



Nordic Conference on  
Climate Change Adaptation

Climate change in the Arctic:

Warmer, wetter, wilder – Arctic  
heritage

Anne-Cathrine Flyen

# Anne-Cathrine Flyen

- Architect/Researcher
- Building preservation, climate related damages, polar heritage
- Work experience; heritage management and research :
  - NIKU
  - The Governor of Svalbard
  - Directorate for Cultural Heritage
  - Municipality of Oslo
  - SINTEF Building and Infrastructure



# Warmer, wetter, wilder – Arctic heritage

What are the consequences of climate change and what about the vulnerable, arctic cultural environments?



# The high Arctic: the archipelago of Svalbard



# Arctic heritage

- 1) What distinguishes the cultural heritage sites at Svalbard?
- 2) What are the anticipated effects from climate change on the vulnerable historic sites?
- 3) How are these effects met by the Governor of Svalbard (responsible for protecting historic remains at Svalbard)?



# Svalbard

- Discovered by W. Barents in 1596
- International “common ground” until 1925, when it became under Norwegian jurisdiction.
- No signs of any indigenous population.
- International use of the islands in a variety of ways for over 400 years
- Svalbard’s cultural remains regarded as international heritage.



# Historical periodes

- Western European whaling: 1600-1750
- Russian wintering/hunting: 1700-1850
- Norwegian wintering/hunting: 1800 -
- Scientific/adventurous expeditions: 1800 -
- Mineral seeking, mining Industry: 1900 -
- Public administration: 1905 -
- Tourism: 1850 -
- World War 2 at Svalbard: 1941-45



# Automatic protection clause

All structures and artefacts related to human activity dating from before 1946 are automatically protected through the Svalbard Environmental Protection Act.



The Amundsen anchoring mast for the airship *NORWAY* of Nobile, Amundsen and Ellsworth before attempting to cross the north pole

# Protected structures and artefacts



# Climate

Svalbard defined as «arctic desert»! - Not any more?



# Climate change - anticipated effects

Small changes in microclimate = huge effects

Increase in  
temperature

Rain

Fungal  
decay

Land slide

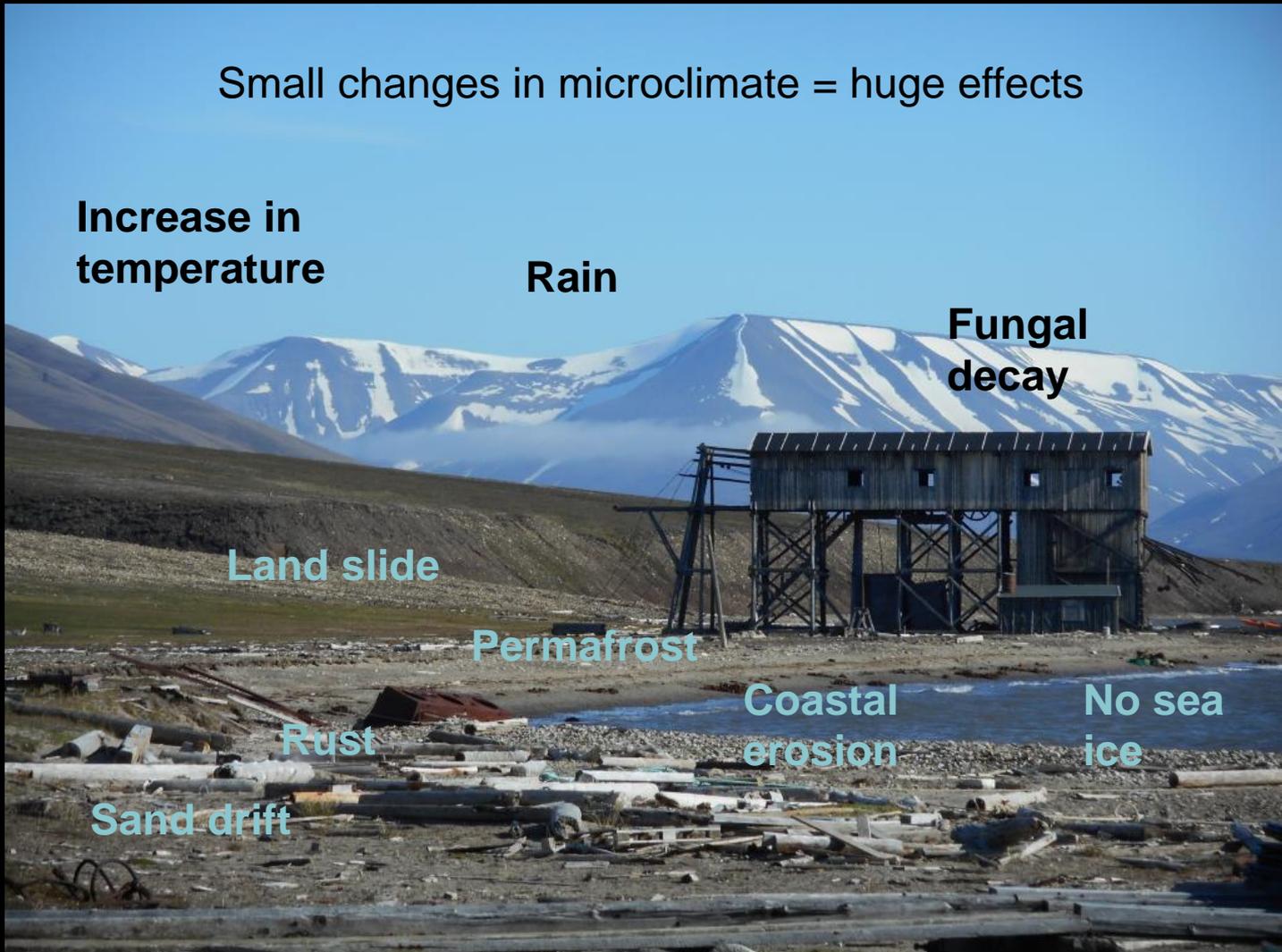
Permafrost

Coastal  
erosion

No sea  
ice

Rust

Sand drift



# Permafrost/thawing of soil



# Excavations in the 1980-s



Excavations at *Likneset - Corpse Headland* - in the 1980-s. Photo: The Governor of Svalbard

# Excavations in 2016



Excavations at *Likneset - Corpse Headland* -  
in 2016.

Photo: Svalbardposten/The Governor of Svalbard



# Coastal erosion

Norwegian trappers station  
from 1924



Norwegian coal mining city  
from 1917



# Coastal erosion

Decrease in sea ice during winter time = increase in coastal erosion



# Land slide/solifluction



# Fungal decay



# Oxidation/Rust



# Wearing the vegetation down - and then comes the wind



# How are the effects met?

- ▶ Cultural Heritage protection integrated with nature protection
- ▶ A stated goal by the Governor of Svalbard (2012) is preserving a representative selection of the heritage for posterity
- ▶ Emergency-excavations
- ▶ In 2017: Research excavations: what is actually happening?
- ▶ Restoration of buildings and constructions
- ▶ Moving buildings away from shoreline
- ▶ Site-specific guidelines

But how to change nature?



# Managing Svalbards nature, animal life and cultural heritage – goals and contradictions



# Challenges

When you do not know enough about what is happening –  
how to expend greater efforts?



# Challenges

Degradation seems to speed up –we do not even know enough to meet the present situation!

- ▶ What is actually happening and how fast?
- ▶ Degradation parameters?
- ▶ What kind of degradation?
- ▶ Interaction between human and natural degradation



# Other challenges

- ▶ Knowledge is needed to engage in knowledge based management!
- ▶ Nature conquer cultural heritage: nature rules!
- ▶ The money goes to nature research
- ▶ Remote areas— no infrastructure = expensive research activities
- ▶ Missing: environmental monitoring
- ▶ Focus has been on tourism/human wear



More research needed if mist is to be lifting!



anne.flyen@niku.no

