



UNIVERSITY of TARTU



# Metsaga alade pindalamuutused Eestis ja lähivälismaal

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Tartu observatoorium

**Tartu Ülikool**



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## Metsandus

Uuendusraie kui metsade peamine  
majandamisviis

Teravad sotsiaalsed vastukajad –  
Miks just nüüd?



## Metsandus

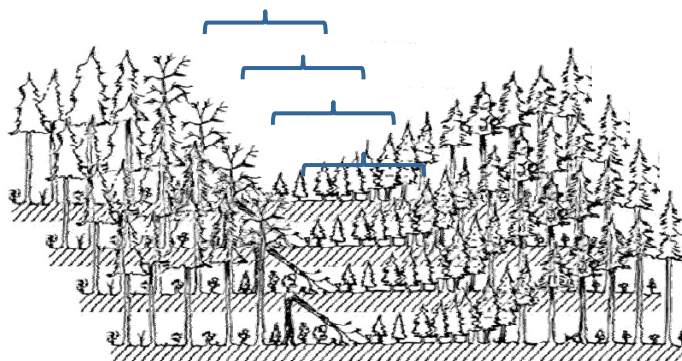
Kas raiutakse rohkem  
või raied on “koledamad”?

Aga võib-olla toimub puudeta raiealade  
akumuleerumine



## Metsa arenguring

Raiealade pindade akumuleerumine

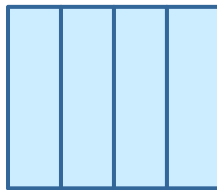


(Sprugel 1976)



## Mida lootsime leida?

- Metsata metsamaa pindala akumulatsioon
- Lageda ala pindala suureneb (küllastub?)
- Elemendi kuju ümardub (küllastub?)



## Metoodika

Raieala/häilu mõõdikud:

- Kogupindala
- Elemendi pindala
- Elemendi kuju-indeks

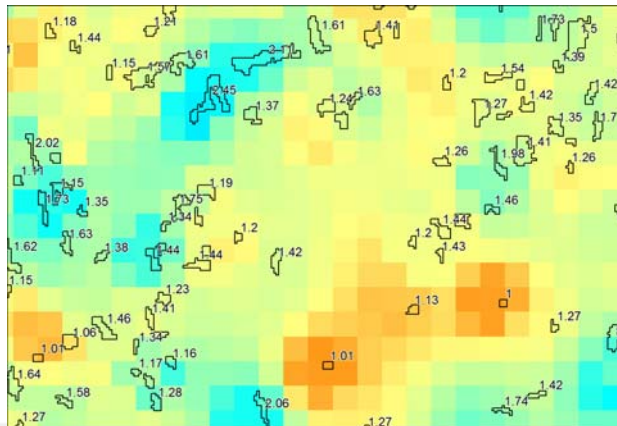
$$\text{Kuju} = \text{Perimeeter} / (4 * \sqrt{\text{Pindala}})$$



## Metoodika

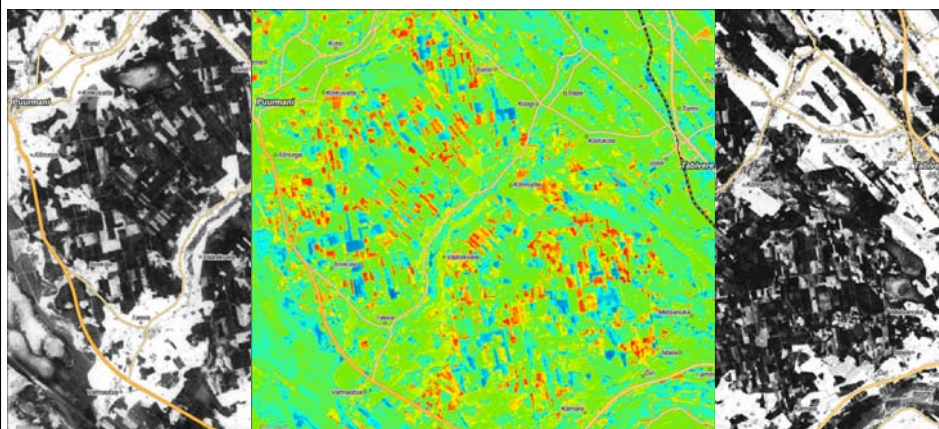
$$\text{Kuju} = \text{Perimeeter} / (4 * \sqrt{\text{Pindala}})$$

...1...1.3...2...



## Tavaline metoodika

Häilude kaardistamine kihtide võrdlusega



1987

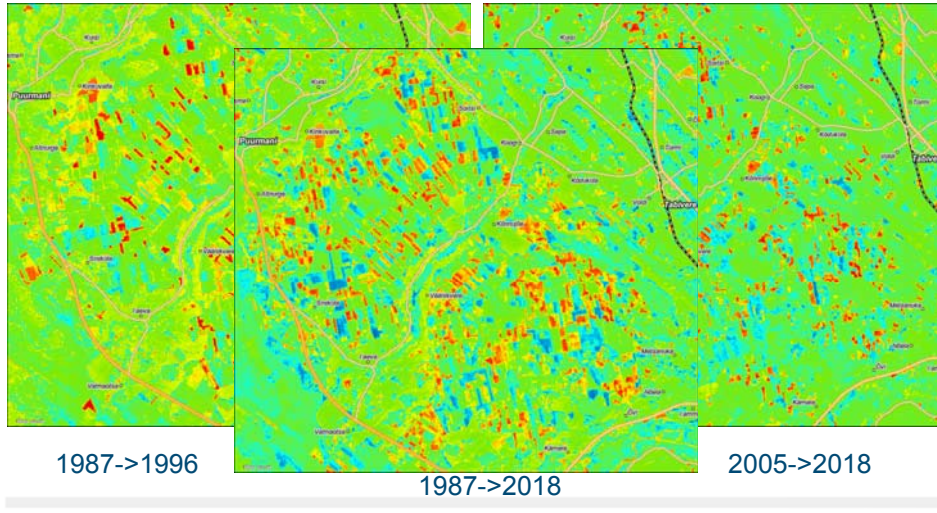
Kahe pildi vahe

2018



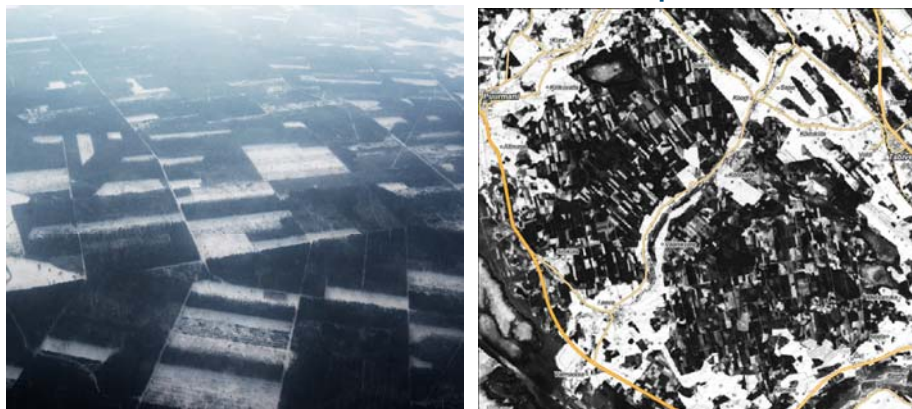
## Tavaline meetoodika

Muutus ei kajasta akumulatsioonist



## Metoodika

Metsamaa kaardistamine talvistelt piltidelt ja seisundi muutus binariseeritud piltide vahel.

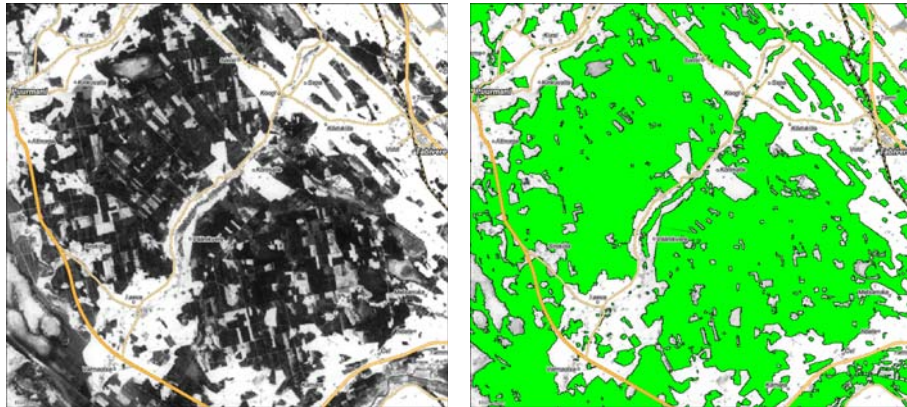


Metsa kaardistamine Landsat TM piltidelt (Peterson et al. 2004)



## Metoodika

Metsamaa kaardistamine talvistelt piltidelt ja seisundi muutus binariseeritud piltide vahel.



Metsa kaardistamine Landsat TM piltidelt (Peterson et al. 2004)



## Häilude akumulatsioon

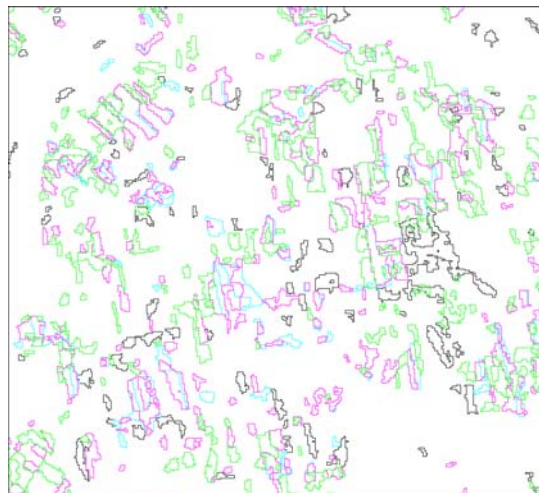
Kärevere

1987

1996

2005

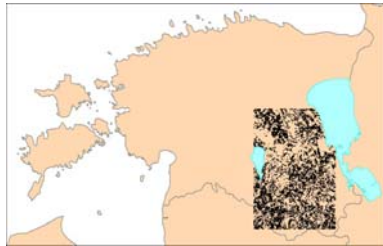
2018





## Kagu-Eesti

### Piirkonnad

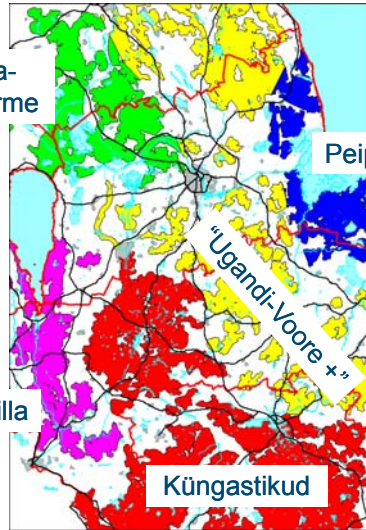


Laeva-Pikknurme

Peipsi madalik

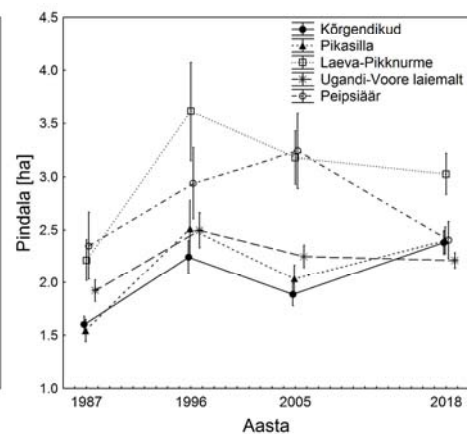
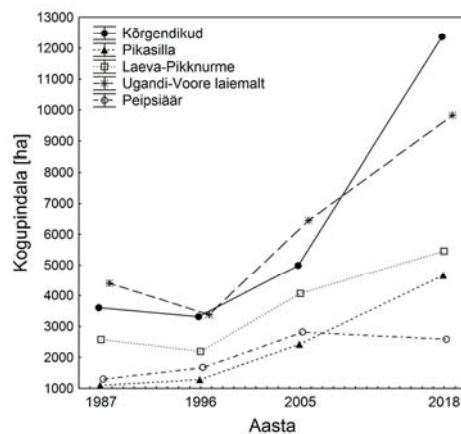
Pikasilla

Küngastikud



## Kagu-Eesti

### Metsata metsamaa - pindala

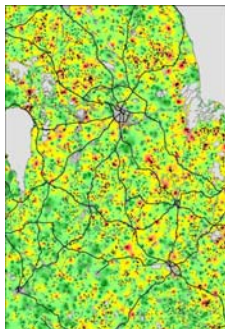
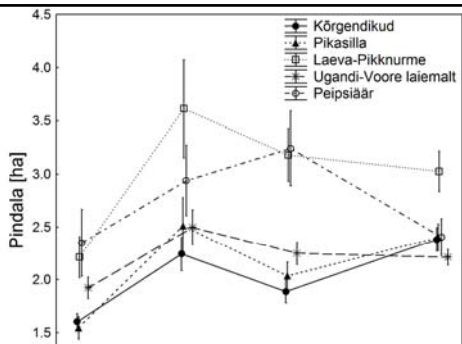




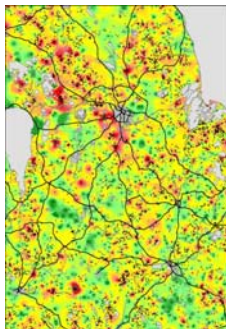
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## Kagu-Eesti

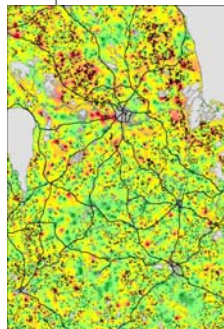
Pindala [ha]



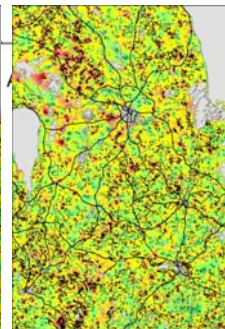
1987



1996



2005



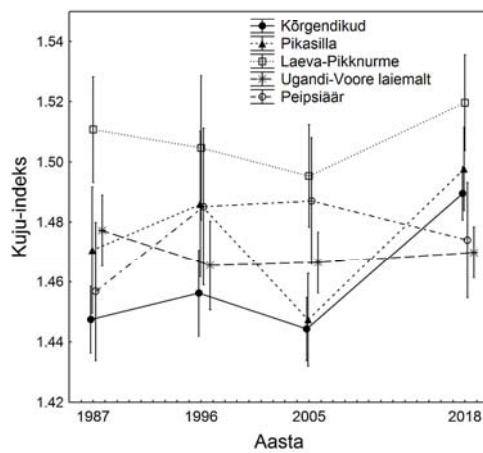
2018



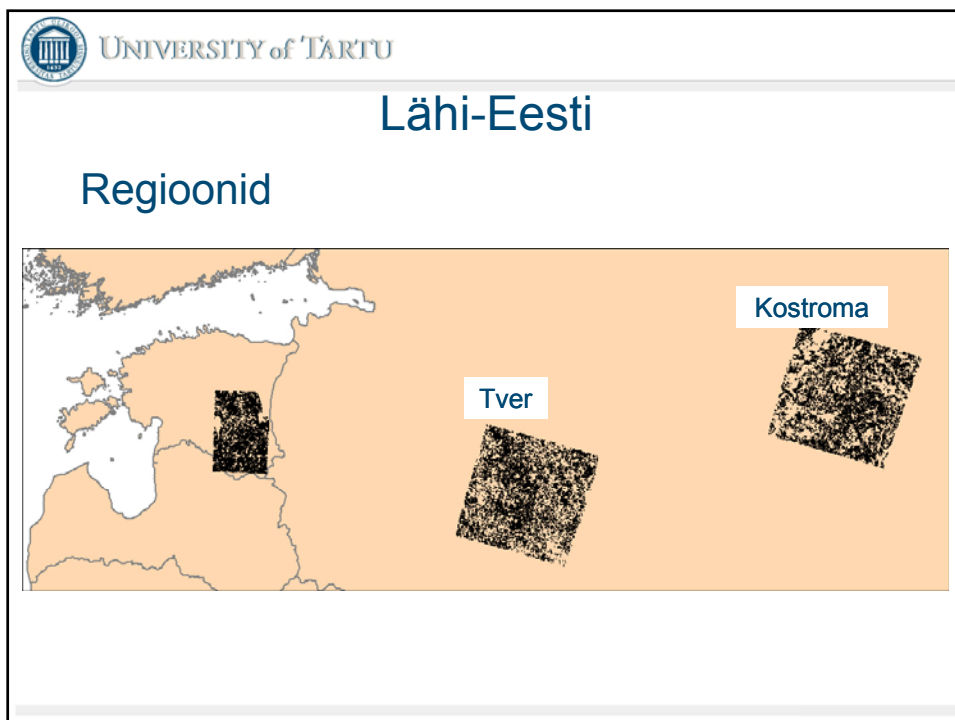
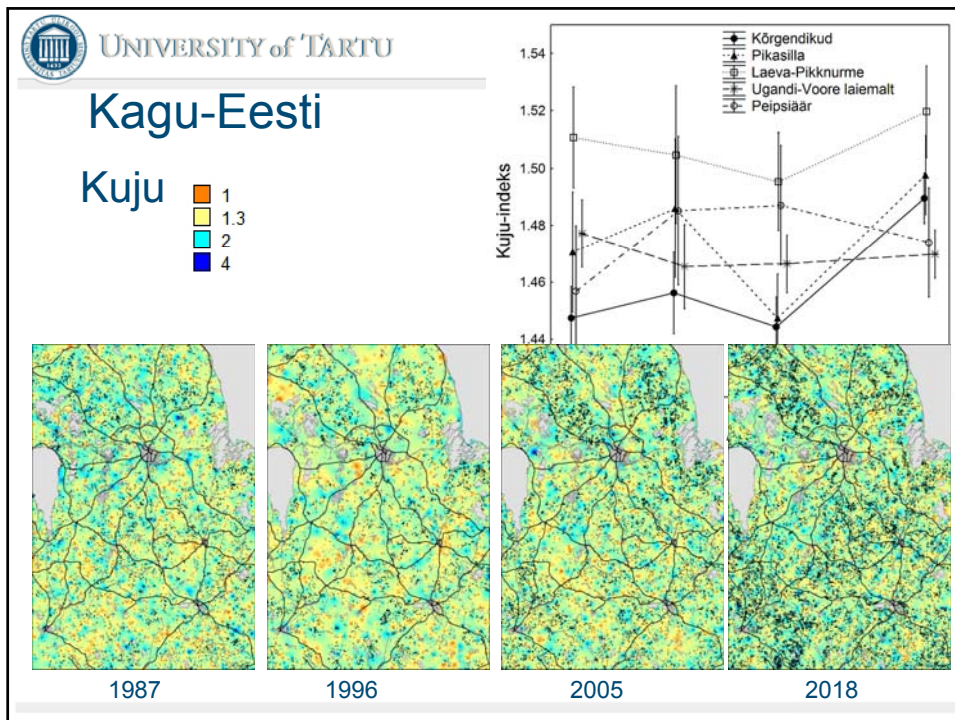
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## Kagu-Eesti

Metsata metsamaa - kuju



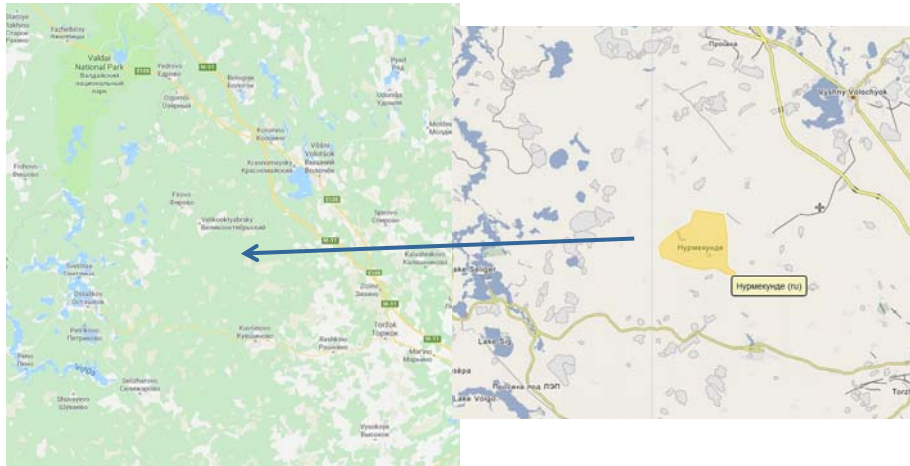






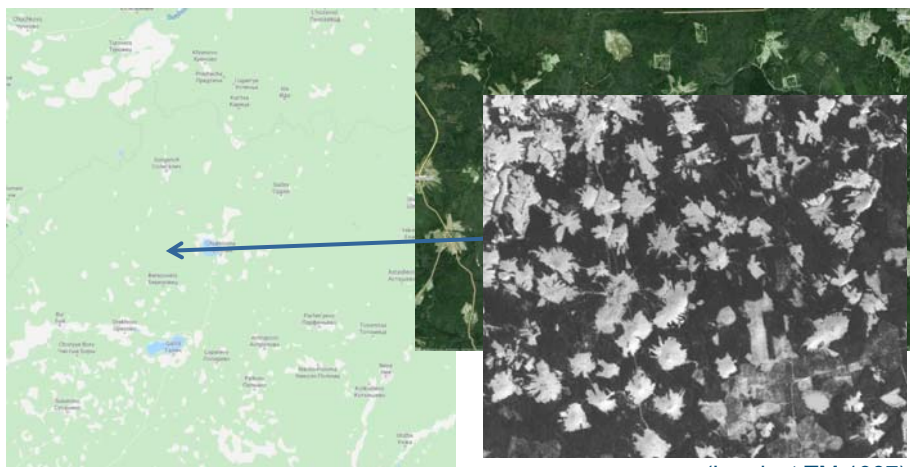
# Lähi-Eesti

## Tver



# Lähi-Eesti

## Kostroma

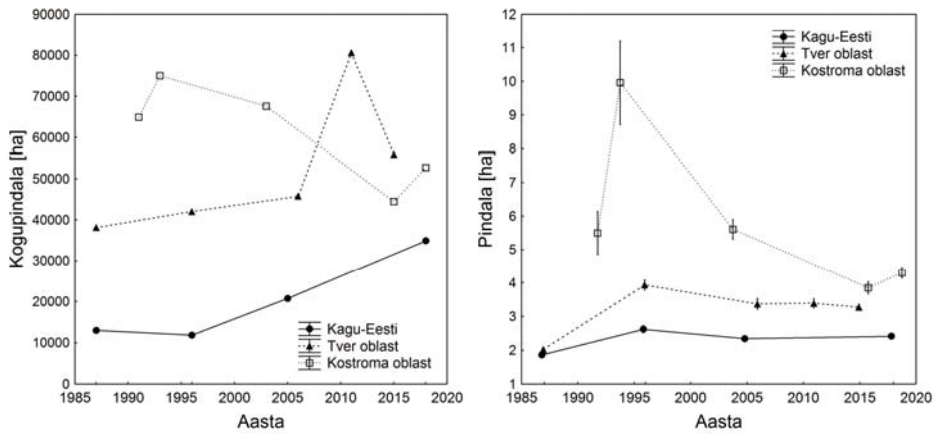


(Landsat TM 1987)



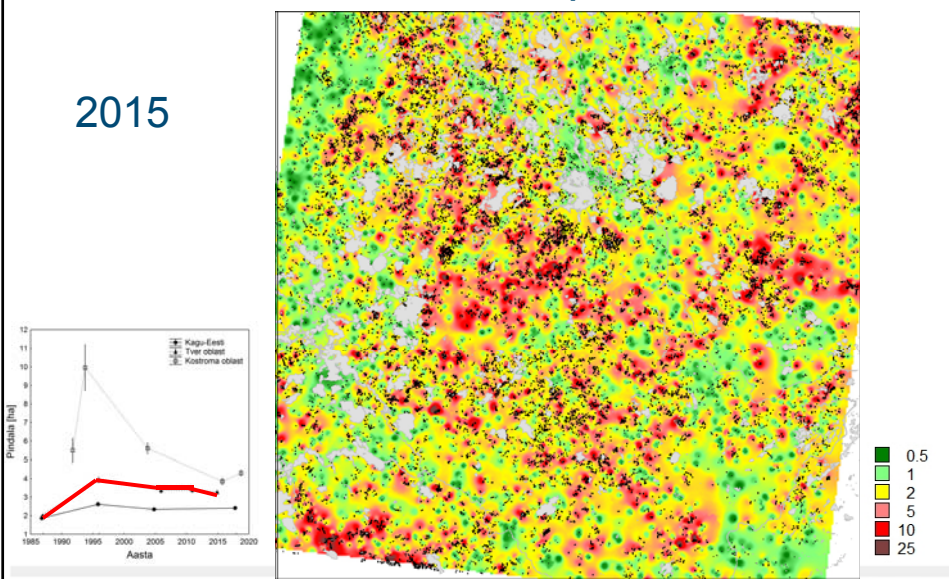
## Muutused regiooniti

### Metsata metsamaa - pindala



## Tver – üksuste pindala

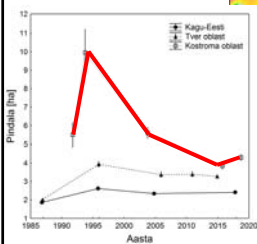
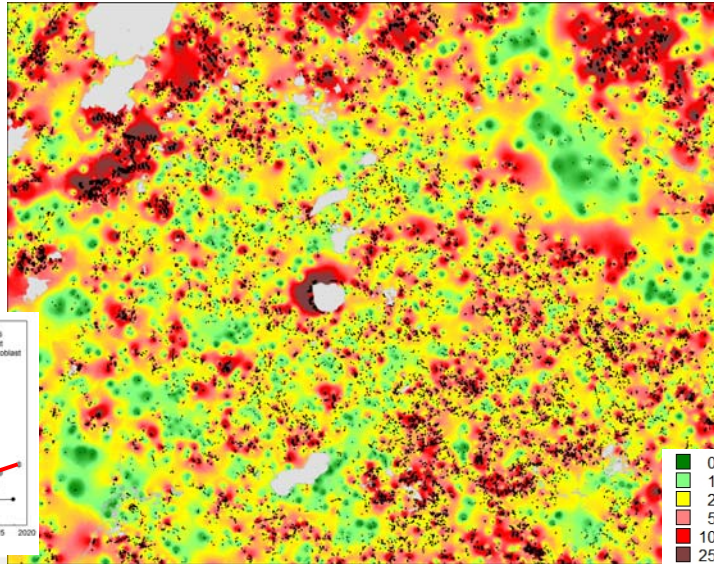
2015





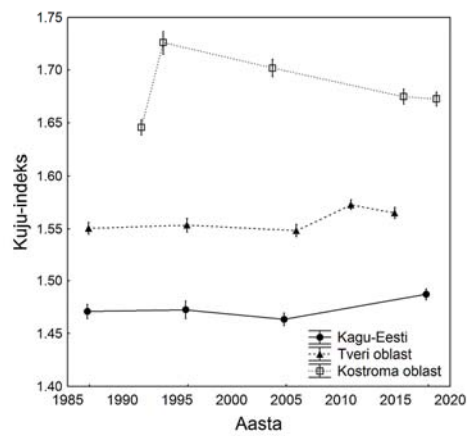
## Kostroma – üksuste pindala

2018



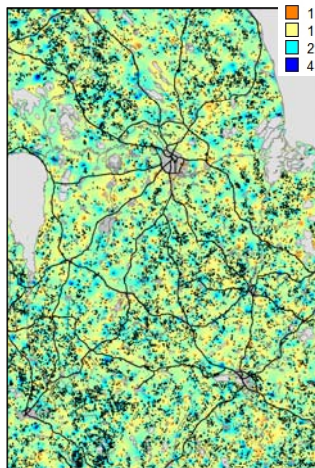
## Muutused regiooniti

### Metsata metsamaa - kuju

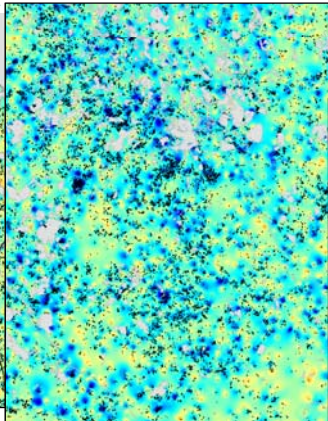




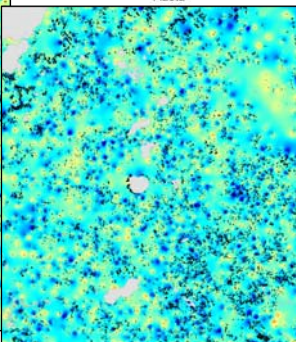
## Kujude erisused



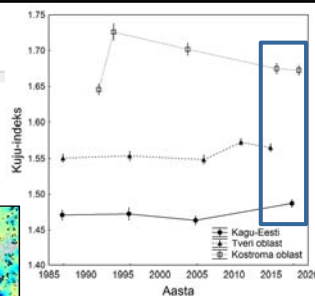
Eesti 2018



Tver 2015



Kostroma 2018



## Mida leidsime?

- Metsata metsamaa pindala akumuleerub, eriti mõnes Eesti piirkonnas – liiga int. raie
- Lagealade üksuste pindala on valdavalt stabiilne – hajus raiete planeerimine või raiete ümberpaigutamine suures skaalas
- Elemendi kuju on erinev piirkonniti ja sageli piklikum kuju kaasneb intensiivsema raiepiirkonnaga