

Graduate Admissions

If you are unsure if your research interests would be a good fit for the research group, please [send Vivek](#) an email [expressing your interest](#). Ideally, you should do this well in advance of the admissions deadline, so there is plenty of time for you and Vivek to mutually decide if you would be a good fit in the research group.

How to Apply

You can apply for graduate admission to Cornell at the [Graduate School's Admissions site](#).

Graduate Fields

Cornell organizes its graduate admissions and supervision around graduate fields of study, rather than departments. Faculty who are members of a field can supervise students in that field, even if they are outside of their department. You can therefore apply to any of the fields in which Vivek is a member and be part of the group. Feel free to ask about more information of any of these fields to find which might be the best fit for your goals.

Vivek is a member of the graduate faculty in [Biological & Environmental Engineering](#), [Civil & Environmental Engineering](#), and [Systems Engineering](#).

Thesis Programs (M.S. and Ph.D)

When funding is available for M.S. and Ph.D students to do specific work, these positions will be advertised on the group's ["Join Us"](#) page. When projects allow for a broader scope, or more general funding is available, that same page will note how many students the group is looking to take on.

Graduate Fellowships

- If you are externally funded (through a graduate fellowship, such as the [NSF GRFP](#) or others), feel free to reach out if you are interested in our research, regardless of whether a position is advertised.
- If you are considering applying for a graduate fellowship, Vivek is also happy to work with you on developing your application.

You can apply to the aforementioned fields without contacting faculty ahead of time, but it is recommended that you [email Vivek](#) to [express interest](#) ahead of time (*well* ahead of time — make sure you can determine if the group is a good fit!). This will ensure that we can [evaluate fit] and, if all goes well, your application will be given priority.

Professional Programs (M.Eng. and M.P.S.)

M.Eng. and M.P.S. students should [contact Vivek](#) to [express interest](#) and ask if he has projects available. This does not need to be done too far ahead of the start of your first semester unless you specifically want to be supervised by Vivek, in which case you should inquire as early as possible.

What We're Looking For

Fit

Fit

It is essential that graduate students are a good fit for their research group. Graduate school is stressful enough: you don't want to be working on projects or in environments that you don't enjoy!

A student will likely fit well in our group if they are broadly interested in climate risk management, want to learn how to do interdisciplinary, collaborative work, and [are committed to upholding a harassment-free environment](#).

We want our students (and everyone else!) to strike a healthy work-life balance. If you aren't sure whether you know how to find this balance, or know that you tend to get overwhelmed with your work, don't worry! Finding this balance is part of the maturing and mentoring process, and Vivek will do his best to help you, but you have to want to find it. [There is no virtue in burying yourself so deeply in your work that your mental, physical, and emotional well-being suffer](#). It helps if you have hobbies and interests outside of work. These will help keep you from burning out and increase your creativity and productivity!

Whether you will "click" with your mentor and other members of the group can be hard to predict ahead of time. We will try to evaluate this during the admissions process. If Vivek is looking for students, after you reach out to express interest (or after he sees your application), he will try to schedule a video chat with you to discuss your research interests and skills further. If there is still mutual interest in group membership, he might ask you to participate in some one-on-one

discussions with other group members to get a sense of how you might work with them and how your interests align.

Writing and Communication Skills

Success in science, and in most fields, requires both verbal and written communication skills. You can generate all of the results that you want, but if you cannot communicate them to a broader scientific audience and/or stakeholders, they aren't very useful.

These skills are challenging to develop, except for a lucky few, and English-language skills in particular may pose a challenge for some international students. We are *not* only looking for students who come in as masters of communication — if we did, we wouldn't have a large pool to choose from! We learn how to write and communicate effectively through practice, but you should have an interest in developing your communication skills as you spend time with our group. We aren't looking for students who view communication as an afterthought.

Technical Skills

The work produced within our group is generally quantitative, though we are always open to collaborating on more-qualitative papers and projects. You are more likely to succeed if you have some of the following skills or are interested in developing them.

1. **Programming in some major language (C++, R, Python, etc):** While we aren't sticklers for language (we want to use the right tool for a given job), we generally try to [avoid working with proprietary software](#), such as MATLAB and GAMS. It helps when the group focuses on a couple of programming languages to facilitate collaboration. We tend to focus on R, Python, and Julia, though there are times when C or C++ is required. However, if you know some other languages, you should be able to pick these up with some effort and code examples, so don't worry too much if you haven't used these specific languages before.
2. **Statistics, applied mathematics, and optimization:** Our work is fundamentally impacted by uncertainty. This means that we need to know how to develop or modify models to allow for uncertainty-characterization workflows, quantify uncertainty when we can, and perform sensitivity analyses. If you have a solid background in probability or statistics, it will help you hit the ground running. A lot of our work also involves decision-making, which means that it is helpful to have some exposure to or interest in optimization.

In general, if you can program, have a solid math background, and some exposure to statistics, you are well-equipped to succeed in our group. If you are lacking some of those elements, don't worry! You're here to learn, and if you're interested in developing these skills, Vivek's job is to help you as much as he possibly can.

Other skills, such as geospatial analysis, climate modeling, or hydrological or power systems modeling, are helpful for particular projects, and you will be able to put them to good use and develop them further. Having these skills as an incoming student may mean that you are uniquely positioned within the group to work on certain projects.

Critical Thinking

Ph.D.s

If you're interested in doing a Ph.D. with our group, it is important that you demonstrate the ability to develop critical thinking skills. A Ph.D. is a license to do independent research, which means you should be able to ask and answer questions such as "Why am I doing this research?" and to follow the scientific method, which involves formulating and testing hypotheses, not just turning the crank or dredging through data or model output. You should be able to tell a story about why you posed a particular question, how your prior understanding of the area led you to formulate certain hypotheses, how you designed your experiment to test those hypotheses, and what the implications of the results are for your hypotheses in particular and the field in general.

Critical thinking is an important part of not just research, but life. We want to be cognizant of why we are doing science, both so we do it well and so we know it makes us happy. Part of your training will involve developing these skills! What is expected when you apply will depend on your background and what credential you are pursuing. If you want a Ph.D. and have an M.S., Vivek will expect that your critical thinking skills are relatively well-developed. If you're coming straight from undergrad, the expectations will not be as high, as you haven't had graduate training yet. It's ok if you don't quite meet Vivek's expectations at this stage so long as you demonstrate an interest and enthusiasm in developing these skills further.

Application Process

Note

This section is primarily aimed at students applying for thesis programs (M.S. and Ph.D.). Not all of these steps are relevant for M.Eng. and M.P.S. applicants, and we will note which ones are.

Am I Guaranteed Admission?

It would be unethical and unfair of Vivek to promise admission prior to seeing your completed application and those of other candidates. While the below-listed steps may go well, they may also go well for other applicants, and unfortunately resources are limited. In the unfortunate eventuality that you are not offered admission, hopefully the process will help you make your application(s) more attractive to other faculty at Cornell and other universities.

Once you decide you are interested in working with our group, there are several steps that will be asked of you to maximize the chances of a quality fit and a successful graduate experience. These are not provided in any particular order, depending on how much lead time was provided before the deadline.

All of these factors will be taken into account holistically, and none of them should be viewed as an individual deal-breaker. Try not to stress out! If you've gotten to this point, you and Vivek have likely corresponded and agreed that there is mutual interest in an application. The aim at this point is to maximize the odds that you will be happy and successful, and Vivek understands that all of the evaluated skills are things that can and will improve over time.

Send An Email Expressing Interest

Putting together a graduate application is a lot of work, both for you and for your recommenders, and it costs money. It's worth the time to reach out and get feedback on whether you should apply to work with a given supervisor. If you and Vivek have mutual interest in you joining the group ahead of time, it increases the chances of a successful admission more than a blind application. If you are interested in applying, but would like feedback on whether you would be a good

fit with our group, take the following advice into consideration when writing your initial email expressing interest.

- **Read the [group website](#) and this lab manual thoroughly before you send an email:** You should have an awareness of what kind of work we do, what will be expected of you, and what you can expect from us. You can certainly ask questions to clarify these issues if something isn't expressed clearly enough, but it will become apparent if you haven't done this due diligence. You should also not ask questions that are included in the [FAQ](#) below, as this is a sign that you haven't looked closely at the manual, particularly this page.
- **Attach relevant documents:** To get the most informed feedback, you should include your current CV or resume (as a [.pdf](#)), a draft of your personal statement or a statement of your research interests (ideally as a [pdf](#)), and any relevant prior work you'd like Vivek to see. This helps him get a sense of your interests and incoming skillset.
- **Explain why you are reaching out to Vivek *specifically*:** Did you read one of our group's papers (and if so, which one(s))? Was a project or opening listed on the website of particular interest? It's helpful for Vivek to know why our group appeared on your radar. For this reason, mass e-mails are unlikely to receive productive responses. An inquiry that references a specific paper or material and ties it to your interests and what you hope to gain as a member of our group is the most likely to get a positive response.
- **Ask specific questions:** It's hard to provide feedback if your expression of interest is vague, and this can be a sign that you haven't fully thought through whether we would be a good fit for you. For example, you might ask questions like:
 - "Are you still working on [<some topic>](#) >?" or "Are you interested in [<some topic>](#) >?"
 - "Do you have funding for students in the fall?" (This will hopefully be made clear on the website, but it's ok to ask to be sure).
 - "Is [<this method>](#) something you use?"

If your only questions are "Should I apply?" or "Can you look at my application?", the only answers that I can give you are "It's up to you" and "If your application is in the pool, I will see it."

Video Chats

You will be asked to participate in a video chat with Vivek. This is intended to evaluate your verbal communications skills and whether you can further articulate

your interests, and is not intended to be a formal interview. Ideally, it would help ensure that you and Vivek get along well enough to provide a productive mentoring relationship, but this is impossible to ensure until you've spent time with the group. If, based on your interests, you'll likely be working closely with another graduate student or a postdoc, Vivek may request that you have a followup one-on-one with the relevant individual(s) to discuss interests and background.

No judgement whatsoever will be made based on video background, and don't feel the need to dress up for these chats. If you do not feel comfortable having a video chat, or if time zone considerations make scheduling difficult, let Vivek know and alternatives can be provided.

Guided Paper Evaluation

Vivek will send you an email asking you to provide a written evaluation of a paper, which he will provide in that email. This paper will be selected based on your discussed interests. The goal of this response is to get a sense of your baseline writing skills, as well as your current ability to read and analyze a paper.

Your evaluation should be no more than two pages (no more than 12 point font and no less than one inch page margins), and should touch on several of the following prompts:

- What are the main research questions and hypotheses of the paper?
- What are the key results?
- Are there important qualifications for the results that were mentioned or not mentioned?
- How effective are the figures at communicating key points?
- Can you think of a way to improve on the paper?

You should return your response to Vivek within 48 hours. This doesn't need to be detailed or overly polished, and this isn't an exam. However, if this is not possible due to time constraints, let Vivek know ASAP and we can find a suitable date.

Academic Integrity

Vivek reserves the right to withdraw from the admissions process at any point if you are found to have violated the Academic Integrity Policy's letter or spirit. Integrity is a fundamental value, and if you behave dishonestly at this stage, with how low the stakes ultimately are, it is a bad signal for how ethically and well you might proceed with your research.

This evaluation is governed by [Cornell's Academic Integrity Code](#) In particular:

1. You should do this work on your own, without communicating with advisors, colleagues, etc.
2. You may use information that you find on the web so long as it is from a trustworthy source. However, you must attribute any sources that you draw from. Plagiarism is unacceptable, and simply paragraphing without attribution is still plagiarism.
3. Please use a formal bibliographic style such as APA, AGU, or similar. References do not count toward the page limit. It doesn't matter which of these you use, but be consistent.
4. You *may* use large language models (*e.g.*, ChatGPT) to help you write your evaluation. However, you should be prepared to answer detailed questions about what you have written and to explain your reasoning, which will be hard if you haven't read the paper carefully. You must also cite the model you used, the precise input(s) that you prompted it with, and provide a statement of how you fact-checked and integrated the output into your writing.¹

Your Application

There are three questions your application needs to address. They are aimed at making sure that if you were to join our group, you would be happy and successful.

1. Would pursuing this degree and doing research in our group advance **your** career *and* life goals?
2. Do you have the required skills to successfully carry out research in our group? Have you given clear thought to what skills are required and which you have? For those that you will need to acquire, have you given thought to how you will obtain them?
3. Is Vivek the right supervisor for your research goals? How do your interests align with the group?

Your application will be evaluated holistically, though you should write your personal statement so that it clearly addresses those three questions. These questions should be relatively straightforward after the previous steps, if they were able to be completed. If they weren't, no worries, though Vivek may ask you to complete them after he sees your application.

FAQ

Is the position fully funded?

All Ph.D and M.S. positions are fully funded for the duration of your time, including stipends (including in the summer), tuition, and benefits. This may involve some combination of teaching assistantships and research assistantships. You should get more details in your offer letter and discussions with Vivek.

M.Eng. positions are self-funded, however.

Should I write a research proposal?

This isn't necessary. As an incoming student, you aren't expected to have a detailed research plan. Your personal statement should include your research goals, some ideas you find interesting, and how those goals and interests relate to your career and life goals. Not including those in a personal statement because you want to write a separate research proposal would weaken your overall application.

If you happen to have a clear and specific research proposal that demonstrates a clear understanding of the field, outlines specific and feasible research for which Vivek would be a suitable mentor, and builds on the discussion of your goals and interests in your personal statement, that could help your overall application. However, you are never expected to submit a proposal, and one which is weak may hurt instead of helping you. My recommendation is that you focus more on writing a compelling personal statement.

Will I be able to attend conferences?

Yes! Attending conferences is an important part of professional development. Our goal is usually for students to attend one or two conferences each year --- usually the American Geophysical Union Fall Meeting in December and then a smaller one, such as the Society for Decision-Making for Deep Uncertainty Annual Meeting (usually in November). Other workshops and conferences may emerge, and you will be encouraged to submit abstracts or attend as appropriate.

Travel Support

You will never be expected to pay for travel expenses, though typically expenses are covered through a reimbursement model. If this is a problem (and there are many good reasons for it to be, particularly for students), talk to Vivek about

directly booking your transportation and hotel, and we can discuss how to handle routine expenses such as food.

What do you wish students knew before joining your group/program?

- Ultimately, graduate school is about gaining research skills, *not* your courses (M.Eng. students excepted). This is often a difficult change for new students, because doing well in coursework is largely what got you into a good graduate program! We'll pick classes which are appropriate for your work and your interests, but their ultimate purpose is to support your research. You should always prioritize your research if you have to make a choice between the two (though hopefully with good planning and time management, you won't have to).
- Our work involves a lot of programming and statistics and applied mathematics. It is common to spend all day (or more) tracking down a bug or trying to understand a paper. This is progress, even if it doesn't feel like it.
- You should be doing a lot of reading; if you think you might not be reading enough, there's a good chance you are not. This could be reading textbooks or papers. Finding and reading papers is a skill, and is the only way to build your knowledge about the area that you are working in.
- Scientific writing is a skill that relatively few undergrads have had a chance to practice, and many academics are also not great at (Vivek certainly has a lot to improve on as well!). Your initial papers, abstracts, and other products will likely need a fair amount of editing and iterations, so make sure that you start writing early and leave plenty of time for revisions. Your drafts will also probably come back with a lot of feedback, which can be jarring, but it is all intended constructively.

1. All of this may be more work than just reading the paper and writing the response yourself, but your mileage may vary. ■