

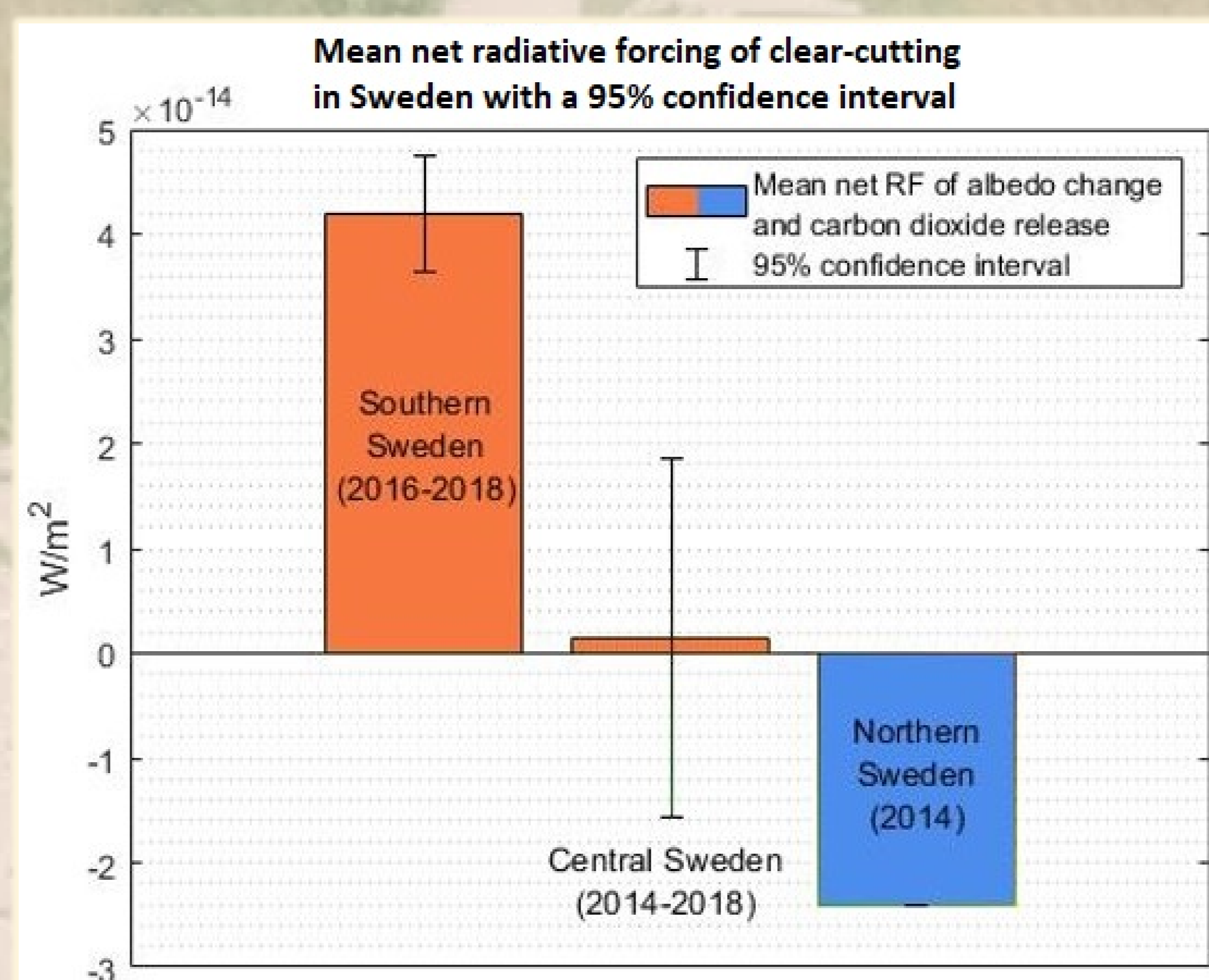
Changes in radiative forcing due to clear-cutting in Sweden

Iris Mužić¹, Patrik Vestin¹, Anders Lindroth¹, Meelis Mölder¹, Tobias Biermann^{1,2}, Michal Heliasz^{1,2}, Janne Rinne¹

¹Department of Physical Geography and Ecosystem Science, Lund University, Lund, Sweden

²Centre for Environmental and Climate Research, Lund University, Lund, Sweden

CONCLUSION
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.



FOREST FEEDBACKS TO CLIMATE

- Forests **store CO₂** and thereby reduce the atmospheric concentration → **cooling**
- Forests have a **low albedo** and thereby absorb more incoming radiation → **warming**

AIM

- to determine the **net climatic effect of clear-cutting** in Sweden by comparing radiative forcing by albedo change and radiative forcing by CO₂ release due to clear-cutting in Sweden

HYPOTHESIS

- high-latitude clear-cutting can reduce climate warming

STUDY SITES



- Norway spruce and Scots pine forests

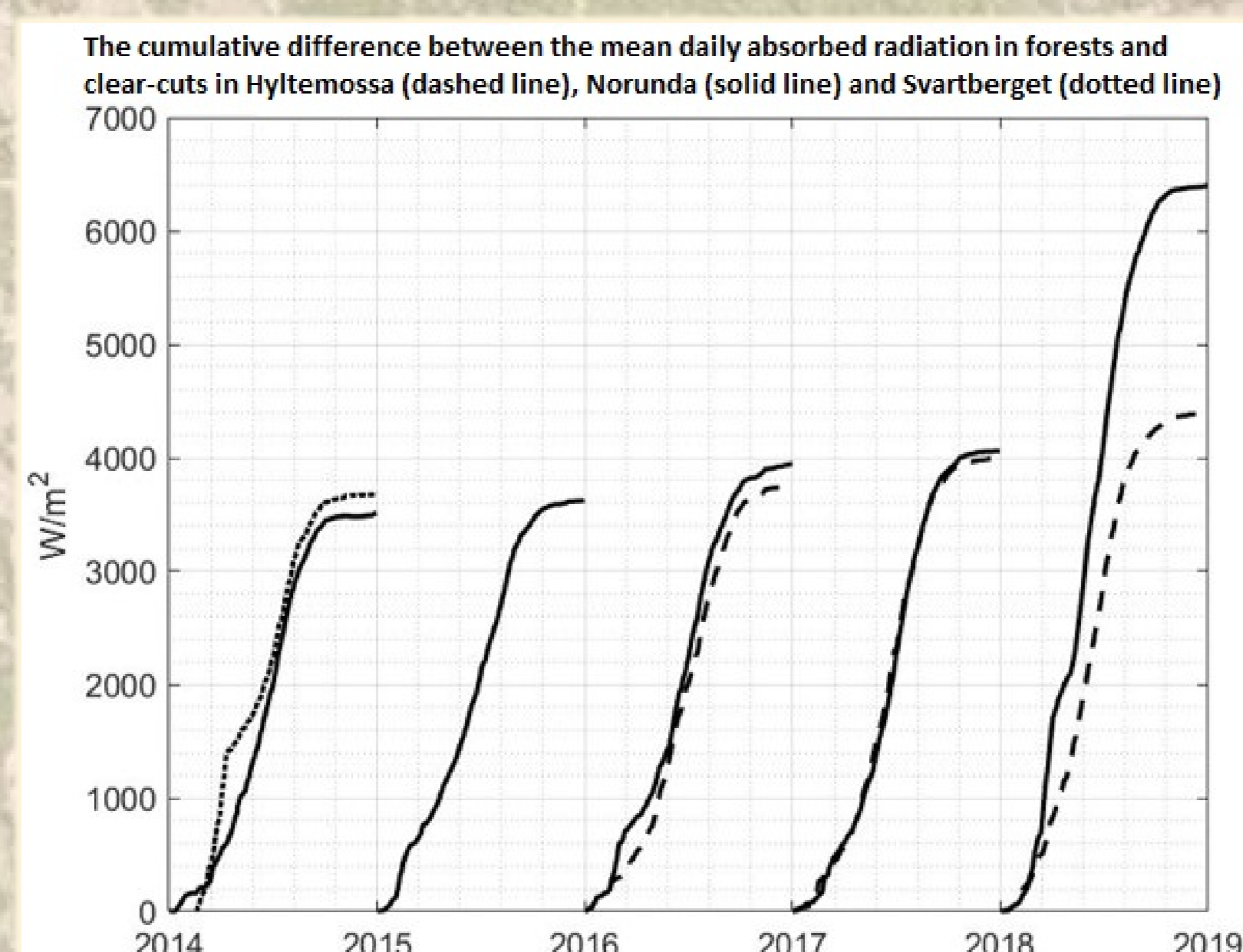
Svartberget forest and Degerö mire (64°N)

Norunda forest and clear-cut (60°N)

Hyltemossa forest and clear-cut (56°N)

RESULTS

- latitude increase:
radiative forcing by albedo change ↑
radiative forcing by CO₂ release ↓
- small differences in **summer albedo** in Sweden have higher contribution to radiative forcing by albedo change than the winter albedo



DATA

- **CO₂ release**
difference in the aboveground carbon stock of the standing biomass between forest and clear-cut sites
- **albedo change**
incoming and reflected shortwave radiation from net radiometers in forest (installed by ICOS Sweden) and neighbouring clear-cut sites (installed by LU)

ICOS National Network Sweden

FUTURE PERSPECTIVE

- albedo effect has an essential role in future **forest management strategies**
- **more data is required** on radiative and CO₂ fluxes during the whole rotation cycle of managed forests



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