

# MSc: Changes in radiative forcing due to clear-cutting in Sweden

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## AIM

- to determine the **net climatic effect of clear-cutting** in Sweden by comparing radiative forcing by albedo change and radiative forcing by CO<sub>2</sub> release due to clear-cutting in Sweden

## STUDY SITES



- Norway spruce and Scots pine forests

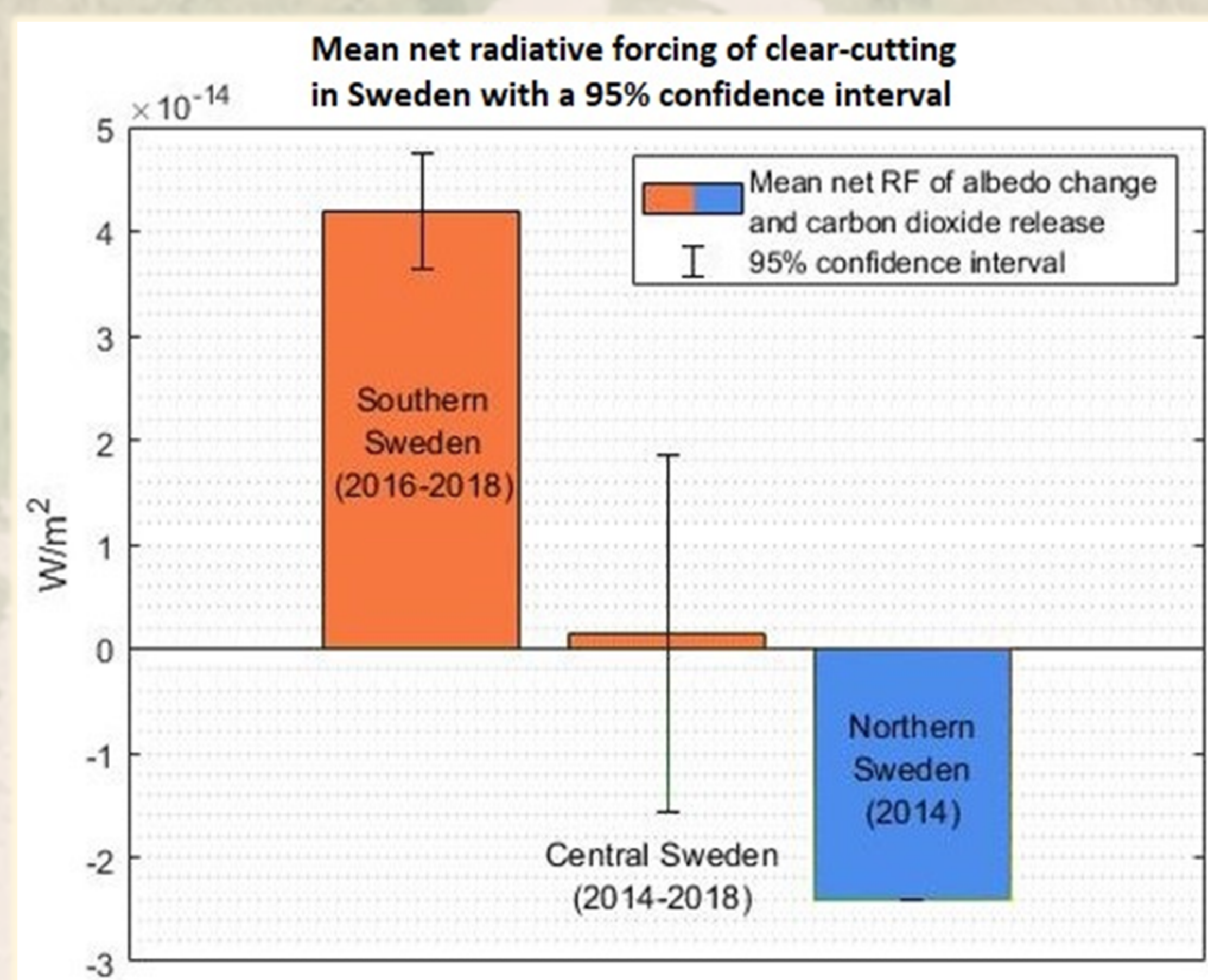
**Svartberget forest and Degerö mire (64°N)**

**Norunda forest and clear-cut (60°N)**

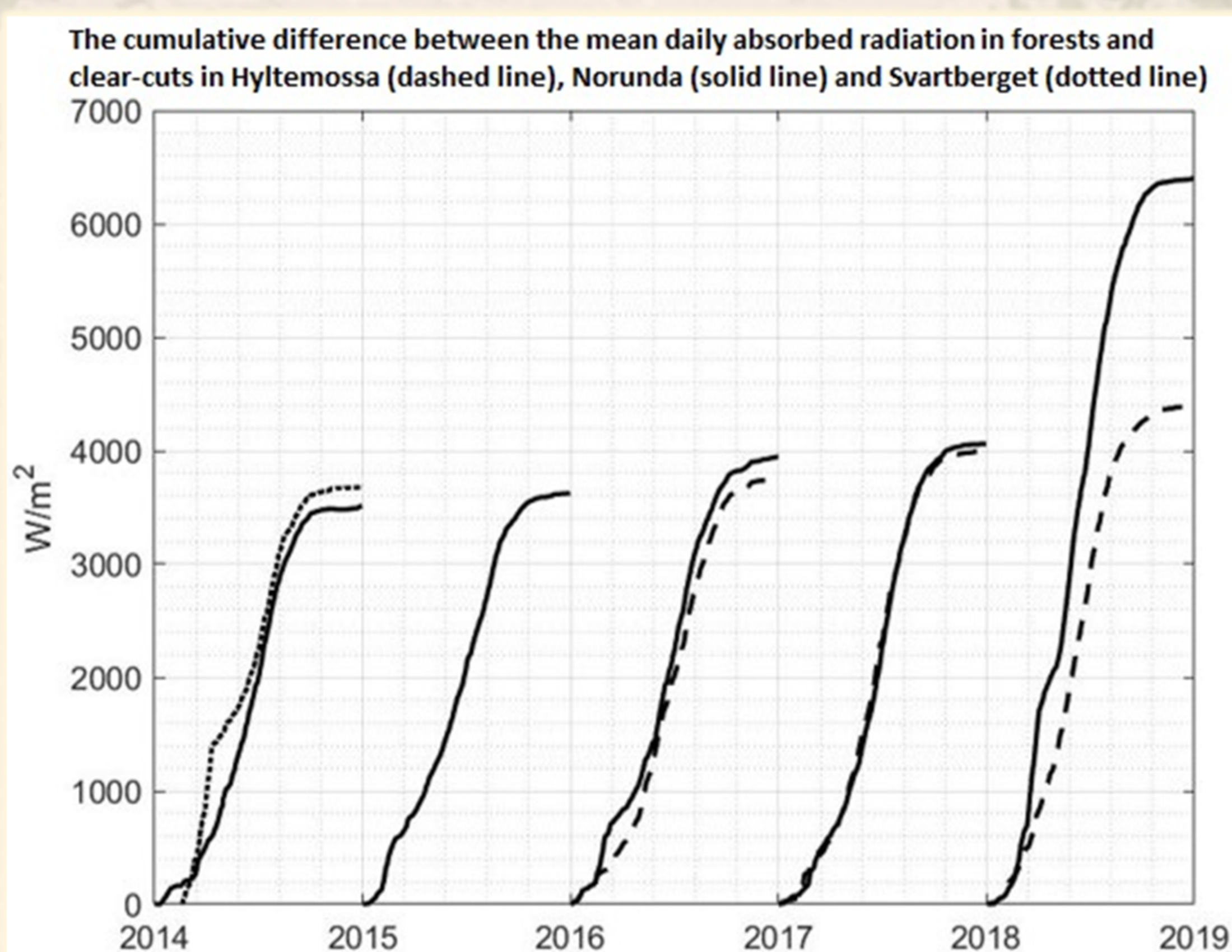
**Hyltemossa forest and clear-cut (56°N)**

## CONCLUSION (MSc)

Based on available data, clear-cutting in **southern** and **central** Sweden had a **warming effect** on climate while in **northern** Sweden clear-cutting had a **net cooling effect**.



## RESULTS



- latitude increase:  
radiative forcing by albedo change ↑  
radiative forcing by CO<sub>2</sub> release ↓
- differences in **summer albedo** in Sweden have higher contribution to radiative forcing than the winter albedo

MSc Thesis:



# PhD: The role of land-atmosphere interactions on temperature variability and extremes in Fennoscandia

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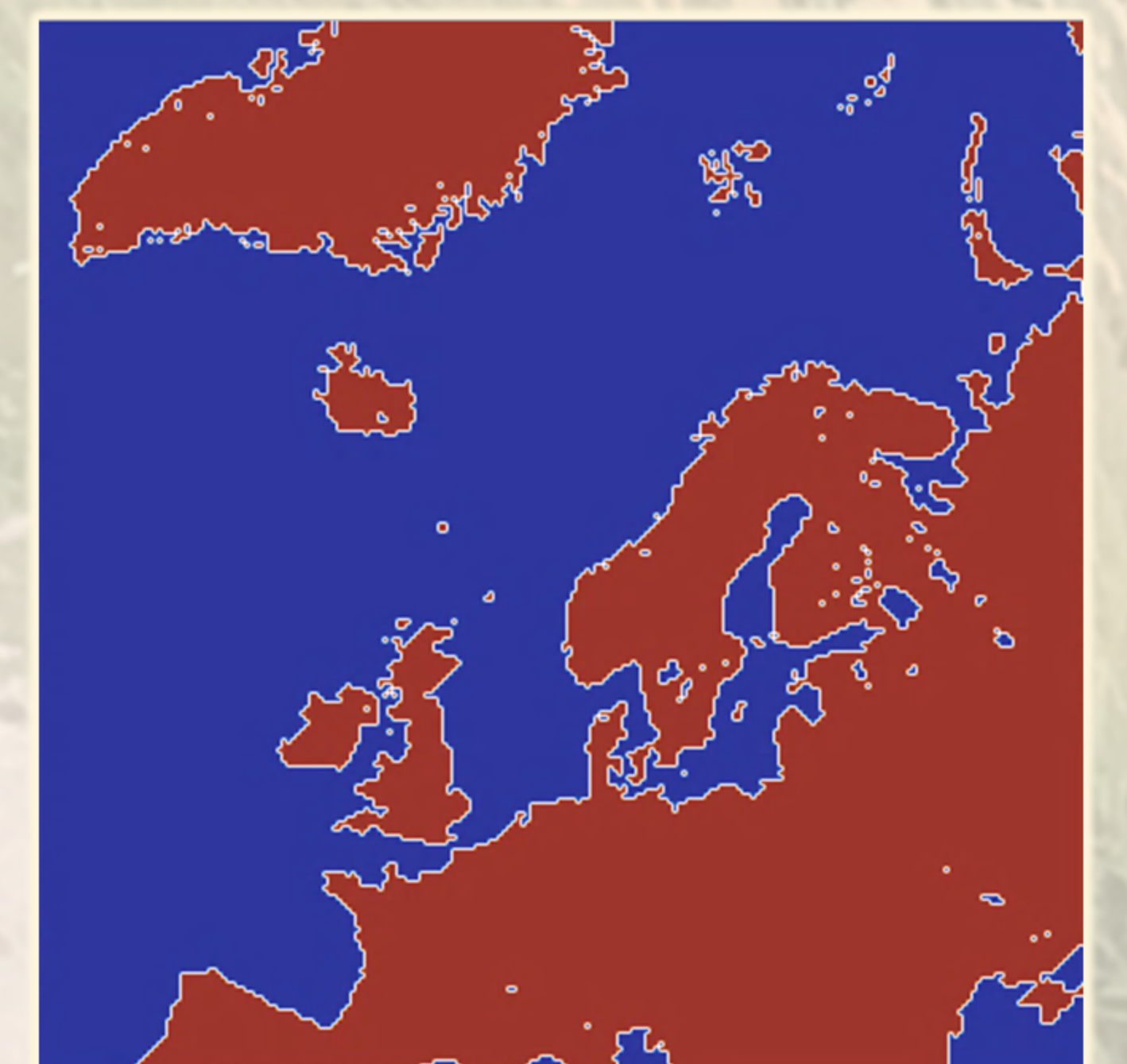


## AIM

- to investigate the **coupling effect between terrestrial biogeophysical forcing and atmospheric blocking** for the assessment of high-temperature extremes in Fennoscandia

## STUDY AREA

- WRF-CTSM domain extent



## EXPECTED RESULTS

	Article I	Article II	Article III
Topic	Recent temperature variability and trends	Extreme high-temperature event	Anthropogenic impact in the future
Main objective	Investigate the interannual variability, spatial pattern and magnitude of near-surface air temperature	Investigate the extent to which land cover types modulate the severity of a heatwave	Investigate the extent to which land use and climate change will affect the severity of a heatwave in the future
Region	Fennoscandia	Selected areas	Fennoscandia
Period	1995–2020	Spring and summer in 2018	Spring and summer in the future
Tool	WRF-CTSM		
Resolution	20 km	4 km	12 km
Methods	Model evaluation		
	Variability and trends detection, extreme event definition	Land-atmosphere coupling strength, sensitivity tests	Sensitivity tests, physical climate storyline approach

- evaluation of the state-of-the-art coupled climate model WRF-CTSM
- assessment of the **contribution of land cover** to severity of heatwaves during atmospheric blocking events in the present and future climate

Contact:

