Deep dive into climate change communication: Time of Emergence

Syllabus

Meeting times: Fridays 12:30-3:20pm
Classroom: Parrington 306
Instructor: Prof Ann Bostrom
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Course Description

In this deep dive we will tackle specific climate change communications challenges faced by state agencies in Washington. Climate forecasts can be used to guide a variety of state agency activities, including for example assessing infrastructure needs, determining emergency response capacity needs (e.g., floods and storms, droughts and heat waves), and budgeting. In the context of climate change, such forecasts come with considerable uncertainties. Projects in this deep dive will involve working with the UW Climate Impacts Group and federal, state and local on how best to communicate climate change-related forecasts and uncertainties to meet agency needs. Climate Impacts Group Director Amy Snover is the direct client for the deep dive, and has collaborated on the development of the project materials, including this introduction.

As public and private sector planners and decision makers across the Pacific Northwest consider whether and how to prepare for climate change, they ask a basic question: when and where could climate change matter across the region? Which will we first notice, increased heat waves, heavier rain events or changes in winter flooding? Shall we first focus on preparing our drinking water, electricity or public health systems? In which locations will climate changes first drive change?

In response to questions like these, the UW Climate Impacts Group has developed a new approach to communication and delivery of climate change information that (1) focuses on identifying the time when climate change causes local conditions to deviate significantly from the past, the Time of Emergence of climate change, and (2) provides this information in the context of a wide range of scientifically credible future potential conditions, in order to stimulate and support user understanding of the implications of scientific uncertainty for decisions and priority setting. With funding from the Environmental Protection Agency and the US Army Corps of Engineers, the Climate Impacts Group has developed a prototype online system (http://toe.cig.uw.edu/) that enables users to explore where and when different types of change will first occur, for over 100 management-relevant climate variables. By accurately representing the variability and uncertainty in projecting future climate, the prototype online tool enables user selection of the scenarios best fitting their decision context and risk tolerance.
**Time of Emergence** of management-significant climate change is a deceptively simple metric that, for prioritization decisions, needs to be further combined with information provided by the user about the time required to prepare for these changes. Initial prototype testing with climate-literate regional practitioners revealed the challenge of effectively communicating the assumptions and implications of this metric, so as to support its appropriate application. In this project, students will work with the Climate Impacts Group and regional practitioners from local, regional, state and tribal agencies to develop and test alternate Time of Emergence communication frameworks. This project aligns with and will be informed by research findings from Lewandowsky and others on the effects of communicating climate change uncertainties as outcome uncertainties versus as temporal uncertainties (see Figure below and readings):

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### Learning Objectives

Students participating in this seminar will gain knowledge to:

- Lead and manage in public or nonprofit governance
- Participate in and contribute to the public policy process
- Analyze, synthesize, think critically, solve problems, and make decisions
- Articulate and apply a public service perspective
- Communicate and interact productively with a diverse and changing workforce
- Contribute to climate change communications and decision making
## DRAFT SCHEDULE

| Week 1 (Jan 8) | • Introduction to project and to Time of Emergence (TOE) tool by UW Climate Impacts Group Director Dr. Amy Snover.  
• Discussion of clients, class structure, research methods, and capstone reports.  
• Team selection and initial planning meetings. |
| Week 2 (Jan 15) | • Introduction to research on climate change and on communicating uncertain risk information  
• Introduction to interview and survey research methods  
• Discuss experience with TOE tutorials, and discuss and finalize interview protocols. |
| Week 3 (Jan 22) | • Refine research design, data collection and analysis methods  
• Initial survey development  
• Outline final reports (team reports and overarching deep dive results report) |
| Week 4 (Jan 29) | • Presentation of final report outlines, draft introductions and methods sections, interim interview results (as available), possible discussion with CIG staff [draft due to CIG by Monday morning]  
• Refine survey |
| Week 5 (Feb 5) | • Presentation of interim interview results and draft survey instrument to CIG, feedback from CIG Director Amy Snover and discussion  
• Finalize survey instrument, sampling |
| Week 6 (Feb 12) | • Team meetings to brainstorm TOE improvement and design of formative assessments of those improvements |
| Week 7 (Feb 19) | • Team presentations of interview results report sections  
• Discussion of survey analysis approaches |
| Week 8 (Feb 26) | • Initial analysis of survey results due. Discussion of survey results  
• Presentation and discussion of tests of proposed TOE tool improvements. |
| Week 9 (Mar 4) | • Present and discuss team draft findings, conclusions and recommendations. |
| Week 10 (Mar 11) | • Draft individual team reports due March 10th  
• Analysis and writing session on final deep dive report (Mar 11th) |
| Final class Thursday March 17th 12:30-2:20pm | • Final presentations to UW Climate Impacts Group (and others, including agencies – public meeting, will be announced to the Evans School). |
Products
Each team will produce a report for the Climate Impacts Group (CIG) and a Time of Emergence user group (e.g., U.S. EPA, WA Department of Ecology, Seattle City Light or local government agencies), and a portion of a comparative summary that includes all user groups with whom the deep dive interacts.

Each individual team report will include:
• Introduction to the website assessment task and the relevant climate change communication theory and research. The introduction will include a summary of what is known about the effectiveness and use of any similar climate change communication tools in policy contexts (including language, visuals, interactivity).
• Research methods and process
• Assessment of decisions that might be informed by TOE, and how they might be informed by TOE
• Evaluation of TOE website, with a focus on a particular piece of interest to the user(s) with whom the team has worked
• Suggested improvements to the TOE website based on evaluation
• Formative assessment of suggested improvements (as time permits)
• References / bibliography

Description of deep dive project activities (to be discussed in the first class):
The purpose of this project is to conduct an evaluation of the Time of Emergence website—a University of Washington website developed by the Climate Impacts Group to communicate regional climate change projections—in order to improve the usability and usefulness of the TOE website for state and local government decision makers and planners. Project teams (3-5 students) will interview government agency staff/decision makers (hereafter ‘participants’) to learn how TOE might inform their decision making, and observe TOE (http://toe.cig.uw.edu/) use sessions with concurrent think-alouds. Each team will re-interview agency participants after suggested improvements to the TOE web tool (wording/presentation) have been identified, to test the proposed improvements. All teams will also collect survey data from agency participants as well as from a larger sample of potential TOE web tool users. Each team will analyze interviews and surveys to evaluate the TOE website and identify potential improvements to it. Each team will write a final team report on the TOE website assessments they have conducted, and contribute to an overall report summarizing all survey results as well as a cross-user group comparison, and making final recommendations for improving the TOE website to make it a more useful policy decision support tool.

Candidate agencies: Washington State Department of Ecology (contact Michael Levkowitz), U.S. EPA (contact Michael Cox), and Seattle City Light (contact Crystal Raymond)

To guide our work, we will all sign letters of agreement with each other, the partnering agencies, and the Climate Impacts Group. Completing human subjects training is part of the course requirements.
Course Evaluation

You will be evaluated in two areas:

1. Capstone (75%) Your team report and contribution to the overall deep dive report will be assessed with regard to clarity (writing and the organization of your argument), analysis (the substance and depth of your argument and reasoning, analytical rigor), overall quality and usability to client (the UW Climate Impacts Group).

2. Seminar participation (25%) Your participation will be assessed in three areas:
   a. Responsibility (turning in documents on time, taking assignments and presentations seriously, etc.)
   b. Citizenship (attending seminar meetings, participating in discussions, offering useful observations and suggestions on colleagues’ projects, etc.)
   c. Professionalism (e.g. of final presentation)

Key product due dates:

- January 15th: Signed letters of agreement and draft interview protocols due.
- January 29th: Presentation of final report outlines, draft introductions and methods sections, interim interview results (as available).
- February 5th: Presentation of interim interview results and draft survey instrument to CIG
- February 12th: Team proposals for TOE website improvements.
- February 19th: Interview results report sections due.
- February 26th: Initial analysis of survey results.
- March 4th: Draft findings, conclusions and recommendations. Key take-aways from your team report that you want to communicate in your presentation, including two stories.
- March 10th: Complete drafts of team reports due March 10th (note that this is a Thursday).
- March 17th: Final presentations. Final team reports due.
While this is not a standard capstone seminar, you may nevertheless find the following useful:

Resources assembled by the Public Service Clinic to support capstone work:

- **Advice from past Public Service Clinic students**

- The [Proposal to Presentation webpage](http://evans.uw.edu/myevans/students/proposal-to-presentation) outlines students’ responsibilities throughout the capstone process and includes a letter of agreement template and sample work plans.

- **Sample Letters of Agreement and Work Plans**
  [http://evans.uw.edu/myevans/students/proposal-to-presentation](http://evans.uw.edu/myevans/students/proposal-to-presentation)

- **Capstone Project Archive** (contains past CPs, both PSC and independent).
  [http://evans.uw.edu/myevans/students/degree-project-archive](http://evans.uw.edu/myevans/students/degree-project-archive)

- **Award-Winning Capstone Projects**
  [http://evans.uw.edu/myevans/students/student-awards](http://evans.uw.edu/myevans/students/student-awards)

- **Research, Writing, and Team Resources**: resources about applied research methods and literature reviews, high performing teams, style guides, and presentation skills.  [http://evans.uw.edu/myevans/students/research-writing-and-team-resources](http://evans.uw.edu/myevans/students/research-writing-and-team-resources)


- The Odegaard Writing & Research Center’s [online resources and handouts](http://evans.uw.edu/myevans/evans-school-student-projects-and-human-subjects-approval) about grammar and mechanics, English as a Second Language, citations, and more. The [Center](http://evans.uw.edu/myevans/evans-school-student-projects-and-human-subjects-approval) offers drop-in writing consultations and appointments for graduate students.
Course materials (*key readings)

You will be asked periodically to read and comment on drafts and materials from other students in the course. Outside of these, there are only a few papers that are essential reading for this deep dive. If you have a limited background in climate change, you may want to read this recent report (at least the executive summary) at the outset of the course: https://cig.uw.edu/resources/special-reports/ps-sok/


*Time of Emergence of Climate Change Signals in the Puget Sound Basin, Project Report
