

# Eco-development Response to Climate Change and the isostatic Uplift of Southwestern Finland : Case study of the Nordsund area around Ahlainen ( 60° 40 ' 30 ' 'N, 021°37 ' 14 ' 'E)



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# New socio-economic options for Land- Management within the Commons of Finland



- Interference of isostatic uplift and climate change of Mustalahti area (Ählainen) as paradigm case for the whole southwestern area of Finland.
- Local contamination by agriculture and river deposit:
  - P (905.45 mg/kg to 1255.87 mg/kg)
  - High concentrations of Ca, Mg and K (1444.73 meq/kg)
  - High concentrations of Fe (2148.85 meq/kg) and Al (3026.89 meq/kg)

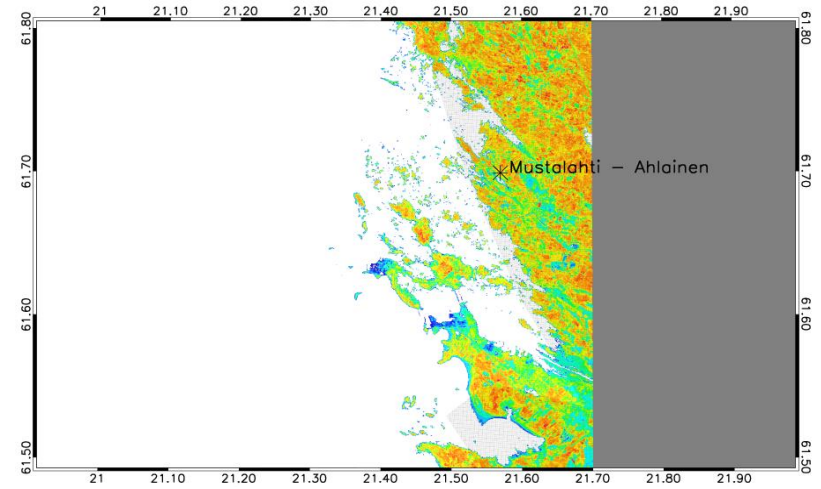
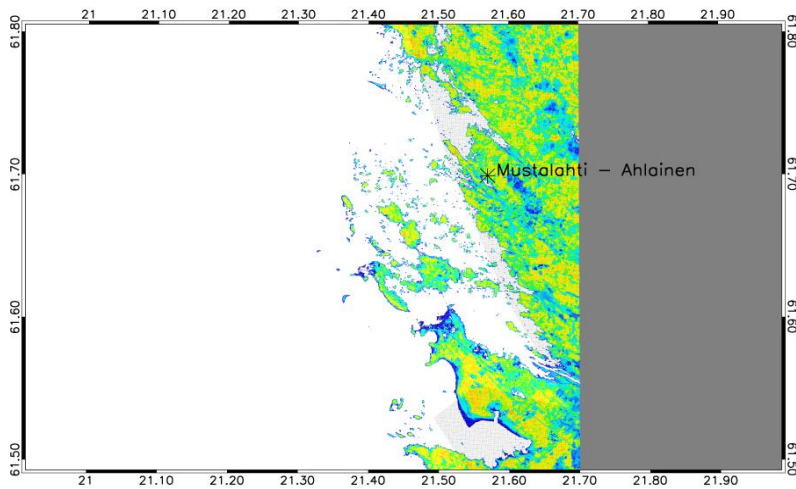
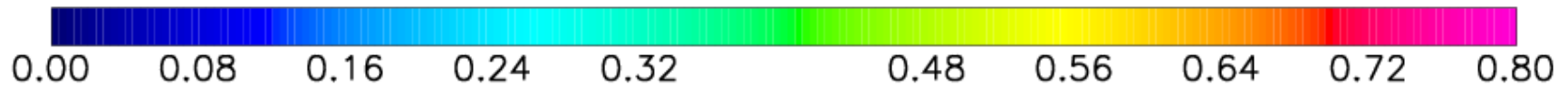
# Consequences of uplift: Sea connection of Mustalahti (2020) and situation in 1963

- Situation 1963



# Vegetation shift 2000-2019

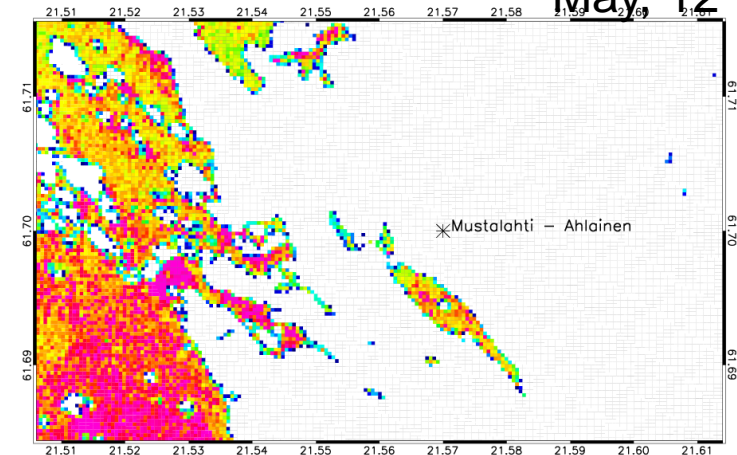
NDWI - NDVI [-]



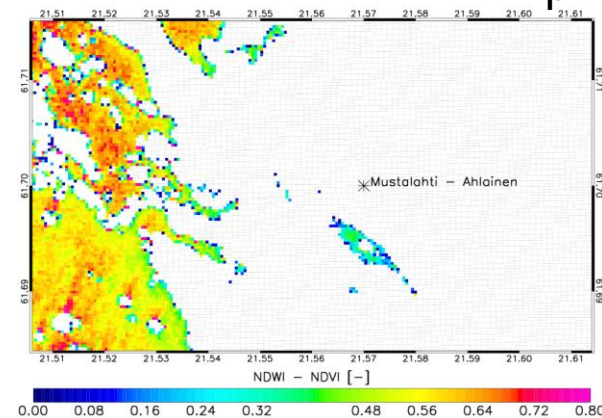


# Water surface shift 2000-2019

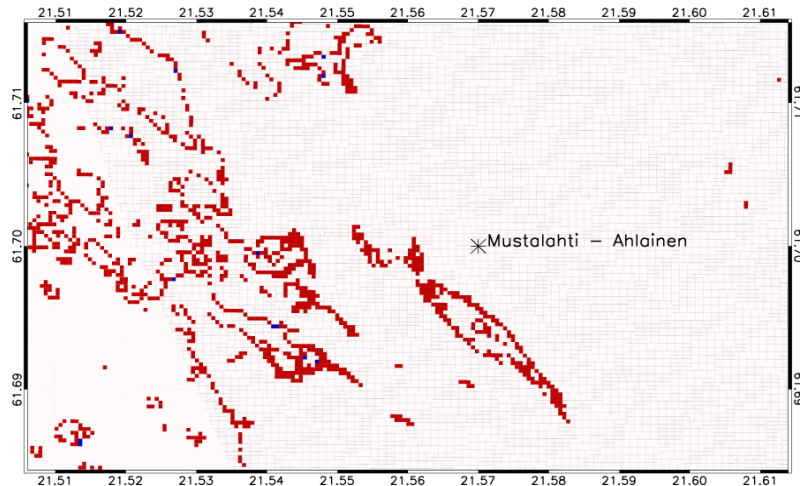
May, 12<sup>th</sup> 2000



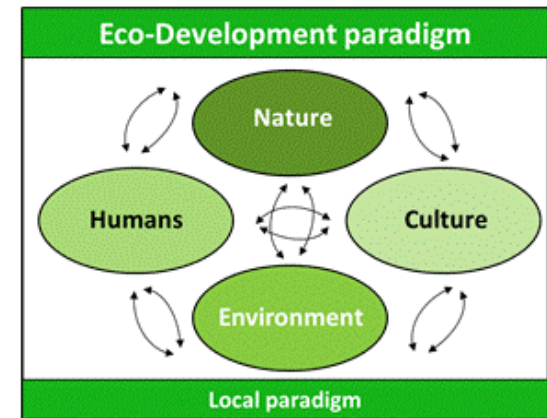
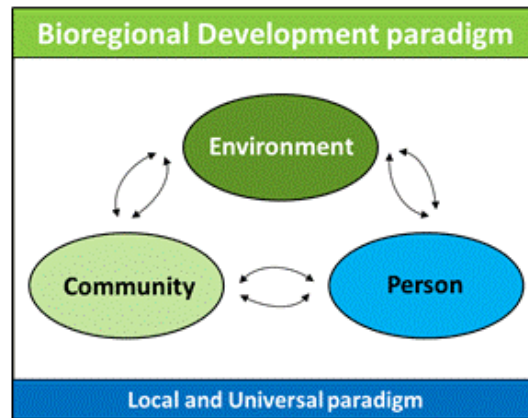
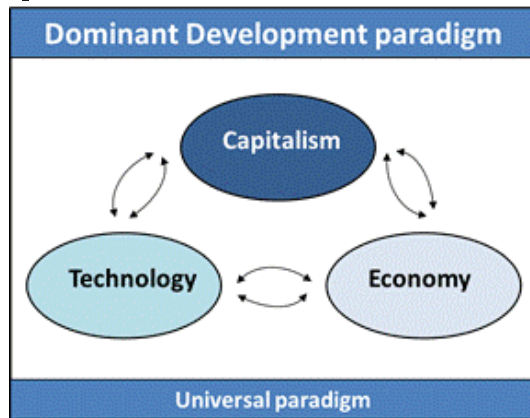
April, 23<sup>rd</sup> 2019



Difference 2019 & 2000



# From Global Dominant paradigm to Eco-Development



- **Global Dominant Development Paradigm : Think global, Act Local**
- **Local Eco-Development: Act Local, Interact Global**

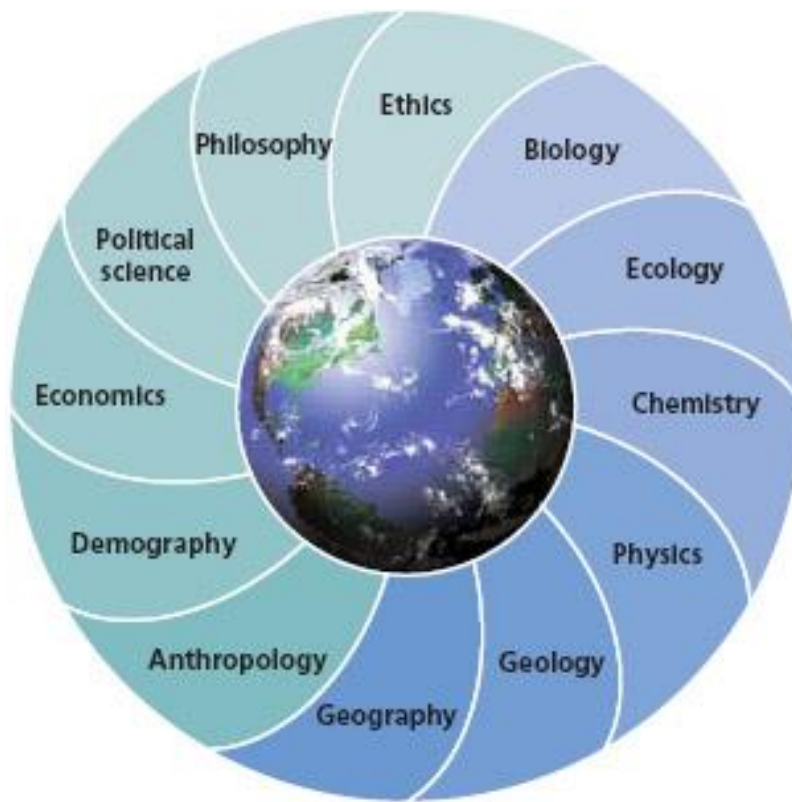
# Eco-Development or the balance between:

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- Populations
- Local available resources
- Cultural desired lifestyles (Riddel, 1981)

# The Eco-Development Fourfold Multiplicity within a Mutual Fourfold-Interaction of Agents



- Nature within Whitehead's process vision (Whitehead, 1920)
- Relational total-field image of Deep Ecology (Naess, 1995)
- Transactionalism Environment-Person-Society (Evanoff, 2010, chapter 3)
- Integrity of the Land (Leopold, 1949) and Moral Care for the particularity of the Land and the Cultural Identity of its Habitants (Verstraeten & Verstraeten, 2014)





# Co-evolutionary View within the Modified Eco-Development Paradigm

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- It overrules environmental as well as cultural determinism
- Natural varying environments make room for certain forms of human cultural activities and life styles (Brunhes, 1920, Febvre, 1925, Vidal 1926)
- Exclaves, enclaves require common land management
- Local commons administration encourages the autonomous development of this new ecosystem and the self-resilience of the new created morphoregion
- The Common Shear Area creates perspective for local ground lease (see Fokke Jan Vonck (2013))

# New Environmental challenges and Soil Breeding



- the invasion of reed fields by black alders provoke N-capturing from the air by bacteria.
- The base saturation is increasing as well as the N-concentration.
- The latter encourage pine and at the long term it involves the incline of low-and tall-herb spruce type vegetation

# New opportunities of the Commons:

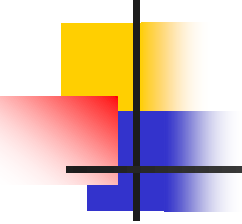
## Renewable Energy Source by Forest Harvesting

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- A new renewable energy source for combustion in households and electricity production
- Fire wood produced in a shorter time period
- Just after 25 years big trees are covering the dry meadows
- Conifers produce excellent wood for making pellets
- Within this bioregional scenario local ownership has to be encouraged by government

# Balancing Emissions of Natural Green House Gasses

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- New marshes contain very strong greenhouse gasses even more effective than  $\text{CO}_2$
  - Consequently it is better to transform it into  $\text{CO}_2$  by using it for household energy by traditional Dutch local capture of natural gasses (brongas)





## Conclusion: Eco-Development Paradigm creates new local life conditions

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- Management of the new ecosystem of marshes, meadows and forest
- New opportunity for local forest harvesting
- Cattle-breeding transforms in open grassland farms with common herds
- Livestock for slaughter makes room for local dairy products and local market
- New opportunity for local social life



# PALJON KIITOKSIA

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**TACK SA MYCKET**

**For more information and references see  
Verstraeten & Verstraeten, sustainability –MDPI  
11, 21, 1 November 2019**

