

CAPARDUS – CULTCOAST workshop 24.03.2021

Existing systems for documentation and monitoring of cultural heritage sites in Svalbard



Anne-Cathrine Flyen

Anne-Cathrine Flyen

- Architect, Researcher, PhD-Candidate
- Research field: preservation of buildings, degradation, human wear, environmental monitoring, cultural heritage at Svalbard
- Work experience within CH management and research:
 - NIKU
 - Sysselmannen på Svalbard
 - Riksantikvaren
 - Byantikvaren i Oslo
 - SINTEF Byggforsk/Community



THEME / CONTENT	RESPONSIBLE	PERIODE
The Governor's discontinued monitoring system: Monitoring of the cultural environment on Svalbard.	The Governor of Svalbard	1999 - 2003
Nordic project	The Governor of Svalbard	2003
Environmental impact from human use?	Norwegian Institute for Nature Research (NINA) and Norwegian Institute for Cultural Heritage Research (NIKU)	2008 - 2012
CULPOL	NIKU and NINA	2013 - 2016
Ricardo Rouras project on photo surveillance	Ricardo Rouras	2009/-10
The governor's annual cruises and the field inspectors	The Governor of Svalbard	Annual
Knowledge of traffic and biological environmental effects	NINA	2018 (?)

THEME / CONTENT	RESPONSIBLE	PERIODE
MOSJ: Monitoring of wildlife: In the ocean: 18 species/program. On land: 3 species/program	Norwegian Polar Institute (NP)	Ongoing, more than 20 years
MOSJ: Climate monitoring: atmosphere, ocean, land	The Norwegian Meteorological Institute (MET), NP, Institute of Marine Research (HI), Norwegian Institute for Air Research (NILU)	Ongoing, more than 20 years
MOSJ: Monitoring impact: Human traffic, fishing, pollution, hunting and trapping	NP, HI, NILU	Ongoing, more than 20 years
MOSJ: Monitoring plants	NP	Started in 2018, however no data in MOSJ yet
Mosj: Monitoring Cultural Heritage	The Governor	Started in 2018, however no data in MOSJ yet
The Governor/Visit Svalbards tourism statistics	The Governor	Ongoing since 1997
CULTCOAST	NIKU	2019-2023
ArcticAlpine Decay	NIKU and Norwegian Insittue of Bioeconomy Research (NIBIO)	2021 - 2025

MOSJ: Environmental monitoring of Svalbard and Jan Mayen

- ▶ Provide a basis to control whether political aims set for the development of the environment in the North are being attained
- ▶ MOSJ obtains relevant information from existing environmental programmes on land, in the air and in the sea.

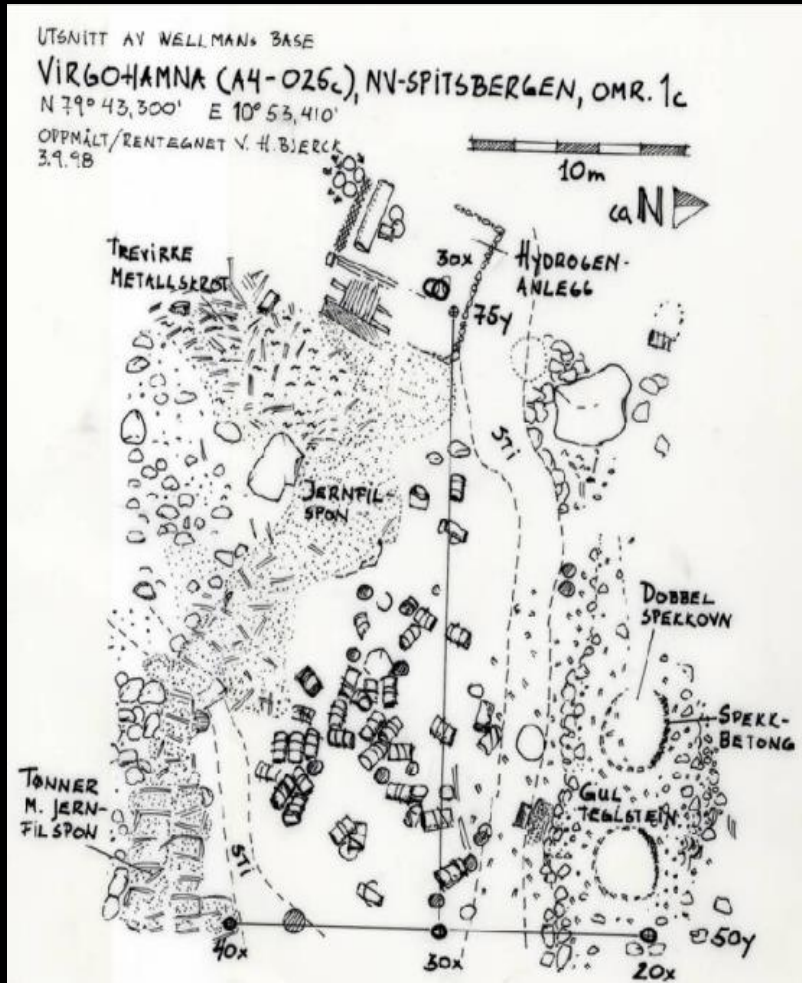


Photo: N. Lecomte/Norsk Polarinstitutt

Governors environmental monitoring program

19 sites, 1998 – 2004

Goal: knowledge on degradation processes

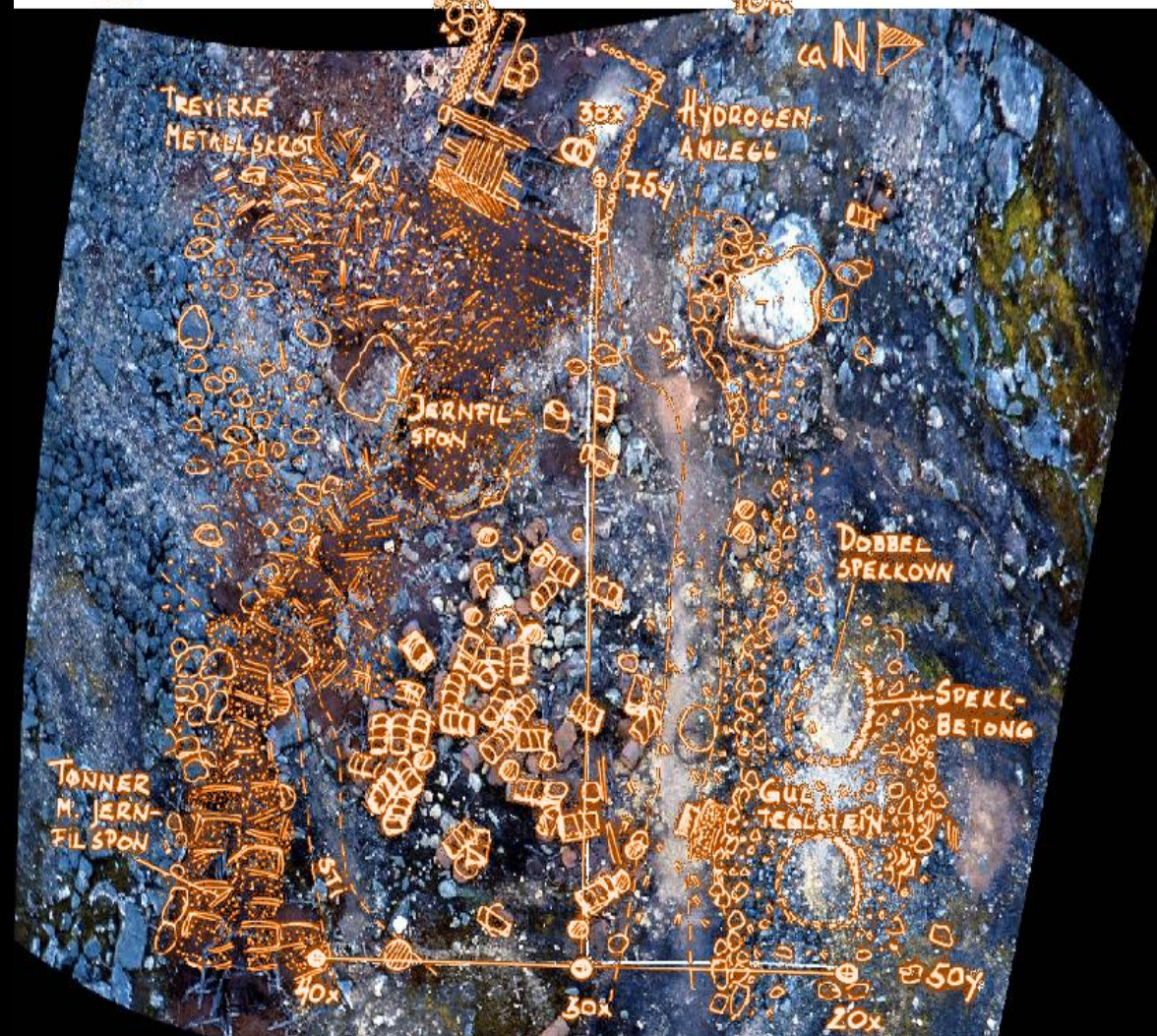


UTANNT AV WELLMANNS BASE

VIRGOHAMNA (AV-ØZS.) NN-SPITSBERGEN, OMR. 1c

N 71° 42,300' E 10° 55,510'

OPPHAVT/KONTAKTAVT V. 4.3.1984
37.75



- Rough and simplified system based on aerial photography from helicopter
- Only running for a few years, then shut down
- Unable to capture changes systematically
- However, a good basis

The Governors environmental monitoring

- ▶ Streamline environmental monitoring using drones
- ▶ Use of different sensors (camera)
- ▶ Ortophoto (from drone) georeferenced on map
- ▶ Accurate mapping of cultural environments/sites
- ▶ Makes it possible to detect changes in erosion and traffic wear
- ▶ 3D-models for documentation and dissemination



An aerial orthophoto of an archaeological site. The terrain is dark and rocky. A red line traces a path across the site, and several orange ovals highlight specific features. The text 'KARTFESTET EROSJONSKANT' is positioned to the left of the red line, and 'KARTFESTEDE GRAVER' is positioned to the right of the orange ovals.

KARTFESTET
EROSJONSKANT

KARTFESTEDE
GRAVER

SYSSELMANNENS DRONEPROSJEKT

Georeferert ortofoto

Foto: Lise Loktu / Sysselmannen på Svalbard

NIKU

Norwegian Institute for Cultural Heritage Research

SYSSELMANNENS DRONEPROSJEKT

3D-modeller



Modell: Tommy Dahl Markussen / Sysselmannen på Svalbard

The Governor:

- ▶ Do not have resources to monitor for MOSJ
- ▶ This drone-program only act like a basis
- ▶ Monitoring data for MOSJ organised as a separate project with its own funding



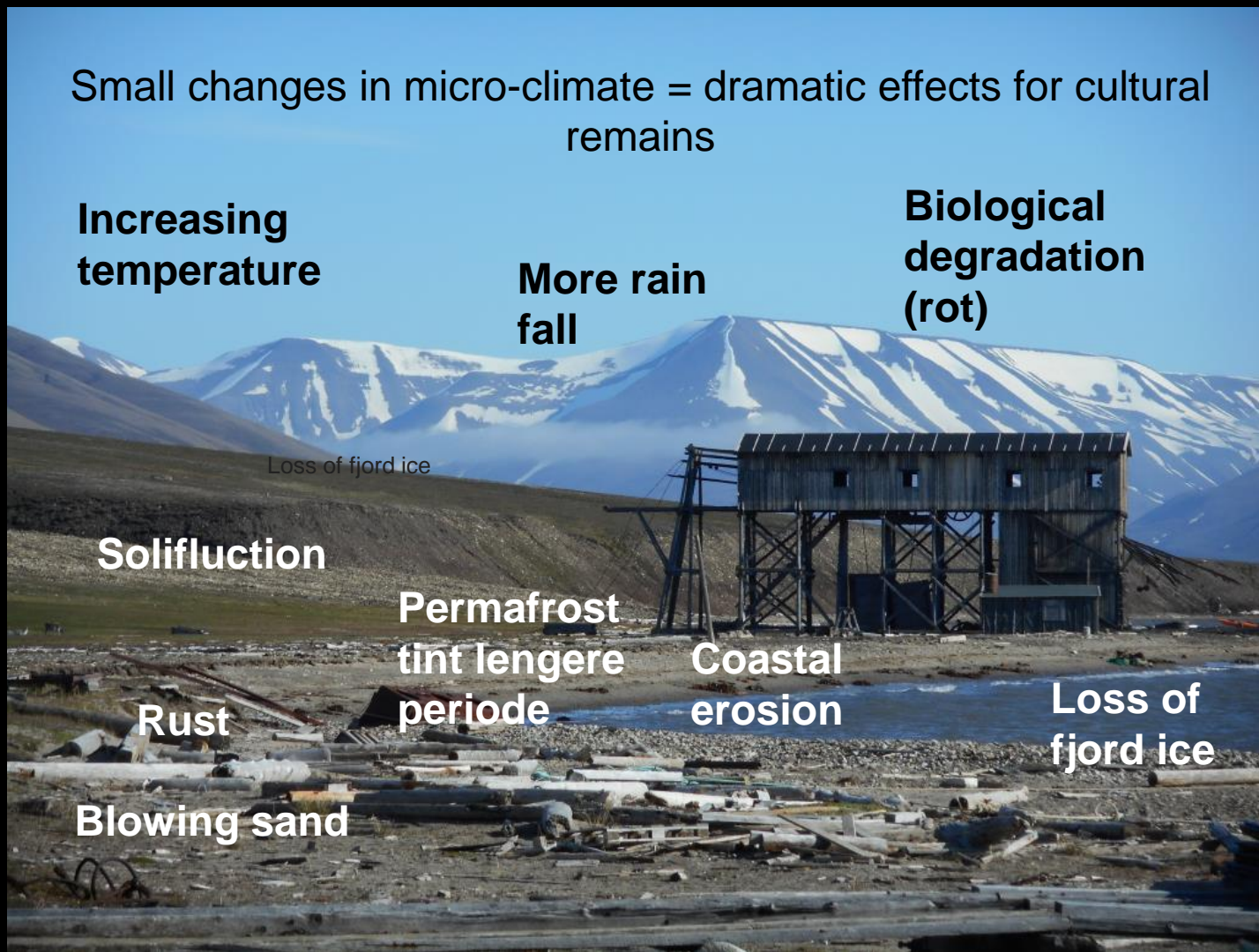
Climate

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



thawed longer period

Climatic changes – anticipated effects



Coastal erosion threatening historic sites



Dealing with fungal decay



Environmental impacts from wear and tear?

- ▶ Sites vulnerable for human traffic
- ▶ Trampling tourists collect souvenirs



Ruins in good shape or buildings in bad shape?



Environmental monitoring at Svalbard


- ▶ The Governors monitoring program from 1999 – 2004. Focus on archaeological sites, coastal erosion and tourism/human wear
- ▶ This program was shut down, but still holds basic information and methods
- ▶ Hardly any monitoring programs running for standing structures, and only for coastal erosion and human wear
- ▶ The Governor started monitoring by drones in 2018
- ▶ The Governors/Visit Svalbards statistics on visited sites and visiting tourists holds good basic information
- ▶ AECOs work on site-specific-guidelines based on NINA/NIKUs work on developing a method for vulnerability assessments
- ▶ Tourists/guides as «monitoring tools»?



Environmental monitoring

- Geohazards, including coastal erosion;
- fungal decay; human weare:
 - Threats
 - Understand what is happening
 - Effects
 - Indicators
 - Monitoring methods



The background image shows a wide, rocky beach in the foreground, covered with numerous grey and brown stones of various sizes. In the middle ground, there is a calm body of water, possibly a fjord or a lake, reflecting the overcast sky. The background is dominated by high, jagged mountains with significant snow cover under a grey, cloudy sky.

anne.flyen@niku.no

Takk for at jeg fikk legge frem våre erfaringer!
Thanks for letting me present our results so far!