

The Human Side of Climate Change

Book of Abstracts

CONFERENCE 16-17 October 2015, Bergen, Norway
LINGCLIM project, www.uib.no/en/project/lingclim

Venue: **University of Bergen**, Faculty of Law, Auditorium 2
Magnus Lagabøtes Plass 1, 5010 Bergen <http://www.uib.no/en/jur/map>



Photo: Jan M. Lillebø, Bergens Tidende, January 2011. Copyright: Bergens Tidende

Over the last two decades, the human side of climate change has attracted increasing attention from scholars from the social sciences and humanities – developing into a prolific, rich and truly multidisciplinary effort, with contributions from fields as varied as media and communication science, political science, sociology, psychology, cultural studies, computational science, discourse analysis and linguistics. The kinds of data sources and materials that have been studied are as manifold as the different disciplinary approaches, ranging from the analysis of textual materials – such as scientific papers, policy reports, newspaper articles, blogs and other social media – to methodological approaches such as experiments and opinion surveys. This conference focuses on the current state of the research field.

Keynote speakers:

Mike Hulme, King's College London, **Eystein Jansen**, University of Bergen,
Michael D. Jones, Oregon State University, **Irene Lorenzoni**, University of East Anglia,
Brigitte Nerlich, University of Nottingham, **Matthew Nisbet**, Northeastern University,
Nick Pidgeon, Cardiff University, **Mike S. Schäfer**, University of Zürich,
Élodie Vargas, Université Stendhal, Grenoble



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CONFERENCE PROGRAMME

THE HUMAN SIDE OF CLIMATE CHANGE

Friday 16 October

08.30 Registration

09.00-09.30 Welcome and opening of conference

Professor **Kjersti Fløttum**, Head of LINGCLIM project

Professor **Dag Rune Olsen**, Rector of the University of Bergen

A voice on behalf of the people of the Pacific Islands – **Chief Telematua** (5 min film)

09.30–10.15 Keynote - **Mike S. Schäfer**, Professor, Institute of Mass Communication and Media Research, University of Zürich, Switzerland:

“Climate Change - A Global Problem in a Global Public Sphere?”

Chair: Andrew Salway

10.15–11.00 Keynote - **Irene Lorenzoni**, Senior Lecturer, School of Environmental Sciences, University of East Anglia, UK:

“Reflecting on the 'unusual': climate change narratives in decision-making about the future”

Chair: Øyvind Gjerstad

11.00–11.15 Break

11.15–12.00 LINGCLIM and Norwegian Citizen Panel presentations

11.15 Kjersti Fløttum: “The LINGCLIM project – an overview”

11.35 Endre Tvinnereim: “Exploring citizens’ view of climate solutions in their own words”

12.00-13.00 Lunch

13.00-14.40 Parallel sessions in Auditorium 2, Seminar rooms 1 and 2

Session A1, Venue: Aud 2 Chair: Mike Hulme	Session A2, Venue: Room 1 Chair: Eystein Jansen	Session A3, Venue: Room 2 Chair: Irene Lorenzoni
13.00 Peter M. Haugan Socially responsible climate and energy research?	13.00 Madeleine Midtgaard Exploring Climate Variability in Bangladesh: Understanding Local Constructions of Climate	13.00 Scott Rettberg Toxi*City: a Cinematic Combinatory Climate Change Narrative
13.25 Asun Lera St.Clair & Erlend A.T. Hermansen Making Climate Science Meaningful and Actionable	13.25 Igor Esau Traditional environmental knowledge in the Arctic cities	13.25 Erik Thorstensen Mitigating climate change: citizens, stakeholders, the public and laypeople as agents in IPCC WG III 2014
13.50 Kjetil Rommetveit, Roger Strand, Silvio Funtowicz Climate change versus technoscience? Imagining the limits of human interventions	13.50 Scott Bremer Evoking stories of the local climate in Bangladesh	13.50 Pierre Lejeune The ambiguous epistemic status of some typical statements about the future in the SPMs of WG II and III in IPCC’s Fifth Assessment Report (AR5)

14.15 Marianne Aasem The effect of institutional context on public attitudes towards climate policy instruments	14.15 Håvard Haarstad & Stina Ellevseth Oseland Transforming an ‘oil city’: urban form and strategies for low carbon transition in Stavanger, Norway	14.15 Marte R. Fjørtoft & Anje M. Gjesdal “Alone against the world”: Bolivia’s voicing of heterodox visions at the Cancun Climate Change conference
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14.40–14.50 Break

14.50-16.30 Parallel sessions in Auditorium 2, Seminar rooms 1 and 2

Session B1, Venue: Aud 2 Chair: Michael D. Jones	Session B2, Venue: Room 1 Chair: Mike Schäfer	Session B3, Venue: Room 2 Chair: Nick Pidgeon
14.50 Silviya Serfimova When Does Nature Say ‘No’? Ethical Dilemmas in Norwegian Ecopolitics within the Debates about Norway’s Potential Accession to EU	14.50 Dag Elgesem What’s oil got to do with it? The public debate about Norway’s contribution to keep carbon in the ground	14.50 Anne Gjelsvik & Torr Cumming – Can cinema change how we think and talk about climate change?
15.15 Yohann Ariffin & Nils Moussa The use of emotives in climate change governmentality	15.15 Richard Forrest Performativity and Structuration in Interest Group Communications on Climate Change	15.15 Simon Meisch “‘And all at once the clouds descend, Shed tears that never seem to end” – Looking at climate change from early modern literature
15.40 Jana Sillmann & Karianne de Bruin Bridging scales in the extremes: from global climate change to local adaptation	15.40 Edvard Hviding Living in the Ring of Fire: Climate Change and the Long Run of Environmental Experience in the Pacific Islands	15.40 Eivind Heldaas Seland Climate in history, history in climate: Some preliminary perspectives
16.05 Erlend M. Knudsen Pole To Paris: The Experiences from an Extraordinary Outreach Project		16.05 Marisa Usera-Clavero Review of Climate Change in Public Health Literature: Engendering a Rapid Appraisal Tool

16.30–16.45 Break

16.45–17.30 Keynote - Elodie Vargas, Ass. Professor, Université Stendhal, Grenoble 3, France:
“Climate Change : Discourses and representations in advertisements”

Chair: Kjersti Fløttum

17.30–18.15 Keynote (videoed) - Matthew Nisbet, Associate Professor of Communication, Northeastern University, Boston, Massachusetts, US:

“Disruptive Ideas: Public Intellectuals, the Media, and Discourses about Climate Change”

Chair: Elisabeth Ivarsflaten

18.15 End of day 1

Saturday 17 October

08.45–09.45 Keynote (videoed) - Brigitte Nerlich, Professor, School of Sociology and Social Policy, University of Nottingham, UK: “Metaphors in climate change discourse”

Chair: Trine Dahl

09.45–10.30 Keynote - Eystein Jansen, Professor, Department of Earth Science / Bjerknes Centre for Climate Research, University of Bergen, Norway:

“Uncertainties, risks and opportunities as viewed from recent climate research”

Chair: Helge Drange

10.30-10.45 Break

10.45-12.30 LINGCLIM presentations. Chair: Elisabeth Ivarsflaten

10.45 Gisela Böhm: “The psychology of language effects on the perception and communication of climate change”

11.10 Øyvind Gjerstad: “The Linguistic Complexity of Climate Change Narratives”

11.35 Andrew Salway: “Inducing salient information structures from climate change texts”

12.00 Trine Dahl: “LINGCLIM linguistic studies - Future research issues”

12.30-13.30 Lunch

13.30–14.15 Keynote - Mike Hulme, Professor of Climate & Culture, King’s College London: “Seeing Climate Change: For the Few, For the Many?”

Chair: Kjersti Fløttum

14.15–14.30 Break

14.15–14.30 Break

14.30-15.45 Parallel sessions in Auditorium 2 and Seminar room 1

Session C1, Venue: Aud 2 Chair: Elodie Vargas	Session C2, Venue: Room 1 Chair: Trine Dahl
14.30 Frolence Rutechura Linguistic Analysis of Obama's Speech on Climate Change	14.30 Fanny Domenech “Exploring the future of climate change”: new discursive practices in corporate communication
14.55 Oleksandr Kapranov (LINGCLIM project) Conceptual Metaphors in Corporate Discourse on Global Climate Change: The Cases of Shell and BP	14.55 Gaby Ortiz-Barreda Violence against women and climate change: What does the evidence say?
15.20 Ingelin Barmen & Jenny Etzell Climate Change, Environment and Promotional Discourse	15.20 Marguerite Daniel Climate change, childcare and positive deviance in the north of Ghana

KEYNOTES

SPEAKERS – ABSTRACTS



Mike Hulme (King's College London):

Seeing Climate Change: For the Few, For the Many?

How is it possible to see global climate change? Taking inspiration from Peter Rudiak-Gould's 2013 essay "We have seen it with our own eyes", this talk explores the different ways in which climate change becomes visible to us: through science (knowledge is made), through citizen's experience (knowledge is everywhere), through creative art (knowledge is veiled). These different claims about the visibility of climate change circulate widely across public arenas and become enrolled by different political interests and actors. They are rooted in different epistemologies, they motivate citizens in different ways and they carry different implications for democracy. I reflect on what these claims to 'see' climate change mean for the politics of climate change.

Mike Hulme is professor of climate and culture in the Department of Geography at King's College London. His work explores the idea of climate change using historical, cultural and scientific analyses, seeking to illuminate the numerous ways in which climate change is deployed in public and political discourse. He is currently working on a book manuscript *Weathered: A Cultural Geography of Climate* (SAGE, 2016). His previous books include *Can Science Fix Climate Change? A Case Against Climate Engineering* (Polity, 2014) and *Why We Disagree About Climate Change* (Cambridge, 2009). From 2000 to 2007 he was the Founding Director of the Tyndall Centre for Climate Change Research, based at the University of East Anglia, and since 2007 has been the founding Editor-in-Chief of the review journal *Wiley Interdisciplinary Reviews (WIREs) Climate Change*.



**Eystein Jansen (University of Bergen):
Communicating the IPCC findings: Does it help to reduce complexity?**

The IPCC reports contain a vast and comprehensive overview of the science literature. In the SPM of WG1 these were condensed into a series of headline statements - communicating (with government approval of the text) what the authors (natural scientists) believe best summarise the most policy relevant aspects of the 1000+ page document which references 10.000 peer reviewed papers. Through this major reduction of textual complexity, expressions of caveats and uncertainty are necessarily omitted to a large extent. Yet it leaves the communicator with some potentially useful tools when presenting the results to stakeholder audiences. Has this trade-off been efficient, and does it give the science communicator a better means to reach out the science basis for climate policy to various audiences? Experiences with communicating AR5 results to various types of audiences from the perspective of an author of the WG1 Summary for Policymakers will be summarised.

Eystein Jansen is professor of Earth Science at the University of Bergen, with expertise in past climates and natural climate variability, primarily of high latitude oceans. He was the founding director of the Bjerknes Centre for Climate research and served in this position for 13 years until 2014. Jansen was co-ordinating lead author in the IPCCs 4th Assessment report, and lead author in the 5th Assessment report, both within WG1. Jansen has authored or co-authored more than 120 peer review papers and is a member of the Norwegian Academy of Science and Academia Europaea.



**Michael D. Jones (in collaboration with Kjersti Fløttum):
Culture and Climate Change: A Storied Examination of Norwegian Public
Opinion**

Global climate change is a problem where solutions are costly, often at odds with existing energy market incentives, where unilateral action by individuals or countries often seems futile in the face of collective action problems, and consequences for inaction are easily deferred to latter generations. For these reasons, adopting policies that promote mitigating or adapting to climate change has proven difficult for most countries, indicating the broad societal support is likely necessary to achieve effective policy action. In the spirit of understanding mass public opinion about climate change, this chapter investigates findings of a recent national survey conducted in Norway, comparing findings to similar studies already conducted in the United States. Built into the Norwegian national survey are replication experiments already conducted in these US studies that allow tentative comparisons of US and Norwegian citizens on perceptions of risk. Additionally, this study operationalizes the Narrative Policy Framework to assess the role of narrative communication and culture in shaping how information about climate change is processed by Norwegian citizens. Implications of findings for Norwegian and global climate change policies are discussed.

Michael D. Jones is an assistant professor at Oregon State University's School of Public Policy. His research focuses on policy theory and the Narrative Policy Framework, with recent publications appearing in *Critical Policy Studies*, the *Policy Studies Journal*, *Political Psychology* and *Social Science Quarterly*. He is the editor, with Elizabeth A. Shanahan and Mark K. McBeth, of *The Science of Stories: Applications of the Narrative Policy Framework in Public Policy Analysis* (2014, Palgrave Macmillan).



**Irene Lorenzoni (School of Environmental Sciences, University of East Anglia):
Reflecting on the ‘unusual’: Climate change narratives in decision-making about
the future**

The experience of an extreme event can serve to open up spaces for reflection upon the nature of the event, the underpinning causes, the immediate responses and effects on longer-term decision making. Extreme events are sometimes perceived as ‘unusual’ and infrequent within the lifespan of an individual, although historical accounts often provide tell-tale records of similar occurrences. This talk examines and considers how publics and decision-makers present and discuss an experienced ‘unusual’ event, its effects, and its relationship with scientific understandings, including climate change. It considers which narratives emerge, what expectations they include and examines whether these narratives create opportunities (and / or barriers) for changing thinking, learning and policy responses to such events, in regard to diverse forms of adaptation.

Dr Irene Lorenzoni is Senior Lecturer at the University of East Anglia. She is interested in how individuals, groups and collectives perceive the challenges of global environmental change, how they engage and respond to them. Her research examines the relationships between individual perceptions and understandings of environmental issues - specifically climate change, its causes and consequences over different timescales - and behavioural change. Her recent work includes understanding individual and institutional engagement with climate change both in terms of mitigation and adaptation; the role of social capital in adaptation; public attitudes towards energy options; the evolution of climate change policy; conceptualisations of time and the future, responses to extreme events. She is a member of the Science, Society and Sustainability (3S) Research Group at UEA and of the Tyndall Centre for Climate Change Research.



**Brigitte Nerlich (University of Nottingham):
Coming to terms with climate change through metaphors**

I.A. Richards said in his *Philosophy of Rhetoric* that a ‘command of metaphor plays a role in the control of the world that we make for ourselves to live in’ (1936: 155). This means that we make the world we live in through the language we speak in it, especially through the use of metaphors. Metaphors make us see one thing in terms of another and then act in specific ways according to these new ways of seeing – they have a performative power. They can, of course, also make us not act at all, especially when it comes to climate change. This talk charts some of the changes in climate change science and policy debates through changes in metaphors, from optimistic and rallying ones to pessimistic and divisive ones. I shall ask: Do metaphors help us cope with climate change or have we lost our ability to speak about climate change and therefore the power to change the world we want to live in?

Brigitte Nerlich is Professor of Science, Language and Society at the University of Nottingham. She has a background in linguistics, philosophy and sociology. Her research deals with the cultural and political contexts in which metaphors and other framing devices are used in public, policy and scientific debates about emerging technologies, especially biotechnologies, emerging diseases and climate change. She is Director of a Leverhulme Trust funded research programme ‘Making Science Public: Challenges and opportunities’. She has a Dr.Phil. from the University of Düsseldorf and a DLitt from the University of Nottingham. She is a Fellow of the Academy of Social Sciences. She blogs on the Making Science Public blog (<http://blogs.nottingham.ac.uk/makingsciencepublic/>) and elsewhere and she tweets as @BNerlich.



**Matthew Nisbet (Northeastern University, Boston Massachusetts):
Disruptive Ideas: Public Intellectuals, the Media, and Discourses about Climate Change**

In this presentation, Dr. Nisbet will discuss his research analyzing the role that prominent public intellectuals like Bill McKibben, Naomi Klein, Jeffrey Sachs, Tom Friedman, George Monbiot, and Andrew Revkin play in shaping debate over climate change. He will detail how public intellectuals establish their authority, spread their ideas, and shape political discourse, assessing the contrasting stories that they tell about the causes and solutions to climate change and related environmental problems. He will propose methods for building on his analysis and urge the need for forums that feature a diversity of voices, discourses, and ideas.

Matthew C. Nisbet is Associate Professor of Communication, Public Policy & Urban Affairs at Northeastern University. He is Editor-in-Chief of The Oxford Encyclopedia of Climate Change Communication, “The Age of Us” columnist at The Conversation, a consulting researcher to the American Association for the Advancement of Science, and a member of the National Academies Roundtable Committee on Public Interfaces in the LifeSciences. Nisbet studies the role of communication, media, and public opinion in debates over science, technology, and the environment. The author of more than 70 peer-reviewed studies, scholarly book chapters, and reports, he teaches courses in Environmental and Risk Communication, Political Communication, and Strategic Communication.



**Nick Pidgeon (School of Psychology, Cardiff University):
Public Perceptions of Climate Change: Key Trends and Emerging Issues**

Public perceptions of climate change are known to differ between nations and to have fluctuated over time. Numerous plausible characterizations of these variations, and explanations for them, are to be found in the literature. This paper considers previous empirical research that has addressed the temporal aspects of public perceptions, core conclusions from work on perceptions, and possible theoretical explanations. We address findings that have been obtained since the 1980s and using a range of methodologies (qualitative and quantitative). Studies point to a majority belief in anthropogenic warming in many countries in recent years, alongside a clear desire for government action. However growing scepticism in the 2000s in some developed countries, alongside facets of ‘psychological distancing’, have been underpinned by economic and socio-political factors. We also review very recent work looking at the relationship between extreme weather events and public perceptions. We conclude that the imbalance in the literature toward polling data, and toward studies of public perceptions in Western nations (particularly the United States), leaves much unknown about the progression of public understanding of climate change worldwide. More comparative research is required that also helps us to understand the reasons behind trends in public perceptions, while the application of qualitative methodologies also offers the potential for better appreciation of the cultural contexts in which climate change perceptions are evolve.

Nick Pidgeon is Professor of Psychology at Cardiff University, where he directs the Understanding Risk Research Group (www.understanding-risk.org). He researches risk analysis, risk perception, risk communication, and public engagement with risk. In 2008-2011 he held an Economic and Social Research Council Climate Leader Fellowship on public perceptions of climate change. Co-editor with Roger Kasperon and Paul Slovic of *The Social Amplification of Risk*, Cambridge University Press, 2003, Nick is a Fellow of the Society for Risk Analysis and an Honorary Fellow of the British Science Association. In the 2014 Queen’s UK Birthday Honours list he was awarded an MBE for services to climate change awareness and energy security policy.



**Mike S. Schäfer (University of Zurich):
Climate Change in the Media: Where have we been, and where should be headed?**

Climate change is an ‘unobtrusive’ issue: Its causes, characteristics and consequences are not easily perceivable, and what most people know about them stems from the media and from online communication. Fittingly, the analysis of climate change communication has become a growing and lively research field in recent years. It has established that climate change has become a relevant media issue in the late 2000s in most countries around the world, triggered in particular by landmark events such as the world climate summits (COPs) or the IPCC reports. It has also shown considerable differences in the salience, tone and framing of climate change communication between Anglophone and other countries, between the ‘Global North’ and ‘South’, as well as over time. The talk maps the major trends in mediated climate change communication and points out directions for further research.

Mike S. Schäfer is Professor of Science, Crisis and Risk Communication at the Institute of Mass Communication and Media Research at the University of Zurich. He is also a member of the steering committee of the university’s “Center for Higher Education and Science Studies” (CHESS). Mike has studied communications and sociology in Leipzig, Vienna and Cork, holds a Ph.D. from the Free University of Berlin and headed the research group “Media Constructions of Climate Change” at the University of Hamburg until 2013. His work focuses on climate change communication in mass media and online, particularly in a cross-national, comparative perspective. Mike tweets as @mss7676.



**Elodie Vargas (Université Stendhal, Grenoble 3):
Climate Change: Discourses and representations in advertisements**

The purpose of advertising is to convince customers that a company's services or products are the best, enhance the image of the company, point out and create a need for products or services. How is this possible, when a company is a 'big polluter', who is responsible for pollution and climate change? Climate change and advertising are two contradictory data. The only solution for any such company is to "greenwash". This talk explores the different ways to "greenwash" and focuses on the discourses and representations of climate change in advertisements.

Elodie Vargas, PhD from the University of the Sorbonne (Paris IV), is Associated Professor of German Linguistic at Grenoble University. She has a background in Textlinguistics, Discourse analysis and Pragmatics. Her first field of research was *Popular Science*, but her research deals now with the *Greenwashing* in advertisements. She is currently working on a book manuscript "The Greenwashing as 'text pattern': Analysis of discursive and semiotic strategies in French and German advertisements". She is a member of COP 21 UGA research group and works interdisciplinarily with scientists in climatology (IPCC). <http://cop21.univ-grenoble-alpes.fr/fr/a-propos/le-groupe-cop21-uga/>

PARALLEL SESSION ABSTRACTS

Marianne Aasem – CICERO – Center for International Climate and Environmental Research – Oslo, Norway

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Title: The effect of institutional context on public attitudes towards climate policy instruments

Abstract:

Recent studies emphasize that public support for climate policies is crucial to the viability of such policies (Pidgeon, 2012). They further stress the need for creating settings such that policies are supported by people holding different values (Hulme, 2009). This study investigates the effect on public attitudes towards policy instruments to cut emissions, from varying the institutional context. Institutional context is defined as rationality context, defining whether “individual rationality” or “social rationality” is appropriate (Vatn, 2005).

A split sample survey of car owners in Oslo was conducted to investigate the effect of different text treatments on attitudes to three instruments to reduce emissions from private cars: more bike lanes, increase gasoline prices, chose public transport voluntarily. Three groups of 500 respondents received different texts about car emissions. One emphasised the individual health gain from reducing emissions (“Individual”-treatment), another emphasised the social responsibility for avoiding climate change (“Social”-treatment). A control group received no treatment.

We find that attitudes to instruments depend on institutional setting, also when controlling for egalitarian and individualistic values. Respondents that receive “Social”-treatment are more positive to increase gasoline price than the other groups, respondents that receive “Individual”-treatment are more positive to bike lanes. Institutional setting does not affect the respondents’ values. It rather seems to influence what norms becomes emphasized. Enhancing individual rationality increases the support when the instrument give individual benefits (bike-lane). Enhancing the social rationality increases the support to instrument that offers social benefits (increased gasoline price).

Hulme, M., (2009). *Why We Disagree About Climate Change*. Cambridge, UK: Cambridge University Press.

Pidgeon, N., (2012). Public understanding of, and attitudes to, climate change: UK and international perspectives and policy. *Climate Policy*, 12, 85–106.

Vatn, A., (2005). *Institutions and the Environment*. UK: Edward Elgar.

Yohan Ariffin & Nils Moussu – University of Lausanne, Switzerland

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Title: The use of emotives in climate change governmentality

Abstract:

This paper uses the concept of global environmental governmentality to analyse the politics of climate change following the 2009 Copenhagen Accord, which aimed at limiting global warming to no more than 2 °C over its pre-industrial value, and the subsequent Cancun Agreement, which allowed countries to voluntarily pledge their emissions reductions targets and baseline years.

Foucault defined governmentality as “power that has the population as its target, political economy as its major form of knowledge, and apparatuses of security as its essential technical instrument”. He went on to study how governmentality was gradually informed by neoliberalism, the central issue of which he summarized as follows: “how the overall exercise of political power can be modelled on the principles of a market economy”.

Our paper begins by briefly discussing the emergence of contemporary global environmental governmentality, which we argue displays the following features: systematic application of economics to cognizing environmental problems and solutions, organization of environmental problems into politics as “security” issues, and gradual recognition of the need to protect nature from the people or the population reconceptualised as a source not only of wealth and power but also of externalities. These features form the new “story-line of ecological modernization” to adopt an expression used by Maarten Hajer.

Our preliminary discussion is followed by a reflection on how this global environmental governmentality has been applied to climate change. We argue that a discourse coalition formed by government and business actors was consolidated during the post-Kyoto negotiations. This coalition framed climate change as an opportunity to achieve global environmental security through low-carbon technologies, productivity improvement, and carbon accounting tools.

We argue that “emotives”, or the appeal to emotions, can account for this outcome. The concept of “emotives” was introduced by Willam Reddy to refer to emotional expressions that are analogous to performatives. Reddy however addresses what these utterances do to the speaker. Our paper takes a different definition of the term. Emotives refer here to attempts by discoursing subjects to get their addressees to do something or to refrain from doing something. They are mobilized by state and non-state representatives who enjoy sufficient authority to use the first person plural (“we are fearful”, or “we are confident”).

The purpose of our contribution is to discuss how the use of emotives can account for the imposition of the bottom-up “pledge and review” process and of “market-friendly” solutions to climate change. We argue that governments together with business have sought to “responsibilize” state behaviour by evoking the danger of climate change and the concomitant need to set a climate target which should be achieved collectively, not through international command and control measures, but through further integration of states and global markets. In this regard, climate change governmentality appears to give credence to Foucault’s intuition that “there is no liberalism without a culture of danger”.

Ingelin Barmen & Jenny Etzell – Department of foreign languages, University of Bergen, Norway

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Title: Climate change, environment and promotional discourse

Abstract:

We will present and discuss the work and findings of our master's theses. These theses conduct linguistic analyses of the discourses found in French advertisements as well as in texts published on the website of Greenpeace France. Though two separate studies, both theses analyze the relationship between CC and language, the supposed influence of the latter on the creation of the public's conception of CC, and the problem of mediation of this pressing issue.

The nature of the research conducted is that of a qualitative study taking into account the context in which language is produced. The studies analyze numerous different language phenomena relevant for the points of interest stated above. We wish to highlight interesting similarities and differences found in the two different types of discourse. Relevant topics of discussion will be the problem of whether we can trust advertisements as being an "honest" source of information concerning CC and the efficiency of a language supposedly promoting fear of CC risks and effects.

Bibliography:

Adam, J-M. & Bonhomme, M. (2012 [1997]) *L'argumentation publicitaire. Rhétorique de l'éloge et de la persuasion*. Paris, Armand Colin.

Amossy, Ruth (2013 [2000]) *L'argumentation dans le discours*

Hulme, Mike (2013) *Why we disagree about climate change*.

Kerbrat Orecchioni, Cathrine (1997 [1980]) *L'énonciation de la subjectivité dans le langage*.

Scott Bremer – Centre for the Study of the Sciences and the Humanities (SVT), University of Bergen, Norway

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Title: Evoking stories of the local climate in Bangladesh

Abstract:

Climate change research has increasingly come to focus on local climate adaptation. This emerging corpus of research acknowledges that we are already facing the impacts of a rapidly changing climate, that these impacts are experienced at the local ‘lived-scale’, and that these experiences are contingent to each unique locality. The specificity of this research has seen various calls for partnerships between scientific and local communities, to co-produce climate knowledge. One key challenge remains to faithfully elicit this local knowledge as a meaningful contribution to a process of co-production. How can we make explicit the tacit understandings of local climate inherent to communities, where this knowledge is embedded within other cultural symbols, values and meanings? We argue that the broad field of narrative theory and methods may offer a promising approach.

This presentation presents findings of climate research with local communities in northeast Bangladesh, as part of the TRACKS project. The research conducted ‘narrative interviews’ with 235 diverse local actors, to elicit stories about their experience with the changing weather, and its impact on their lives. In this way, we sought some glimpse into local climate knowledge as culturally embedded, told in a way sympathetic to this cultural meaning. After a short comment on the narrative interview approach, we present and critically discuss some of the most revealing narratives, including by way of film. The dual objectives are to provide: (i) interesting insights into local climate understandings in Sylhet Division; and (ii) commentary into the usefulness of narrative interviews as a social science method for local climate adaptation.

Marguerite Daniel – Department of Health Promotion and Development, University of Bergen, Norway

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Title: Climate change, childcare and positive deviance in the north of Ghana

Abstract:

Climate change adds to the complex challenge of achieving optimal child health and development in the Global South. In this presentation we describe a planned project (application submitted to Toppforsk) that departs from the dominant risk factor paradigm, in favour of positive deviance (PD) methodology. The basic premise is that even in places where deprivation is severe and widespread, some PD families are able to harness scant resources, sufficient to support optimal child development. The question is, how do they manage despite their hardships? This transdisciplinary project – using PD research on childcare in the context of climate change in the north of Ghana – aims to discover effective attitudes and behaviours that might be spread to many more families struggling to raise their children under impoverished living conditions. The baseline situation of child health in two contrasting districts of Upper East Region in the north of Ghana will be established using a range of methods including survey data, remote sensing, participant observation, interviews and participatory methods. Not only will measures like stunting be used, but cultural beliefs and common attitudes and behaviours regarding child health will be identified. Positive deviant households – where children are thriving in spite of general conditions of hardship – will be purposively selected. Observation and participatory methods – particularly visual methods like Photovoice – will be used to discover the uncommon attitudes and behaviours that contribute to excellent childcare in these households. Working with local communities using highly participatory methods, we will then design an intervention to disseminate the findings so that more households can provide exemplary childcare. By involving several disciplines that contribute to child health (health promotion, nutrition, geography, anthropology, social psychology, etc.) we aim to build a comprehensive picture of childcare in the context of climate change in the north of Ghana.

Fanny Domenec - Université Panthéon Assas-Paris 2 / Université Aix Marseille, LERMA EA 853, France

Email: fanny.domenec@u-paris2.fr

Title: “Exploring the future of climate change”: new discursive practices in corporate communication

Abstract:

Over the last decades, oil and gas companies have been accused of actively contributing to air pollution and climate change. In response, ExxonMobil, Chevron and Shell have diversified their communication tools, using online videos and “energy scenarios” to promote the image of the oil industry. This paper aims to explore these innovative genres, at the crossroads of corporate discourse and infotainment. The corpus is made up of the documents published by ExxonMobil (Exxon’s Outlook for Energy), Chevron (Chevron Human Energy Stories) and Shell (Shell Scenarios).

Using the tool of English for specific purposes (ESP) which focuses on specialized varieties of English or SVEs (Resche 2013; Van der Yeught 2014) and genre analysis (Bhatia, 2004), this work seeks to characterize new discursive practices in the corporate world. The lexical units and terms used to describe the companies’ products and activities are analyzed in a lexical module. The strategic module casts light on the rhetorical devices used to “reframe” climate change and the companies’ responsibility for the phenomenon (Levy & Kolk 2002; Nisbet 2009).

Results pinpoint to an evolution in corporate communication on climate change, from a defensive and sometimes climate-denying stance to a proactive approach founded on a posture of transparency. The documents under study are marked by processes of polyphony (Carel & Ducrot 2009; Fløttum 2010), conversationalization (Fairclough et al. 2011) and storytelling (Lambert 2013) that blur the frontiers of traditional corporate discourse (Domenec 2013). These hybrid genres, at the intersection of science, literature and information are both meant to inform and entertain the audience. Hedging and popularization are used to justify the need for the companies’ products which are described as a solution to, rather than the cause of, climate change.

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Title: What's oil got to do with it? The public debate about Norway's contribution to keep carbon in the ground

Abstract:

Two thirds of the fossil fuels have to be kept in the ground in order to limit the global warming to 2 degrees, according to the IEA. Whether Norway should contribute to this by reducing its oil activity became an issue in the parliamentary campaign in 2013: should one allow the search for oil in the pristine areas outside of Lofoten in Northern Norway, or not? The question was highly controversial but in the negotiation among the winning parties of the election it was decided to temporarily postpone further exploratory search for oil in the area. But it is not clear what will happen in the future.

In May 2015 all of the parties in the Parliament unanimously agreed to divest the Norwegian Pension Fund from companies with more than 30 percent of its activity in the coal industry. The issue was again whether Norway should contribute to keep carbon in the ground. Why, one might ask, was it seemingly politically much less controversial to divest the Pension Fund from coal than to abstain from drilling of oil outside of Lofoten?

To shed light on this question we manually coded all of the (613) articles appearing in Norwegian newspapers and on the NRK website during September 2013 (the Election Day was on September 9) and analyzed the arguments and how the issue was framed. Using automated methods we then chart the media debate about Norway's contribution to keeping carbon in the ground when the Lofoten case was no longer an active political issue and how the debate focused instead on the divestment of the Pension fund. We analyze the media coverage of Norwegian politics on oil and climate change up to May 2015 and discuss the similarities and differences between the arguments and framings of the issue over time.

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Title: Traditional environmental knowledge in the Arctic cities

Abstract:

Population of arctic cities rapidly has significantly increased over the last few decades following up exploration of the region's natural resources. Majority of the city dwellers are migrants from southern territories. They have deep cultural attachment to trees and agriculture. In this way, the traditional environmental knowledge (TEK) [1] of city dwellers is in conflict with the arctic climate, nature and their reflection in the TEK of the aboriginal population. We used analysis of the high-resolution satellite images to reveal the transformation of the arctic environment by implementation of the imported TEK in the cities. We document a broadly implemented forestation and attempts of agriculture in the Russian arctic, Island and Greenland [2]. We disclose large local environmental effect of such culturally-driven environmental changes. Our analysis of 28 cities in Northern West Siberia revealed that they have become significantly greener since 2000. Similar conclusion was drawn in [2] after detailed instrumental analysis of environmental changes in Barrow (Alaska) and in [3] after study of tree planting in Murmansk, Reykjavik and Nuuk. Although many southern tree species are struggling to survive in the arctic, the cultural needs of migrant population support the work in arboretums and urban gardens [4].

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Title: “Alone against the world”: Bolivia’s voicing of heterodox visions at the Cancun Climate Change conference

Abstract:

The UN Climate Change conferences are moments where different world-views connected to climate change meet, align and evolve, and conference narratives let us observe how such world views are discursively constructed and debated. In this paper, we examine the discursive strategies of the Bolivian representatives at the UN climate change conference in Cancun (COP 16), as they are expressed in narratives about the hopes for the outcomes of the Cancun conference, and disappointment over the final results. Moreover, we examine reactions to the Bolivian position, more specifically that of the Norwegian representative Erik Solheim, which presents a distinctly different framing of the event.

At the Cancun summit, optimism had been dampened after the disappointment of Copenhagen (COP 15). In a context where the room for hope and optimism seemed to have been narrowed down, how could alternative framings of climate change issues be put forward and negotiated? In what ways did Bolivia continue the efforts which had been initiated at COP15 in Copenhagen, and further developed through the World People’s Conference on Climate Change in Cochabamba in 2010? Through our analysis, we aim to produce an inventory of discursive strategies and linguistic tools that are used to construct an alternative vision and framing of the climate change issues debated at Cancun, with a specific focus on the discursive construction of speaker and addressee subject positions (including tools of distancing and proximity, evaluation, and pronoun use), as well as tools for distancing and silencing views that transgress the mainstream.

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Title: Performativity and Structuration in Interest Group Communications on Climate Change

Abstract:

Various crucial, yet overlooked, aspects of climate change communications involve the self-reflective ‘performativity’ considerations of public-policy actors advancing claims in the public sphere, especially interest groups (IGs) advocating action to address the issue. IGs are an important source of information on climate change and related scientific matters, influencing perceptions and policy options. Nevertheless, IG communications take place in the context of their own — and others’ — assumptions and perceptions regarding how audiences may respond, and, to varying degrees, strategic considerations calculated to anticipate such responses. Hence, actors may perform certain ‘identities’ and engage in related ritualized communication activities believed to be consonant with their specific adopted roles, including through adhering to a set of norms or ‘unwritten rules’ of climate campaigning and related, tacitly understood strategies. Performativity thus entails structuration — in terms of both roles and action repertoires.

With emphasis placed on the “story-telling” aspects of communications, IGs engage in the conscious utilization of framings, narratives, and the employment of metaphors — but also hyperbole and fictionalized portrayals of issues and underlying mechanisms. The result can be distortions of science knowledge, including inaccurate portrayals of climate science and its inherent uncertainties. Moreover, it can be difficult for audiences to determine whether IG claims are meant literally or are intended to be figurative and metaphorical in nature. The ethics of the performance of advocacy therefore emerges as a key issue for consideration.

Reflecting on first-hand observations and personal experience working for IGs addressing climate and related issues, as well as ongoing doctoral research, this study is a Grounded Theory-inspired qualitative analysis exploring categories of performativity concerns and their implications for science communications and the functioning of social movement organizations.

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Title: Can cinema change how we think and talk about climate change?

Abstract:

Summing up the current state of affairs when it comes to awareness on climate change, author Eugene Linden states that climate warnings are ‘heard, but not listened to’ (Linden 2015). In this paper we will discuss if and how watching depictions of climate change can make a difference. We will base our discussion on three different types of cinematic material. The first is the campaign ‘Nature is speaking’, in which famous Hollywood actors like Julia Roberts, Harrison Ford, and Edward Norton give voice to nature itself in films aiming to represent the views of ‘the ocean’, ‘the soil’, etcetera. The second is a selection of ‘cli-fi’ movies, fiction films in which climate change plays a prominent role. Considered a sub-genre to science fiction, cli-fi often depicts apocalyptic climate-related catastrophes where nature threatens human existence, typically through extreme weather conditions (examples are *Snowpiercer* (2014) *The Day After Tomorrow* (2004)). Our third example is *Chasing Ice* (2012), a documentary about the effect of rising temperatures on glaciers in the Arctic.

In our paper we will combine perspectives from visual rhetoric, film studies, and climate science. Our method will be close reading of a selection of films, and in our analysis we will focus particularly on the role of visual imagery. We will discuss how and to what extent these different films can be said to represent the scientific knowledge about climate change (IPCC 2013), or what Charles Musser (2014) has termed ‘truth value’, and how different rhetorical approaches might work in order to convince the public about climate change.

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Title: Transforming an ‘oil city’: urban form and strategies for low carbon transition in Stavanger, Norway

Abstract:

A key assertion of this paper is that cities – urban-level politicians, planners and citizen groups – should to a greater extent be recognized as critical actors in climate and energy transformations. The way cities are planned and built is a key determinant for energy consumption and CO₂ emissions. Around 70% of total energy use takes place in cities, and since the world is rapidly urbanizing, this is expected to grow. Cities are increasingly mobilizing inter-city networks to develop responses to energy and climate challenges (e.g. C40, Energy Cities). Urban planners and other actors are picking up new ideas through these networks and applying them in different contexts. However, a problem for urban energy transformations is the inertia of the built environment. Once a particular urban form and structure is in place it is difficult to change, and all cities have particular structures and landscapes that condition how sustainable energy policies can be implemented. There is a need to understand how urban policies can effectively overcome the inertia of the built environment.

This paper examines the strategies for transforming the transport and mobility infrastructures in Norway’s oil city, Stavanger. It draws on fieldwork in Stavanger, including interviews and observation. We place particular emphasis on how energy-related practices have been built into the urban form at critical historical junctures – in this case how the oil discovery outside the city’s coast has shaped the city’s form and planning decisions since the early 1970s. We use this historical account to discuss the opportunities and constraints for contemporary policy strategies in the city, including a ‘smart city’ project, compact city plans and the building of new public transport infrastructure (bus rapid transit). Finally we discuss how the case study can help understand the opportunities and challenges for urban low carbon transformation more broadly.

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Title: Socially responsible climate and energy research?

Abstract:

Our common climate future is primarily determined by the ways in which humans harvest and use energy. However, our global energy future seems to be only weakly constrained by climate concerns. Intergovernmental climate change assessments and negotiations have had little tangible impact. Security policy and economic policy, local health and environmental concerns seem to be of greater importance. Recently, technological developments have made new renewables cost competitive with fossil energy. The global energy future and thereby climate is then determined by an interplay between local and regional multisectoral policy developments, opportunities for business and innovation, and the public in their role as consumers and activists.

What is the role of science including social and human sciences in determining the path forward? Scientists should actively inform the public debate and critically view their own work in a global context (Lubchenco, 1998). However, I will claim that much of science in Norway even including climate science is in effect supporting narratives of environment-friendly fossil fuel and avoiding to ask crucial questions (Bay-Larsen and Haugan, 2015). Scientists should also be critical to what knowledge is being asked for and how advice is being used in a so-called knowledge-based society. But it requires effort to keep informed about practical aspects of society outside of expert knowledge domains. I will claim that scientists rarely expend such efforts. How can we make science more useful to society?

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Title: Living in the Ring of Fire: Climate Change and the Long Run of Environmental Experience in the Pacific Islands

Abstract:

Vernacular Pacific models of gradual environmental change and sudden catastrophe have implications for how contemporary challenges related to the effects of climate change are perceived and interpreted on the local level. Contrary to stereotypical popular views of island life in the tropical Pacific as characterized by environmental splendour and idyllic equilibrium, the actual foundations for everyday life in the islands include many elements of unpredictability and instability that may pose harsh challenges for long-term human settlement. Starting from the vantage point of the seismically active New Georgia Group in the Solomon Islands and its recent record of earthquakes, volcanic eruptions and associated natural disasters such as tsunamis and the sudden rise and subsidence of coastlines, I examine how Pacific Islanders' long-term experience of living with such volatile environments is manifested in world views that allow for a certain interpretation of environmental instability. In New Georgia as elsewhere in the Pacific, moreover, islanders have also taken significant historical roles themselves in transforming the environments on which they rely; a pattern which accelerates in the present. I further discuss how prevailing approaches to unstable island environments are exemplified across Oceania by folk tales about origin, creation, movement, danger and malevolent agency. The argument is developed that the multitude of Pacific perspectives on environmental processes tend to be far from static, but instead retain a grasp of both sudden and long-term transformations of rich, diverse but vulnerable island environments exposed to the forces of seismology, weather and sustained human agency, including the current effects of anthropogenic climate change.

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Title: Conceptual Metaphors in Corporate Discourse on Global Climate Change: The Cases of Shell and BP

Abstract:

This talk involves a qualitative discourse analysis of conceptual metaphors identified in corporate discourse on climate change by British Petroleum (BP) and Shell respectively. The material of the study involves these corporations' official 2014-2015 annual reports. The analysis of the annual reports involves identification of conceptual metaphors viewed through the lenses of cognitive linguistics. Conceptual metaphor is regarded as a robust means of discursive space construction. The following types of conceptual metaphors have been identified in the annual reports by BP and Shell: 'Corporation as a Responsible Citizen', 'Corporation as a Helping Neighbour' and 'Corporation as an Environmentally Friendly Citizen'.

Shell's public discourse involving climate change is embedded into the company's attempt to address environmental issues in conjunction with an increasingly interconnected global economy. Since late 1980ies, Shell's public discourse addresses the issue of climate change as a part of the company's public relations (PR) campaign for sustainable development. An important feature of Shell's discourse involves reporting on social and environmental impacts embedded in the context of sustainable development, where Shell's discursive practices involve conceptual metaphor 'Shell as a Caring Corporation'. Shell's corporate image building as a 'caring corporation' is instantiated by means of discursive imagery and metaphoric constructions involving concepts of care and citizenship.

Conceptual metaphor 'BP as a Citizen' appears to be extensively employed in BP's environmental discourse. BP's public image of a good climate-change-concerned citizen is facilitated and reinforced by metaphoric imagery of care, thus resulting in the construction of BP as both a responsible and a caring citizen. In general terms, 'BP as a Citizen' metaphor involves the interface between the firm and society, where corporate citizenship presupposes image building and PR. 'BP as a Citizen' metaphor is evocative of conceptualisation of corporate roles regarded through the lenses of political citizenship. Results of the data analysis indicate that metaphor 'BP as a Citizen' is employed in BP's corporate discourse space in conjunction with metaphors 'Corporation as a Helping Neighbour' and 'Corporation as an Environmentally Friendly Citizen'. These conceptual metaphors seem to construct the BP's discursive space by presenting BP as a trustworthy citizen who is committed to sustainable development and is concerned with the issues of global climate change.

Erlend Moster Knudsen – Pole to Paris, Norway

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Title: Pole To Paris: The Experiences from an Extraordinary Outreach Project

Abstract:

Pole To Paris is an awareness campaign, aiming at increasing the awareness of climate changes and hence the importance of reaching a binding and sufficiently ambitious agreement during the UN climate summit in Paris this year (COP21). The campaign is unique and ambitious, being the reasons why it will work and why it is interesting for LINGCLIM.

While project director and PhD in Antarctic climate Daniel Price currently is biking from Brisbane to Paris, deputy-director and PhD in Arctic climate Erlend Moster Knudsen will start running from Tromsø to Paris in August. We plan to meet on our paths coming into Paris for the start of COP21 November 30th, but not just the two of us. With us, we have a team of young environmental scientists and followers biking/running or in social media.

Along the way, we encourage businesses, research institutions and the common man to join us, biking or running parts of the distance. We will give school presentations on climate (supported by our partner the Bjerknes Centre for Climate Research), interview research institutions working with or influenced by climate change, and focus on possibilities for a greener future (including ongoing projects in South Asia by our partner UNDP). We also focus on social media, with science, blog, video and photo updates on our Facebook (<https://www.facebook.com/poletoparis>), Twitter (<https://www.twitter.com/poletoparis>) and Instagram (<http://www.instagram.com/poletoparis>) accounts for everyone to follow us along.

Pole To Paris' approach is multidisciplinary in our climate communication, offering a unique dimension to be added to the variety at the LINGCLIM conference. While not offering a presentation of published papers, Pole To Paris offers a conference presentation of our experiences as young climate scientists, running and biking across the globe to raise climate change awareness and interact with a wide audience through various media.

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Title: The ambiguous epistemic status of some typical statements about the future in the SPMs of WG II and III in IPCC's Fifth Assessment Report (AR5)

Abstract:

IPCC's reports provide an excellent opportunity to observe discursive devices that help resolve tensions / contradictions between different voices and aims (Fløttum 2010 & 2014), particularly so in the case of the «summaries for policymakers» (SPM) of each working group:

« [...] the summaries of its [IPCC's] reports, written for decision-makers, have to be agreed on and adopted word-for-word by scientific redactors and political government representatives. However, in its discourse, the IPCC always hastened to affirm a linear and purified vision of its relation to the political process. This stance is expressed in the IPCC's famous credo: “policy-relevant, but not policy-prescriptive”.» (Dahan 2013 : 224)

When statements are made about the future, things become even more complicated, e.g. in the case of causal chains, where one may wonder what is assumed as being (un)likely: the cause, the consequence or the causal relation. Commenting on «If climates changes like this and socio-economic conditions change like that, then the impacts will be harmful (or benign)», Malone (2009: 71-72) makes the following comment: «This very carefully hedged type of cause-and-effect argument is very typical of scientific studies of climate change - and the type of argument that leaves ample ambiguous space for political proposals.»

Furthermore, IPCC's modelled description of the future relies on «scenarios», whose degree of likelihood is not assessed, so that what is said is only valid within the hypothetical world that corresponds to each of them. At the same time, for general statements, the SPMs use a scale of likelihood of outcomes (from «virtually certain» to «exceptionally unlikely»), which is contradictory.

I will show some typical combinations of linguistic markers (NP determiners, modal verbs, verb tenses and modes, if-clauses) in utterances about the future that reveal a strategy of hedging and / or compromise between incompatible standpoints.

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Title: »And all at once the clouds descend, Shed tears that never seem to end« – Looking at climate change from early modern literature

Abstract:

Under anthropogenic climate change, extreme weather events will probably be more threatening to human development than long-term scaled average warming. This consideration can be encouraged by looking back to the ‘Little Ice Age’. This (non-anthropogenic) climate change between 1450-1850 manifested itself among others in water-related extreme weather events (e.g. heavy rain, hailstorms, floods, storm tides) that adversely affected food and energy production and therefore human welfare.

By providing a perspective from the Environmental Humanities, the paper addresses the issues of climate change and extreme weather events by looking at early modern literature. An analysis of 17th and 18th century Middle European poems addressing extreme weather events shows that these texts can in a way explain what scientific facts of climatology meant in cultural terms and in human's daily life experiences. Therefore, the paper focusses on how poets give language to these events and try to attribute meaning to them. It also observes strategies of cultural adaption to changing environmental conditions.

Although the engagement with this historical texts cannot provide concrete solutions on what to do with regard to specific challenges of climate change and extreme weather today. But by looking how people before dealt with unknown and opaque weather phenomena it illuminates that such phenomena only become accessible via human senses and debatable in a linguistic form.

In discussing this insight, it can be argued that today's climate change discourse dominated by the natural sciences needs to be broadened by taking the humanities as well as cultural, mythological and religious knowledge into account.

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Title: Exploring Climate Variability in Bangladesh: Understanding Local Constructions of Climate

Abstract:

There is a growing body of research that documents the effects of climate change on human systems, and highlights the importance of developing mitigation and adaptation strategies. To understand the effects of climate change on human systems, we need to gain insight into the human experience of climate change, or indeed climate variability; the fickle weather we live with. This paper presents an empirical study that was undertaken as part of the interdisciplinary research project TRACKS (Transforming Climate Knowledge with and for Society) that looks at the impact of climate variability on communities in northeast Bangladesh. The study applies a cultural psychological approach to study a series of 'narrative-based interviews' with diverse community actors, to gain insight into local understanding of climate variability. It investigates the cultural construction of climate knowledge expressed through participant narratives, including processes of acquiring and transferring climate knowledge in the context of rural Bangladeshi culture. Interviews with members of rural communities revealed that perception, social representation and trust were important processes in the construction of local climate knowledge. Perception of climate variability was based largely on personal experiences with the environment, particularly through one's livelihood. Media outlets, elders and available environmental cues formed the most trusted sources of climate information, while existing trust patterns influenced knowledge sharing. The findings illustrate the importance of creating mitigation initiatives that have root in in local understanding of climate, to be able to address the different ways climate variability impact local communities.

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Title: VIOLENCE AGAINST WOMEN AND CLIMATE CHANGE: WHAT DOES THE EVIDENCE SAY?

Abstract:

Background: Climate change (CC) causes severe weather disasters which have profound social/health effects on humans. Women/girls have been recognized the most vulnerable due to the social norms/gender constructs. Studies have documented the gendered impacts of CC, but the problem of violence against women (VAM) has received little attention.

Objective: to map the scientific literature related to the linkages between CC and the exposure of women to VAW episodes.

Methods: 4 databases were selected: Medline, Web of science, Science Direct and ProQuest. We developed 2 thematic filters: a) Filter about CC: climate change, global warming, climate risk, climate hazard, climate impact, drought, flood, extreme weather, heat waves, environmental hazards, water scarcity, water insecurity; b) Filter related to VAW: Intimate Partner Violence, Violence against women, Domestic violence, Sexual abuse, sexual violence, Sexual harassment, Spouse abuse, battered women, gender violence, gender based violence. Only papers which explained the role of gender norms in increasing the exposure of women to violence episodes were selected.

Results: 121 studies were identified. After applying exclusion criteria, 10 were included to the analysis. Studies addressed VAW episodes during CC related events -floods (5), Water scarcity (1), among others (4). 8 studies used qualitative methodologies. Low social-economic status, culture and others were highlighted as factors that interact with CC increasing the exposure of women to VAW. During the disasters and post-disasters, women/girls were exposed to all types of VAW-harassment, sexual assaults, Intimate partner violence, abductions- from their partners' y/o strangers.

Conclusion: Women and girls faced difficult conditions during and after extreme weather events. Gender norms interacted with other factors that shape the experiences of women. CC increases gender inequalities and women's vulnerability to VAW. Given the recent attention to this topic, future studies need to explore the association of these two phenomena.

Scott Rettberg – Digital Culture, Department of Linguistic, Literary and Aesthetic Studies,
University of Bergen, Norway

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Title: Toxi*City: a Cinematic Combinatory Climate Change Narrative

Abstract:

TOXI*CITY is a combinatory narrative film (a.k.a. database narrative) produced by University of Bergen professor of Digital Culture and Philadelphia-based filmmaker Roderick Coover. The hybrid work follows six fictional characters whose lives have been transformed by sea-level change and flooding in an urban and industrialized region on America's North Atlantic Coast. Fictional testimonies are set against nonfictional accounts of actual deaths that occurred during Hurricane Sandy and other recent storms and floods. The work is designed for cinematic exhibition, installation in immersive media environments and personal devices.

The project asks what how conditions of life would change if repeated storm surges and tides flooded the densely populated lands with toxins from the hundreds of sea-level petrochemical industry sites and post-industrial brownfields. The narrative events are drawn from actual events and predicted conditions faced in the Delaware River Estuary (home to five of America's largest refineries, a nuclear power-plant and numerous population centers such as Wilmington, Philadelphia and Trenton) as well as events along the nearby coastal shores of New Jersey and New York. The fictions are interspersed with nonfictional accounts of deaths that occurred during recent storms in the area, most notably Hurricane Sandy.

The project has been featured in different contexts including museum installations at in the "Sensing Change" exhibition at the Chemical Heritage Foundation in Philadelphia and the "Landscapes of the Anthropocene" at the INOVA gallery in Milwaukee and currently in the Digital litteratur: Klimafiktion exhibition at Åby Bibliotek in Aarhus, as well as at film festivals and conferences. Rettberg will show a sample from the project and discuss the use of combinatory narrative film as a method to communicate the consequences and contemporary discourses of climate change.

Kjetil Rommetveit, Roger Strand & Silvio Funtowicz – Centre for the Study of the Sciences and the Humanities (SVT), University of Bergen, Norway

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Title: Climate change versus technoscience? Imagining the limits of human interventions

Abstract:

Among the more persistent problems relating to climate change is that of turning knowledge about Anthropogenic climate change into policy-relevant action. This could be framed as a problem of translating hard facts into real policies, helped and guided by factors such as soft values and the perceptions of publics. In this talk, however, we argue that climate change knowledge is from the outset inscribed with human interests and values, including political projects and human errors. In the history of climate change this has also been acknowledged by scientists making and using the models. Importantly, climate research embodies values of the Earth's limits and inherent vulnerability, and are intended as new ways of grappling with complex problems on the interfaces of science, society and the environment. A useful distinction may be made with another family of sciences, namely the technosciences, devoted to the making of new and useful products and gadgets, in fields such as ICT, nano- and biotechnology. In spite of the similarities, interactions and even synergies between the technosciences and climate research, they are epistemologically different in politically relevant ways. Specifically, each family of sciences imagines limits to human growth and expansion differently. Whereas most climate researchers argue the need to take natural limits seriously, technosciences frequently project the need to overcome any such limits in the geophysical world. The kinds of futures that emanate from each family of sciences, and the kinds of prescriptions they carry for policies and collective action, are different, and speak to different concerns. Through this comparison we highlight some main different characteristics of prominent sciences, and how these sciences are increasingly political. Achieving clarity about such roles for the sciences could possibly also contribute some much-needed realism into debates about the possibilities and limitations of acting on climate change knowledge.

Frolence Rutechura – University of Dar es Salaam, Tanzania

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Title: Linguistic Analysis of Obama's Speech on Climate Change

Abstract:

Climate change has become a subject of great concern globally. Policy makers, politicians, scientists, environmentalists have in different means attempted to address climate change. Of most interests, politicians have stepped in to give various speeches to the public on how best to undertake the consequences of climate change. This paper therefore attempts to analyze how power relations on the choice of textual features from Obama's speech on addressing climate change delivered at Georgetown University in Washington D.C. This paper makes use of Fairclough's three dimensional approach of critical discourse analysis-analyzing textual properties of the speech, discursive strategies and socio-cultural practices. As Potter puts it, language does not only reflect social reality but also actively constructs it (1996). There is a tendency where both power in discourse and power behind discourse is applied in texts to construct what I call 'social being' in a particular setting. Obama, through his speech on climate change, raises awareness on the the state of the climate in the US and around the globe through the use of language.

Eivind Heldaas Seland – Department of archaeology, history, cultural studies and religion,
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Title: Climate in history, history in climate: Some preliminary perspectives

Abstract:

The very notion of climate change builds on the premise of departure from a historical situation of normality. Climate is thus of vital importance to historians and archaeologist aiming to explain societal change. Historical experiences with climate change, however, are equally crucial to climate scientists arguing for relevance and impact. Planned as a pilot for a later research project, this paper explores the potential of text data mining, citation network analysis, and narrative analysis, in order to gather preliminary perspectives on how archaeologists and historians have cast climate as an agent of change in their research, and how climate scientists have utilised historical perspectives in theirs.

Silviya Serafimova – Helsinki Collegium for Advanced Studies/Institute for the Study of Societies and Knowledge (BAS), Finland

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Title: When Does Nature Say 'No'? Ethical Dilemmas in Norwegian Ecopolitics within the Debates about Norway's Potential Accession to EU

Abstract:

The paper aims to outline and analyze some crucial challenges in Norwegian environmental politics against the background of the debates about the potential accession of the country to the EU. In this context, the multiple pro and con arguments concerning the accession in question will be examined, namely, the ones proposed by some well-recognized Norwegian philosophers, environmental activists and politicians such as Sigmund Kvaløy Setreng and Dag Seierstad. Those arguments are focused on preventing the negative influence of market expansion: on revealing the long-term consequences of the increased export of goods and dangerous organisms affecting the growing resistance to antibiotics, the cumulative effects of mass tourism etc., which are achieved at the expense of damaging the environment, as well as of ruining the integrity of local communities in Norway in the long run. In turn, the possibility for counteracting the increasing impact of climate changes will be explored by rethinking the role of bioegalitarianism due to the principles of environmental ethics, as they are defined by Arne Naess and Sigmund Kvaløy Setreng.

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2. Kvaløy, S. 2006. Naturens nei – om EU, frihandel og økologisk kaos. Nei til EUs skrifteserie – VETT nr. 4.
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Jana Sillmann & Karianne de Bruin – CICERO - Center for International Climate and Environmental Research – Oslo, Norway

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Title: Bridging scales in the extremes: from global climate change to local adaptation

Abstract:

“Understanding and Predicting Weather and Climate Extremes” has recently been nominated as one of the Grand Challenges of the World Climate Research Programme (WCRP) to advance research on extremes mainly related to natural sciences. Today considerable challenges continue to exist in linking the efforts made in both the natural and social sciences communities to better understand extreme events, the associated risks and uncertainties, and identification of potential adaptation options. Obvious barriers lie in the spatial and temporal scales between increasing confidence in projected changes in extremes on a global level and the adaptation needs to reduce their impacts on a local level. The differences in scales already become evident in the often interchangeably use of the terms ‘weather’ and ‘climate’ extremes, creating confusion within society and scientific communities about their meaning and relevance. This includes the IPCC Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX 2012), in which for simplicity it is referred to both weather and climate extremes using the collective term ‘climate extremes’. We will illustrate the differences and overlaps between weather and climate extremes and provide examples of natural and social sciences applications. We argue that to move forward in climate services, the simplicity brought forward in SREX should be disentangled to provide a clearer attribution of climate change to weather and climate extremes to facilitate the two-way flow of climate services between users and providers. Ultimately the integration between the natural and human side of climate change can be brought closer when dealing with extremes.

Asun Lera St.Clair, DNV GL Strategic Research & Innovation, & **Erlend Hermansen**, CICERO – Center for International Climate and Environmental Research – Oslo, Norway

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Title: Making Climate Science Meaningful and Actionable

Abstract:

One of the most important conditions for collective action and transformative solutions is a better understanding of the factors that drive knowledge uptake and enhance use of evidence in decision making. Governance systems in many countries place an explicit focus on the importance of using evidence in policy making, including climate change. But this emphasis on using evidence, even when taken seriously by governments, tends to downplay how exactly evidence is to be communicated and used. An ambition to have policy that is evidence-based is only half the story; equally key are the arrangements for producing evidence and for conveying it to policy-makers and to other stakeholders. The IPCC is committed to producing policy-relevant work, yet there are few studies or evaluations of how its work does inform or influence policy and decision making. Little is known about the way the principal outputs from the IPCC process are taken up and used in different contexts. This paper synthesizes results from a project under the umbrella of JPI Climate (and funded by the Norwegian Research Council) focused on understanding factors that enhance knowledge uptake using as a case study the reception of IPCC AR5 in 4 European countries (Norway, UK, Spain, and Poland). Using interdisciplinary perspectives from science and technology studies (STS), science-policy, sociology of knowledge, linguistics, policy analysis, media studies and discourse analysis the project has addressed the way science-policy-politics divides are seen and framed in the Reports' summaries for policy makers (SPMs) and their uptake by multiple societal stakeholders. We ask how is the information understood, selected, translated and communicated, and how suited it is to decision makers' needs. We also present results from participatory processes that have engaged actively in reframing and improving knowledge uptake for key actors, and results analyzing the printed and TV media impact of IPCC AR5.

Erik Thorstensen – Oslo and Akershus University College of Applied Sciences, Norway

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Title: Mitigating climate change: citizens, stakeholders, the public and laypeople as agents in IPCC WG III 2014

Abstract:

The basic idea in this paper has been to investigate how the IPCC's third working group's (in the mitigation of climate change) last report (2014) portrays citizens, stakeholders, the public and laypeople as agents in the mitigation of climate change. I argue that these terms share extension in the context of mitigation.

I produced this overview in order to research if there are differences in how these agents are presented as barriers to or drivers for mitigations of climate change – and whether there are important differences between the different parts of the report or between the different disciplines. The public is more often seen as a barrier to climate change than citizens and stakeholders. These findings are then used into a deeper investigation to uncover if the IPCC WG III report communicate the public to the readers of the report as lacking understanding of climate change and mitigation (the deficit model of public attitudes towards science) and whether the report sees stakeholders as shareholders. There are indications of a deficit understanding of the public, but few indications on a view of stakeholders as shareholders.

The method applied in this paper has been to search through IPCC WG III (2014). I have then read all the occurrences of citizens, stakeholders, the public and laypeople to determine whether they are seen as drivers, barriers or neutral in relation to mitigation of climate change – and if stakeholders connote economic interests.

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Wynne, B. (1991). Knowledges in Context. *Science, Technology & Human Values*, 16(1), 111–21.

Marisa Usera-Clavero – Regional Health Authority, Murcia, Spain; University of Alicante, Spain

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Title: REVIEW OF CLIMATE CHANGE IN PUBLIC HEALTH LITERATURE:
ENGENDERING A RAPID APPRAISAL TOOL

Abstract:

Background: The target of the Millennium Development Goals on gender equality and empowerment of women endangers the viability of other targets, such as environmental sustainability and their influence on health.

Objective: to analyze from a gender perspective (GP) the literature related to the public health problems due to climate change (CC).

Methods: Searches were conducted in Medline, Scopus, and EMBASE databases. Key words: "Climate change", "gender", "women". GP in the paper was accepted when included the components of the rapid appraisal tool: 1. sex/gender as a key variable/dimension. 2. Gender inequality in health. 3. Participation of women/ adaptation /gender empowerment. WHO's Classification of CC and Health was used.

Results: From 359 papers, after applying exclusion criteria we selected 54 papers, 20 with GP. Core issues of papers with GP: Lack of access to management/exploitation of natural resources, reduction in opportunities/increased vulnerability(4 papers), Mortality/morbidity (M/M) and malnutrition due to disasters (4), Perception of CC and adaptation strategies(4), Strategies to health promotion to CC adaptation(3), Cultural barriers to women's access to occupational/economic tasks to improve survival(2), Food insecurity and health impact(2), Greater gender equality and less environmental impact(1). On the other hand, papers without GP: High temperatures and M/M(18), M/M and malnutrition due to disasters(4), Low temperatures/Heat waves and M/M(3), Awareness about CC(3), Others climatic effects in M/M(3), Risk perception to the CC (1), Behaviors that increase air pollution(1) and sex-differences in migration due disasters(1).

Conclusion: In health sciences, research about CC from GP go beyond of the association between CC as risk factor, and its health impact, focusing in contextual factors in the roots of CC, and related to individual/structural coping's strategies, such as: equity policies, women empowerment and their participation in decision making.

LINCLIM MEMBERS AND ABSTRACTS

LINGCLIM PROJECT –

Linguistic representations of climate change discourse and their individual and collective interpretations

www.uib.no/en/project/lingclim

Project members



Kjersti Fløttum (head of project) is Professor of French linguistics at the Department of Foreign Languages, University of Bergen. Her general research fields are related to text and genre theory with a special focus on linguistic polyphony (multivoicedness) in scientific, political and climate change discourse. She headed 2002-2006 the KIAP project, *Cultural Identity in Academic Prose*, and is now head of the multidisciplinary project LINGCLIM, (2013-2016). Fløttum is co-author of the books *ScaPoLine* (2004) and *Academic Voices* (2006), editor of *Speaking to Europe* (2013) and has published extensively in international journals, including *Journal of Pragmatics*, *Journal of Language and Politics*, *Language & Communication*, *Text & Talk*, *Climatic Change*, *Global Environmental Change*, *Nature Climate Change*. www.uib.no/en/persons/Kjersti.Flottum#



Gisela Böhm (PhD 1993, Technical University of Berlin, Germany; Habilitation 2000, University of Bremen, Germany) is full professor for psychometrics and research methods at the University of Bergen, Norway, where she is head of the DICE-Lab research group at the Faculty of Psychology. Her main research fields are social cognition, emotion, moral judgments, risk perception and evaluation, and the public understanding of science. Recent research projects have been concerned with the determinants of sustainable behavior, the public perception of climate change, the role of emotions in environmental risk perception and behavior, and the interplay between risk and morality in responses to climate change. www.uib.no/persons/Gisela.Boehm



Trine Dahl is Professor of English linguistics at the Norwegian School of Economics. Her main research areas are text linguistics, discourse analysis and pragmatics. Her research has previously been related to academic texts and knowledge construction in the disciplines of economics and linguistics. Since 2010 she has been involved in research initiatives dealing with climate change communication. Her work has been published in e.g. *Journal of Pragmatics*, *Text & Talk*, *Written Communication*, *Language & Communication* and *Fachsprache - International Journal of LSP*.
<http://www.nhh.no/en/research-faculty/department-of-professional-and-intercultural-communication/about-the-department/cv/dahl--trine.aspx>



Helge Drange is professor in oceanography and climate research at the Geophysical Institute at the University of Bergen, and he is member of the leader group at the Bjerknes Centre for Climate Research in Bergen. Drange has wide experience in climate research in general and in climate modelling in particular. In addition to participating in and coordinating national and European climate research projects, Drange is active in climate outreach with a series of popular climate lectures and interviews/commentaries/chronicles in the press. Drange was in 2010 awarded the University of Bergen's Meltzer Prize for public outreach.
www.uib.no/People/ngfhd/



Elisabeth Ivarsflaten is Associate Professor at the Department of Comparative Politics, University of Bergen. Ivarsflaten specializes in the study of public opinion and political parties. She is main coordinator of the Norwegian Citizen Panel at the University of Bergen. Ivarsflaten holds a Ph D from the University of Oxford and was a Postdoctoral Prize Research Fellow at Nuffield College, Oxford. Her articles have appeared in *the American Journal of Political Science*, *Comparative Political Studies*, and the *European Journal of Political Research*.
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Øyvind Gjerstad is Associate Professor of French linguistics at the University of Bergen. His research interests include linguistic and discursive polyphony and the narrative properties of deliberative discourse, studying how texts on climate change comprise a plot, and how the voices and (re)actions of the different characters are integrated into the unfolding ‘story’. He is a member of the project Linguistic Representations of Climate Change Discourse and Their Individual and Collective Interpretations (LINGCLIM), headed by Kjersti Fløttum.

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Oleksandr Kapranov is a post-doctoral research fellow with the LINGCLIM project. He holds a PhD from The University of Western Australia (UWA) in Perth. Kapranov's research interests involve cognitive linguistics, psycholinguistics and political discourse. His current research agenda focuses on discourse of climate change in general and on corporate discourse on climate change in particular. www.uib.no/personer/Oleksandr.Kapranov



Vegard Rivenes is currently working as a research assistant and coordinator in the LINGCLIM project. He graduated with a M.Sc in philosophy from University of Bergen in 2011. He has previously worked as a research assistant at the *Climate change: media, politics and society* project and as an executive officer also at University of Bergen. His main research interests are scientific uncertainty, the precautionary principle and ethics. www.uib.no/persons/Vegard.Rivenes

Affiliated members



Andrew Salway is a Senior Research Scientist and leader of the Language and Language Technology Group at Uni Research, Bergen. His research interests focus on corpus linguistics and text mining, and their application in humanistic and social science research methodologies with particular interest in social media, narrative and multimodality. www.bbrel.co.uk, <http://uni.no/en/staff/directory/andrew-salway/>



Endre Tvinnereim is Senior Researcher at the Uni Research Rokkan Centre for Social Studies. His main research interests are public opinion on climate policies, quantitative text analysis in survey research, and evidence-based evaluations of cap-and-trade and other CO2 pricing mechanisms. He leads the Interdisciplinary Climate and Energy Research Group (ICERG), which brings together researchers from the Bjerknes Centre for Climate Research, Uni Research, the University of Bergen and the Norwegian School of Economics (NHH). Tvinnereim co-chairs the Climate and Environment section of the Norwegian Citizen Panel and served as Expert Reviewer for the IPCC AR5 WG3 (mitigation). <http://uni.no/en/staff/directory/endre-tvinnereim/>

LINGCLIM ABSTRACTS

Kjersti Fløttum (Department of foreign languages):

The LINGCLIM Project – an overview

In this presentation I will provide a short overview of research undertaken in the LINGCLIM project so far, related to research questions, materials and methods. The overarching question of the project is the role of language in climate change representations and interpretations. LINGCLIM is a multidisciplinary initiative, where linguists collaborate with climate, political, media, psychological and computational scientists.

I will present a provisional stock-taking of our main objectives:

- 1) generate integrated new knowledge through developing innovative multidisciplinary methodology, including linguistic analyses (various discourses, at different levels), opinion surveys and psychological experiments,
- 2) explore the relationship between linguistic representations and their collective and individual interpretations (opinions, attitudes), and
- 3) explore perspectives on the future.

Gisela Bøhm (Department of Psychosocial Science):

The psychology of language effects on the perception and communication of climate change

Language plays a pivotal role in how people perceive and think about climate change. This role is two-fold. On the one hand, the wording in which a message is expressed influences how the message is processed and understood by the recipient. For example, the verbal expression that a scientist chooses to communicate the probability of climate change impacts (e.g., probably, likely, not certain) influences whether people infer a high or a low probability and how alarming the message appears to them. On the other hand, the verbal expressions that people use in their messages reflect their underlying beliefs and the intention of the message. For example, verbal expressions contain implicit evaluations such as a focus on the chances versus the risks of an event (e.g., in the proverbial choice of calling a glass half full or half empty, or in stating that "sea level will rise up to 3 cm" versus "sea level may more than 2 cm"). Hence, language both shapes and expresses people's perceptions, attitudes, and opinions. Several experiments will be presented that illustrate the effects of language and help explain the underlying psychological mechanisms.

Trine Dahl (Norwegian School of Economics):

LINGCLIM linguistic studies: Future research issues

While head of LINGCLIM, Kjersti Fløttum, in her presentation will provide an overview of research undertaken within the project so far, my presentation will point forwards to yet unexplored issues of the climate debate. Among important unexplored aspect of the climate debate in a LINGCLIM context is the crucial issue of climate change solutions, be they technological, economic, political or social in nature. This component of the 'climate narrative' may therefore be an interesting research 'object' in the final stages of the project. Quantitative data from the Norwegian Citizen Panel might serve as important input to such studies, as may data from qualitative studies of written texts and smaller, dedicated surveys. The presentation will include a discussion of a few examples of how solutions to climate change are currently framed in various text genres.

Øyvind Gjerstad (Department of foreign languages):

The Linguistic Complexity of Climate Change Narratives

Linguistic research has applied the notion of narrative in order to understand to what extent there may be a storyline, or narrative, in texts related to climate change (Fløttum 2014; Fløttum and Gjerstad 2013). In both text and talk climate change is often presented as a certain type of COMPLICATION, with implicit or explicit recommendations or imperatives for ACTION(S) taking place or that should take place in order to achieve some particular EFFECT(S) or FUTURE SOLUTIONS (cf. Adam 2008). Furthermore, linguistic studies have indicated that such stages can

appear not only in the form of text segments but also as single sentences and even sentence constituents (Fløttum and Gjerstad 2013). This can lead to a complex hierarchy involving multiple narrative stages at different levels of both syntax and text structure. The ability to restrict a narrative stage to a single sentence constituent has rhetorical implications, as it can keep contentious views to the background, thus shielding them from criticism.

Oleksandr Kapranov (Department of foreign languages):

Conceptual Metaphors in Corporate Discourse on Global Climate Change: The Cases of Shell and BP

This presentation involves a qualitative discourse analysis of conceptual metaphors identified in corporate discourse on climate change by British Petroleum (BP) and Shell respectively. The material of the study involves these corporations' official 2014-2015 annual reports. Several types of conceptual metaphors have been identified in the annual reports by BP and Shell. In particular, Shell's discourse is embedded in the context of sustainable development, where Shell's discursive practices involve conceptual metaphor 'Shell as a Caring Corporation'. Data analysis indicates that metaphor 'BP as a Citizen' is employed in BP's corporate discourse space in conjunction with metaphors 'Corporation as a Helping Neighbour' and 'Corporation as an Environmentally Friendly Citizen'. These conceptual metaphors present BP as a trustworthy citizen committed to sustainable development.

Andrew Salway (Uni Research, Bergen):

Inducing salient information structures from climate change texts

This paper will present and reflect on some data-driven techniques for analysing large volumes of textual material that were used to investigate the human side of climate change. An investigation into the representation of the future in climate change blogs used frequency lists, word clusters and sorted concordances in order to highlight common representations of the future. Instances of these representations were then subject to close reading and manual categorisation. The discovered representations were also for quantitative comparisons between "accepting" and "sceptical" climate change blogs. In other work, grammar induction techniques were used to characterise salient information structures around key terms. This enabled important information about the content of international climate negotiations to be extracted and analysed, i.e. relating to the positions of different countries. More tentatively, such information structures induced from climate change blogs were shown to have potential value for analysing topics, framing and rhetorical devices.

Endre Tvinnereim (Uni Research Rokkan Centre):

Exploring citizens' view of climate solutions in their own words

What do Norwegians think about climate change and what to do about it when given the opportunity to express themselves in their own words? This paper uses structural topic modeling, a new approach to the analysis of open-ended survey questions, to induce topics from raw text. It is also used to analyse how topic choice correlates with background variables such as gender, age, and political orientation. Data are taken from the nationally representative online Norwegian Citizen Panel. Representative responses, as identified by the quantitative model, are read closely for validation purposes and to provide a richer understanding of citizen views on climate change and climate solutions.