

SECTION 1. ADMINISTRATIVE INFORMATION:

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Agency or Institution of the recipient: University of Massachusetts Amherst

Co-Investigators: Michelle Staudinger, Northeast Climate Adaptation Science Center

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Project title: Early Career Climate Communications and Networking

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Actual total cost of the project: \$122,466K

SECTION 2. PUBLIC SUMMARY

The Climate Adaptation Science Centers (CASCs) and consortium institutions are working to support and build a network of early career professionals across the U.S. interested in the climate sciences and climate adaptation. The purpose of this project was to support the development of a national early career communication platform to facilitate and increase information sharing and networking across the CASCs and consortium institutions. This was accomplished by working with the Early Career Climate Forum (ECCF), a CASC-supported

science network dedicated to improving research practice through communication and collaboration. Project goals included the redesign and expansion of a pilot website that was originally developed by early career scientists in attendance of the 2012 Northwest Climate Bootcamp as well as adding services such as a regular blog, email list-serve, database of members, and training modules for CASC retreats and bootcamps, all directed towards the advancement of early career scientists in the field of climate change science and adaptation.

SECTION 3. PROJECT SUMMARY:

The Early Career Climate Forum

The Early Career Climate Forum (ECCF) was developed as a multi-platform, web-based resource to facilitate and increase information sharing, networking and effective science communication for early career scholars, managers and scientists across the Department of Interior's Climate Adaptation Science Centers (CASCs), affiliates, and stakeholders. The ECCF originally grew out of a week-long workshop in August 2012, known as the Northwest Climate Science Bootcamp, where a group of graduate students and post-doctoral researchers recognized a need to enhance information sharing, collaboration and networking among early career climate scholars, scientists and practitioners. A pilot website, featuring student-orchestrated research and career-based blogs, was launched in 2013.

In 2015, with funding from the Northeast Climate Adaptation Science Center (NE CASC), the website was redesigned, relaunched, moved to a new server, and expanded with additional resource pages and the establishment of the ECCF listserv. The ECCF was led by an Editorial Board comprised of graduate students, post-docs and early career scientists located across the CASC institutions and/or partner organizations with interests in the platform and

communicating climate science across the network. Effort was made to include representation on the Editorial Board from every CASC region. The ECCF audience targeted graduate students, post-doctoral fellows, and staff across the national network of CASCs and affiliated partner institutions. The ECCF's mission was to build and support a community of early career scholars working at the science-management interface on climate change issues. It did this by providing the community with relevant information around three core themes: 1) early career challenges, 2) communicating on climate, and 3) science and research. Additionally, the ECCF sought to provide early career scholars with a structured opportunity to practice writing and sharing their research or career-related thoughts to broad audiences through writing non-technical blog posts.

Over the course of the project, the ECCF maintained a regular blog written in non-technical language, and released roughly 125 blog posts, authored by more than 65 different authors representing a wide range of professional (e.g., graduate students, university professors, communication specialists) and academic backgrounds (e.g., climatology, ecology, applied science, and social science), and regions across the United States. A daily listserv achieved approximately 235 subscribers, alongside multiple social media platforms (e.g., Twitter, Facebook) for reaching its members. The project also created a series of resource pages pertaining to 1) climate-relevant fellowships, job boards, and listservs; 2) science writing and communication tools; 3) diversity in STEM; and, 4) CASC-affiliated publications. The Publications resource page presented data on more than 60 CASC-supported papers published by early career CASC researchers.

From Google metrics we were able to determine general patterns of use of the ECCF website as well as the most popular content on the site. Overall, the home page, job board and main blog pages received the most page views. Our top ten most popular blogs were:

- [The importance of philosophy in responding to climate change](#)
- [The do's and don't's of making a poster](#)
- [Why is genetic diversity important?](#)
- [Targeting 2 degrees Celsius in Paris, #COP21](#)
- [How to achieve work-life balance: Stories of success from CSC Science Moms](#)
- [A people issue: Dr. Katharine Hayhoe on climate change communication](#)
- [LiDAR applications for sea level rise mapping](#)
- [In case you blinked, here's a review of the 2-day, action-packed, breakneck—paced, 1st ever National CSC student and early career training](#)
- [Climate and communication: Takeaways from the Alan Alda Communication Center workshop](#)

These blogs received between 222-680 unique page views and often were viewed more than once by users.

Over the time period of July 2015 and April 2018, which represents when the ECCF was relaunched and the majority of new content was posted, the number of users steadily increased and totaled over 13,950 users, with 35,491 page views. The audience was split nearly equal 46% female, 54% male, and the majority (60%) were between 19 and 34 years of age. Most users (70%) were from the United States with the best state representation from California, Massachusetts, New York, North Carolina and Colorado; however, a small percentage (2-3%) of users were from other countries including India, Canada, and the United Kingdom. On social media the average Facebook post reached approximately 125 followers and 120 likes, and our Twitter page had 257 followers at its maximum.

National Student and Early Career Training

In 2016, the ECCF organized and executed the workshop “Communicating Climate Science to Multiple Audiences: Why we do it, and how to plan for it” at the National Student and Early Career Training held on the UMass, Amherst campus on November 2-3, 2016. The session provided an overview of why we communicate science, and climate science in particular, to different technical and non-technical audiences ranging from the public, to fellow scientists, to national and international decision and policy-makers. Participants learned different skills, techniques and platforms appropriate for developing audience-specific messages and for communicating with a range of CASC-targeted audiences: scientific, informed stakeholders, (natural resource managers; policy and decision makers), tribal, and public. The session consisted of two parts: Part 1 was a series of plenary talks (including co-PI Markowitz) on the challenges and benefits of communicating climate science; in part 2, participants choose from a series of interactive communication skill building activities that included 1) Compass Message Box Training, 2) Communicating with the media, and 3) Debating climate change. The ECCF also published two blogs specifically related to promoting the national training and a follow up blog recapping all activities along with a video (<https://youtu.be/YLvHKlxuuHc>).

ECCF Community Survey

During the Fall of 2017, the Editorial Board conducted a community survey (Appendix 1) to assess the quality and utility of existing ECCF products as well as to identify future opportunities on how best to provide community members with access to climate- and career-related resources across the CASC network. The survey was disseminated to the ECCF listserv as well as NE CASC staff and PIs. A total of 37 people completed the survey. A peer-reviewed publication (Guckian et al., In review) summarizes the full results of the survey; however, a few

notable outcomes were that those engaging in the ECCF platform represented diverse fields of study (e.g., climate modeling, ecology, adaptation/mitigation, human-natural systems, policy) and stages in their professional and academic careers. Importantly, the majority of respondents reflected our primary target audience (e.g., graduate students, postdoctoral fellows, and early career faculty and researchers). In terms of interacting with the ECCF's multiple platforms, respondents expressed high levels of satisfaction with the ECCF overall, and further indicated that the ECCF was either 'fairly' or 'very' useful in supporting their career development.

Perhaps one of the more interesting and important findings from the survey was that respondents indicated that the ECCF provides them with a sense of community and hope for science in the future. Survey respondents expressed interest in more curated blog and listserv content, and further highlighted the importance of maintaining multiple platforms for reaching different community members.

Conclusions and Recommendations:

The ECCF continues to explore options for expansion and enhancement of its products as it transitions from CASC support and leadership. Based on feedback received from the community of users and networking with other climate and environmental programs, future iterations of the ECCF could improve the platform through 1) building increased awareness of the ECCF and the utility of the products to broader audiences; 2) expand services and content of the ECCF's multiple platforms; and 3) enhance early career networking and communication across new networks. This could be realized through outreach, engagement, and communication activities that better align blogs with topics and interests identified by the 2017 community and future surveys; broadened engagement within the CASC network as well as with broader (non-

CASC) climate, tribal, and adaptation networks; seeking opportunities to cross-post blog content with related organizations and networks; and exploration of new products such as a YouTube channel featuring early career stories from CASC-supported projects and a coordinated early career webinar series.

SECTION 3. OUTREACH AND PRODUCTS:

Publications:

Guckian, M.L., C. Tucker, E. Kiekebusch, T. Klemm, E.M. Markowitz, L. Middleton, A. Wootten, and M.D. Staudinger. *In review*. Assessing the impact of an online climate science community: The Early Career Climate Forum. Submitted to the Environmental Communication December 2018.

Other products:

- The Early Career Climate Forum platform (<http://eccforum.org/>)

Workshops

- Communications Workshop. National Student and Early Career Training held on the UMass, Amherst campus on November 2-3, 2016. 65 participants, ½ day

Presentations:

- 1) Markowitz, E. and M.D. Staudinger. *Leveraging web-based platforms to support and enhance climate change communication*. NE CASC Seminar Series. Spring 2016.
- 2) Markowitz, E. *Climate change engagement and communication: Why it's not just about the "facts"*. National Student and Early Career Training held on the UMass, Amherst campus on November 2016
- 3) Guckian, M.L. *Communicate, collaborate and develop: The Early Career Climate Forum*. Tool presentation at the Climate Science Adaptation Centers National Student and Early Career Training. Amherst, MA. November 2016.
- 4) Staudinger, M.D. *Adapting to climate change impacts across the Northeast and Midwestern United States: Case studies from the Northeast Climate Science Center*. 2015 National Adaptation Forum. Poster.

Appendix 1

Thank you for taking part in our community survey. We are interested in hearing your thoughts about the Early Career Climate Forum (ECCF) and the various ECCF platforms you interact with. On the next few pages, you will be asked questions about the ECCF website, listserv, social media platforms and various questions pertaining to your motivations for engaging with the ECCF. The survey should take approximately 10 minutes to complete and will help us improve ECCF products and better serve community needs. We greatly appreciate your participation and feedback.

1- How do you follow the ECCF? Check all that apply.

- Website user (1)
- Email listserv (2)
- Facebook (3)
- Twitter (4)
- I don't follow the ECCF (5)

2- Generally speaking, how satisfied are you with the ECCF?

- Not at all satisfied (1)
- Not very (2)
- A little (3)
- Somewhat (4)
- Fairly (5)
- Very (6)
- Extremely satisfied (7)

3- How did you first learn about the ECCF?

- Friend, co-worker or fellow student (1)
- Academic advisor or professor (2)
- Twitter (3)
- Facebook (4)
- Forwarded email (5)
- Climate Science Center (e.g., staff or products) (6)
- Events or presentations (e.g., National CSC Student Training) (7)
- Web search (8)
- Don't know / can't remember (9)
- Other (10) _____

4- How often do you visit the ECCF website?

- Everyday (1)
- Several times a week (2)
- About once a week (3)
- Once a month (4)
- Less than once a month (5)
- Only when new content is announced (6)
- I've never been to the website (7)

5- The ECCF maintains multiple pages on the website. How useful do you find each of the following pages?

	Not at all useful (1)	Not very (2)	A little bit (3)	Somewhat (4)	Fairly (5)	Very (6)	Extremely useful (7)	Does not apply (8)
Blog (1)	<input type="radio"/>							
Writers' page (2)	<input type="radio"/>							
Resources: Fellowships (3)	<input type="radio"/>							
Resources: Job board and listservs (9)	<input type="radio"/>							
Resources: Writing and communication tools (4)	<input type="radio"/>							
Resources: Diversity in Stem (7)	<input type="radio"/>							
Discussion Forum (8)	<input type="radio"/>							
Publications (5)	<input type="radio"/>							

6- How do you most often use the website? Can you provide a brief example (e.g., read blogs, research communication tools)?

8- Would you like to see more or less blogs related to the following topics?

	Much less (1)	Less (2)	Somewhat less (3)	About the same (4)	Somewhat more (5)	More (6)	Much more (7)
Science communication tools and insights (1)	<input type="radio"/>						
Early career development, perspectives and lessons (2)	<input type="radio"/>						
Climate modeling (e.g., global modeling, downscaling) (3)	<input type="radio"/>						
Notes from the field (e.g., specific research projects). (4)	<input type="radio"/>						
Current events/developments in policy and research (e.g., conferences, COP21, new publications) (5)	<input type="radio"/>						
Personal experiences and reflections of the science process (6)	<input type="radio"/>						
Research troubleshooting (7)	<input type="radio"/>						

9- Are there any other topics that you would be interested in reading about on the blog?

10- Have you ever referred a student, colleague or acquaintance to the ECCF website?

- Yes (1)
- No (2)

11- Is there anything else you would like us to know about the website (e.g., resource pages, etc.)?

14- When thinking about the frequency of the listserv announcements and the number of messages per announcement, would you like to see more or less of each?

	Much less (1)	Less (2)	Somewhat less (3)	About the same (4)	Somewhat more (5)	More (6)	Much more (7)
Frequency of announcements (1)	<input type="radio"/>						
Messages per announcement (2)	<input type="radio"/>						

15- Have you ever referred a student, colleague or acquaintance to subscribe to the ECCF listserv?

- Yes (1)
- No (2)

16- Is there anything else you would like us to know about the ECCF listserv?

17- Do you follow the ECCF on social media?

- Facebook (1)
- Twitter (2)
- Both Facebook and Twitter (3)
- Neither (4)

18- Would you like to see more or less posts on the social media accounts?

- Much less (1)
- Less (2)
- Somewhat less (3)
- About the same (4)
- Somewhat more (5)
- More (6)
- Much more (7)

19- How interested are you in commenting on and having discussions with other ECCF members related to blog posts and other ECCF topics on our Facebook page?

- Not at all interested (1)
- Not very (2)
- A little (3)
- Somewhat (4)
- Fairly (5)
- Very (6)
- Extremely interested (7)

20- Have you ever referred a student, colleague or acquaintance to follow the ECCF on Twitter or Facebook?

	Yes (1)	No (2)	I don't follow the ECCF on this platform (3)
Facebook (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Twitter (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21- Is there anything else you would like us to know about the ECCF social media platforms?

22- Please complete the following sentences:

	Too short / small / few (1)	sometimes too short / small / few (2)	just right (3)	sometimes too long / big / many (4)	too long / big / many (5)
The length of the blog posts are ... (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The frequency of blog posts are ... (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The size of the text in the blog posts are ... (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The size of images in blog posts are ... (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The number of images in the blog posts are ... (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23- Do you know that the ECCF website has a discussion forum where you can propose and talk about climate science and early career topics with the ECCF community?

- Yes (1)
- No (2)

24- How interested are you in commenting on blog posts and/or discussion forum threads maintained on the ECCF website?

- Not at all interested (1)
- Not very (2)
- A little bit (3)
- Somewhat (4)
- Fairly (5)
- Very (6)
- Extremely interested (7)

25- The ECCF website currently requires users to have a log in address and password to comment on website content. If you did not have to sign into the ECCF website to comment on discussion forum threads or blog posts, would this make you less or more likely to engage in each of the following in the future:

	Much less likely (1)	Less likely (2)	Somewhat less likely (3)	Neither less nor more likely (4)	Somewhat more likely (5)	More likely (6)	Much more likely (7)
Comment on blog posts (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post and comment to threads on the Discussion Forum (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26- How useful do you find the ECCF in supporting your career development?

- Not at all useful (1)
- Not very (2)
- A little (3)
- Somewhat (4)
- Fairly (5)
- Very (6)
- Extremely useful (7)
- Does not apply (8)

28- To what extent do you agree or disagree with the following statements:

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
Being a part of the ECCF community gives me a sense of hope for the future of climate science. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The ECCF provides me with a sense of community with other early career scientists. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Almost done, just a few more questions about you.

29- What is your gender?

- Male (1)
- Female (2)
- Other (3) _____
- Prefer not to say (4)

30- What is your current occupation?

- Undergraduate student (1)
- Master's student (2)
- Ph.D. student (3)
- Post-doc (4)
- Senior researcher / scientist (5)
- Early-career professor (6)
- Staff (7)
- Other (8) _____

31- What is your affiliation?

- Alaska CSC (1)
- North Central CSC (2)
- Northeast CSC (3)
- Northwest CSC (4)
- National Climate Change and Wildlife Science Center (NCCWSC) (5)
- Pacific Islands CSC (6)
- South Central CSC (7)
- Southeast CSC (8)
- Southwest CSC (9)
- USGS (10)
- LCC (11)
- USDA (12)
- NOAA (13)
- Other (14) _____

32- What field(s) are you working in? Check all that apply.

- Climate change (1)
- Climate modeling (2)
- Climate downscaling (3)
- Ecology (4)
- Wildlife (5)
- Aquatics (6)
- Conservation (7)
- Adaptation and mitigation (8)
- Communication (9)
- Policy / Decision-Making (10)
- Coupled Human-Natural Systems (11)
- Other (12) _____

33- Are you a member of the ECCF editorial board?

- Yes (1)
- No (2)

34- Is there anything else you would like to share about your experiences with the ECCF or something you would like to see the ECCF do in the future?