

VESTLANDSFORSKING



NORCE



# Coping with darkening peaks

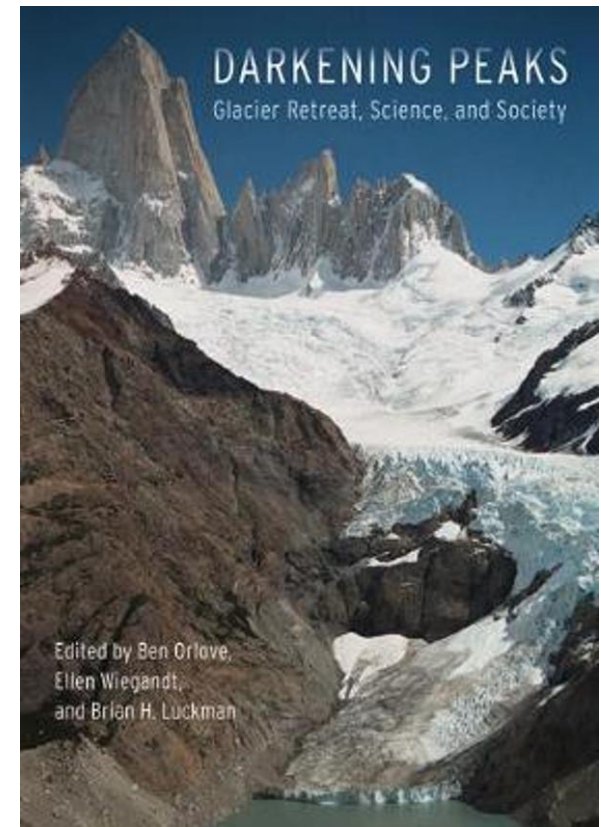
## Melting ice as a boundary object

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# How are climate and cryosphere change impacting mountain tourism?

- Glacial retreat and loss of summer ice and snow
- Shorter and <<poorer>> ski season
- Increased natural hazard risks
- Limited research on how this affect mountain tourism outside the ski industry
  - ▶ Climate change already affect many classic mountain routes in the Alps. *Moreau et al. 2010*
  - ▶ Glacial retreat is negatively affecting demand in some destinations. *Welling et al. 2020; Smiraglia et al. 2008*



Orlove et al. 2008

## Sense of place, connection to nature and pro-environmental behavior

- Glaciers and ice caps have importance for place identity and hold symbolic and cultural significance for mountain communities (Orlove et al., 2008; Jurt 2015; Allison 2016)
- Increasing number of last chance tourists in the Arctic and to glaciers (Lemelin 2010; Lemeieux et al. 2019).
- Last chance tourists display stronger connection nature and motivation for pro-environmental behaviour than others (Lemeieux et al. 2019; Groulx et al. 2019)



Photo: Breogfjell AS

# Charismatic entities and boundary objects

- “Charismatic” entities in the natural world have served to aid environmental protection – thus displaying a non-human agency (Lorimer 2007).
- Does also contribute to emotional connections to place.
- Charismatic entities can also serve as boundary objects (i.e. Star and Griesemer 1989, Guston 2001)
  - ▶ Serves to connect different realms or epistemic communities i.e. science and the public.
  - ▶ Translates meaning and significance across boundaries between different realms.

# Objectives

- Investigate impacts and adaptations in nature-based tourism industry
- **Investigate whether tourism actors use climate change impact as an element in the tourism experience – to raise awareness and instigate pro-environmental behavior.**
- **Analyse the role of snow and ice as “charismatic entities” and “boundary objects” in this process**



Photo: Halvor Dannevig



# Methods and cases

## Informants

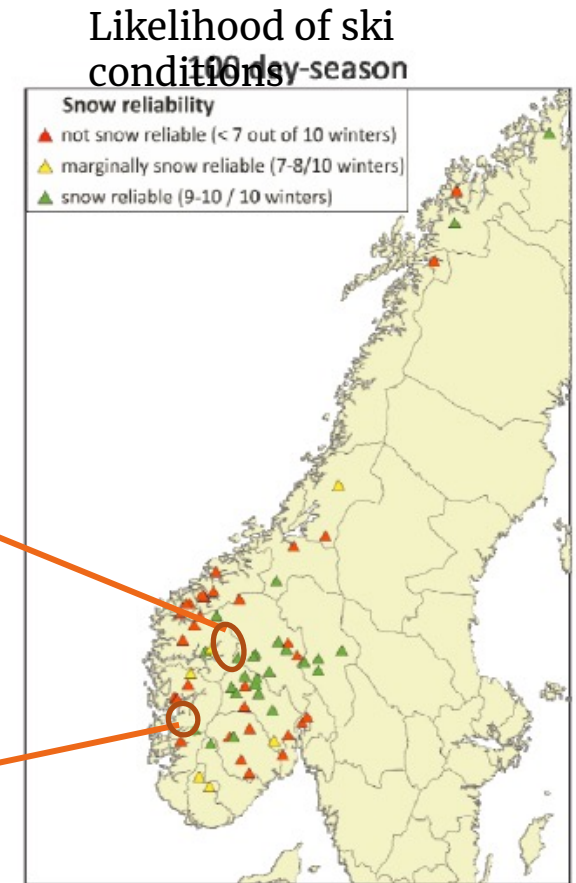
- Mountain guides
- Destination Marketing Officials.
- Clients of mountain guides (tourists)

### Indre Sogn

- Workshop
- Two surveys (n=42, n=70)
- 5 interviews

### Hardanger

- Workshop
- 7 interviews



Steiger et al. 2017

Research is built on the project «Climate change impact on Norwegian nature based tourism (CLIMTOUR)» 2016–2021

# Glacial retreat

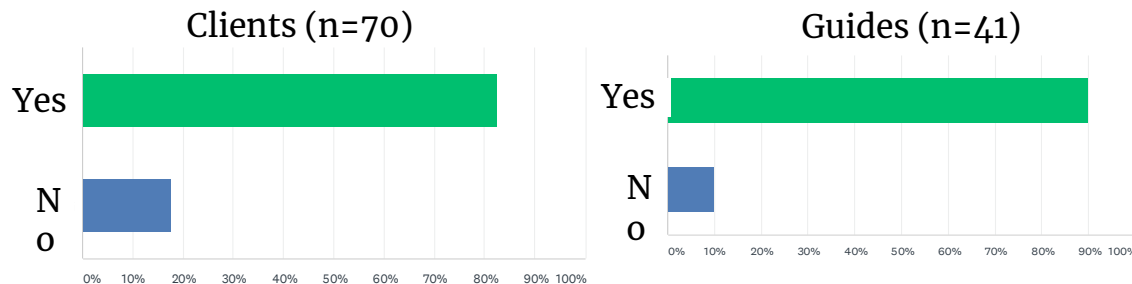


- 70% of glaciated area loss by end of century
- 93% of glaciers will disappear (high emission scenario)
- Leads to an ongoing loss of an iconic tourist activity in Norway.

Briksdalsbreen Glacier, Western Norway

# Guides and clients responses to cryosphere change

Did you have to do things differently due to lack of snow and ice in summer?



Quotes from open ended questions to guides in survey and interviews

*«Its really really sad to see the change from black and white mountains to pure black. But I dont think it matter much for the clients.»*

*«It has major impact for all of us involved in glacier guiding. We need to think completely different about product development.»*

*«Its sad to see the extent of glacial retreat»*



Foto: Halvor Dannevi



# Summary: Impacts and adaptations – mountain guides

- Guides and their clients are flexible – high adaptive capacity
- No indications that climate change and cryosphere change affect demand
- Complacent about own adaptive capacity, but very concerned over climate change in general.
- Guides fear that increase in bad weather over several years in a row would decrease demand

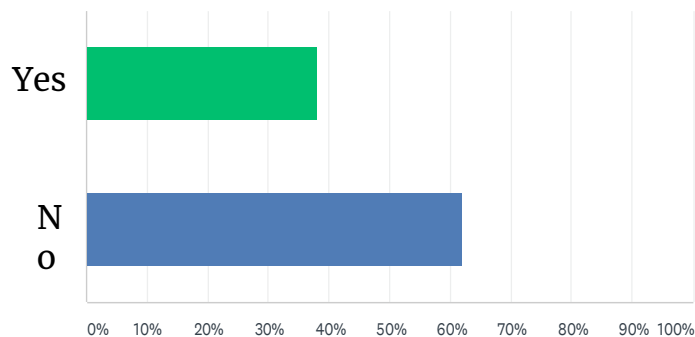


Foto: Halvor Dannevig

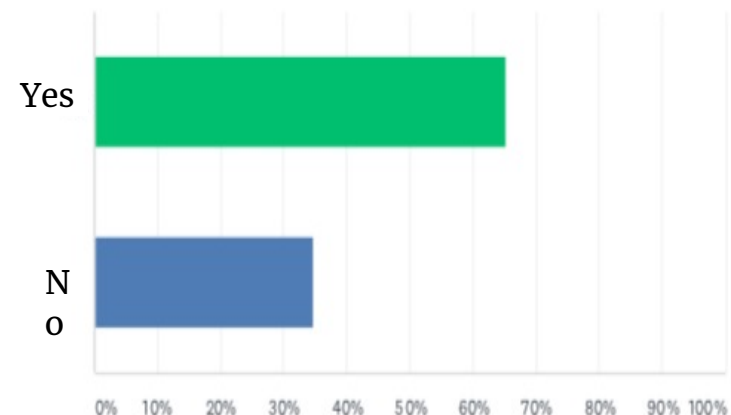
# Does being on guided mountain trips affect clients awareness and behaviour?

«Does your interest in outdoor recreation affect your behaviour in relation to making pro-environmental choices? For example dietary choices, ways of travel, purchase of equipment?

N=71



Have you experienced that the guide has shared his thoughts on sustainability and climate change?



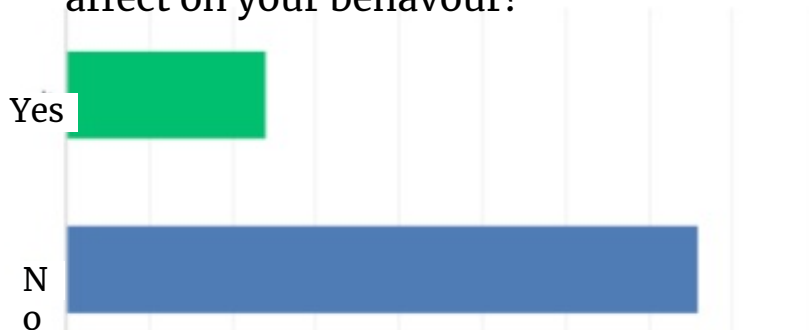
# Does being with mountain guides influence clients environmental behaviour?

*«We talked about how we travel, to leave no trace, and visible climate change impact during the trip»*

*«I want to talk about environmentally responsible behaviour, but we need to look at ourselves first.»*

*»When you see what is happening your awareness is raised and you try to take care»*

Have your experience with guided trips had an affect on your behaviour?



## Breføreren meiner isbrereklame er breens eigen verste fiende

Norsk reiseliv brukar millionar på å marknadsføra Noreg og norsk natur i land på andre sidan av kloden. Det er dårleg nytt for isbreane, meiner både breførar og klimaforskar.



VANSKELEGARE FOR KVAR DAG: Å finna ei god rute til gjestene som skal opp på breen blir vanskelegare og vanskelegare.

FOTO: PATRICK DA SILVA SÆTHIER / NRK

**Sondre Dalaker**  
Journalist

**Mads Nyberg Støstad**  
@MadsStøstad  
Journalist

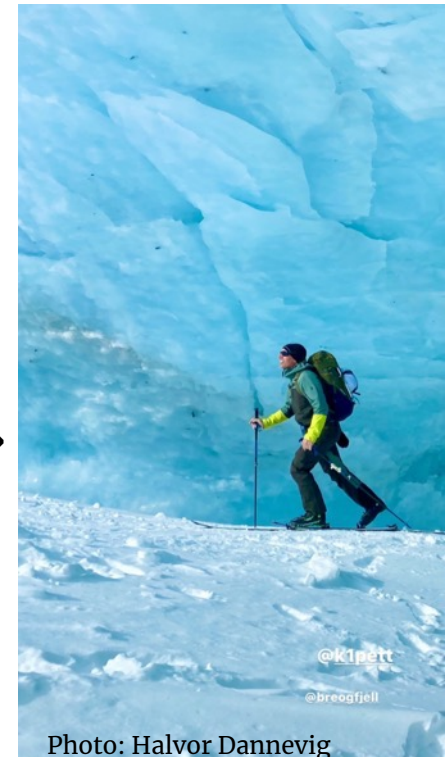
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**Glacier guide to far East Asian tourist: «The longer you are flying to get her, the longer it will be to walk to the glacier» (nrk.no; 17.01.2019)**

# Is the most important climate change impact on mountain tourism that it could inspire the industry to influence clients towards sustainable behaviour?

- Guides display both strong emotional connections to place and nature and use the melting mountains to raise awareness about climate change among clients
- Some also believe that the industry should also require commitment to sustainability from industry partners.
- But feel a need to have «their own house in order first» –i.e not accepting air travel themselves or from their clients.
- Illustrates an affective relationship between environmental change and desire to act (in line with Groulx et al. 2019 and others)





# Melting glaciers as charismatic entities and boundary objects



Untere Grindelwaldgletscher, Caspar Wolf 1774

- Climate change narrative: based on climate science – highly abstract models of reality that disconnects with actors' experiences and perceptions (Hulme 2009, Jasanoff, 2010)
- Glaciers are one of the most visual impacts of climate change and in this «capacity» serve as boundary objects between the science of climate change, the guides and general public
- Glaciers' charisma is tied to their aesthetic value, fame and iconic status from art and tourist marketing material
- The use of melting snow and ice to raise awareness and instigate pro-environmental behaviour show how glaciers functions as a charismatic entity with non-human agency by mobilizing emotions.


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Thank you!



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