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## Does scientific knowledge matches with what matters to small arctic communities? The Case of Sea Ice in Uummannaq, Greenland

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### ► To cite this version:

Mateo Cordier, Jean-Michel Huctin, Juan Baztan, Zhiwei Zhu, Jean-Paul Vanderlinden<sup>2</sup>. Does scientific knowledge matches with what matters to small arctic communities? The Case of Sea Ice in Uummannaq, Greenland. ICASS IX - The Ninth International Congress on Arctic Social Sciences, IASSA - International Arctic Social Sciences Association, Jun 2017, Umeå / Sweden, Sweden. 10.13140/RG.2.2.22749.31206 . hal-04566411

**HAL Id: hal-04566411**

**<https://hal.science/hal-04566411>**

Submitted on 2 May 2024

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# DOES SCIENTIFIC KNOWLEDGE MATCHES WITH WHAT MATTERS TO SMALL ARCTIC COMMUNITIES?

## The Case of Sea Ice in Uummannaq, Greenland

M. Cordier, J-M. Huctin, J. Baztan, Z. Zhu and J-P. Vanderlinden

# RESEARCH PROJECT 2014-2017



*The project is centered on 7 case studies in France, Greenland, Russia, India, Canada, Alaska, and Senegal. In every site we analyze how natural science can be used in order to better adapt in the future, how society adapt to current changes and how memories of past adaptations frame current and future processes. Scientific results are shared with local communities through meaningful artwork and with policy makers through co-constructed policy briefs in a way that respects cultural specificities while empowering stakeholders.*

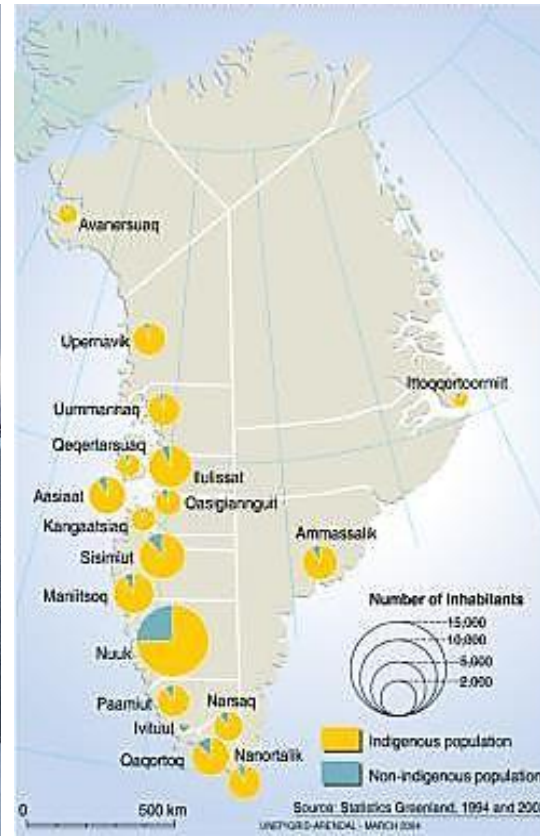


# RESEARCH QUESTIONS



- How scientific knowledge on global changes and adaptation **matches** with the perspectives of local communities ?
- Are there any **discrepancies** between scientists and small coastal arctic communities regarding the knowledge they consider important to better understand and adapt to climate changes ?
- If yes, how sciences and society can **better connect** ?

# CASE STUDY: UUMMANNAQ (GREENLAND)



- **Uummannaq:** a community of 2300 Inuit inhabitants on the Northwest coast of Greenland, with a relatively traditional way of life and a mix market-subsistence economy.

# FIELD WORKS IN UUMMANNAQ

- Two field works: November 2014 and April 2015



**2 (ii) Results from interviews in October 2014:**  
**UUMMANNAQ SHOULD BE AS IT WAS BEFORE**  
(Quotes extracted from the 18 interviews carried out in October 2014 in Uummannaq)  
"Most of people do not hunt for living anymore".  
"But we still go with dogs. Everyone of us here love go sledding with dogs".  
"However, some people kill their dogs because there is no more ice anymore".

- 43 interviews on adaptation and scientific knowledge
- 2 official meetings
- Several community gatherings and trips to the 7 settlements

# METHODS



Scopus<sup>®</sup> is the largest abstract and citation database of peer-reviewed literature: scientific journals, books and conference proceedings.

More than 22 600 scientific journals (= 60 million references)

- Open question interviews on adaptation + discussing scientific knowledge on sea ice and previous interview results
- Ethnographic research since 2006 by Jean-Michel Huctin
- Bibliometry in Scopus

## RESEARCH OBJECTIVE

- To identify the gaps between :

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### Literature review on Scopus

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*Scientific knowledge on climate change (e.g., ice extent)*

**and**

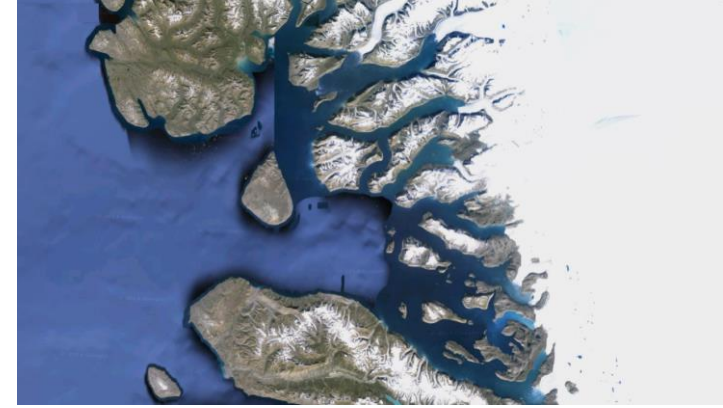
### Interviews and ethnographic research

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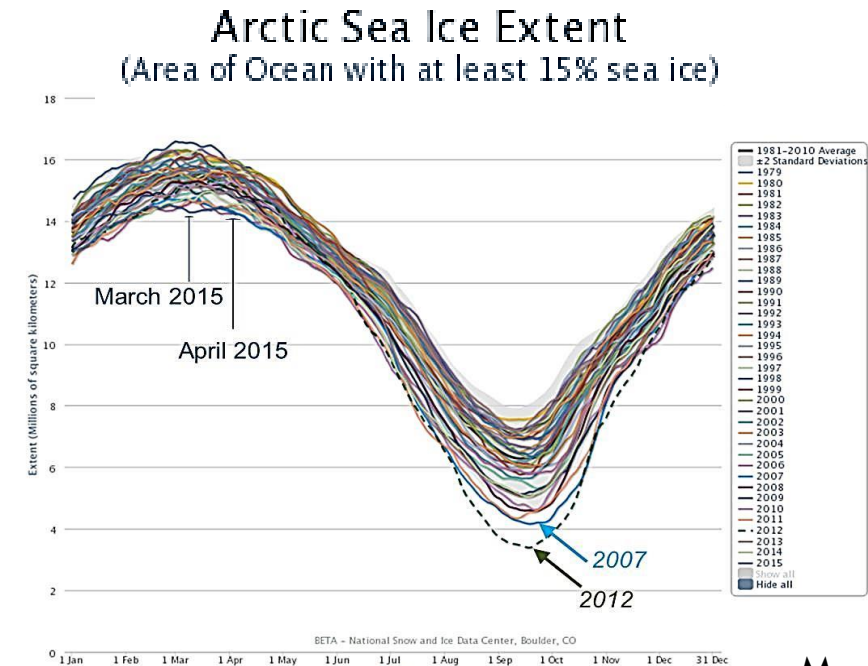
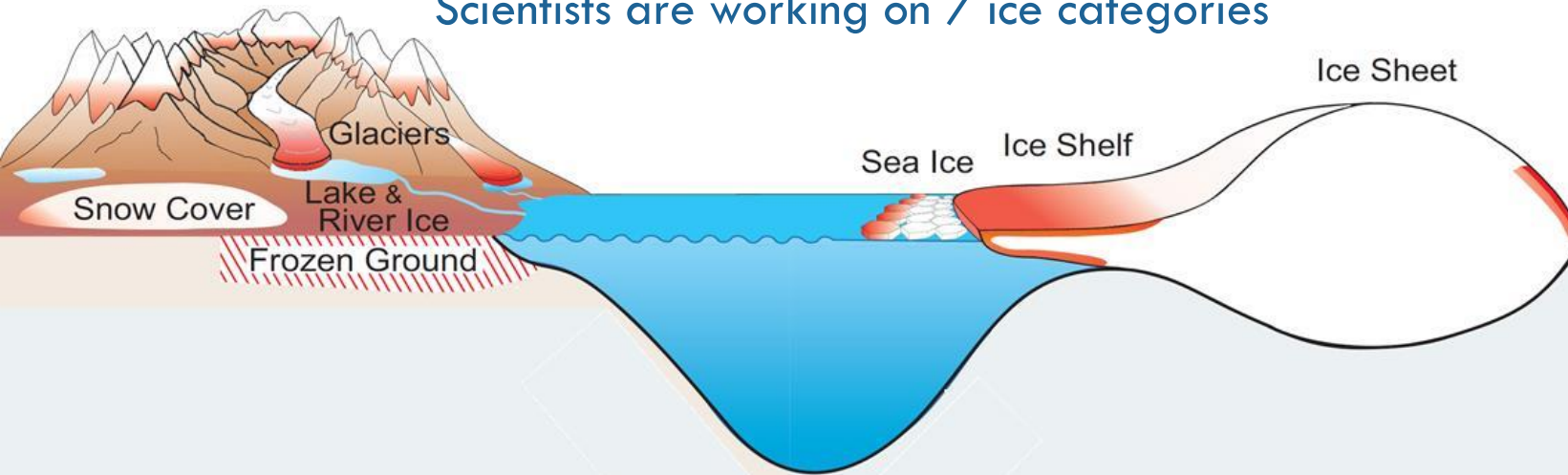
*Knowledge relevant to Uummannaq inhabitants (e.g. ice extent + ice thickness close to coasts)*

# METHODS

- Example of questions we asked in interviews and focus groups:
  - “Scientists data on ice are providing a **useful** and **meaningful** information to you (relevant)?”
  - “Is this scientific information matching with the evidences **you observe** in your daily life (credibility)?”
  - “Looking at the image here [see map above], and considering the changes on your coastal communities, can you please **identify places and activities that are changing.**”



Scientists are working on 7 ice categories





# RESULTS FROM INTERVIEWS



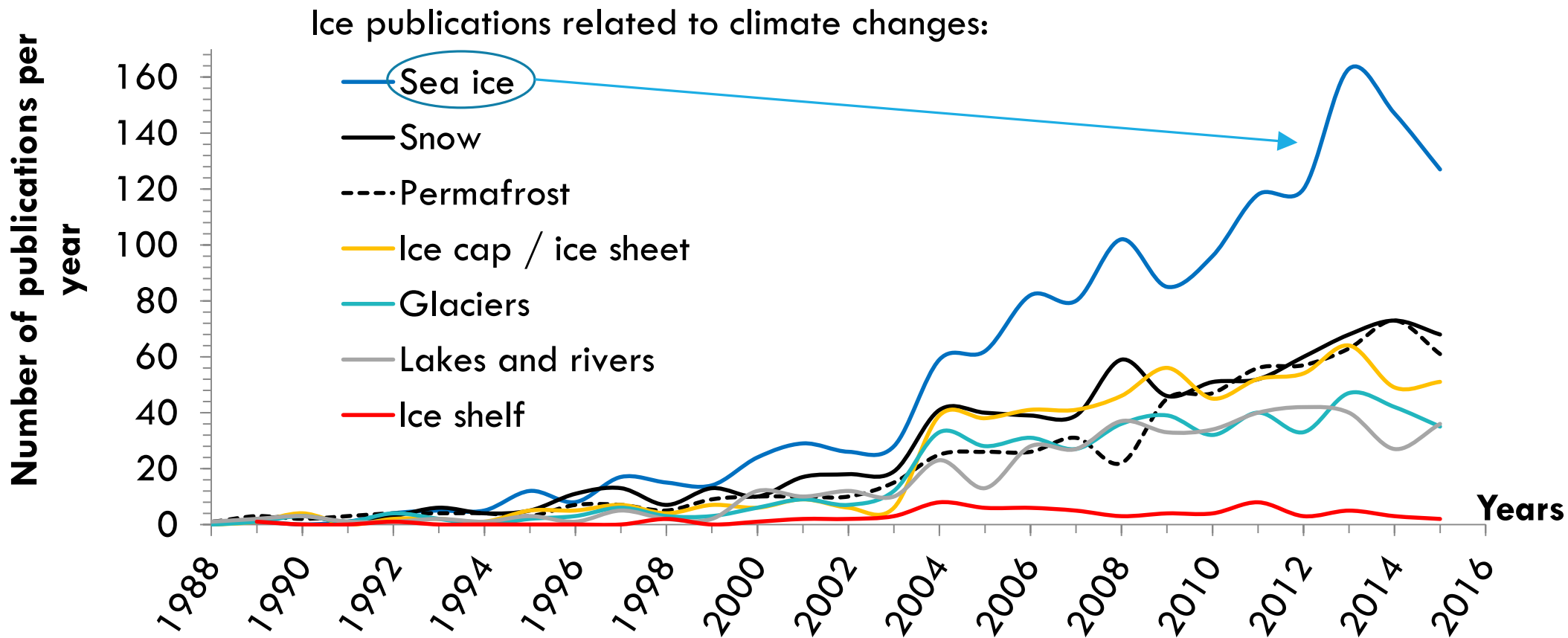
- The ice category of main interest in Uummannaq is **sea ice** :

- *"Now the coldest temperature is -25°C or less while back then it used to reach more than -50°C."*
- *"Now the wind is more unpredictable, stronger and lasting for longer periods of time." "Since I was a child, I have never noticed anything like this."*
- *"Some of the glaciers are really melted, these are the biggest changes. Like glaciers around Ukkusissat, Saattut, Ikerasak, some of them are really melted to the point that they are almost gone."*
- ***"Everyone of us here loves to go dogsledding. However some people kill their dogs because there is no ice anymore."***
- ***"The hunters cannot neither go with dogsled because the ice is too thin nor sail because it is still too thick!"***
- *"The price of the seal skin is too cheap." "Hunters have no place to sell their meat immediately."*
- *"The hunters are saying that the population of narwhales is not going to extinct and it shouldn't be an issue if biologists increase the limits of quotas. But it cannot come true right now because of the politics and the biologist opinion."*
- *"The important changes are political, about the money. The government spends a lot of money but not in smaller towns, maybe it's like that in the whole world."*
- *"Many people want to move to the bigger towns. There are more opportunities for young people in the big towns."*
- *"The municipaly moved to the big town Ilulissat and now Uummannaq has to ask there. We have to wait if we want to repair the road, most of the money is for Ilulissat. Every decision has to be taken there."*

# RESULTS



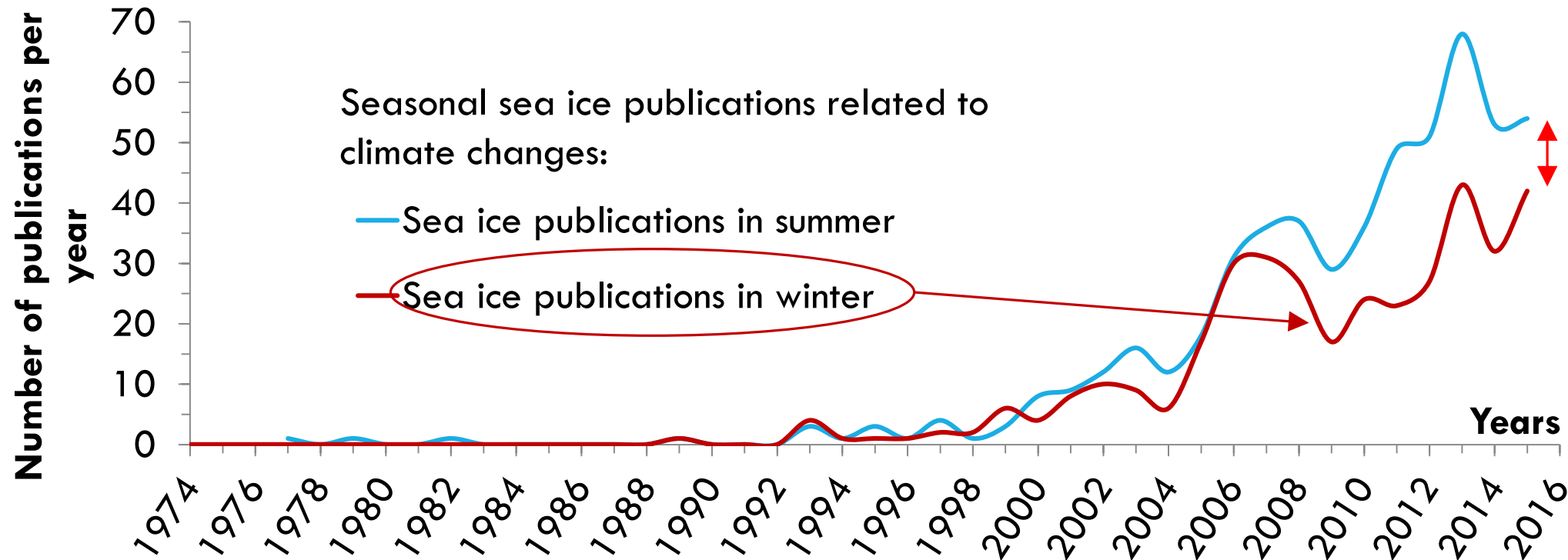
- **Result from bibliometry:** there is a good match, the most studied type of ice is **sea ice**





# RESULTS

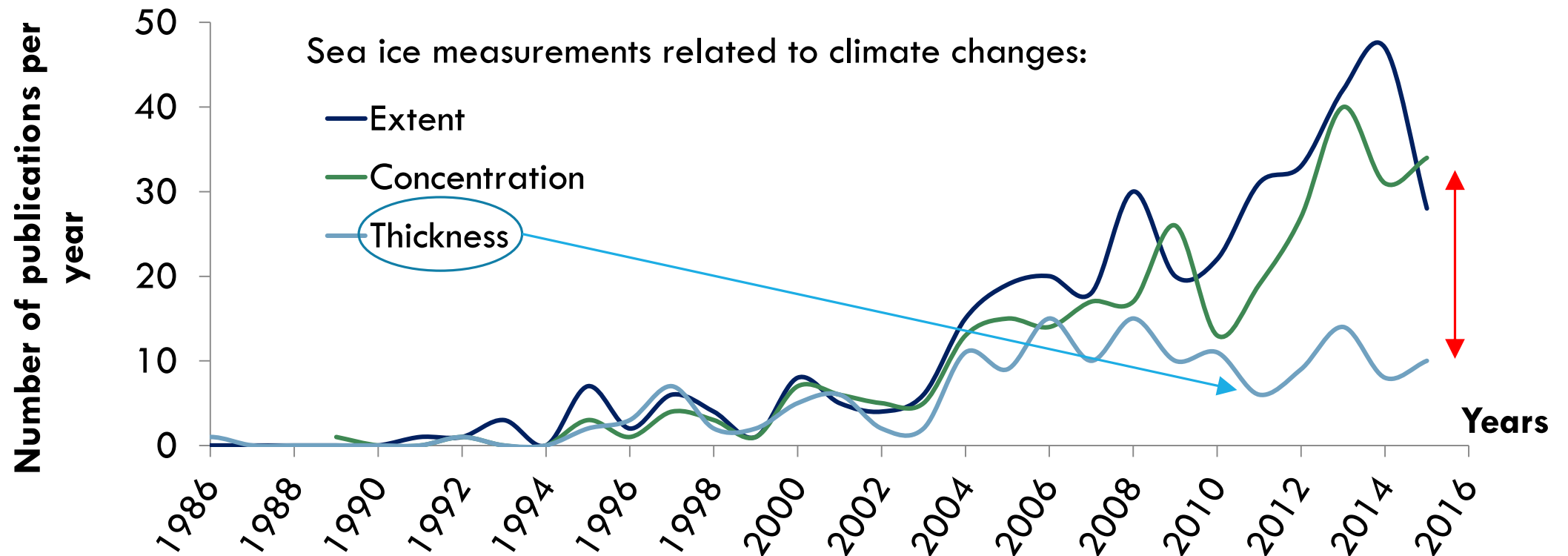
- **Result from interviews and observations:** the Uummannaq community is interested in **winter sea ice only** (since there is no sea ice in summer anyway).
- **Result from bibliometry :** the match is not too bad but not perfect. Scientists publish article on both, summer and winter sea ice but winter sea ice publications are slightly lower than summer sea ice since 2007.



# RESULTS



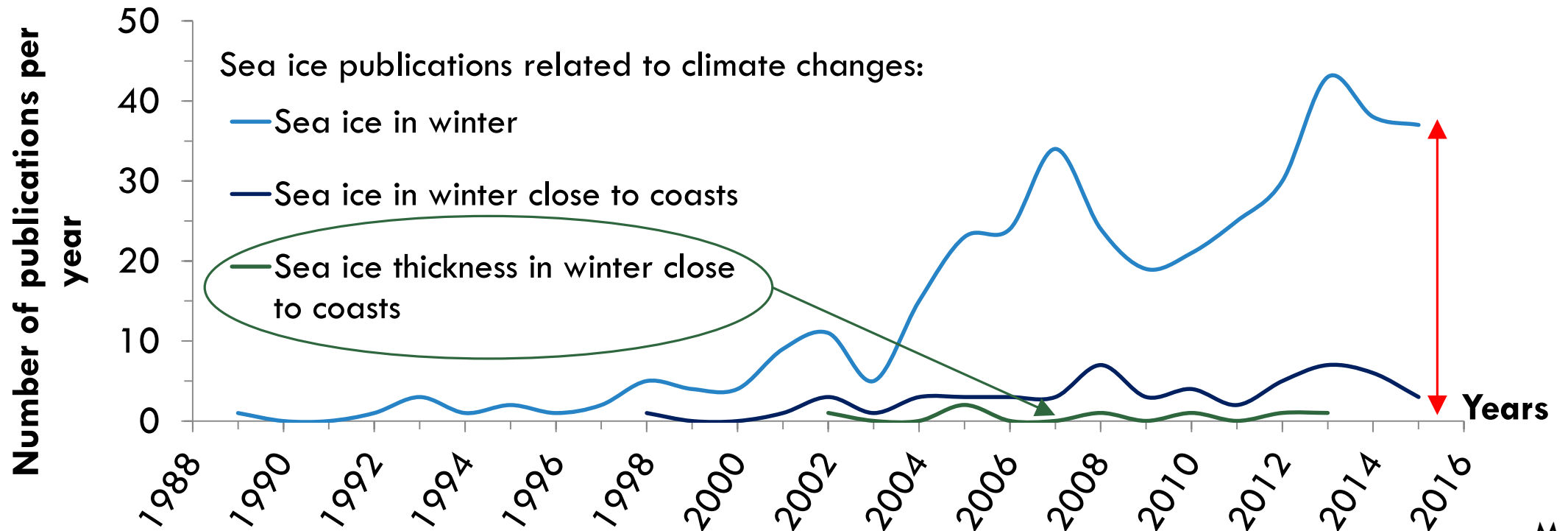
- **Result from interviews** : Umannaq inhabitants are also interested in **sea ice thickness** measurements
- **Result from bibliometry**: there is no match, sea ice thickness is receiving **low attention** from scientists



# RESULTS



- **Result from interviews** : ice thickness should be measured **in winter and close to the coast** to match interest and needs of Ummannarmiut
- **Result from bibliometry** : there is no match, sea ice thickness in winter close to the coast is receiving **extremely low attention** from scientists



# CONCLUSION

## Ice extent provide relevant information to Uummannaq inhabitants?

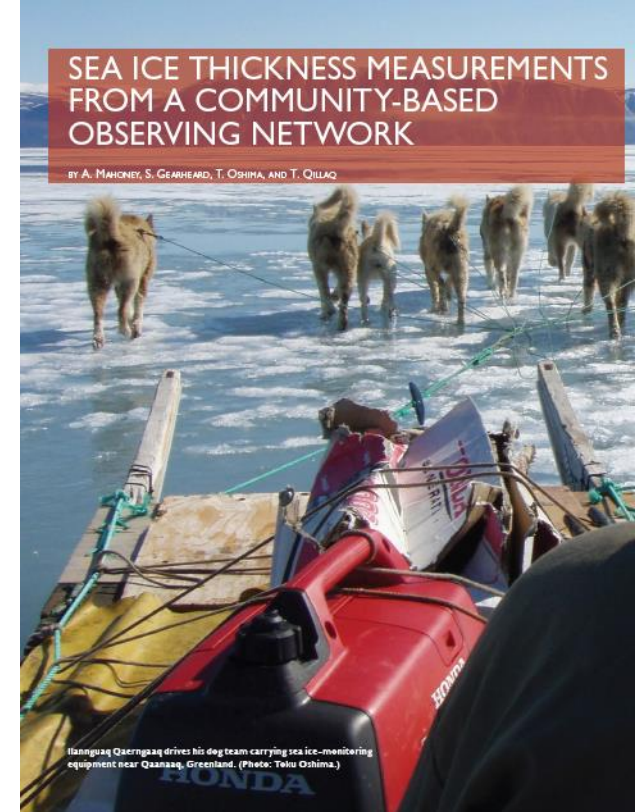
- **Partly yes** if measurements or estimations are located **close to the coast** where people live.
  - Could help to know how fishing, hunting, shipping, social and cultural activities might be affected in the future by climate changes.
- **However, it must be completed by thickness** measurements because a large ice extent with very low thickness is not resistant enough to practice sea ice activities.
  - *"When I was child in the 1960's, the ice was thick, about one meter, and was leaving in July or June. Now it is in April or May, even around Niaqornat [a small village] the ice is gone. It is hard to go fishing..."*
  - *"Before the end of the 1990's, the ice was really thick. We even travel with dogsledge all the way to Qaanaaq from Uummannaq. But in the beginning of the 2000's, because it got warmer, the sea ice did not get really thick."*



# CONCLUSION & RECOMMENDATIONS

## Recommendation for ice studies to properly inform adaptation strategies of small Arctic coastal communities in Greenland

- Develop climate change studies (and forecasts) that address thickness of winter sea ice close to the coast – this is important since coasts are **where people live and work (fishing and hunting)**.
- With relevant information on sea ice, small Arctic coastal communities are more likely to properly adapt.



Source: a. Mahoney, s. Gearheard, T. oshiMa, and T. QillaQ. American, Meteorological Society, March 2009.

# CONCLUSION & RECOMMENDATIONS



- **Develop knowledge co-production between researchers and inhabitants of small Arctic coastal communities** to fill the gap between scientific knowledge on sea ice and the information needed by inhabitants of small coastal arctic communities.
- **Involving community members in research and taking traditional/local knowledge in consideration** are not only a matter of improving "our" scientific studies. It is also a matter of **supporting a bigger awareness of researchers** for environments and populations they study and for the public in general as well as **promoting a better knowledge in the society, getting people to act** in a more right direction and hopefully **inspiring more efficient public policies**.



# FOR MORE INFORMATION...

Polar Science xxx (2017) 1–9



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## Life on thin ice: Insights from Uummannaq, Greenland for connecting climate science with Arctic communities

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**THANK YOU**

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