

# Plant Communities at Nadym, Laborovaya, and Vaskiny Dachi

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## **Objectives**

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- **Detect trends in composition and structure of zonal plant communities along the bioclimate gradient**
- **Provide baseline data for remote sensing and modeling components**
- **Establish permanent plots to monitor changes in the future**

## Methods

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- 39 Plant community relevés at three locations
  - Braun-Blanquet cover-abundance scale
- Environmental factors
  - Climate-, geography and soil parameters
  - Biotic parameters, e.g. vegetation height, plant functional types, biomass, ....
- Temperature loggers for *n*-factor analysis
- Vegetation description + analysis
  - Sorted table method
  - Ordination techniques (DCA, NMDS)

# Nadym



# Nadym



# Laborovaya

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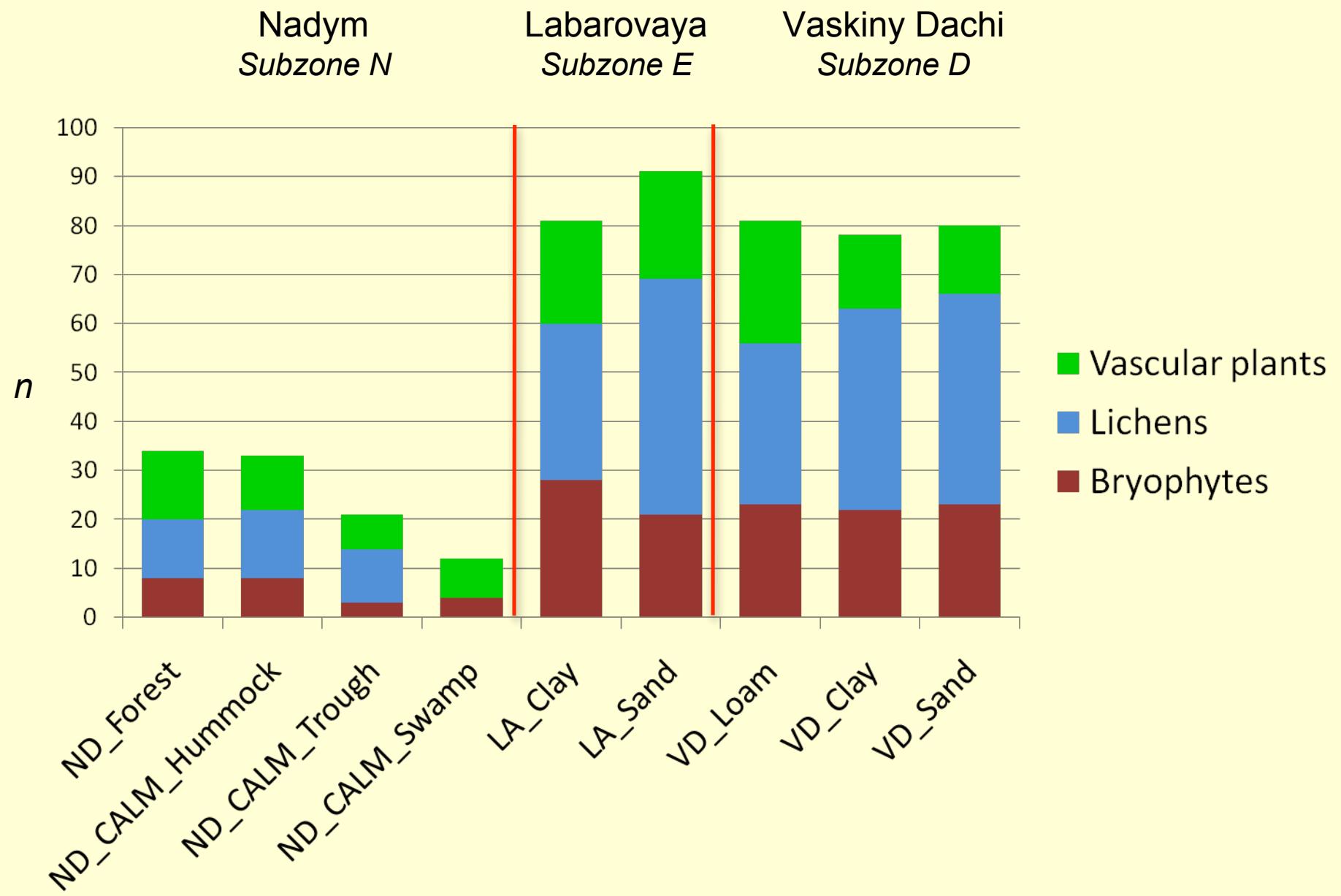


# Vaskiny Dachi

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## Species richness



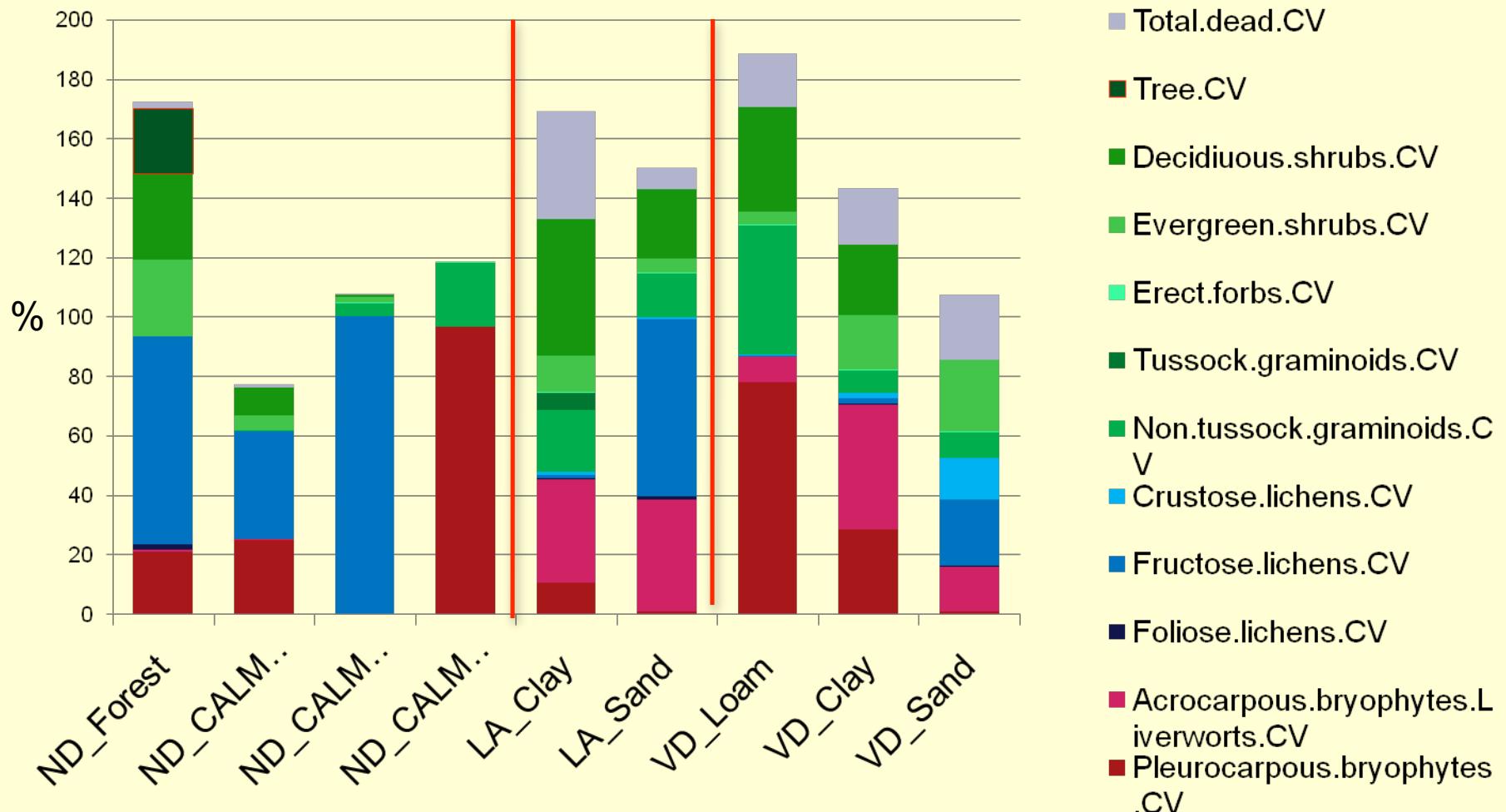
# Functional type coverage

## Nadym *Subzone N*

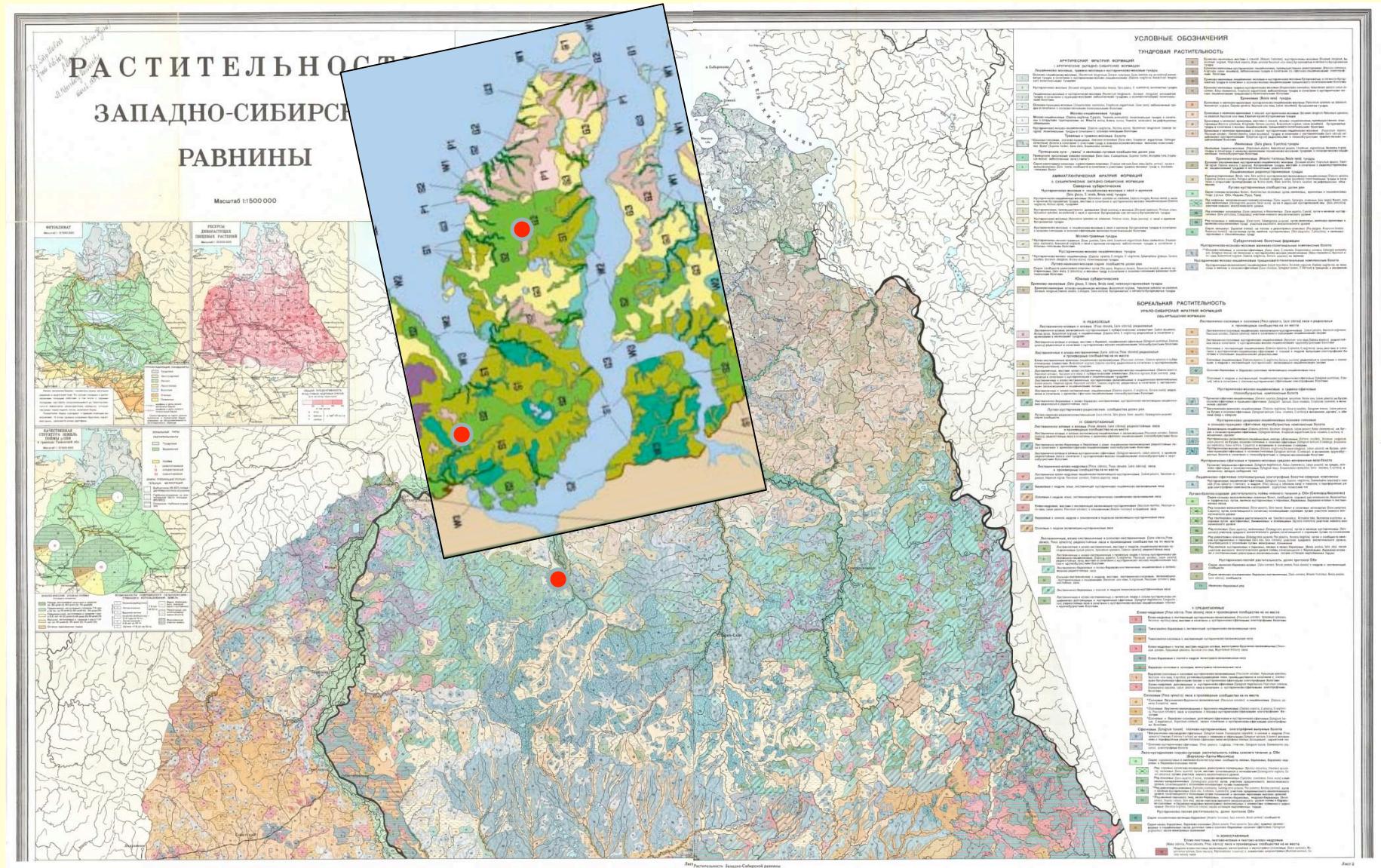
# Labarovaya Subzone E

# Vaskiny Dachi

## *Subzone D*

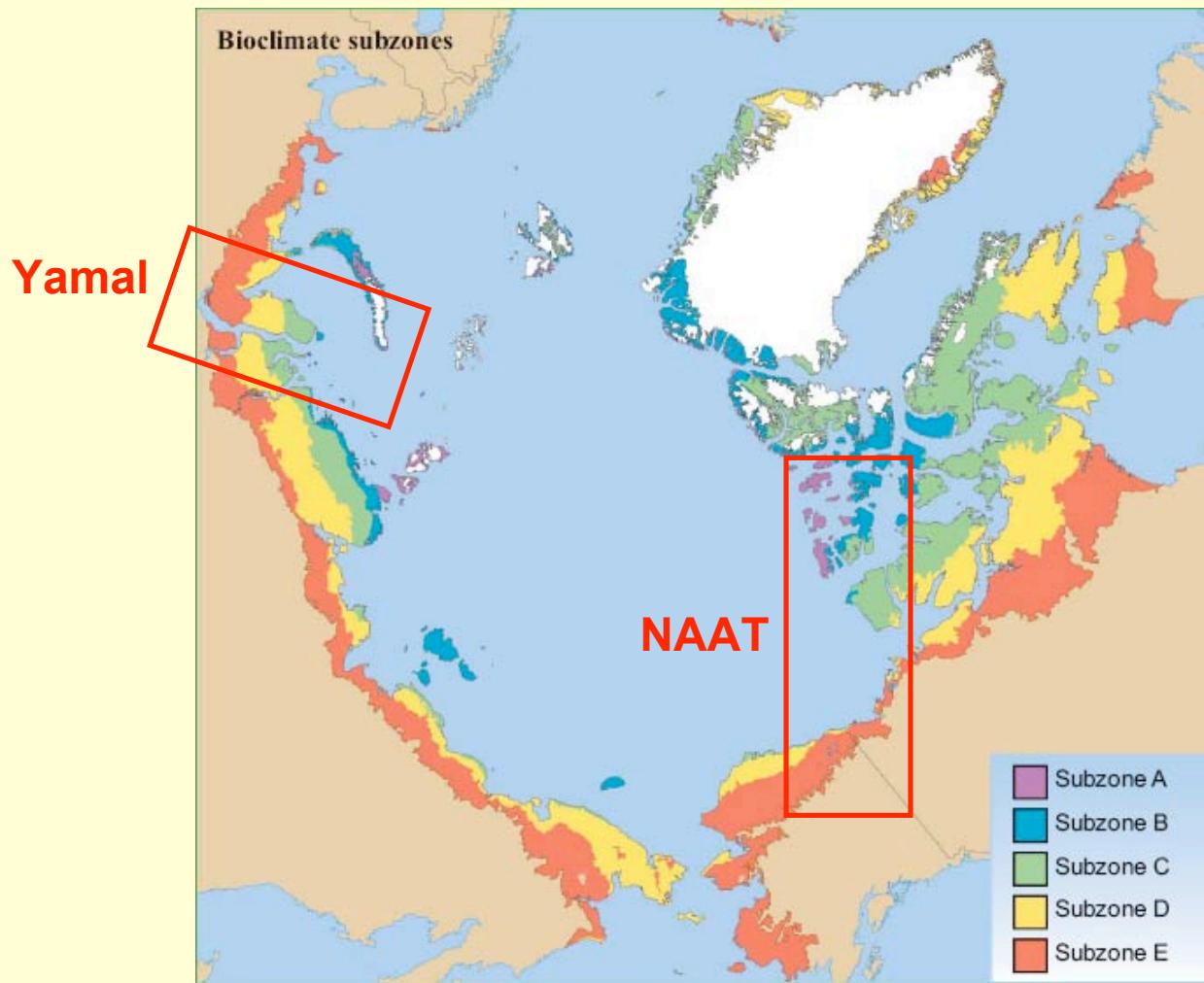


# Plant communities



Sources: CAVM Team (2003)

# Plant communities along the North American Arctic Transect



Source: CAVM Team (2003)

# Climate vs. succession

## Arctic bioclimate subzones

A



B



C



D



E



## Spatial sequence of pattern-ground development

III



IV



V

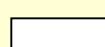


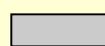
VI



VII



 Barren

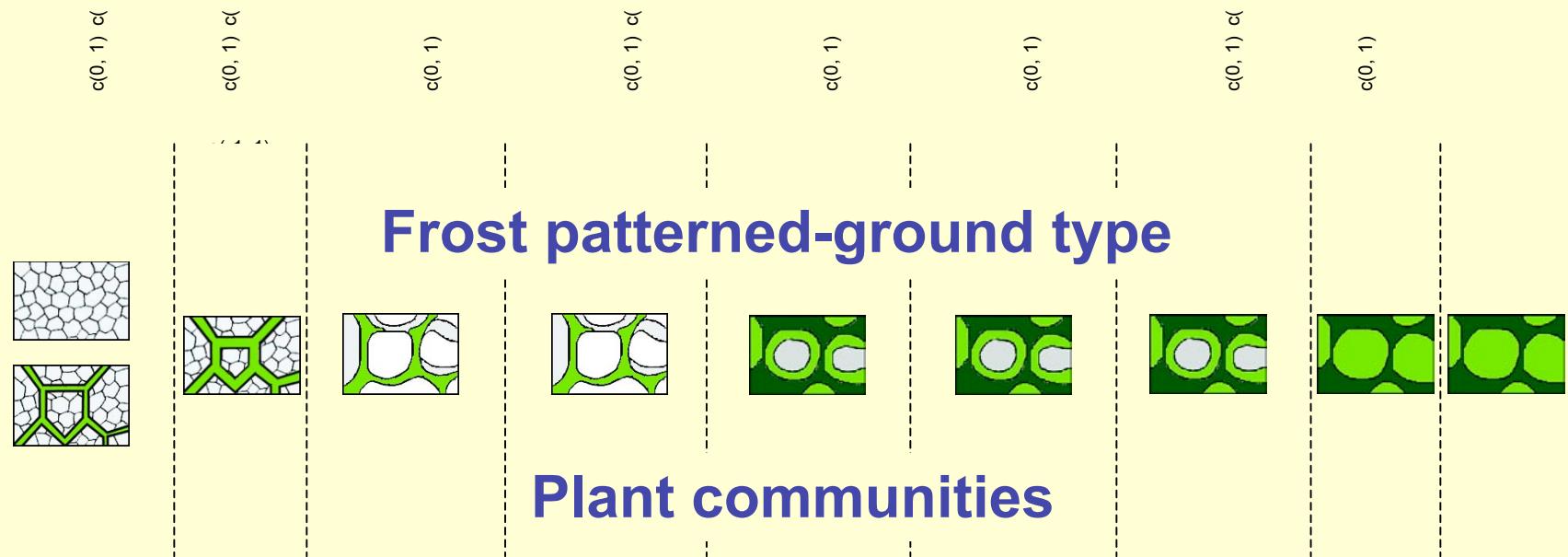
 Crust

 Thin vegetation

 Thick vegetation

from Chernov and Matveyeva 1997 (modified)

# Sampling sites



- 1 *Puccinellia angustata*—*Papaver radicatum* comm.  
*Poa abbreviata* var.
- 2 *Puccinellia angustata*—*Papaver radicatum* comm.  
*Poa pratensis* ssp.*alpigena* var.
- 3 *Saxifraga*—*Parmelia omphalodes* comm.
- 4 *Hypogymnia subobscura*—*Lecanora epibryon* comm.  
*typicum*
- 5 *Orthotrichum speciosum*—*Salix arctica* comm.

- Barren
- Crust
- Thin vegetation
- Thick vegetation

# Biodiversity

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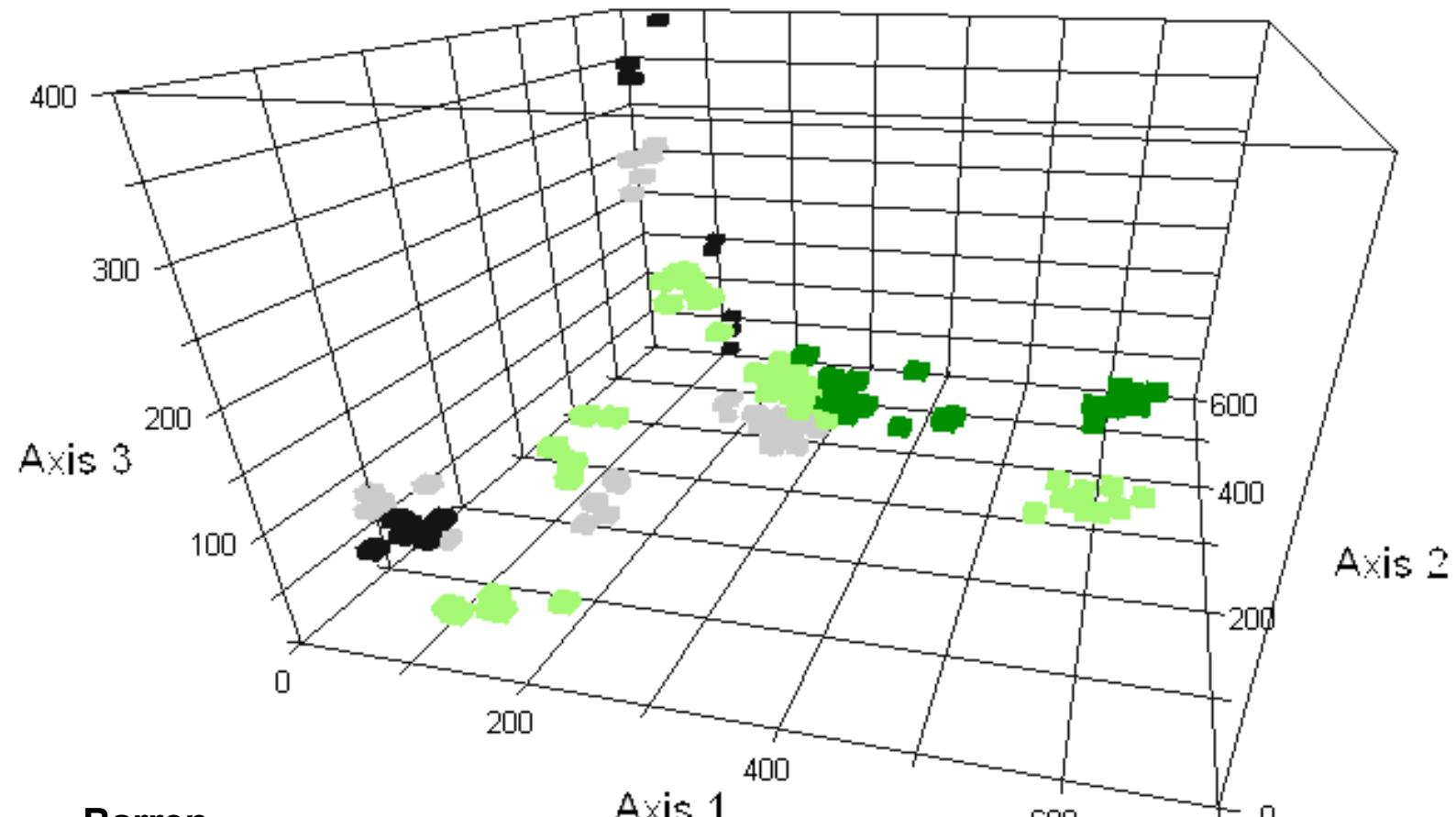
## Species richness

**Vascular plants  
Lichens  
Mosses**

c(0, 1) c(0, 1) c(0, 1)  
c(0, 1) c(-1, 1)  
c(0, 1)  
c(0, 1) c(0, 1)  
c(0, 1)

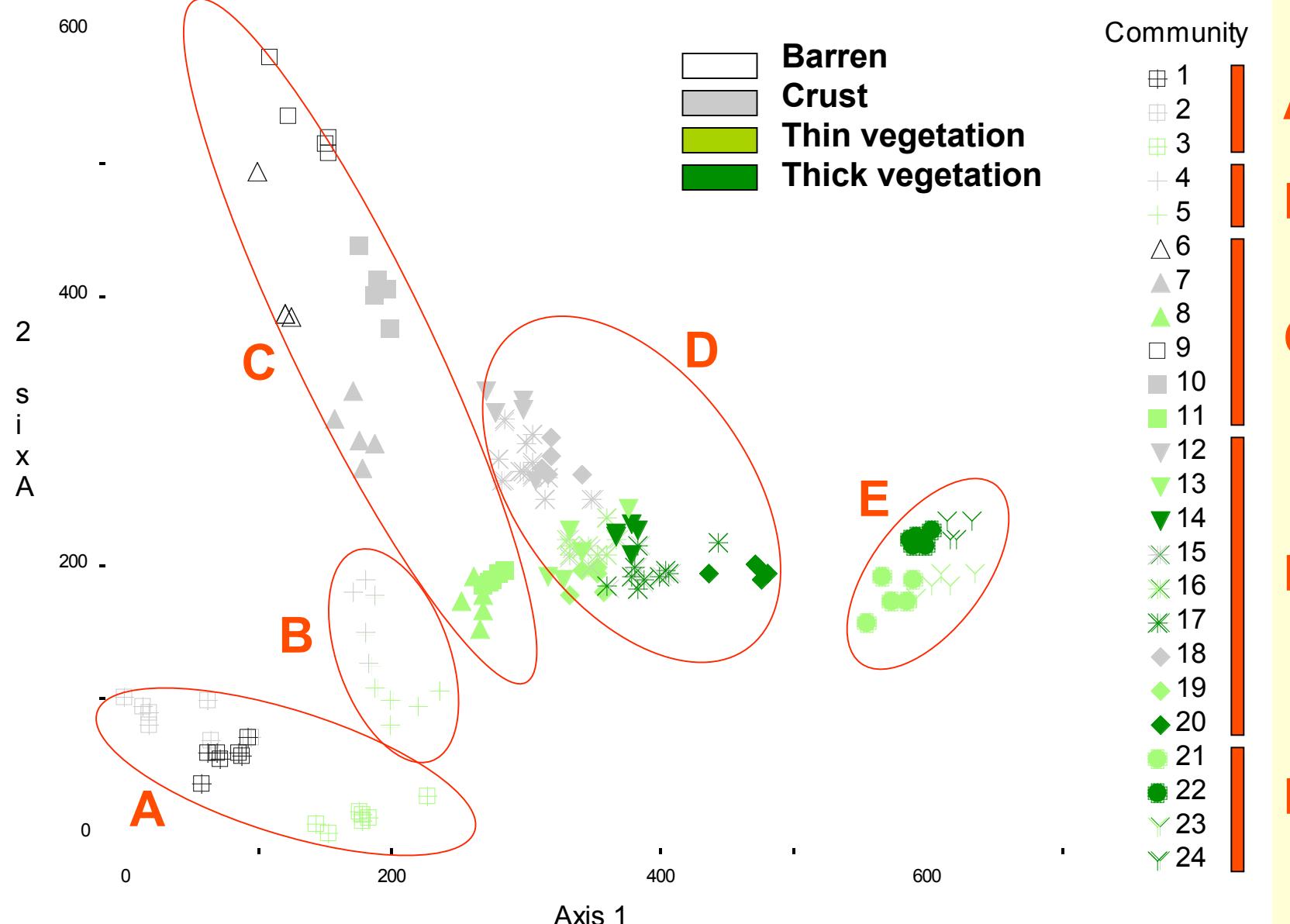
n<sub>n</sub>

Plant community

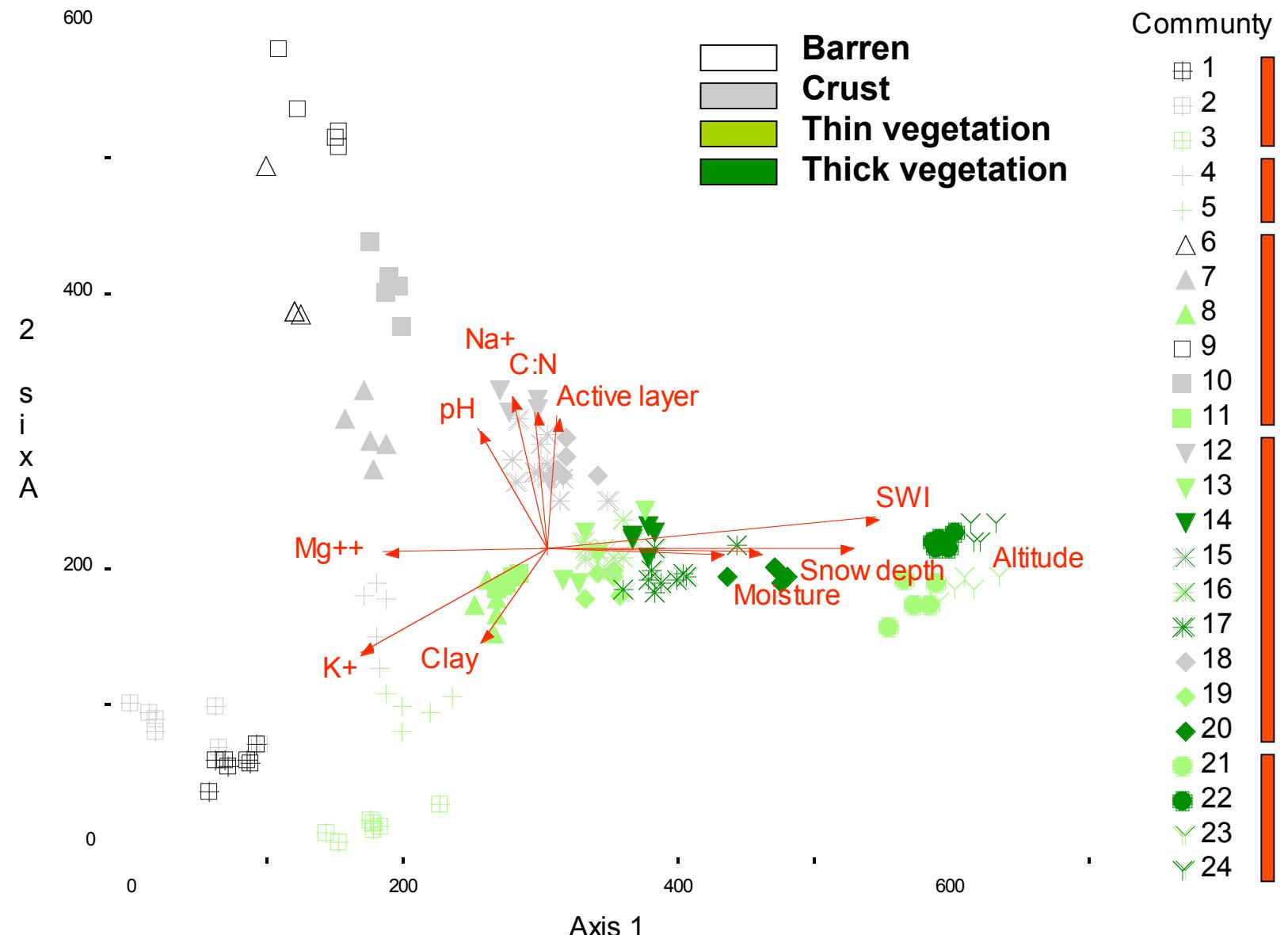


- Barren**
- Crust**
- Thin vegetation**
- Thick vegetation**

## Detrended Correspondence Analysis



## Detrended Correspondence Analysis



A

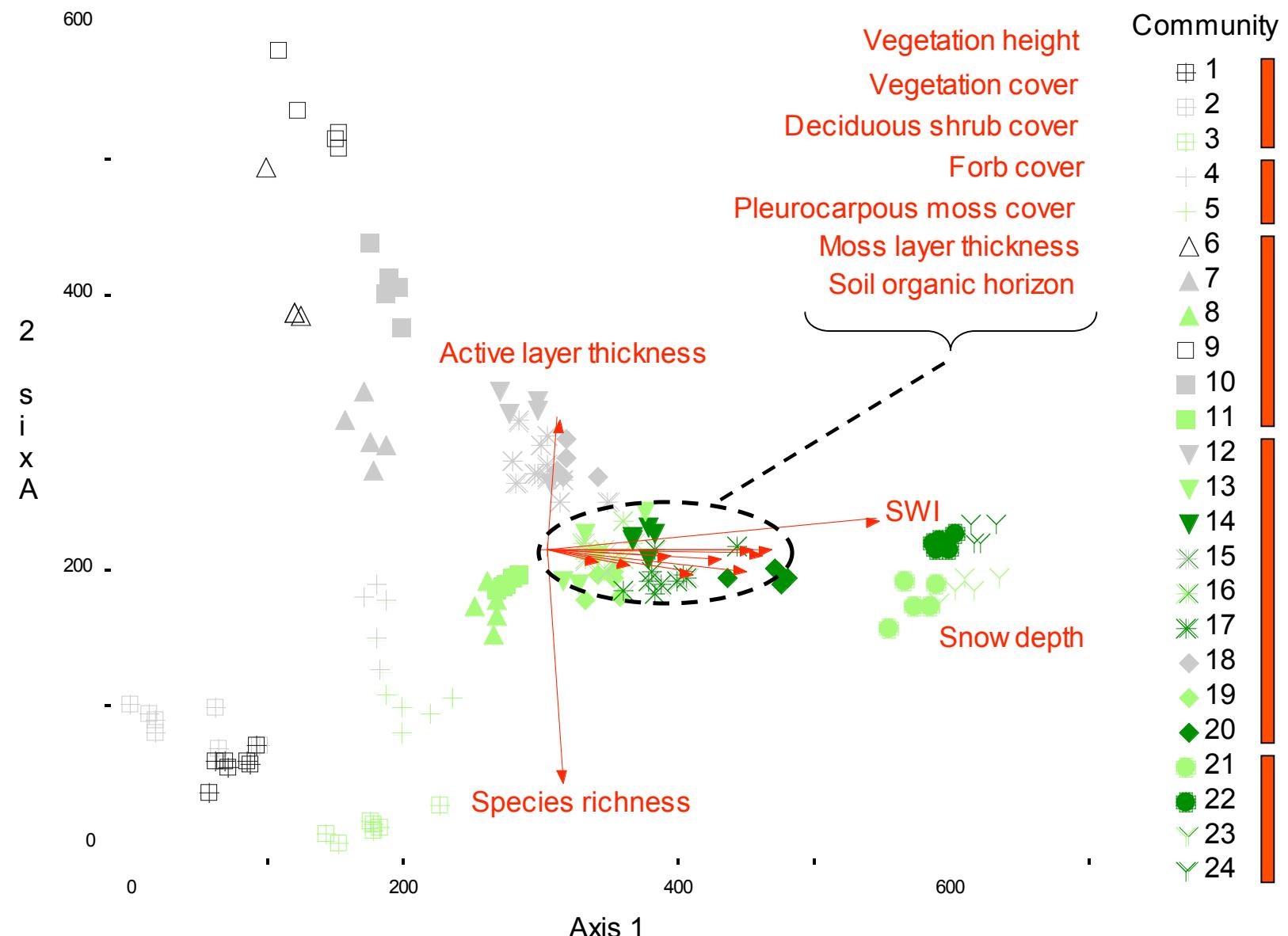
B

C

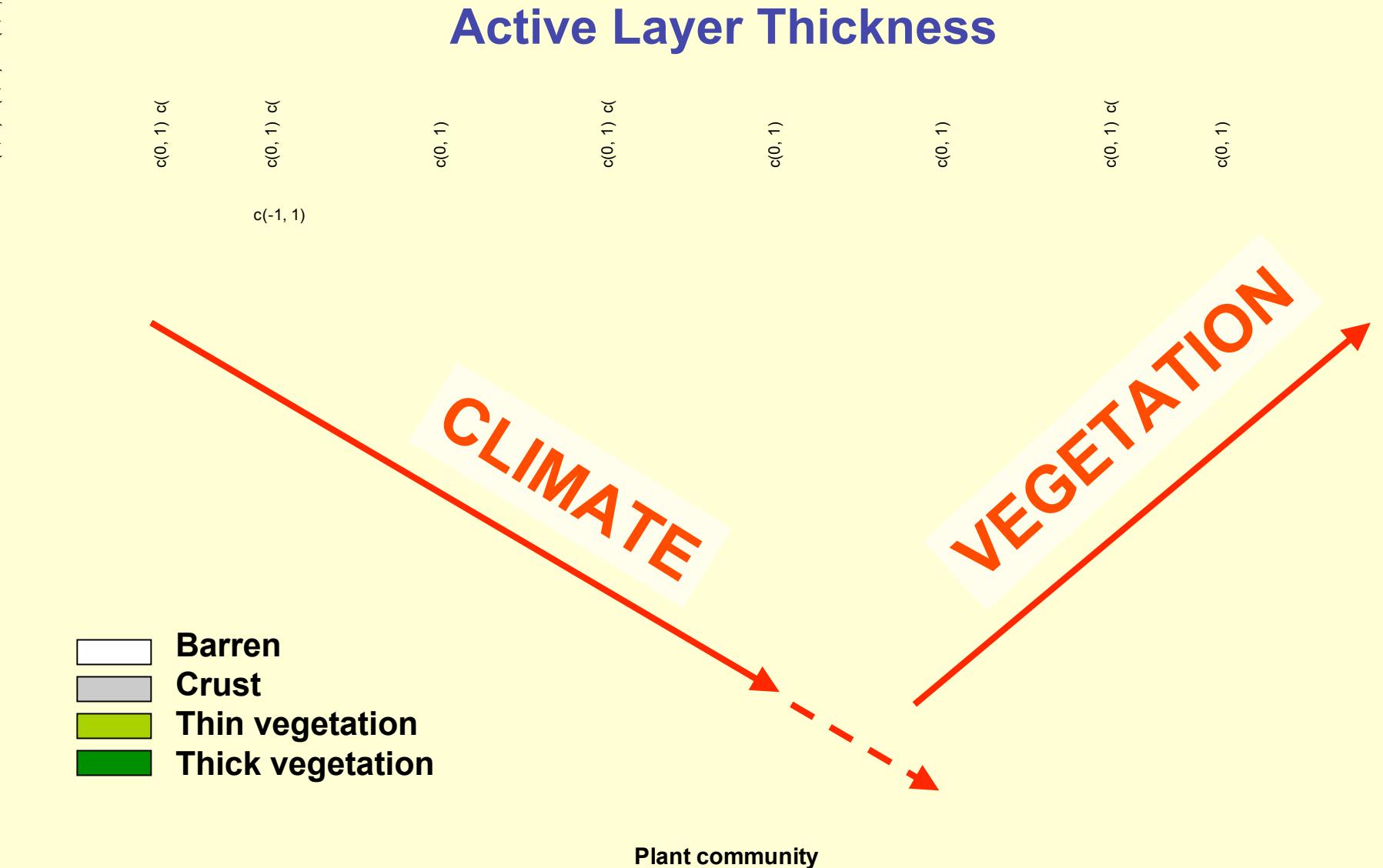
D

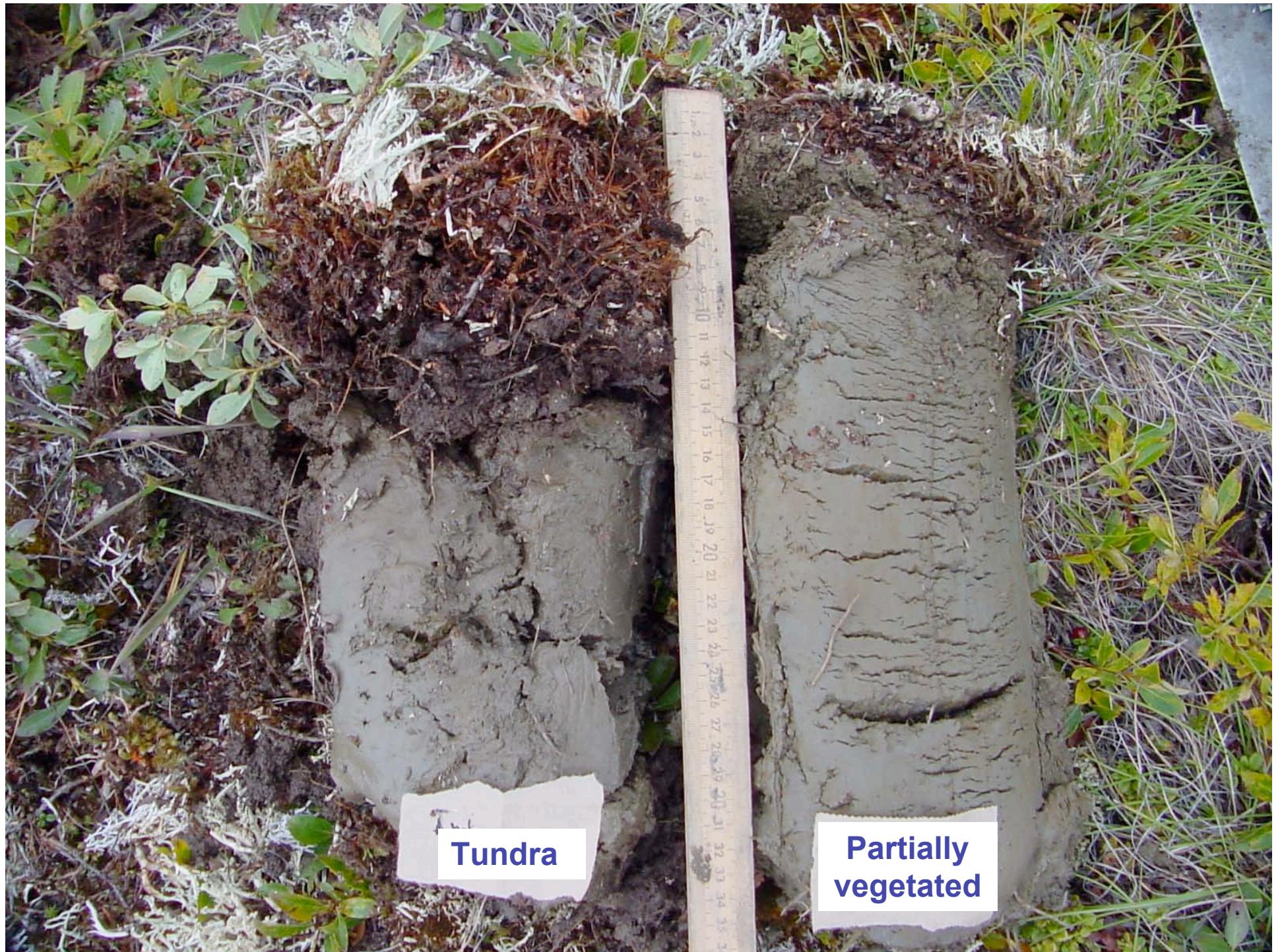
E

## Detrended Correspondence Analysis



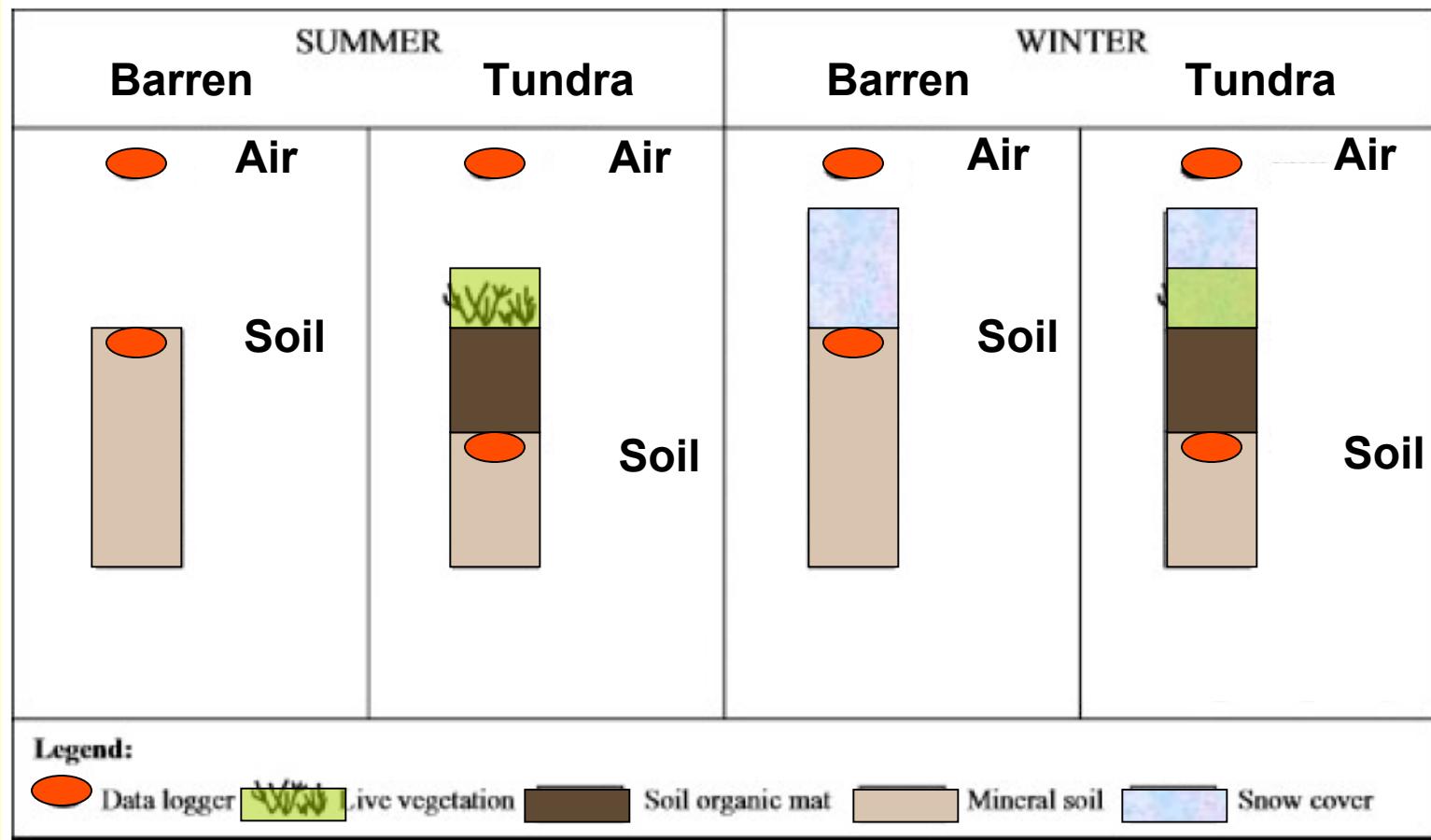
# Active Layer Thickness





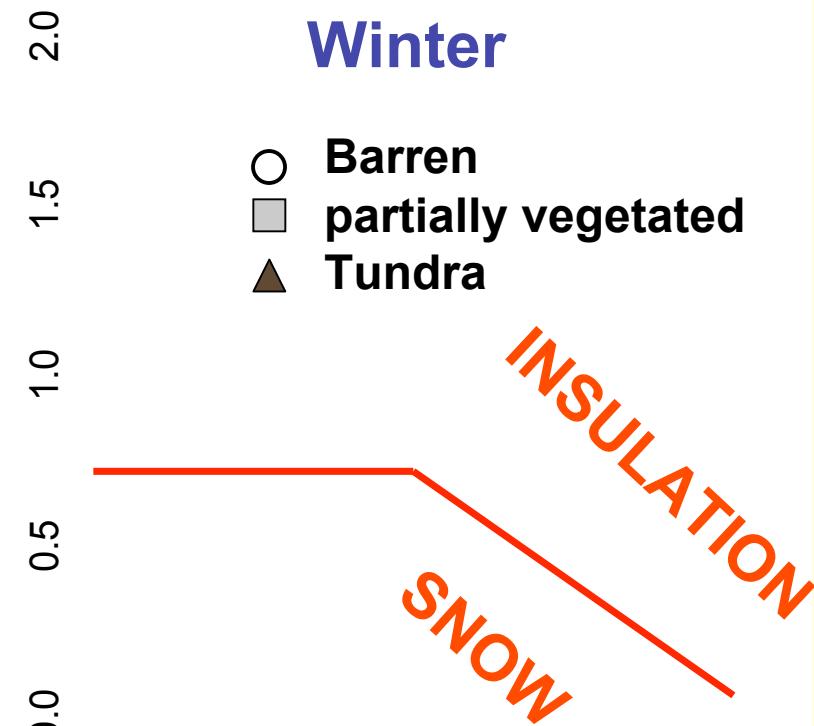
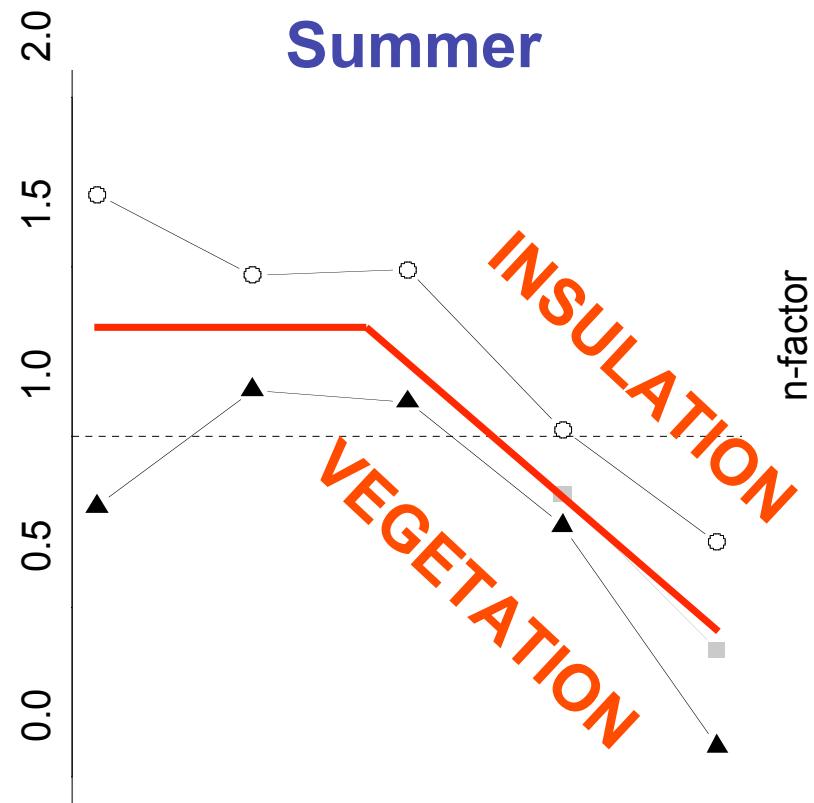
**n-factor =**

**Ground surface temperature**  
**Air temperature**



n-factor =

Ground surface temperature  
Air temperature



## **Outlook for 2008/09**

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- **Completion of field sampling**
  - **Integration of soil and climate data**
  - **Community description and analysis**
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- **Integration and/or compatibility checks with existing classification schemes (Europe, Russia, US, CAVM)**
  - **Integration with NAAT data**

## Acknowledgements

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**NASA's Land-Cover/Land-Use Change (LCLUC)**  
**Olga Afonina, Misha Zhurbenka (Komarov Botanical Institute)**