



Learning the Earth with Artificial Intelligence & Physics (LEAP) Operations Manual

| | |
|---|-----------|
| 1. Introduction and Purpose | 2 |
| 2. Vision and Mission Statements | 2 |
| 3. Administration and Operations | 2 |
| <i>Organizational Structure</i> | 2 |
| <i>Organizational Chart – Center Executive Committee and Staff</i> | 3 |
| <i>Management Structure</i> | 4 |
| <i>Primary Communication Tools</i> | 8 |
| <i>Minutes, Notes, and Record Keeping</i> | 8 |
| 4. Funding and Finance | 8 |
| <i>Request for Research Project Proposals and Research Seed Funding</i> | 8 |
| 5. Data and Research | 9 |
| <i>Data Sharing and LEAP Memberships</i> | 9 |
| <i>Research Focus Groups</i> | 11 |
| <i>Authorship Guidelines</i> | 11 |
| 6. Human Resources | 11 |
| <i>Hiring and Recruitment</i> | 11 |
| <i>Conflict Resolution</i> | 12 |
| <i>Succession Planning</i> | 12 |
| <i>Staff Development and Performance</i> | 12 |
| <i>Professional Development</i> | 12 |
| <i>Leadership Training</i> | 13 |
| 7. Appendix | 13 |
| <i>Space Policy at Innovation Hub</i> | 13 |
| <i>LEAP Headquarters Floor Plan</i> | 14 |
| <i>Staff Positions: Job Description Postings</i> | 15 |



1. Introduction and Purpose

The purpose of this Operations Manual is to document key procedures to ensure that all LEAP members understand the underlying basis for leadership and decision-making. The Operations Manual empowers LEAP’s leadership team and staff to make decisions that are within their areas of responsibility, to streamline and standardize operations, promote transparency, and build teamwork. Finally, the Operations Manual will also serve as a resource for human resources, including hiring procedures, succession planning, and performance evaluation, and be a repository for key contacts.

This manual is complemented by two additional documents:

- LEAP Bylaws [[LINK](#)]
- LEAP Code of Conduct [[LINK](#)]

2. Vision and Mission Statements

Strategic Vision Statement: LEAP will revolutionize climate projections for informed climate adaptation.

Achieving this vision will ensure that a large and broad range of public and private stakeholders have the required tools necessary for informed decision making when facing climate change.

Mission: LEAP’s mission is to increase the reliability, utility, and reach of climate projections through the integration of climate and data science.

3. Administration and Operations

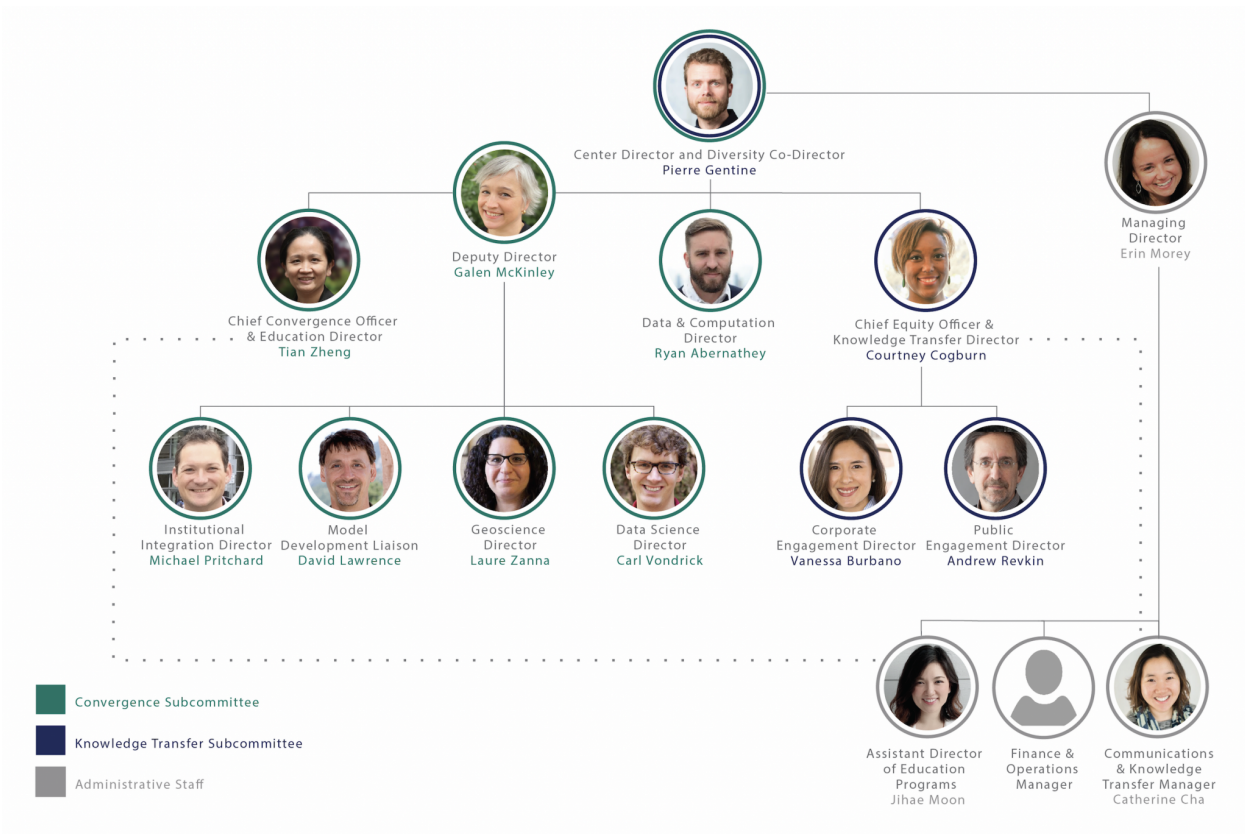
Organizational Structure

Roles and responsibilities of the Directors and Staff, listed below, are defined in the Bylaws [[LINK](#)].

| Name | Title | Institutional Email |
|------------------|--|----------------------------------|
| Ryan Abernathey | Data and Computation Director | rpa@ldeo.columbia.edu |
| Vanessa Burbano | Corporate Engagement Director | vanessa.burbano@gsb.columbia.edu |
| Catherine Cha | Manager of Communications and Knowledge Transfer | cc102@columbia.edu |
| Courtney Cogburn | Chief Equity Officer & Knowledge Transfer Director | cc3803@columbia.edu |
| Pierre Gentine | Director | pg2328@columbia.edu |
| David Lawrence | Model Development Director | dlawren@ucar.edu |
| Galen McKinley | Deputy Director | mckinley@ldeo.columbia.edu |

| Name | Title | Institutional Email |
|----------------|--|--------------------------|
| Jihae Moon | Assistant Director of Education Programs | jm4509@columbia.edu |
| Erin Morey | Managing Director | ekm2110@columbia.edu |
| Mike Pritchard | Institutional Integration Director | mspritch@uci.edu |
| Andrew Revkin | Public Engagement Director | ar667@columbia.edu |
| Carl Vondrick | Data Science Director | vondrick@cs.columbia.edu |
| <i>Vacant</i> | Manager of Finance and Operations | |
| Laure Zanna | Geoscience Director | lz1955@nyu.edu |
| Tian Zheng | Chief Convergence Officer & Education Director | tian.zheng@columbia.edu |

Organizational Chart – Center Executive Committee and Staff





Management Structure

LEAP is administratively housed within Columbia School of Engineering and Applied Science (SEAS)'s Office of the Dean. LEAP's management structure encourages shared knowledge development and frequent interactions between geoscientists and data scientists, trainees, and all partners. LEAP consists of multiple committees, subcommittees, and boards, each having specific and complementary responsibilities.

| Executive Committee | |
|-------------------------------------|---|
| Chair | Center Director and Deputy Equity Officer (Pierre Gentine) |
| Membership (with voting privileges) | Center Deputy Director (Galen McKinley), Chief Convergence Officer and Education Director (Tian Zheng), Data and Computation Director (Ryan Abernathy), Chief Equity Officer & Knowledge Transfer Director (Courtney Cogburn), Institutional Integration Director (Michael Pritchard), Model Development Liaison (David Lawrence), Geoscience Director (Laure Zanna), Data Science Director (Carl Vondrick), Corporate Engagement Director (Vanessa Burbano), Public Engagement Director (Andrew Revkin), and Managing Director (Erin Morey). |
| Voting Process | A voting quorum is 7 and majority votes with a quorum will be decisive. |
| Administrative Staffing | Managing Director (Erin Morey) |
| Purpose and Responsibilities | <p>Purpose: principal forum for strategic and operational decision-making.</p> <p>Responsible for:</p> <ol style="list-style-type: none"> 1) Continually reviewing research, education, DEI and KT progress toward strategic goals 2) Developing and annually reviewing the LEAP Strategic Plan 3) Reviewing internal funding recommendations from CSC for DEI and institutional balance 4) Reviewing the annual budget (past year and projected), based on an overview by Center Director 5) Planning annual meeting and workshops 6) Stewarding existing and forging new institutional partnerships 7) Resolving internal conflicts 8) Supporting the hiring of staff |
| Meeting Frequency | Bi-weekly |
| Meeting Duration | One hour |



| Convergence Subcommittee | |
|-------------------------------------|--|
| Co-chairs | Center Deputy Director (Galen McKinley) and Chief Convergence Officer and Education Director (Tian Zheng) |
| Membership (with voting privileges) | Data and Computation Director*, Institutional Integration Director (Michael Pritchard), Model Development Liaison (David Lawrence), Geoscience Director (Laure Zanna), Data Science Director (Carl Vondrick). The Center Director and Deputy Equity Officer (Pierre Gentine) is an ex-officio member with voting privileges. |
| Voting Process | A voting quorum will be 5 and majority votes with a quorum will be decisive. Members must be present to vote. |
| Administrative Staffing | Assistant Director of Education Programs (Jihae Moon) |
| Purpose and Responsibilities | <p>Purpose: principal forum for implementing research and education activities of LEAP.</p> <p>Responsible for:</p> <ol style="list-style-type: none"> 1) Establishing metrics for research and education progress 2) Overseeing internal proposals for research, including: determining annual research priorities, formulating internal RFP, establishing LFRP to review proposals, reviewing and voting on LFRP funding recommendations, presenting LFRP funding recommendations to EC for final approval, and determining whether existing projects should be expired and its resources distributed elsewhere* 3) Reviewing research progress against metrics 4) Reviewing education progress against metrics 5) Supporting integration of LEAP research outputs into CESM 6) Ensuring integration of research and education 7) Selecting LEAP Fellows 8) Planning monthly Convergence Luncheons 9) Reviewing LEAP-Pangeo progress and data infrastructure against the needs of research, education, and corporate partnerships 10) Reporting biweekly to the EC <p><i>*Projects will expire depending upon NSF feedback, waning faculty or trainee interest, emergence of new projects that more directly align with LEAP's Knowledge-Data Continuum, and/or improper productivity.</i></p> |
| Meeting Frequency | Bi-weekly |



| | |
|------------------|----------|
| Meeting Duration | One hour |
|------------------|----------|

*Ryan Abernathey is no longer a participating member of the CSC as of October 2022.

| Knowledge Transfer Subcommittee | |
|--|---|
| Chair | Chief Equity Officer and Knowledge Transfer Director (Courtney Cogburn) |
| Membership (with voting privileges) | Center Director and Deputy Equity Officer (Pierre Gentine), Corporate Engagement Director (Vanessa Burbano), Public Engagement Director (Andrew Revkin) |
| Membership (without voting privileges) | Educator Evaluator (Charles Lang) and Oren Pizmony-Levy |
| Voting Process | A voting quorum will be 3 (depends on size with corporate/public) and majority votes with a quorum will be decisive. Members must be present to vote. |
| Administrative Staffing | Manager of Communications and Knowledge Transfer (Catherine Cha) |
| Purpose and Responsibilities | <p>Purpose: principal forum for implementing diversity, equity, and inclusion and knowledge transfer activities of LEAP.</p> <p>Responsible for:</p> <ol style="list-style-type: none"> 1) Establishing metrics for diversity, equity, and inclusion 2) Establishing metrics for knowledge transfer 3) Reviewing progress against DEI and KT metrics 4) Planning DEI Workshops, Hackathon, and Translate-a-thon 5) Managing corporate and public engagement 6) Anonymizing applications for staff positions and LEAP Fellows 7) Governing the Storytellers in Residence program 8) Reporting biweekly to the EC |
| Meeting Frequency | Bi-weekly |
| Meeting Duration | One hour |

| External Advisory Committee | |
|-----------------------------|--|
| Membership | <p>Non-affiliate executives (<i>membership updated October 2022</i>):</p> <ol style="list-style-type: none"> 1. Prof. Melissa Burt - Colorado State University 2. Prof. Amy McGovern - Oklahoma University |



| | |
|------------------------------|--|
| | <ol style="list-style-type: none"> 3. Prof. Sonia Seneviratne - ETH Zurich 4. Prof. Rafael Bras - Georgia Tech 5. Prof. Bin Yu - UC Berkeley 6. Prof. Montserrat Fuentes - St Edward's University 7. Prof. Rebecca Nugent - Carnegie Mellon University |
| Staffed By | Managing Director (Erin Morey) |
| Purpose and Responsibilities | <p>Purpose: advise and provide constructive feedback on the Center and its trajectory, and provide the Executive Committee with management advice.</p> <p>Responsible for:</p> <ol style="list-style-type: none"> 1) Advising on strategic partnership formation 2) Advising on the external competitive environment 3) Advising on complementary NSF grants to bolster its broader impacts (e.g., NRT) |
| Meeting Frequency | Annually |
| Meeting Duration | Two to three hours |

| Director's Council | |
|-------------------------|--|
| Membership | <p>Executives across LEAP's core institutions, primarily Deans and Institute Directors (<i>membership updated April 2022</i>):</p> <ol style="list-style-type: none"> 1. Dean Shih-Fu Chang, Columbia Engineering 2. Vice Dean Garud Iyengar, Columbia Engineering 3. Dean Maureen Raymo, Columbia Climate School 4. Dean Alexander Halliday, Columbia Climate School 5. Dean Costis Maglaras, Columbia Business School 6. Dean Melissa Begg, Columbia School of Social Work 7. Dean Amy Hungerford, Executive Vice President for Arts and Sciences and Dean of the Faculty of Arts and Sciences, Columbia 8. Dean James Bullock, School of Physical Sciences, UC Irvine 9. Dean Russel Caflisch, Director, Courant Institute of Mathematical Sciences, NYU 10. <i>Vacant</i>, NCAR <p>Center Director (Pierre Gentine) and Center Deputy Director (Galen McKinley) are ex-officio members</p> |
| Administrative Staffing | Managing Director (Erin Morey) |
| Responsibilities | <p>Responsible for:</p> <ol style="list-style-type: none"> 1) Reviewing preliminary draft of Annual Progress Reports and |



| | |
|-------------------|--|
| | providing feedback for improvement 2) Providing administrative guidance 3) Supporting continuous and streamlined inter-institutional integration |
| Meeting Frequency | Annual |
| Meeting Duration | One hour |

Primary Communication Tools

| Program | Purpose, Uses |
|--|--|
| Google (Docs, Sheets, Slides, Forms, Calendar) | Primary program for emailing, document organization and sharing, and collaboration, including presentations and meeting minutes. Primary program for scheduling meetings, events, and other activities. |
| Zoom | Primary program for Center, subcommittees' and groups' communications, particularly virtual meetings, seminars, panels, and other events. |
| Slack | Secondary program for Center communications and knowledge sharing. Multiple "channels" allow for collaborative and targeted communication on research, education, knowledge transfer, and diversity, equity, and inclusion topics. |
| Asana | Primary tool for Center project and program management. |
| GatherTown | Interactive program for virtual meetings to enhance and foster collaboration opportunities in a virtual environment. |
| GitHub | Platform for sharing code within LEAP and with the broader community. Enables LEAP to collaborate on research software, data analysis, and ML model development. |

Minutes, Notes, and Record Keeping

Center policy is to compile minutes and notes for each meeting, to promote proper record keeping, particularly for Annual Progress Reporting purposes and for properly addressing follow up and action items. This Center policy is also helpful for fostering collaboration and ensuring the appropriate delineation of roles, consistent with this By Laws. Notes will be shared internally within each committee and subcommittee.



4. Funding and Finance

Request for Research Project Proposals and Research Seed Funding

The Center is committed to building a diverse research community at the intersection of geosciences and data sciences. The rationales for holding an annual Request for Proposals (RFP) process are to:

- Ensure continual progress and synergy toward LEAP's overarching goals;
- Allow for adjustment of priorities in response to new findings;
- Ensure integration of climate science and data science communities so as to forge a new discipline of Climate Data Science;
- Involve all members of the LEAP community with the broader impacts' goals of the Center; and
- Facilitate reporting and progress tracking, which is critical for ongoing communication with our sponsor, NSF.

Distribution of project funding is a critical managerial task. The Convergence Subcommittee will release a RFP for research seed funding to support transformative ideas from LEAP researchers across the teams at Columbia, NYU, UC Irvine, Minnesota, and NCAR. In addition to projects that have demonstrated proofs of concept to improve Earth system modeling or model evaluation, this RFP program aims to support ambitious yet credible projects that are hard to secure funding through traditional funding mechanisms or that can be greatly accelerated by a seed grant. Members of the Executive Committee will also participate in the RFP process for research support of students or postdocs, though their salary will come from a different pool for their involvement in the Center's operation and management. The number of new projects awarded and old projects renewed will vary by Year.

This process will be LEAP's recurrent vehicle for distribution of annual research funds. Proposals will be reviewed by the LEAP Funding Review Panel (LFRP). In Year 1, the LEAP Executive Committee will take the role of the LFRP; in future years, the LFRP will be drawn from LEAP Tier 3 members.

The Convergence Subcommittee will be responsible for funding distribution, and will select a portfolio of projects balancing maturity level, model parameterization versus data product or metric development, data-knowledge spectrum, and areas of science (e.g., land, ocean, atmosphere, cryosphere, or the coupled model). LEAP will distribute funding in one-year increments for projects with postdocs, with an option for progress-based renewal, and three-year increments for projects with PhD students.

In order to receive funding from the Center, the PI must attend and present at the LEAP Annual Meeting the outcomes from the research project, and submit a one-page progress report every 6 months, which will be used to evaluate progress for potential renewal, as well as updates when requested. Postdocs supported on these funds will chair the LEAP research Focus Groups that will meet bi-weekly to monthly; all supported PIs and students will be expected to actively participate in at least one Focus Group.

5. Data and Research

Data Sharing and LEAP Memberships

The LEAP team has established an extensive plan to disseminate the Center's findings, data, and codes to its partner institutions and to the general public. By establishing an open



science/open-source approach, the LEAP team is providing greater dissemination (e.g., reducing many barriers to access) and encouraging its community to build upon its work, enhancing societal impact, and enabling further community growth and progress. LEAP will publicly disclose and publish all project innovations as soon as possible (e.g., journals, LEAP-Pangeo), with all underlying code made available for free (e.g., through GitHub, <https://github.com/orgs/leap-stc>, linked on the database on the LEAP Climate Information Portal).

LEAP's proposed approach is consistent with NCAR's long-standing model of CESM open-source [development](#) and with [Pangeo's](#) open-source model (Pangeo is a community platform for open big geoscience data). LEAP EC will determine the most appropriate version of open-source licensing for each innovation (e.g., creative commons license). If LEAP later requires a more nuanced approach to intellectual property management, particularly for corporate engagement, LEAP's partner academic institutions will collaboratively adapt the IP plan. LEAP universities' technology transfer offices possess substantial experience handling diverse IP portfolios, and will assist the team.

LEAP Membership Structure

Research Membership

- **Tier 1:** open to anyone who wants to attend research seminars, who signs up to receive LEAP's announcements (mailing list), and who wants access to public computing resources or datasets hosted on LEAP-Pangeo.
- **Tier 2:** based on an application [\[LINK\]](#) sent to LEAP's Convergence Subcommittee. Actively involved in LEAP-related research (but not funded by LEAP), swipe access at Innovation Hub (for Columbia affiliates), and access to computing resources and storage on LEAP-Pangeo. Can apply to attend LEAP's Annual Meeting and to be part of focus groups.
- **Tier 3:** supported by LEAP funding as a Request for Proposal (RFP) PI, Co-PI, researcher, student, or postdoc; required to attend LEAP's Annual Meeting.

In all cases, the EC can make exceptions to these definitions for specific individuals.

Education Membership

- Access to LEAP-Pangeo cloud computing for education purposes (e.g., for class or hackathon), on a temporary basis.
- **Eligibility**
 - Course instructors who meet one of the following criteria are eligible to request LEAP-Pangeo education access for their class (including self, co-instructor(s), TAs, students, evaluators, etc.):
 - LEAP Tier 3 members
 - Full-time faculty or scientist at LEAP Institution (Columbia, NYU, UMN, UCI)
 - Full-time faculty or scientist who participated in a LEAP Train the Trainer workshop
- **Proposal**
 - Course instructors may propose to use LEAP-Pangeo for their upcoming course by submitting a short proposal to LEAP's Convergence Subcommittee via the



Assistant Director of Education Programs. Instructors are strongly encouraged to submit their proposals as early as possible and at least 30 days before the commencement of the class. The proposal should provide the following information:

- Basic information about the course (institution, department/program, student population, class size, course dates)
- Basic information about the Instructor (name, affiliation, research interests)
- Confirmation of available administrative support for using LEAP-Pangeo for the class (setting up user account, monitoring use, etc.)
- Intended use of LEAP-Pangeo (time window including development, number of users, types of notes requested, approximate total number of CPU hours per week, approximate storage need (GB x day), special needs such as GPU/TPU need or access to particular LEAP-Pangeo data sets).
- Class computing policy section of the syllabus.

KT Membership

LEAP's Knowledge Transfer membership structure will be included in subsequent versions of this Operations Manual.

Research Focus Groups

LEAP's research projects have overlapping interests and needs. To further foster integration, all LEAP researchers will participate in research focus groups. The Geoscience Director and Data Science Director will determine appropriate groupings each year, which will evolve based on participation and relevance to existing science.

Focus Groups will meet monthly in person and on Zoom, and use Slack for more frequent interactions. Focus Groups will foster center culture in terms of convergent and open-source science by encouraging frequent sharing of ideas, data, and code. Focus Groups will solidify linkages between research projects across partner institutions. In order to receive research funding, LEAP participants must commit to participating in these Focus Groups. Each year, the Geoscience Director and Data Science Director will review LEAP's research portfolio, and determine the Focus Groups that strategically link projects; partner institutions will be fully engaged. For example, a Focus Group might synergistically include a project on atmospheric parameterization at UCI, a project on cryospheric parameterization at Columbia, and a targeted data science method development at Minnesota. Monthly Focus Group meetings will drive integration across institutions.

Authorship Guidelines

Authorship Guidelines are available and should be consulted and followed regarding authorship on research developed under LEAP STC [\[LINK\]](#).



6. Human Resources

Hiring and Recruitment

Implicit and explicit biases emerge at the many stages of the job application evaluation: By overestimating academic qualifications of candidates from elite institutions, failing to critically determine characteristics and skills needed for the position, and believing that hiring criteria must be remediated to achieve diversity goals.

In addition to the traditional open and unstructured reviews, LEAP's candidate evaluation criteria will also consider an innovative multi-phase hiring process, including: 1) blinding applicant names and institutional affiliations for LEAP staff positions, engineers, or REU positions, and Design Studio internships; 2) work sample tasks (where applicable); and 3) use of standardized interviews. A randomized field experiment will randomly assign applications to one of three conditions: Control (open and unstructured review); Treatment 1 (single phase: blinded CV/ résumé); or Treatment 2 (multi-phase: blinded CV/ résumé, work sample tasks determined by primary hiring unit, and standardized interviews). Findings will be published in business and psychology journals and academic magazines. The proposed field experimentation and associated research will be led by LEAP's Chief Equity Officer. The Executive Committee will select the subsets of LEAP various candidate evaluation efforts for experimentation and supervise its implementations and data collection. LEAP administrative staff will provide support for all LEAP's candidate evaluations, selected for experimentation or not.

LEAP's Knowledge Transfer Subcommittee will utilize this Center's partnerships to recruit a talent pool of diverse backgrounds, life histories, and experience levels.

Conflict Resolution

The Center Director and Deputy Center Director are responsible for conflict resolution. The Executive Committee is responsible for resolving internal conflicts.

Succession Planning

The LEAP team will continue to clearly delineate and update roles, responsibilities, and records of work performed to ensure seamless transition when key participant and staff positions are vacated and new individuals are hired to fill those roles. When a key role is vacated, that person will be responsible for formally delineating their day-to-day tasks and responsibilities to ensure a seamless transition.

Changing of Directors

Center Director Succession: If the Center Director steps down, the Deputy Center Director will become Director. If neither can serve, the Executive Committee will elect a six-month interim director, and in the meantime, will conduct a search. At the end of the six months, the Executive Committee will vote to determine the permanent Center Director.

Other Directors or Chief Officers: If a Director or Chief Officer other than the Center Director leaves their role, the EC will be responsible for identifying a replacement, and providing the results of their vote to the Center Director. The Center Director will make the final decision on the appointment.

Committees and Subcommittees



In the event a Committee or Subcommittee member with voting privileges ceases their membership, it is the responsibility of that Committee or Subcommittee to determine whether the stated responsibilities and decision-making authority of that body can still be achieved, and, if not, to discuss and determine a suitable replacement via consensus.

Staff Development and Performance

The Center Director will review annually the performance of the Managing Director.

The Managing Director will discuss and coordinate individually with each of the three staff members to develop and review responsibilities and career goals on an annual basis. This process will help facilitate annual performance discussions, foster a sense of collaboration, increase career growth and development, and codify each staff member's contributions to the Center.

Professional Development

The staff and scientists will have opportunities for professional development. Besides internal events (seminars, events), the School of Engineering and Applied Science Dean's Office will provide professional development opportunities for the staff hired through the Dean's Office.

Leadership Training

Executive Coaching

The Director and Deputy Director will be supported by Executive Coaching. The Director is involved in leadership mentoring programs with the Provost office. Dr. Paul Ingram, Kravis Professor of Management at Columbia's Graduate School of Business, is a paid consultant and serves as the Executive Coach for the Center Director and Deputy Center Director, supported by institutional cost share. This coaching program includes: 1) formal monthly, hour-long sessions; 2) ad hoc coaching conversations; and 3) general organizational development. Ingram supports establishing, refining, and evaluating key Center priorities, and translating high-level goals into measurable actions. Ingram will regularly solicit anonymous feedback from LEAP's team on the Directors' effectiveness and progress.

7. Appendix

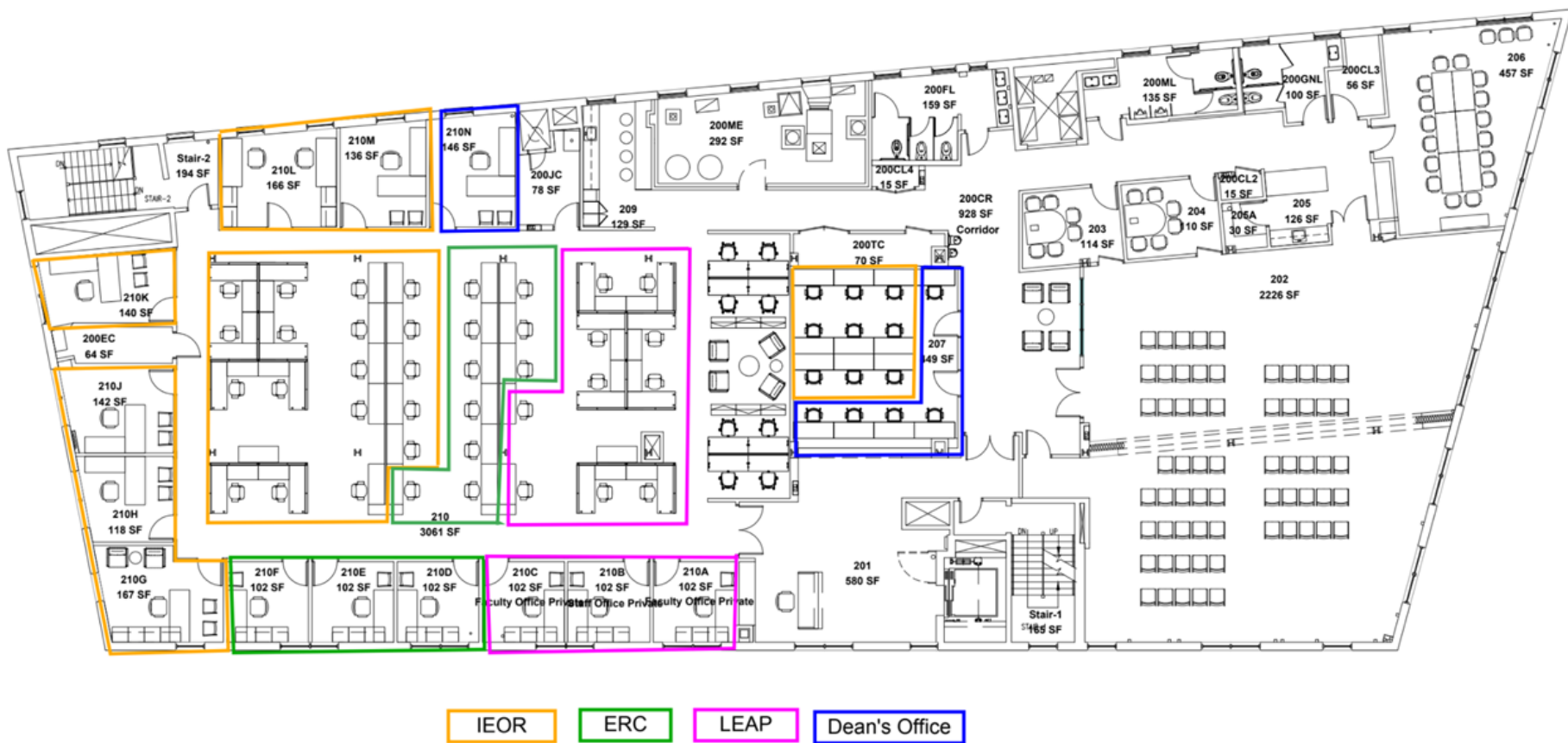
Space Policy at Innovation Hub

LEAP's Space Policy at the Innovation Hub is available online [\[LINK\]](#).





LEAP Headquarters Floor Plan





Staff Positions: Job Description Postings

Managing Director

The Managing Director will build, manage, and innovate the administrative infrastructure of a world-class, federally-funded climate data science research center with extensive outreach, educational, and diversity programming. The Managing Director will assume chief responsibility for the design and implementation of financial and operational policies and procedures, including finance, pre- and post-award grant management, information technology, facilities, human resources, communications, events, academic governance, non-academic partnerships, and workforce development.

Personnel & Project Management: Hire, supervise, and develop six full-time staff supporting the Center's integrated research and broader impacts initiatives. Set performance objectives, motivate personnel to achieve desired results, and ensure staff support of faculty efforts across research, workforce development and education, broadening participation, and knowledge transfer. Lead and manage daily operations, including supervise and facilitate cross-institution collaboration and internal and sub-award milestones achievements staff development, technology, and space, and ensure that operations are defined by and aligned with the Center's academic priorities and University policy.

Finance & Operations: Work with the Engineering School and other University-wide offices to build, manage, and report upon a \$5M annual operating budget, including monitoring sub-award agreements and milestones achievements of four partner universities. Report on financial affairs to the federal agency sponsor, and communicate sponsor requests and other updates to University partners. Administer the Center's seed funding program and the disbursement of funds to awardees. Facilitate the recruitment and supervision of postdoctoral, graduate, and undergraduate researchers, and work study students.

Leadership Support: Staff the Center's monthly Executive Committee meetings, and delegate staffing duties for all other advisory and subcommittee meetings. Ensure that Center faculty and leadership have the administrative support necessary to achieve excellence in intellectual activities, societal impact, and overall operations. Represent the Center Director and Deputy Director's goals and vision and serve as a liaison to faculty, schools, and administrative units of Columbia University, including senior University leadership. Facilitate integration, engagement and check deliveries from all members of the Center's 50+-person/multi-institutional team of faculty, trainees, non-academic institutional partners, and administrators.

Communications, Events & Special Projects: Spearhead special projects as directed by the Center Director and Deputy Director, including but not limited to external communications, partnership development, event planning, new program design, and/or personnel recruitment. Manage Institute internal and external communications initiatives to align with the Center Director and Deputy Director's strategic priorities. Oversee Center-wide communications, regular events and annual meetings, NSF Site Visits, and outreach. Facilitate joint initiatives and expand impact through strong and productive relationships with key business, academic, and government leaders both locally and globally. Represent the Center at meetings, conferences, symposia, and other events. Oversee education programming, in partnership with the Universities' schools, and identify areas to expand, grow offerings, and enhance interaction among programs and students. Develop new initiatives to foster collaborative inter- and transdisciplinary programming (e.g. seed funding, networking, seminars), including broadening the Center's activity across underrepresented disciplines.



Minimum Qualifications:

- Graduate degree required, preferably in environmental engineering or sciences, data science and/or public administration.
- At least 8-10 years of management and organizational leadership and change management experience, including a strong commitment to supervising and developing staff combined with the ability to plan and manage multiple diverse projects, work collaboratively across functions, levels, and departments toward shared objectives, and integrate resources on a timely and organized basis. Experience within a complex and matrix enterprise is a must.
- Demonstrated operational and financial management experience, including formulating and executing a strategic plan in support of growing and scaling an organization in terms of staff, budget, activity, and impact.
- Experience or familiarity with the federal grantmaking landscape and government funding policies and guidelines.
- Demonstrated ability to think strategically, to anticipate future consequences and trends, and to incorporate them into organizational planning processes.
- Ability to effectively collaborate with diverse personnel and partners, notably those from academia, industry, non-profits, and the city and federal government, with the ability to convey a vision of the Center's strategic future.
- Exceptional interpersonal, organizational, and oral and written communication skills.
- Ability to consider multiple points of view and to make sometimes difficult decisions.
- A working knowledge of the higher education environment and academia is essential.
- Track record of handling sensitive information with the highest level of professionalism and confidentiality.

Assistant Director of Education Programs

Reporting to the Managing Director of the Center for Learning the Earth with Artificial Intelligence & Physics (LEAP) with a dotted line to LEAP's Chief Convergence Officer and Education Director, the Assistant Director of Inclusive Education provides organized and effective administrative support to all LEAP's educational activities. Working closely with LEAP's Chief Convergence Officer and Education Director (CCO/ED), LEAP leadership, administrative team, faculty, and other members of the LEAP community, the Assistant Director of Inclusive Education will be the administrative lead of all LEAP education activities ensuring programs run smoothly according to the timeline determined by LEAP's executive committee, meet key milestones and successfully produce impactful deliverables and outcomes. The Assistant Director of Inclusive Education will also work closely with other members of LEAP's administrative team to integrate Education seamlessly with research and knowledge transfer activities while supporting the Broadening Participation and Diversity, Equity, and Inclusion (DEI) missions of the Center.

Management:

- Maintain a project timetable and a meeting schedule for LEAP's education activities to ensure project progress and success;
- Regularly check in with LEAP education leadership team members to collect project updates and to offer administrative support;
- Oversee and keep updated the list of current collaborations, active conversations, new initiatives, and upcoming deadlines/milestones to keep LEAP's education efforts focused on our priorities;
- Serve as liaison with other synergistic educational activities across the university (School of Engineering and Applied Sciences, Climate School, Arts and Science, Business School, School of Social Work, etc), LEAP institutions and beyond; and,
- Implement and track diversity, equity, and inclusion across the education program.
- Provide administrative support to the Convergence Subcommittee



Academic Affairs:

- Provide administrative direction for curriculum development and course offering at all LEAP institutions, including engagement with course instructors for hosting LEAP Course-based Undergraduate Research Experiences (CUREs),
- Oversee the recruitment of design studio interns and qualified course assistants;
- Recruit and support student researchers for the research experience programs; and
- Oversee the submission and processing of course syllabi and certificate proposals for departmental and school approvals.

Events:

- Organize informal educational events, such as “train the trainer” workshops, research experience programs’ poster sessions, hackathons, and other informal learning events.
- Coordinate with university IT & facilities personnel to set up and secure LEAP educational event A/V equipment/resources for both virtual, hybrid, and in-person events.
- Manage registration and event communications.

Relations:

- Support the ED by facilitating and coordinating collaborations with education partners inside and outside Columbia. Such relations include, but are not limited to, technical supports for LEAP’s education activities, bridge programs, diversity pipeline contacts, research experience programs for students, professional development, and internship programs;
- Initiate conversations with potential partners (employers, research labs, non-profit organizations, educational institutions, etc.) on future collaborations.

Evaluation:

- Provide administrative support to LEAP’s evaluator for the evaluation of LEAP’s educational activities, including documentation, disseminating surveys, organizing focused groups, etc; and
- Provide tracking of diversity, equity, and inclusion progress in the education part of LEAP.

Minimum Qualifications:

- Bachelor’s degree and/or its equivalent required, with a preference for training in education, or relevant fields
- 4+ years of related experience in educational programming
- Minimum two years of prior experience in diversity, equity, and inclusion
- Excellent interpersonal and written communication skills.
- Detail oriented and proven track record of taking initiative and is able to anticipate and prioritize tasks.
- Demonstrated ability to perform non-routine work, manage multiple projects simultaneously and work independently, as well as within teams.
- Proficient in Google productivity applications (Google docs, drive, presentation), MS Office, virtual events/webinars, and Internet utilization.
- Ability to travel to programs and visit possible venues.
- Ability to cultivate relationships among faculty, students, partners, and other participants.
- Some evening and weekend hours are necessary.

Manager of Communications and Knowledge Transfer



Reporting to the Managing Director, the Manager of Communications & Knowledge Transfer will oversee the communications and knowledge transfer activities of the Center. These activities include managing the LEAP website, social media, and partnering events, such as organizing the annual symposium, workshops and related seminars. The LEAP Center will have a diverse network of external partners from non-profits and governmental organizations to small startups and large corporations. It will be the responsibility of the Manager to work closely with the LEAP leadership and research teams to generate effective communication strategies and approaches to maximize the impact of the Center's knowledge transfer activities. This will include an annual survey of corporate and public partners to assess our clients needs and measure the impact of our activities. The Manager will serve as the liaison between the LEAP leadership and our partners, an important role in expanding the Center's reach and building a dynamic learning community.

Communications:

- Develop and execute a strategic communications plan for the Center in conjunction with its partners and affiliates in alignment with diversity, equity, and inclusion (DEI) priorities
- Write and edit other communications for public relations and direct marketing
- Design, develop, and update content for the Center's website including news releases and blog posts, event landing pages, photo and image galleries, multimedia presentations, data visualizations, interactive graphics, infographics, and presentation slide decks
- Be responsive to audience engagement through web and social media platforms (e.g., Twitter, LinkedIn, Reddit, Facebook) and activities.

Partner Relationship:

- Manage existing and expand corporate and community partnerships in alignment with DEI priorities
- Plan and coordinate meetings between the LEAP team and external public and private partners.
- Track and manage engagement with external partners of LEAP, including developing and maintaining a client relations management system
- Create and maintain the LEAP tiered affiliates program to be implemented in Years 2+.

Event Management:

- Organize and oversee the annual symposia/workshops/seminars and other knowledge transfer events for external partners
- Develop, launch and maintain marketing activities of events, including establishing registration pages, developing marketing materials, and post-event communications with external partners.
- Coordinate with university IT & facilities personnel to set-up and secure event A/V equipment/resources for both virtual, hybrid, and in-person events.
- Be responsible for run-of-show preparations and management.
- Diversity, Equity and Inclusion (DEI). Receives and helps support training on DEI in the Center and Center activities.

Survey & Reporting:

- Work closely with the Chief Equity Officer and the LEAP Knowledge Transfer Team to assess communications and partnership strategies, develop and conduct an annual survey of corporate and public partners to assess climate data & modeling needs and the effectiveness of our communication & knowledge transfer strategies and approaches.
- Write an annual report of such findings



- Liaise with the research and data teams of LEAP to ensure that the climate information portal and our knowledge transfer approach is reflecting the needs of the wide range of partners

Organizational Performance Tracking:

- Track performance metrics regarding knowledge transfer to/from corporations and public partners
- Track knowledge transfer activities and platforms (website, climate data infrastructure)
- Track Diversity, Equity and Inclusion (DEI) efforts within the Center (hiring, code of conduct)
- Support team in producing annual reports for NSF & external partners

Minimum Qualifications:

- Bachelor's degree and/or its equivalent required.
- 4+ years related experience; minimum two years of prior experience in communications, project management, event planning, and/or client relations, minimum two years of prior experience in diversity, equity, and inclusion
- Demonstrated commitment to valuing diversity, equity and inclusion and evidence of contributing to an inclusive working and learning environment
- Proven excellence in written communication skills, including writing, proofreading, and editing.
- Detail oriented and proven track record of taking initiative and is able to anticipate and prioritize tasks
- Proficiency in Mac OS and Windows operating systems and relevant software applications, including Microsoft Office, Adobe Creative Suite, Photoshop.
- Experience with GitHub, web programming or python is a plus.
- Be an active user of social media, with a focus on audience engagement and advancing an institute/organization's brand and voice.

Manager of Finance and Operations

Reporting to the Managing Director of the Center for Learning the Earth with Artificial Intelligence & Physics (LEAP), the Manager of Finance and Operations is responsible for managing the day-to-day financial transactions and the Center's accounting operations in The Fu Foundation School of Engineering and Applied Science (SEAS). The Manager administers the \$5M annual Center budget, implements and enforces internal controls, provides reporting and analyses on financial activities, budget projections, and burnout rate, and collaborates closely with internal financial offices of SEAS and Columbia University. The Manager will also identify and track additional grant funding opportunities, help lead grant proposal development and submission in coordination with LEAP PIs, and submit and monitor the status of submitted grant applications. The Manager will also work closely with the Managing Director to administer the annual Request for Proposals (RFP) and oversee related budget transfers and salary distribution requests. As a member of a collaborative staff for the Center, this person contributes to event planning and implementation. They are also the primary contact with SEAS and Columbia Facilities on facilities issues.

Budget Administration, Financial Controls, and Reporting:

- Budget Administration and Reconciliation. Under the direction of the Managing Director, actively administers the Center's administrative operating budget. Performs monthly reconciliation of Center accounts, actively monitors Center expenditures to prevent overdrafts, and provides projections to the Center. Investigates and resolves variances and recommends budget modifications to adjust levels of spending. Works with Central



University offices on setting up activities, scopes on the grant, and any budget modifications.

- Internal Controls. Assists in developing, and is responsible for implementing and enforcing, the Center's financial transaction- and accounting-related standard operating procedures (SOPs). Monitors the Center's financial activity to ensure compliance with departmental, SEAS, and University policies and procedures. Coordinates with SEAS Finance, CU Internal Audit, SPA/SPF, and other internal stakeholders, including sub-awardees, to comply with any audit requirements.
- Closing and Reporting. Provides data analysis and reporting and works in close collaboration with the SEAS Finance team to complete all year-end transactions for the Center. Prepares monthly budget projections and burn rate, and provides budget reports for the Center's annual report, as well as post-award reporting to the NSF.
- Internal Collaboration. Serves as a liaison with A/P, Procurement, the Dean's Office, Sponsored Projects Finance, and other internal CU stakeholders on financial and operational matters.
- External Collaboration. Serves as a liaison with external partners and their financial professionals on financial and operational matters, which are funded through subawards. Monitors and processes subaward to the Center partners.
- Annual Requests for Proposals (RFP). Assist the Managing Director in administering and renewing the annual RFP, which will serve as the internal funding mechanism for the Center's research activities.

Daily Financial Operations, Payroll Accounting, and HR Support:

- Initiation of Financial Transactions. Initiates all Center finance transactions including but not limited to Travel and Business Expense Reimbursements (TBERs), purchase orders (PO), and processing invoices. Reviews and reconciles all Pcard and Ccard transactions associated with the Center, as applicable. Processes any receipt of funds associated with Center activities and ensures funds are recorded on the appropriate projects. Creates projects and chartfields as needed.
- Initiation of Payroll Transactions. Initiates or reviews cost transfers and prepares salary distribution requests (SDRs) to ensure proper allocation of expenditures within the Center, and departmental and Dean's Office accounts. Manages the Center's casual and work-study payroll. Journal Entries. Initiates / reviews journal entries and internal costs, and oversees the allocation of expenses and recoveries
- Support the hiring and appointment functions of the Center. This includes understanding the various appointment and hiring processes, advising Center faculty on these processes, and working with them to procure relevant paperwork for hires. Initiates various hiring and appointment transactions in PAC.

Awards Proposal and Grants Management:

- Researches, identifies, and tracks additional grant funding and business development opportunities to further sustain and broaden LEAP's reach.
- Drafts grant proposals/LOIs, grant application narratives, and supporting budgets in coordination with LEAP PIs and the Managing Director. Helps lead grant proposal submission, including but not limited to preparing and organizing materials, in coordination with LEAP PIs and the Managing Director.
- Submits grant applications and monitors the status of submissions. Maintains a master calendar of grants and prospects, all associated files and correspondence, and a library of grant support documents (e.g., resumes, CVs, bios, forms, etc.).

Event and Facilities Support:

- Event planning support. Assist with knowledge transfer, Diversity, Equity and Inclusion (DEI) and educational events organization and event support. Manages Capital



Improvements. As needed, coordinates with the SEAS Facilities staff and CU Facilities to plan, implement, and monitor Center renovations and other facilities projects.

- Service Tickets. Initiates service tickets and works with SEAS Facilities and CU Facilities to follow-up on facilities-related needs within the Center. Travels. Manages travel reimbursement and funds advance.

Interfacing and Development:

- Hands-on Leadership. Demonstrates day-to-day leadership and guidance to staff by proactively managing and providing clear, timely and University-compliant solutions on a wide range of financial and other administrative matters. Diversity, Equity and Inclusion (DEI). Receives training on DEI in the workplace.
- Interfacing. Interfaces with other parts of the center (research, education, DEI) requiring budget allocation. Development and Documentation of SOPs. Works with staff to document workplace procedures and processes and to optimize efficiency through standardization.
- Innovation, Transparency and Continuous Improvement. Identifies and recommends process improvements and promotes a culture of innovation, advancement, and continuous improvement. Provides appropriate summaries of budget spending on a public platform (e.g., Github) for budget transparency with the Center and with the funding agencies and partners.

Minimum Qualifications:

- Bachelor's Degree is required, with a preference for training in Finance, Accounting, or other relevant fields. Master's Degree preferred.
- 4-6 years of hands-on experience in financial administration and supervisory/management experience required.
- 2+ years of experience in fundraising, grant writing or grants management required.
- Detail-oriented and possess quantitative skills with a high degree of proficiency in spreadsheets using Excel and Google Sheets.
- Experience in higher education or other large, complex institutions is preferred. Familiarity with Columbia financial systems, particularly the Accounting at Columbia (ARC) system, is desired.
- Experience with running a financial report for project reconciliation and budgeting; experience in the University Budget Tools, handling labor accounting in People @ Columbia (PAC), working in the Financial Front End (FFE) and RASCAL systems desired.

Integration Engineer

The Integration Software Engineer (open rank) will work with a team of scientists from the LEAP center and NCAR and with NCAR software engineers to support the development of machine learning algorithms and their implementation and testing in the Community Earth System Model (CESM).

Though this position will be hired through the LEAP project by Columbia University, it is expected that the applicant will work within the CESM Software Engineering Group (CSEG) in the Climate and Global Dynamics Laboratory (CGD), which is part of the National Center for Atmospheric Research (NCAR), located in Boulder, Colorado.

Responsibilities



- Provide software engineering support to aid implementation of new machine-learning based science, maintenance of testing frameworks, and development of new machine learning infrastructure in the CESM.
- Contribute code changes and upgrades in support of CESM and LEAP community development activities and science goals.
- Develop, implement, test, analyze, and document the integration of machine learning methods in the CESM.
- Write code and assist in the design of system software for these systems.

Minimum Qualifications

- Bachelor's degree in computer science or physical science or its equivalent required.
- A minimum of 4-6 years of related experience required in software development or climate / Earth System Modeling experience.
- Some experience with machine learning.
- Excellent interpersonal and oral and written communication skills required.
- Must be skilled at developing strong relationships with both internal and external partners.

Preferred Qualifications

- Demonstrated experience in supercomputing programming environments including MPI, OpenMP, NetCDF.
- Demonstrated ability to debug complex software running on hundreds to thousands of processors.
- Demonstrated skill in the use of git and GitHub for source code management.
- Advanced knowledge of modern Fortran, Python, and shell.
- Advanced ability to work in a UNIX environment.
- Coursework or experience in undergraduate-level physics or environmental sciences.
- Facility with calculus, differential equations, linear algebra, machine learning, and statistics.
- Experience in plotting and visualizing scientific data, or experience with graphical analysis tools.
- Experience in numerical (weather/climate) model development and operation.
- Proven ability to plan as well as coordinate development work and meet deliverable deadlines.
- Ability to convey advanced technical concepts to others, including aptitude for public speaking to scientific, technical, customer/sponsor, and public audiences.
- Excellent oral and written communication skills.
- Demonstrated ability to work as part of a diverse, collaborative, multi-institution team.