notice should suffice.

*Reporting problematic behavior*
All group members must abide by our commitment to creating an inclusive and harassment-free work environment. This involves being aware of how our actions may impact others and being vigilant when these values are not upheld. Anyone who witnesses or experiences harmful behavior is encouraged to report the incident to Nicole, the Department Chair, or the Graduate Advisor. Please note that, as a faculty member, Nicole must report all incidents involving sexual harassment, misconduct, or assault to the University's Title IX Office. Reporting options are described in more detail at https://eps.ucsc.edu/about/diversity/reporting-options.html.