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Last Update: September 24, 2021
I. Executive Summary

As PCC entered its 20th year at the University of Washington, the PCC community engaged in reflection and the process of writing a strategic plan for the next five years. This strategic plan reflects engagement from the broad community -- incorporating responses to online surveys from all stakeholders, and interviews with deans and chairs, conversations from a full day strategic planning meeting, and a follow up meeting of the PCC Executive Board (see Appendix II and III for more details). The new initiatives in this document are motivated by the expansion of natural climate science research across various units throughout campus over the last 20 years. PCC will continue to remain true to its original mission of igniting and supporting fundamental, interdisciplinary climate science research and education at the UW. In the past, there was great need to provide opportunities for developing fundamental climate research across Atmospheric Sciences, Earth and Space Sciences, and Oceanography. Now many faculty and students in other units in the College of the Environment such as the School of Aquatic and Fisheries Sciences and the School of Environmental and Forestry Sciences are also engaged in natural climate research, and the concept of focusing on the 3 “core” units is no longer relevant. Units outside of the College of the Environment such as Biology, Civil and Environmental Engineering, and Social Science work in the Evans School, Jackson School, and beyond, could be fully incorporated into the PCC with additional funding from outside of the College. This document describes the mechanisms to accomplish our mission. Some of these mechanisms have been in existence since the beginning of PCC, while some ideas originated during the strategic planning process. Additionally, some new initiatives were motivated and led by graduate students, in particular initiatives such as ACORN which aim to give students the opportunity to apply their deep knowledge of fundamental climate science to projects that make a difference in the local community.
II. The Origin and History of PCC

A. Origin

The UW Program on Climate Change (PCC) was founded by its first director, Professor James Murray (Oceanography), in the 2001-2002 academic year. PCC’s initial funding came from University Initiative Funds awarded from a competitive, university-wide, solicited proposal. The overarching goals of the newly formed PCC were to create and support an interdisciplinary research and teaching program at the UW that integrates all climate change activities on campus, and to build community among UW faculty and students interested in climate change. This initial funding from the provost was used to build community through annual events such as the Summer Institute, now held at Friday Harbor Labs in mid-September, and the Winter Welcome, an evening event designed to bring people together to welcome new climate faculty, postdocs and staff to the UW climate community. This initial funding was also used to hire new faculty doing interdisciplinary climate research in areas that were identified as lacking in expertise at the UW. The current director, Becky Alexander (ATM S), was one of these new hires. Existing faculty created a set of interdisciplinary graduate-level courses that were each co-taught by two faculty from three core PCC departments: Atmospheric Sciences (ATM S), Earth and Space Sciences (ESS), and Oceanography (OCEAN). New hires updated these courses. The PCC’s primary focus has always been on fundamental climate science on the global scale, distinct from other climate groups on campus such as the Climate Impacts Group (CIG) which is focused on impacts on the local scale. In 2006, PCC funding was switched from the university to what was then the College of Ocean and Fishery Sciences (COFS) and later in 2010 to the College of the Environment after its founding. Although PCC’s reach extends beyond the College of the Environment, the college has been its sole source of funding since the founding of the college.

B. History

i. Interdisciplinary Community

Over the last 20 years, PCC has evolved beyond its three “core” departments of ATM S, ESS, and OCEAN to include all units within the College of the Environment in addition to faculty and students in the Evans School of Public Policy, the Applied Physics Lab, Global Health, CICOES, NOAA PMEL, Jackson School, Civil and Environmental Engineering, and Biology. PCC recently became an affiliate of EarthLab and also joined forces with the UW Center for Health and the Global Environment (CHaNGE) to offer a seminar on the intersection of climate change and human health, which featured 20 UW faculty speakers. UW faculty remain an active and integral part of the PCC, and work collaboratively across units to teach PCC courses and seminars, run and organize our annual Summer Institute, and lead new initiatives such as our recently accepted proposal for a Walker Ames Lecture featuring UW Oceanography alumna Fiamma Straneo of the Scripps Institute of Oceanography. These activities are examples of PCC’s long history of success in bringing
together researchers from across campus. PCC’s core graduate-level courses are currently taught by faculty in ATM S, OCEAN, and ESS, although they are no longer co-taught. The 2020 Summer Institute was run by PCC board members from four different units (NOAA PMEL, ATM S, Global Health, and Civil and Environmental Engineering) and one PCC graduate-student alumna (formerly UW ATM S, now at Cornell University). The Walker-Ames Lecture nomination was led by PCC board members in ESS, OCEAN, and the Evans School including a graduate student representative (GSR). These types of interactions have spurred interdisciplinary research involving multiple PIs and graduate students among various units across campus.

“We have great breadth in climate science at UW, but one disadvantage is that we are so spread out across campus that it’s difficult to get to even know what research is going on outside of your immediate unit. This is a particular challenge for new students, postdocs, and faculty members. The PCC is the glue that holds the climate science community together on campus and, in my view, is a large part of what makes our impact greater than the sum of our parts.” —UW Faculty Member

**ii. Postdoctoral Fellowships**
From 2004 - 2010, PCC funded 6 postdoctoral fellows in ATM S, OCEAN, JISAO (now CIOCES) (see Appendix IV). These postdoctoral fellowships facilitated interdisciplinary research across ATM S, ESS, and OCEAN through cross-unit faculty advising. Through mentoring graduate students, PCC postdocs contributed to interdisciplinary graduate education. The PCC Postdoctoral Fellowship also brought international visibility to climate science research at the UW and was considered a prestigious award.

**iii. Graduate Education**
Graduate students are an integral part of PCC and have been the main focus of PCC’s educational efforts. PCC funds four 9-month graduate student fellowships, three as incentives to incoming first year students in what have traditionally been PCC’s core units (ATM S, ESS, OCEAN), and one as an incentive for a current student to broaden their research. These fellowships provide students and their faculty advisors the flexibility to explore interdisciplinary connections and to collaborate more broadly than when their funding comes solely from grants awarded to PIs. PCC’s interdisciplinary graduate level courses are an integral part of PCC’s Graduate Certificate in Climate Science (GCeCS), which also requires a capstone project focused on communicating climate science to a general audience. Since the founding of GCeCS in 2007, certificates have been awarded to 59 graduate students from 10 different units: Oceanography, SMEA, ESS, CEE, Biology, ATM S, DEOHS, Philosophy, Evans School and Education. Many capstone projects include partnerships with groups outside the UW, which has extended PCC’s influence. Recent capstone projects have included partnerships with local government agencies such as the WA Department of Natural Resources, the WA Department of Fish and Wildlife, King County Labor Council, King County Libraries, nonprofits such as Cascadia Climate Action, Vulcan, and the Gates Foundation, and formal and informal education programs such as K-12 classrooms and local museums. Activities led and initiated by PCC graduate students
have increased substantially over the last 20 years, and continue to expand today. In 2017 the graduate students organized a leadership body, the PCC Graduate Student Steering Committee (PGraSC). PGraSC has 24 members representing units from across the college and beyond and runs and organizes many activities including PCC’s strong local outreach program, the annual, international Graduate Climate Conference started by UW PCC graduate students and now co-run by students at MIT, the Spring Symposium featuring talks by PCC graduate students and postdocs, community events such as the Schooner Series, and the new Actionable Community-Oriented Research eNgagement (ACORN) program which provides opportunities for collaboration between community leaders and graduate students and postdocs across the PCC. Through the capstone projects and ACORN, PCC’s education activities, particularly those related to climate communication, are intimately connected to our outreach program and our connection to the local community.

iv. Undergraduate Education
PCC contributes to undergraduate education primarily through offering a minor in climate science. The Climate Science Minor, approved in 2010, serves undergraduates across the university by providing a structured pathway for learning about the climate system from multiple departments. Twenty students have completed the minor in the last 9 years; 6 of those were completed this year (2020-2021). These students represent 9 different majors, 6 of which are outside the College of the Environment (Biology, Physics, Biochemistry, Statistics, Engineering, Finance).

v. Community Outreach
In addition to being a hub for climate researchers across the UW campus, PCC is also an outward facing hub for communicating climate science to the broader community beyond UW. In addition to our website, newsletters and internal and external listservs, we also provide local resources for the general public including fielding outreach requests and providing a connection between outside interests and internal expertise (e.g., KUOW and other reporters).

A NASA Global Climate Change Education Award in 2009 enabled the PCC to build a strong connection with the K-12 educator community resulting in collaborative curriculum development (>11 GCeCS capstone projects), a new dual-enrollment climate change course for the high school (UWHS ATMS 211, now offered as UWHS ATMS 111), and annual teacher-scientist workshops around teaching new curriculum and new ideas. Much of the curriculum is now available as an open access UW pressbook “Climate for the Classroom”, and scientists continue to collaborate with the PCC to create opportunities for teachers to build their capacity to teach climate science.

The PCC outreach framework for connecting climate scientists to learners and the general public form the basis for development of substantial broader impact programs on NSF and other proposals. Since 2011, at least two proposals submitted each year by faculty and scientists from APL, CEE, Biology, Oceanography and the Evans School include projects
built on the established PCC curated teacher workshops, GCeCS capstone communication projects, or other outreach programming. These frameworks are particularly valuable for young scientists submitting NSF CAREER grants which ask for more substantial broader impacts.

III. PCC Vision and Mission

PCC serves as an interdisciplinary climate research, education, and outreach hub that reaches across the UW campus. PCC is rooted in the natural climate sciences, which includes the physical, chemical, and biological sciences. The original mandate of the PCC to foster collaborations between groups researching fundamental climate science on campus is needed as much today as it was 20 years ago. **PCC aims to bring together natural scientists working on climate science across campus to facilitate interaction, ignite interdisciplinary research, and strengthen interdisciplinary education.** PCC plays an important role in making the UW a global leader in climate science research and education, in UW's ability to attract and retain outstanding faculty and students, and in creating a vibrant and interactive climate community on campus.

With its roots in the natural sciences, PCC branches out to applied and social sciences research on campus. We do this by providing fundamental climate sciences expertise and training across campus, and facilitating dialogue, interaction, and partnerships between natural climate scientists and applied and social scientists. PCC’s educational focus is to provide opportunities for interdisciplinary research, learning and outreach. PCC also provides educational opportunities for students in professional masters degree programs in the applied and social sciences through our Graduate Certificate in Climate Sciences and related courses.

IV. Strategic Priorities

A. Strategic Priority #1: Catalyze interdisciplinary natural climate research

“As climate impacts research continues to grow, I think that PCC has a great role to play in a) collaborating with impacts researchers in new disciplines, b) backstopping incorporation of climate science in projects that non-climate scientists take on at UW, and c) coming together with scientists from other disciplines (particularly health) to explore ways to learn from one another and enhance one another’s science.” - UW Faculty Member

Climate science at the UW continues to grow and evolve as new faculty and research scientists are hired in various units across campus. PCC’s original mission was to bring together faculty, postdocs and graduate students doing climate research in the three core departments of ATM S, ESS and OCEAN. Natural climate science research has greatly expanded across campus over the last 20 years to include units such as SEFS, SAFS,
Biology, Civil and Environmental Engineering and the Applied Physics Laboratory. Thus, PCC has and will continue to accelerate its inclusion of all natural climate science on campus. While PCC has included all of these units in its board membership for a number of years and in its annual events such as the Summer Institute, Winter Welcome, and Graduate Climate Conference, some mechanisms for bringing units together have focused more exclusively on ATM S, ESS, and OCEAN. These mechanisms have been centered on PCC graduate fellowships aimed at recruiting students to these three units and co-teaching courses between faculty in these three units.

Going forward, PCC will adopt a framework of bringing together all natural climate scientists on campus, not limited to the historical three core departments. With its roots in the physical, chemical and biological sciences, PCC will branch out to facilitate interaction and connections between natural and applied and social sciences. We will continue our popular Summer Institute and Winter Welcome, which are highly successful in bringing the community together and integrating new climate scientists into our collaborative enterprise. The Summer Institute in particular is successful at bringing together natural scientists across campus and at connecting natural scientists with applied and social scientists working on climate. We will broaden our co-teaching opportunities to include the aforementioned units across campus as well as other, more applied research units to catalyze new interactions and collaborations between natural scientists and between natural and applied scientists. This will include both traditional lecture-based courses as well as offering seminars jointly with other units (e.g., CHanGE as a recent example, Appendix VIII). We will also expand PCC graduate fellowships to be open to all graduate students studying natural climate science in a thesis-based masters or doctoral program within the College of the Environment. These fellowships will aim to enhance the interdisciplinary education of graduate students studying climate science at the UW, and bring together faculty across units in collaborative research projects (see section B Strategic Priority #2 for a more detailed description of the fellowships).

<table>
<thead>
<tr>
<th>Strategic Priority #1</th>
<th>Mechanisms</th>
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</table>
| Catalyze interdisciplinary natural climate research | Summer Institute  
Winter Welcome  
Co-teaching graduate-level courses  
**PCC interdisciplinary fellows  
**Joint seminars |

** New initiative
B. Strategic Priority #2: Educate the next generation of climate scientists

“PCC was such a great experience and its courses and social events introduced me to many colleagues from other disciplines. The interactions therein helped me to broaden my perspective and scientific knowledge on all things related to the climate. It exposed me to entirely new lines of work, different jargon, and really helped to broaden my knowledge base. It was essential to my development!” --PCC Student Alumni

A traditional strength of PCC is that it is focused on the interdisciplinary education and training of students in a way that brings together students and faculty from across campus. No other unit plays or intends to play this role, making PCC a unique asset to UW climate education and research. PCC has historically prioritized interdisciplinary climate education, with a focus on the interdisciplinary natural climate sciences. Graduate education has been the main focus, with a smaller effort on undergraduate education through the Climate Science Minor.

PCC remains focused on graduate education, but the focus has evolved to not only facilitate interdisciplinary natural climate research but also to provide students with opportunities to engage in applied, community-driven, and action-oriented research during their graduate studies. PCC’s Graduate Certificate in Climate Sciences (GCeCS) provides interdisciplinary training in methods, research, and communication of climate science that enhances the scientific breadth and professional employability of GCeCS awardees. The certificate combines the interdisciplinary PCC courses with a capstone in Climate Science Communication. Capstone projects involve graduate students working with community groups outside the UW. Historically, this has often involved working with K-12 educators on developing curricula, much of this developed curricula has been published in an ebook “Climate Science for the Classroom” that is used by educators around the world. While GCeCS students remain interested in working with K-12 educators on their capstone projects, they have also been increasingly interested in expanding their educational experience to include working on more applied projects within the local community. PCC has responded by expanding its network with the local community to include e.g., King County’s Climate Action Team, The Nature Conservancy, and state agencies such as the WA State Department of Natural Resources, among others. PCC graduate students have recently formed the Actionable Community-Oriented Research and eNgagement (ACORN) program to provide students with opportunities for collaboration with community leaders. PCC will continue to work with students on community projects and explore opportunities for training on ethically and culturally aware practices when working with various communities.

PCC views mentoring as an effective way to form community and increase interactions between different groups on campus at the faculty and student levels. PCC will offer interdisciplinary fellowships that will support graduate students working with at least two PIs
in different units for up to 3 quarters. The two PIs (advisors) will apply for the fellowship to support the student to work on an interdisciplinary research project. We will have two deadlines per year, one for applications to support incoming graduate students and another for applications to support current graduate students. These fellowships will be limited to students in the College of the Environment, but PCC would like to be able to support students in participating units outside of the college with additional funding from other units and colleges across campus (see section D, Strategic Priority #4).

The Climate Science Minor currently has 1-6 graduates per year. PCC will work to expand the minor by increasing the course options for completion to encompass more courses offered throughout the college, rather than our current focus on ATM S, ESS and OCEAN. Prerequisites for upper-level courses in ATM S have made it difficult for students, particularly non-STEM majors, to complete the Climate Science Minor. Expanding course options to other units (e.g., SAFS and SEFS) will increase pathways to completion of the minor.

PCC will work on forming a community of undergraduates doing climate science research across campus while also helping undergraduates to find such research opportunities. PCC will facilitate the formation of a cohort of undergraduates doing climate related research through an undergraduate climate club with mentoring by graduate students. This will be similar to other clubs on campus such as GeoClub, but with a focus on climate that encompasses students in many different units across campus. We will also help to facilitate participation in faculty-led climate research by providing information on processes for getting involved in research in various units doing natural climate research across the university.

Pending administrative support from the College of the Environment, PCC will apply for an NSF Research Experience for Undergraduates (REU) grant to support undergraduate students working with UW faculty during summer and provide mentoring opportunities for graduate students. PCC’s REU would focus on climate and data science, and include training in data analysis that students could apply to their summer research project and beyond. PCC would make a specific effort to recruit students from underrepresented groups and minority-serving colleges in the PNW and across the country who do not have research opportunities at their home institutions.

Since PCC’s strength is in climate education, we have focused our JEDI efforts on Climate and Environmental Justice education. PCC, in collaboration with the Program on the Environment (PoE) and the College of the Environment, is facilitating the inclusion and expansion of Climate Justice in courses offered from the undergraduate to graduate level throughout the college and university. PCC and PoE ran their first “Climate and Environmental Justice” workshop in winter 2021. Ten faculty representing each unit in the College of the Environment participated in this workshop focused on developing a lesson plan on Climate Justice in their existing courses. PCC and PoE have applied for funding to continue this workshop for an additional three years. Our hope is to continue to provide
faculty from across, and potentially beyond, the College with the opportunity to learn best practices for incorporating Climate and Environmental Justice curricula into their course work. To facilitate even broader impact, the learning modules created by participating faculty will be made publicly available, and we will sponsor an annual panel of former participants to help with engagement and awareness of this resource.

<table>
<thead>
<tr>
<th>Strategic Priority #2</th>
<th>Mechanisms</th>
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<tbody>
<tr>
<td>Educate the next generation of climate scientists</td>
<td>Graduate Certificate on Climate Science **ACORN **PCC interdisciplinary fellows Co-teaching graduate-level courses **Joint seminars **Climate minor expansion of course options **Undergraduate climate club **Climate and Environmental Justice Workshops ** Climate Science REU</td>
</tr>
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</table>

** New initiative

C. Strategic Priority #3: Serve as a community resource on climate science and solutions

“The PCC should continue to provide opportunities for outreach and engagement which not only benefit communities outside the UW, but also help graduate students build communications, analysis, teaching, leadership, and teamwork skills in ways that might not be possible solely within their academic program."

-Current UW Graduate Student

PCC outreach activities facilitate broader impacts integration into research. Over the last 10 years PCC has established relationships with non-profits, government agencies and educators through engagement around creation of specific products, including curriculum, public events, and assessing needs of resource managers. PCC has worked with various faculty on their broader impacts projects such as the development of curriculum and the associated September 2020 Virtual Teacher Workshop “Evaluating the impact of X°C (e.g., 2°C) of climate warming on animals and ecosystems—in the high school classroom”, supported and led by Lauren Buckley (UW, Biology). Capstone projects have produced a library of curricula on climate change for middle and high school students that is published as an eBook entitled “Climate Science for the Classroom” that is used by teachers worldwide.
Through public outreach, education (GCeCS) and ACORN activities, PCC is known in external communities as a resource for addressing climate change. PCC is often contacted by the local community for speakers, classroom visits, and media interviews. PCC facilitates these interactions by connecting the community with the requested expertise. Examples of recent speaking and outreach events include the Schooner Series at local breweries and the Ask a Scientist event at the 2020 Climate March. In the next five years, PCC will collaborate with the communications team in the college to enhance its communications training and create teams of PNW Climate Ambassadors who are trained to effectively communicate with various audiences.

Capstone projects, and more recently the ACORN program, benefit local communities by engaging students in a community-led project. Student interest in these collaborative efforts is increasing. Recent capstone projects include developing training materials for international resource managers and developing focus groups for community climate action efforts (Appendix VI). ACORN projects are even more diverse in the ways in which students engage with communities. The PCC has a strong foundation for building on existing community relations and developing new ones, including a staff person with deep ties to community partners, a blog site that shares past experiences with external groups, and a very active, organized graduate student body eager to identify new opportunities. PCC is seeking out resources to provide training for students working with communities ethically and with cultural awareness.

PCC aims to have at least one high-profile public lecture per year followed by a social event to bring together the PCC community. We will kick this off with Fiamma Straneo who will be a Walker-Ames lecturer in the 2021-2022 academic year.

### Strategic Priority #3

<table>
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<tr>
<th><strong>Serve as a community resource on climate science and solutions</strong></th>
<th><strong>Mechanisms</strong></th>
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<tbody>
<tr>
<td><em>High-profile public lectures</em>&lt;br&gt;<em>Teacher workshops and K-12 engagement</em>&lt;br&gt;<em>Capstone projects</em></td>
<td><em>ACORN</em>&lt;br&gt;<em>Communications training</em>&lt;br&gt;<em>PNW Climate Ambassadors</em>&lt;br&gt;<em>Community engagement training</em></td>
</tr>
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**New initiative**

### D. Strategic Priority #4: Broaden PCC funding resources

Many of the mechanisms described above can be accomplished with existing resources because they build off of existing activities that PCC currently supports. A good example of this is opening up PCC fellowships to students across the college and changing the application process to enhance interdisciplinary collaboration among faculty in different
units. However, in order to implement some of the proposed mechanisms described above, PCC will need additional resources. Mechanisms in need of additional support include:

- **REU**: NSF REU grants mainly cover the costs of student travel and stipends, but don’t fully cover the cost of staff support to run the program. Thus we would need a commitment for staff funding at the time of application in order to move forward with this goal.

- **PNW Climate Ambassadors**: In order to provide training in communications for the proposed PNW Climate Ambassadors program, we would need to team up with staff on the communications team in the college, and the college would need to support this use of their time.

- **Community engagement training**: Training in community engagement exists at the UW through programs in CIG and SMEA, and the college could support the ability of these units to expand to include PCC graduate students in such training.

- **Public lectures**: Past funding cuts have resulted in the elimination of high-profile public lectures supported by PCC. PCC would need additional funding to make sure these events are successful. In 2021, we obtained funding from the Walker Ames program, but we cannot expect this to occur regularly.

- **Additional graduate fellowships**: PCC currently has enough funding to support graduate students for up to 9 academic quarters per year. Since fellows are typically awarded 3 quarters of funding, PCC is able to support 3 students per year. An additional 6 quarters of support would allow PCC to support a student in each Ph.D.-granting unit in the College of the Environment, which would further facilitate interdisciplinary connections. Additional support from outside of the college would allow us to support students in participating units such as Biology and Civil and Environmental Engineering whose faculty and students are active participants in many PCC programs.

- **Postdoctoral Fellowships**: PCC would be interested in bringing back the postdoctoral fellowships, as they were successful in bringing together faculty across units, enhanced interdisciplinary education, and provided an effective mechanism to bring visibility to climate science research at the UW.

Despite PCC’s broad reach across the university, its funding currently comes solely from the College of the Environment. Since the inception of the College of the Environment in 2009, PCC funding has been roughly $230K a year, nearly half of which is used to fund 4 9-month graduate student fellowships, three as incentives to incoming first year students, and one as an incentive for a current student to broaden their research. PCC’s funding should extend beyond the College of the Environment through support by the university (e.g., provost funding). This will facilitate broader interdisciplinary climate collaborations across the UW including the Department of Biology, Civil and Environmental Engineering, and the Evans School. These units in particular have been very active in PCC programming at the faculty and graduate student levels while not benefiting from co-teaching activities or graduate fellowships.
PCC should also seek out external funding through e.g., NSF Graduate Research and Traineeship (NRT) and similar programs and from philanthropic donors. The NSF recently held a climate solutions workshop, which will likely result in increased funding opportunities for PCC’s existing activities such as our participation in community-led projects or collaboration with other groups on campus such as the Center for Health and the Global Environment (CHanGE). PCC aims to work more closely with Advancement in order to explore philanthropic sources of funding.

<table>
<thead>
<tr>
<th>Strategic Priority #4:</th>
<th>Mechanisms</th>
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| Broaden PCC funding resources | Engage with broader university leadership  
Apply for external funding opportunities  
Work with the Advancement team |
APPENDICES

I. Participating Units and Stakeholders
   A. Participating Units: PCC Governing Board Membership
      1. The PCC is strongly rooted in academic units within the natural sciences:
         ● Department of Atmospheric Sciences (ATMS)
         ● Department of Earth and Space Sciences (ESS)
         ● School of Oceanography (OCEAN)
         ● School of Aquatic and Fishery Sciences (SAFS)
         ● School of Environmental and Forest Resources (SEFS)
         ● Civil and Environmental Engineering (CEE)
         ● Cooperative Institute for Climate, Ocean, and Ecosystem Studies (CICOES)
         ● NOAA's Pacific Marine Environmental Lab (PMEL)
         ● Applied Physics Lab (APL)
      2. Additional board members are from units representing the applied and social sciences
         ● School of Environmental and Marine Affairs (SMEA)
         ● Evans School of Public Policy (PubPol)
         ● Center for Health and the Global Environment (CHanGE)
         ● UW Climate Impacts Group (CIG)
   B. PCC Stakeholders in the last 5 years
      1. UW Stakeholders
         ● College of Education
         ● Department of Environmental and Occupational Health Sciences (DEOHS)
         ● Dept. of Epidemiology
         ● Quantitative Ecology and Resource Management (QERM)
         ● Department of Biology
         ● Department of Statistics
         ● Jackson School
         ● EarthLab
         ● Center on Risk and Inclusion in Food Systems (CRIFS)
      2. External Stakeholders:
         ● AGU's Thriving Earth Exchange (TEX)
         ● Cascadia Climate Action (CCA)
         ● League of Women Voters
         ● Lake Forest Park People for Climate Action
         ● Northwest Seaport Alliance
         ● Ohio River Valley Institute
         ● Reduce App
         ● Trust for Public Land
         ● Seattle Aquarium
         ● Washington State Department of Resources (DNR)
         ● Washington State Department of Commerce

Last Update: September 24, 2021
C. Additional groups who benefit from PCC’s interdisciplinary educational programming include:

- Undergraduates from across the UW Seattle campus exploring interdisciplinary climate
- K-12 Educators
- and many populations within the general public.

II. Strategic Planning Process

Just after the Winter Welcome in March 2021 the PCC began the process of soliciting input to the strategic plan from the different groups that make up the PCC community. Surveys were drafted, tailored to faculty, alumni, graduate students, undergraduates, postdoctoral scientists and external collaborators. The graduate students gathered virtually to discuss questions to include in the survey. In mid April 2021 the surveys were sent to the mailman listservs, with a request for input by early May. Faculty, postdocs, graduate students, and alumni were all asked about:

- **Scholarship/Education/Research.** How has PCC broadened or enhanced your Education/Research/Scholarship (tailored to group) experience? Which mechanisms have been most effective at facilitating this? How can PCC further facilitate interdisciplinary climate education and research?

- **Outreach/Community Engagement.** What is the importance and relevance to the PCC of engagement with external (off-campus, community) groups? How should PCC prioritize outreach and community engagement? What kinds of collaborations would you like to see in the future that you’d like PCC to facilitate? How can PCC better facilitate engagement in outreach?

- **Diversity, Equity, and Inclusion.** What are your thoughts on how to address diversity, justice and equity within the PCC?

- **Relationships with other on-campus climate related groups.** How can PCC improve upon building relationships with other climate-related groups on campus? How have current PCC activities facilitated your engagement with groups outside your home department? How can PCC improve upon such opportunities for engagement?

- What is your view on the balance between broadening PCC (e.g. engagement with social science units such as the Evans School) and keeping it focused on the “core” academic departments (ESS, Ocean, Atmos)?

- **Strategic priorities.** What do you think are the most important priorities for PCC in the next 5 years (on climate change research, education, outreach, community building, etc)? What mechanisms would you suggest are most effective at realizing these priorities?

- **Any other thoughts.**
Undergraduates and external collaborators were invited to address questions specific to their involvement and hopes for the PCC.

The surveys captured input from 23 faculty, 17 alumni, 12 graduate students, 8 undergraduates, 4 postdocs and 2 external collaborators.

Becky Alexander developed a related set of questions to use for interviews with chairs and deans who were not participating in the strategic planning meeting in June. Dan Brown (SEFS Chair), Lisa Graumlich (CENV Dean), Julia Parish (CENV Associate Dean), Rick Keil (OCEAN Chair) and Bruce Nelson (CENV Associate Dean of Research) were interviewed. Miriam Bertram, the PCC Assistant Director, was also interviewed.

Information from the surveys and interviews were made available to the participants at the Strategic Planning meeting held on June 9 at the Center for Urban Horticulture. Participants (see list below) were divided into small groups to discuss questions similar to those posed on the surveys. Small groups rotated through the day, until every participant had the opportunity to contribute to answering each question. At the end of the day summaries were presented to the group for each of the questions.

The final synthesis was done on a Strategic Plan document drafted by PCC leadership that incorporated input from the Executive Board which convened in person in August 2021. Gerard Roe (ESS), Kyle Armour (ATM S, OCEAN), Abigail Swann (ATM S, BIOLOGY), Alex Gagnon (OCEAN), Miriam Bertram (PCC) and Becky Alexander (ATM S, PCC) contributed to this synthesis.

III. PCC Strategic Planning Meeting List of Attendees (June 9, 2021):

- Becky Alexander, Director, Program on Climate Change, beckya@uw.edu
- Chris Anderson, Professor, SAFS, cmand@uw.edu
- Kyle Armour, Associate Professor, Oceanography and Atmospheric Sciences, karmour@uw.edu
- David Battisti, Professor, Atmospheric Sciences, battisti@uw.edu
- Miriam Bertram, Assistant Director, Program on Climate Change, mab23@uw.edu
- CC Bitz, Professor and Chair, Atmospheric Sciences, bitz@uw.edu
- Surabhi Biyani, Undergrad Assistant, Program on Climate Change, scbiyani@uw.edu
- Ann Bostrom, Professor, Evans School of Public Policy & Governance, abostrom@uw.edu
- Lauren Buckley, Professor, Biology, lbuckley@uw.edu
- Jacob Cohen, Grad Student, Oceanography, jtcnhen@uw.edu
- Nives Dolsak, Professor and Director, SMEA, nives@uw.edu
- Aaron Donohoe, Senior Research Scientist, Polar Science Center / Applied Physics Lab, adonohoe@u.washington.edu
- Kris Ebi, Professor, Global Health and Env. and Occ. Health Sciences, krisbei@uw.edu
- Steve Emerson, Professor Emeritus, Oceanography, emerson@u.washington.edu
- T.J. Fudge, Assistant Research Professor, Earth and Space Sciences, tfudge@uw.edu
IV. Past PCC Postdocs and where they are now

2004
Curtis Deutsch (OCEAN/PCC), Princeton University
Heather Price (ATM S/PCC), North Seattle College

2006
Amelia Shevenell (OCEAN/PCC), University of South Florida

2008
Martin Vancoppenolle (PCC) French National Center for Scientific Research
Juzhi Hou (PCC) Institute for Tibetan Plateau Research

2010
Samantha Siedlecki (PCC/OCEAN) University of Connecticut
Camile Lique (PCC/JISAO) IFREMER research scientist, Laboratoire d’Océanographie Physique et Spatiale in Brest (France).

V. PCC Graduate Fellowship Awards
87 students received PCC graduate fellowships since 2002. Interdisciplinary fellowships are awarded to ongoing graduate students who applied directly for 3-9 months of funding. Through 2021 all other fellowships were 9 month awards to incoming first year students. For 2021-2022 budget threats required that we take a conservative approach and offer $1K incentive awards to incoming students from each of the departments in the college. We plan to resume 9 month fellowships for 2022-2023.

2002-2003 (5)
Jarvis, Julia (ESS)
Mahrt, Beth (ESS)
Strode, Sarah (ATM S)
Takahashi, Ken (ATM S)
Williams, Eleanor (OCEAN)

2003-2004 (6)
Koenig, Lara (ESS)
Ver, Ana (OCEAN)
Gendaszek, Andrew (ESS)
Nicholas, Robert (ATM S)
Booth, James (ATM S)
Ossiander, Lia (OCEAN)

2004-2005 (8)
Donohoe, Aaron (ATM S)
Huybers, Kathleen (ESS)
Lee, Carrie (SEFS) – interdisciplinary
Kunasek, Shelley (ESS)
Minder, Justin (ATM S)
Nicholson, David (OCEAN)
Zelinka, Mark (ATM S)
Zanzig, Rebecca (OCEAN)

2005-2006 (7)
Buer, Eric Buer (ESS)
Hammerschlag, Roel (EVANS) – interdisciplinary
Moon, Twila (ESS)
Monro, David (OCEAN)
Stefanova, Natalia (OCEAN)
Trossman, David (OCEAN)
Yatavelli, Reddy (ATM S)

2006-2007 (3)
Allman, Daniel (ATM S)
Hezel, Paul (ATM S)
McDuffee, Kelsey (OCEAN)

2007-2008 (7)
Fassbender, Andrea (OCEAN)
Atwood, Alyssa (OCEAN)
Burke, Erin (ESS)
Poinar, Kristin (ESS)
McCusker, Kelly (ATM S)
Sofen, Eric  (ATM S)
Feifel, Kirsten (SMEA/OCEAN) – interdisciplinary

**2008-2009 (6)**
Carns, Regina  (ESS)
Ford, Kevin  (BIOL) – interdisciplinary
Harrop, Bryce (ATM S)
Lang, Karl  (ESS)
Scheff, Jack (ATM S)
Tempest, Kevin (OCEAN)

**2009-2010 (2)**
Po-Chedley, Stephen  (ATM S)
Siler, Nicholas (ATM S)

**2010-2011 (5)**
Newsom, Emily  (ESS)
Stevens, Max  (ESS)
Wayand, Nic (CEE) – interdisciplinary
Wetzel, Katherine (OCEAN)
Zhang, Chen (ATM S)

**2011-2012 (3)**
Fricke, Evan (BIOL) - interdisciplinary
Lapo, Karl  (ATM S)
Maloney, Ashley  (OCEAN)

**2012-2013 (3)**
Heal, Katherine (OCEAN) – interdisciplinary
Quetin, Gregory  (ATM S)
Wilson, Earle  (OCEAN)

**2013-2014 (3)**
Leung, Shirley (OCEAN)
Lilien, David  (ESS)
Smith, Maxwell  (ATM S)

**2014-2015 (3)**
Kahle, Emma  (ESS)
Kovenock, Marlies  (BIOL) – interdisciplinary
Spevacek, Ashly  (ATM S)

**2015-2016 (3)**
de Buen, Rebeca  (Evans School of Public Policy) – interdisciplinary  
Diamond, Michael  (ATM S)  
Scannell, Hillary  (OCEAN)  

2016-2017 (3)  
Campbell, Ethan  (OCEAN)  
Tierney, Lydia  (ATM S)  
Hoffman, Andrew  (ESS)  

2017-2018 (4)  
Calkins, Miriam  (DEOHS) – interdisciplinary  
Morey, Susannah  (ESS)  
Pauling, Andrew  (ATM S)  
Rushley, Stephanie (ATM S) – interdisciplinary  

2018-2019 (5)  
Bench, Tristan  (ESS)  
Kahle, Emma (ESS) – interdisciplinary  
Penn, Justin  (OCEAN) – interdisciplinary  
Suave, Jade  (OCEAN)  
Zarakas, Claire (ATM S)  

2019-2020 (2)  
Poletti, Alyssa  (ATM S)  
Stoll, Mary Margaret (OCEAN)  

2020-2021 (3)  
Cleveland Stout, Becca (ESS)  
Davidge, Lindsey  (ESS) – interdisciplinary (PCC/CICOES)  
Rosenberg, Noah  (OCEAN)  

2021 Incentive Awards (6 x $1K awards)  
Hendrickson, Matt  (SEFS)  
Leigh, Katherine (SAFS)  
Liu, Amy  (ATM S)  
Liu, Rachel (OCEAN)  
Sullender, Ben (SEFS)  
Wright, Chris (ATM S)  

VI. Graduate Certificate in Climate Science (GCeCS)-Certificates Awarded  
The first certificate was awarded in 2009 with the completion of a capstone project to develop the WSU Carbon Masters Program. Three students collaborated on this effort, Andrea Fassbender (OCEAN), Alyssa Atwood (OCEAN) and Kirsten Feifel (SMEA/OCEAN) which was overseen by
LuAnne Thompson (OCN), Brad Gaolach, King County Extension, and Gabrielle Roesch, Snohomish County Extension.

A total of 59 students have completed the certificate since 2009. The 37 students who completed the certificate since 2015 are listed below with their capstone titles and links to blog posts where available.

### 2015 (3)
- Poinar, Kristin (ESS), Advised by LuAnne Thompson (OCN) *Climate Change and Restoration along the Burke-Gilman Trail*
- Dosser, Hayley (OCEAN) Advised by LuAnne Thompson and Luc Rainville (OCEAN) *Oceanography Cruise to Climate Research through Outreach*
- Heal, Katherine (OCEAN) Advised by LuAnne Thompson (OCN) and Susan Auld (Sehome High School) *Introducing the biological pump to high school students*

### 2016 (2)
- Nic Wayand (Civil and Environmental Engineering), Advised by Jessica Lundquist (CEE) *Rain-On-Snow Floods*
- Elizabeth Maroon (ATM S) and Alison Saperstein (EVANS), Advised by LuAnne Thompson (OCEAN) *The Road to Paris: Climate Change Science and Policy*

### 2017 (6)
- Brodbeck, Amy (SMEA), Advised by LuAnne Thompson (OCN) *Local Insights: Climate change in small-town Alaska*
- Lenferna, Alex (Philosophy) (in collaboration with Karl Lapo, ATM S), Advised by Yoram Bauman (Economics) *Climate Change in Washington: Impacts and Responses*
- Rich, Emily (Evans School of Public Policy and Governance), Advised by LuAnne Thompson (OCN) and Joe Casola (CIG) *Development and evaluation of a Climate Impacts Group (CIG) graphic for Washington State Governor Jay Inslee’s Staff*
- Dvorak, Michelle (SMEA), Advised by Tom Leschine (SMEA) *Climate change and oil development in the Alaskan Arctic: an economic perspective*
- Howk, Forrest (Evans School of Public Policy and Governance), Advised by Ann Bostrom (Evans), Amy Snover (SMEA), and LuAnne Thompson (OCN) *Sell-by dates for local climate impacts: will Time of Emergence reduce perceived uncertainties?*
- Ray, Brandon (ATM S), Advised by LuAnne Thompson (OCN) *Seminar on Current Research in Climate Change Policy Module*

### 2018 (7)
- Gergel, Diana (CEE), Advised by Eric P. Salathé (ATM S) *Mapping climate science needs and networks in the Pacific Northwest through evaluation of the Northwest Climate Science Center climate science digest*
- McLachlan, Robin (OCEAN), Advised by Mark Windschitl (College of Education) *A Climate-Science Module for Middle-School Classrooms: Harmful Algal Blooms, Society, and Climate Change*
- Baechler, Nyssa (SMEA) and Keil, Katie (SMEA), Advised by Ryan Kelly (SMEA) *Understanding and advancing natural resource management in the context of changing ocean conditions*

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• Koehlinger, Julie Ann (SMEA), Advised by Arthur Nowell (OCEAN) *The ocean and us: an experiential workshop in mindfulness and climate science*

• Perry, Diana (SMEA), Advised by Heidi Roop (CIG) and Jackson Blalock (The Nature Conservancy) *Washington coastal resilience project story map on sea-level rise projections*

• Calkins, Miriam (DEOHS) (partnered with Judy Twedt, ATM S), Advised by Dargan Frierson (ATM S) *A Speakers Bureau for a local, worker-centric Climate Caucus: A platform for communicating climate science and engaging in discussions of local effects*

2019 (8)

• Kahle, Emma (ESS), Advised by Dargan Frierson (ATM S) *National Park Adventure: Using a Video Game to Connect Players with Climate Impacts in Public Lands*

• Lavin, Paige (OCEAN), Advised by Heidi Roop (CIG) *Creating a New Interactive Data Visualization of Washington’s Sea Level Rise Projections Using Tableau*

• van Duivenbode, Zoe (SMEA), Advised by Jamie Stroble (King County) *Co-creating Climate Change Education Materials with Immigrant and Refugee Communities in King County, WA*

• Kovenock, Marlies (Biology), Advised by Abby Swann (ATM S/Biology) *Climate Change Learning Module Engages Girls in Science*

• Bagley, Ashley (SMEA), Advised by Miriam Bertram (PCC) *Climate Change Basics for Environmental Educators*

• Bonnin, Elisa (OCEAN), Advised by Dargan Frierson (ATM S) *Development of an Interactive Narrative as a Tool for Climate Change Communication*

• Stote, Alex (SMEA), Advised by Karin Lohwasser (College of Education) *Ready, Set, Curb! An Interactive Board Game for Youth Learning*

• Diamond, Michael (ATM S), Advised by Cecilia Bitz (ATM S), Lisa Neshyba (Sammamish High School), and Kristin Larson (Sammamish High School) *Geoengineering as a means of teaching the fundamentals of climate change through problem-based learning*

2020 (5)

• Chegwidden, Oriana (CEE), Advised by Christina Bandaragoda (CEE), *Influence of classroom environment on a hydrologic climate change learning module*

• Dohrn, Charlotte (SMEA) and Miller, Hanna (SMEA), Advised by Eric Laschever (SMEA). *Taking Action on Ocean Acidification: Pathways for States*

• Maher, Susannah (SMEA), Advised by Cleo Woelfle-Erskine (SMEA), *Communicating and Collaborating Across Difference*

• Stanfield, Ian (SMEA), Advised by Cleo Woelfle-Erskine (SMEA). *Environmental Outreach in Conservative Communities*

2021 (6)

• Bland, Kathryn (SMEA), Advised by Sunny Jardine (SMEA) *Linking climate change to harmful algal blooms and the Dungeness crab fishery through an interactive webpage*

• Arnold, Amanda (SMEA), Matteri, Elizabeth (SMEA) and Byrnes, Katharine (SMEA), Advised by Mark Windschitl (College of Education) *Ocean Acidification in Nearshore Ecosystems (Middle School) Curriculum*

• Olsen, Amy (SMEA) Advised by Miriam Bertram (PCC) in collaboration with Seattle Aquarium Curator of Conservation Research Shawn Larson and Seattle Aquarium Director of Conservation Engagement and Learning Jim Wharton. *Lightning Talks: Sea Otters! Short engaging lightning talks that highlight how the keystone species Sea Otters will help mitigate climate change impacts*
VII. Annual Summer Institutes
An annual event where faculty, scientists, graduate students, and invited speakers focus on how climate and our physical and human world interact. Each year a new topic, showcasing emerging knowledge and ways in which disciplines intersect, is examined. Always an opportunity for team building and for full discussion of the alternative ways that research can be brought to focus on the pressing questions of today. Each year 5 external speakers join UW experts to discuss topics with 60-70 graduate students, faculty, research scientists/staff and postdoctoral scientists.

2020: Virtual Climate Extremes and Climate and Environmental Equity
2019: Climate Change Impacts on 21st Century Food and Water Security
2018: Sources of Uncertainty in Long-Term Climate Predictions
2017: Climate Change and Population Health
2016: The Climate of Antarctica and the Southern Ocean
2015: Terrestrial Ecosystems, Land Surface, and Climate Change
2014: Climate Variability and Uncertainty
2013: Response of Marine Ecosystems to Climate Forcing: Causes and Consequences
2012: Atmosphere-Ocean-Ice Shelf Interactions
2011: The Water Cycle in a Changing Climate
2010: Climate Feedbacks
2009: Pacific Northwest Climate: Past, Present and Future
2008: Does Ocean Circulation Matter for Climate Change?
2007: Couplings Between Changes in the Climate System and Biogeochemistry
2005: El Nino: Past, Present, and Future
2004: The Year of the Arctic
2003: Rapid Climate Change and Land-Surface Climate Interactions
2002: Development of PCC Science Themes

VIII. Listservs
Programming, opportunities, and information relevant to particular segments of the climate community are distributed through these listservs reaching close to 800 individuals. Individuals self-subscribe and subscribers can post directly to the lists. All others are moderated by staff. Number of subscribers listed for each list were retrieved on Sept. 9, 2021.

- Graduate Students (423 subscribers): pccgrads@uw.edu
- Faculty Members (76 subscribers): pccfaculty@uw.edu
- Postdocs (71 subscribers) : climatepostdocs@uw.edu
- Undergraduates (132 subscribers): climateminor@uw.edu
- UW Affiliates (65 subscribers): pccaffiliates@uw.edu
- K-12 and Informal Educators (25 subscribers): pcceduc@uw.edu

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VIII. PCC Curated Core Courses and Seminars

Course number and title for courses developed for the PCC students are listed here followed by the quarter/year taught, the instructor, and enrollment. Between 2015 and Autumn 2021, 649 students enrolled in these courses.

ATMS/ESS/OCEAN 475 (3 cr), Undergraduate Climate Seminar, Required Capstone for students in the climate minor. Attend graduate ATMS/ESS/OCEAN 586 seminars.
- Autumn 2015, LuAnne Thompson (OCEAN) 9
- Autumn 2016, LuAnne Thompson (OCEAN) 7
- Winter 2018, Kyle Armour (ATMS/OCEAN) 12
- Winter 2019, LuAnne Thompson (OCEAN) 12
- Winter 2020, LuAnne Thompson (OCEAN) 11
- Winter 2021, LuAnne Thompson (OCEAN) 14

ATMS/ESS/OCEAN 586 (2 cr), Current Climate Research Seminar, Required for Certificate Students.
- Autumn 2015, Interdisciplinary Perspectives on Climate Change and Food, LuAnne Thompson (OCEAN), 32
- Autumn 2016, Security and Climate Change, LuAnne Thompson (OCEAN) 24
- Winter 2018, Unanswered Questions, Kyle Armour (ATMS/OCEAN) 26
- Winter 2019, Sea Level Rise: Causes and Impacts, LuAnne Thompson (OCEAN) 19
- Winter 2020, Arctic Change, LuAnne Thompson (OCEAN) 25
- Winter 2021, Intersection of climate change and human health joint with Center for Health and the Global Environment (CHanGE), LuAnne Thompson (OCEAN) 31
- Autumn 2021, IPCC AR 6 WG 1, Becky Alexander (ATMS) 22

ATMS/ESS/OCEAN 554 (3 cr) Paleoclimate Proxies (offered alternate years)
- Winter 2016, Julian Sachs (OCEAN) 8
- Winter 2018, Julian Sachs (OCEAN) 5
- Winter 2021, see ATM S/ESS/OCEAN 589

ATMS/ESS/OCEAN 558 (3 cr) Climate Modeling (offered alternate years)
- Spring 2017, Cecilia Bitz (ATMS) 16
- Spring 2019, Dargan Frierson (ATMS) 8

ATMS/ESS/OCEAN 587 (3 cr) Fundamentals of Climate Change
- Autumn 2015, Kyle Armour (ATMS/OCEAN) 22
- Autumn 2016, Kyle Armour (ATMS/OCEAN) 12
- Autumn 2017, Kyle Armour (ATMS/OCEAN) 13
- Autumn 2018, Kyle Armour (ATMS/OCEAN) 12
- Autumn 2019, Kyle Armour (ATMS/OCEAN) 27
- Autumn 2020, Kyle Armour (ATMS/OCEAN) 20
- Autumn 2021 (est), Dargan Frierson (ATMS) 36

ATMS/ESS/OCEAN 588 (3 cr) The Global Carbon Cycle and Climate

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Winter 2016, Curtis Deutsch (OCEAN) 7
Winter 2017, Abigail Swann (ATM S/BIO) 17
Winter 2018, Curtis Deutsch (OCEAN) 10
Winter 2019, Abigail Swann (ATM S/BIO) 21
Winter 2020, Curtis Deutsch (OCEAN) 16
Winter 2021, Curtis Deutsch (OCEAN) 19

ATM S/ESS/OCEAN 589 (3 cr) Paleoclimate: Data, Modeling and Theory (offered alternate years)
   Autumn 2015, Eric Steig (ESS) 8
   Winter 2020, Eric Steig (ESS) 15
   Winter 2021, Eric Steig (ESS)/Julian Sachs (OCEAN) (combined with 554, Paleoclimate Proxies) 9

OCEAN 569/ESS 590/ATM S 591 (3 cr) Climate Dynamics (offered alternate years)
   Winter 2017, Gerard Roe (ESS)/Kyle Armour (ATM S/OCEAN) 10
   Winter 2019, Gerard Roe (ESS)/Kyle Armour (ATM S/OCEAN) 11
   Winter 2021, Gerard Roe (ESS)/Kyle Armour (ATM S/OCEAN) 17

ATM S/ESS/OCEAN 593 (1 cr) Communicating Climate Science Seminar
   Winter 2017, Amy Snover (CIG) 28
   Winter 2018, Meade Krosby (CIG) 6
   Winter 2019, Meade Krosby (CIG) 6
   Autumn 2020, Miriam Bertram (PCC) 26

IX. Graduate Climate Conference (GCC)
An interdisciplinary climate conference run by graduate students, for graduate students. Over the last fifteen years, each year approximately 120 graduate students representing hundreds of academic institutions have come together to present research and share ideas on climate and climate change in an array of disciplines. First organized in 2006 by graduate students at the University of Washington, the responsibility for hosting now rotates between UW and MIT/Woods Hole, with funding from NSF and sponsorship from units at MIT, Woods Hole, and UW. The 15th conference, the second virtual GCC, is scheduled for Autumn 2021.