



# Climate change and infectious diseases – examples from the Nordic countries and Russia with a focus on wildlife and semi-domesticated reindeer

Skeppet, SVA, 2019 May 16<sup>th</sup>, 13.30- 16.00.

A seminar within the NordForsk Clinf-project (Climate-change effects on the epidemiology of infectious diseases and the impacts on Northern societies) [www.clinf.org](http://www.clinf.org). Organised by SVA in conjunction with a research visit from the Federal Research Centre for Virology and Microbiology (CVM), Vladimir region, Russia [www.vniivvim.ru](http://www.vniivvim.ru)

## Program

**13.30 – 13.40 Ann Albihn, SVA,**

Welcome. And the NordForsk Clinf project and our ongoing One Health study on Brucella.

**13.40 – 14.00 Irina Egorova, microbiologist, PhD at CVM**

Federal Research Centre for Virology and Microbiology - fields of activities.

**14.00 – 14.30 Nataly Pavelko, CVM,**

Diseases of reindeer in Russia

**14.30 – 14.50 Coffee**

**14.50 – 15.05 Anna Omazic, SVA**

Human and animal disease data collection - differences between the Nordic countries

**15.05-15.30 Irina Egorova, CVM**

Anthrax in a population of reindeer in Yamal

**15.30- 15.50 Erik Ågren, SVA**

Surveillance of infectious diseases in wildlife in Sweden

**15.50-16.00 Sum up and discussion**



Photo  
Camilla Risvoll, Nord Univ, Norway



# Climate change is affecting people, animals and the environment

**World Organisation for Animal Health** noticed this problem with a special issue 2008

**Climate warming in the Arctic** is about 3 times the rate of the global change (IPCC, 2014)

**Ecosystem changes:** low species richness and highly specialised species gives lower possibility to adapt. Some treats are species on the move, shrub expansion, tree-line extension, arthropod-vector expansion

**The albedo effect** is affected by thawing of permafrost, snow and ice cover declining, infrastructure break down, greening of light areas



# Northern societies are highly dependent on healthy animals and ecosystems



Photos SVA and Ulrika Rockström, Gård o DjurHälsan, Swe



A Nordic Centre of Excellence funded by the NordForsk programme *“Responsible Development in the Arctic: Opportunities and Challenges – Pathways to Action”*

8 Cooperating partners, a multidisciplinary team of > 50 senior scientists



Photos: Carl-Johan Utsi



Climate change effects on the epidemiology of infectious diseases and the impacts on Northern societies





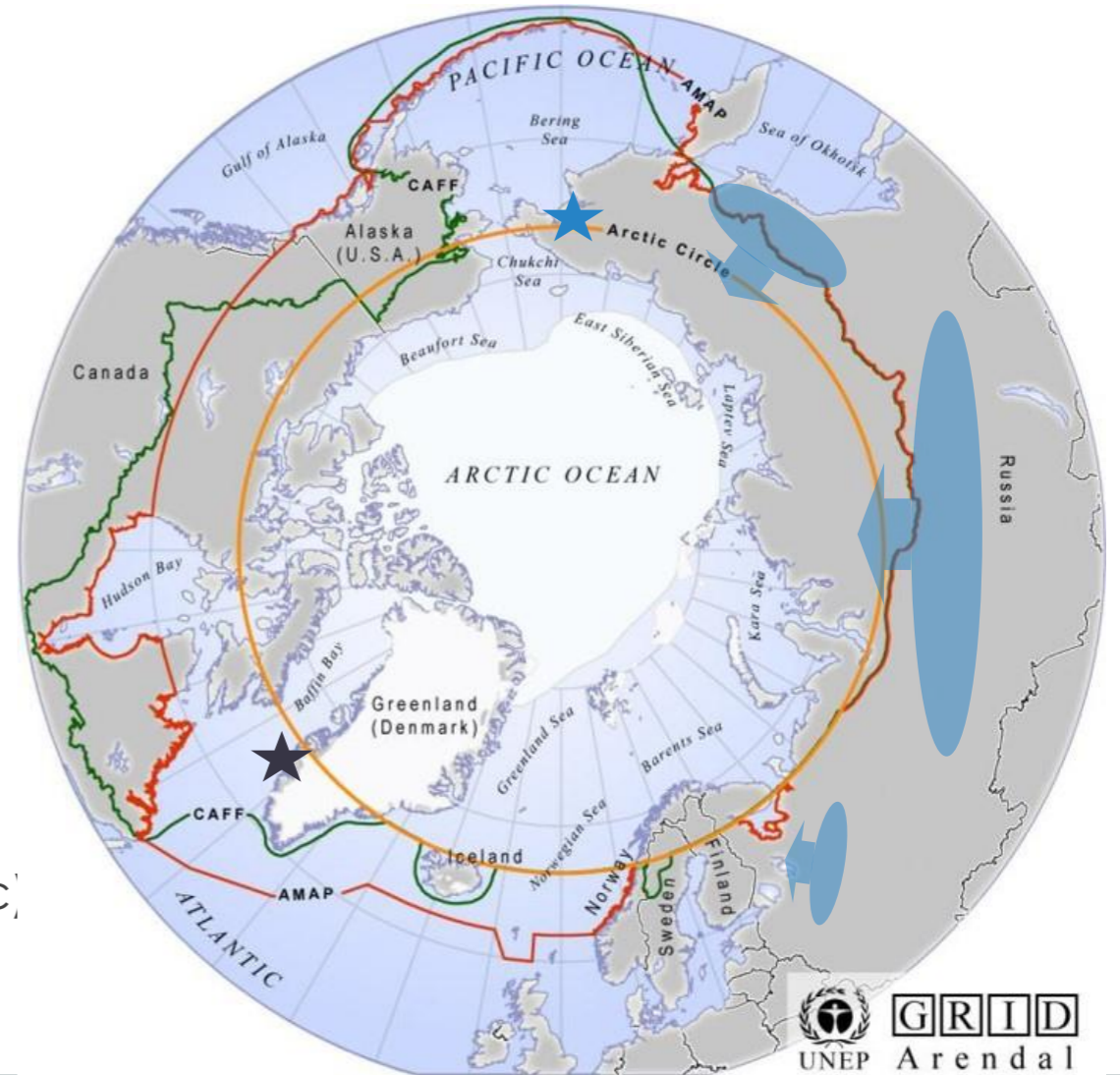
## CLINF aims

### Objectives:

- To clarify the impact of **climate sensitive infections (CSIs)** for humans and animals in the north, for animal husbandry and societies
- To turn this new understanding into practical tools for decision-makers

# Geographical area for CLINF

- ★ Yakutsk
- ★ Nuuk
- Geographic CSI extension (hypothetic)





## We work in several Work packages, e.g.

- WP1: Human and animal diseases in the Nordic region and Russia
  - Definition of CSIs
  - Gather information on the prevalence and incidence of CSI in humans and animals. Retrospective data, new samples collection and analyses, tick-borne diseases, ...
- WP2: Climate change in the Nordic region
- WP3: Depicting geographic spread of CSI in the Nordic region
- WP4: Societal impacts and adaptation needs of CSI

# For whom do we do it?

- >150 stakeholder organisations identified in the Arctic region
- Interactive platform and OPEN DATA at [clinf.org](http://clinf.org) for the research society and many more.





# Brucella among reindeer and humans



- *Brucella melitensis*, *B. abortus*, *B. ovis*, ....
- Symptoms differ for different species but reproductive disorders, abortions, arthritis is common. In humans recurrent fever, flu like symptoms, chronic weakness and arthritis.
- Transmitted by un-pasteurised milk, aborted foetuses, environment, contact, ....
- Does it exist, is it a problem, zoonotic relevance?
- Not in the Nordic countries, but in Russia?
- Comparing the situation in the Russia Yamal region with Yakutia
- Retrospective disease data collection of humans and animals.
- Serological analyses of reindeer in these two regions. (Rose-Bengal test and Elisa)
- PCR-diagnostics of positive herds??