Atomization of a discipline?
Forward thinking for a retrospective science

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with input from
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Ca. 500 dendro-papers each year (Fonti, Frank, Cherubini 2010)!
Some major fields of tree-ring activity and their specific research frontiers:

- **Stable isotopes**
  - Divergence
  - Standardization
  - Low frequency
  - Intra-annual resolution
  - Spatial scales
  - New parameters
  - Compound specificity
  - Age trend
  - Intra-annual resolution
  - Soil & mycorhiza

- **climatology**
  - Internal fractionations
  - Economization
  - Isotopomers

- **Forest ecology**
  - Management
  - Carbon sequestration
  - Carbon allocation
  - Tree mortality
  - Growth models
  - Stand dynamics models

- **Environmental analyses**
  - Hydrology
  - Glaciology
  - Dendrochemistry
  - Landscape changes
  - Soil & mycorhiza

- **Wood anatomy & wood formation**
  - Root anatomy
  - Quantitative wood anatomy
  - Cambium dynamics
  - Dwarf shrubs
  - Tropics

- **archaeology**
  - History of wood technology
  - Architecture history
  - Palaeo-environment
  - Former economy & trading routes

- **Genetics**
  - Modelling experiments
  - Statistical methods
  - Measurement techniques
  - Remote sensing
Some major fields of tree-ring activity and their specific research frontiers

- **climatology**
  - Internal fractionations
  - Compound specificity
  - Age trend
  - Intra-annual resolution
  - divergence
  - standardization
  - Low frequency
  - Intra-annual resolution
  - Spatial scales
  - New parameters

- **Forest ecology**
  - management
  - C sequestration
  - C allocation
  - Tree mortality
  - growth models
  - Stand dynamics models

- **archaeology**
  - History of wood technology
  - Architecture history
  - Palaeo-environment
  - Former economy & trading routes

- **Environmental analyses**
  - hydrology
  - glaciology
  - dendrochemistry
  - glaciology
  - Landscape changes
  - economics
  - New parameters
  - Spatial scales
  - Stable isotopes
  - Wood anatomy & wood formation
  - Root anatomy
  - Quantitative wood anatomy
  - Remotesensing
  - Measurement techniques
  - Statistical methods
  - genetics

- **Wood anatomy & wood formation**
  - tropics
  - Dwarf shrubs
  - Cambium dynamics
  - Quantitative wood anatomy

- **Stable isotopes**
  - isotopomers
  - Internal fractionations
  - Compound specificity
  - Age trend
  - Intra-annual resolution
  - Soil & mycorhiza

- **Cambium dynamics**
  - Root anatomy
  - Quantitative wood anatomy
PECT:

Environmental analyses

Hydrology
Dendrochemistry
Glaciology

Forest ecology

Management
C sequestration
C allocation

Archeology

Economization
Isotopomers

Stable isotopes

Sustainable fractionations
Compound specificity

Age trend
Intra-annual resolution

Soil & mycorhiza

Divergence

Standardization

Low frequency
Intra-annual resolution

Spatial scales
New parameters

Tropics
Dwarf shrubs

Wood anatomy & wood formation

Cambium dynamics
Root anatomy

Quantitative wood anatomy

Cambium dynamics
Root anatomy

Dendrochemistry

Glaciology

Hydrology

Landscape changes

Former economy & trading routes

Architecture history

History of wood technology

Palaeo-environment

Dating technique (short series)

Stand dynamics models

Growth models

Tree mortality

Economy

C sequestration
C allocation

Management

Progress by applying Innovations in various fields?

Internal Research Frontiers?
Innovative trends in dendro-sciences

Quantitative wood anatomy

Environmental Archaeology

Dendroecology with new life forms and in the tropics

Experimental Dendroecology
Innovative trends in dendro-sciences
Quantitative wood anatomy: a new perspective on wood density
(Thanks to Holger Gärtner)
Innovative trends in dendro-sciences

Environmental Archaeology
(Thanks to Tomasz Wazny)

Istanbul ancient harbour Tsunami impact
During last 1600 years, at least 21 historic tsunamis are known to be felt in Istanbul
Innovative trends in dendro-sciences

Dendroecology of shrubs and tropical trees

Betula nana, Norway
Innovative trends in dendro-sciences

Dendroecology of shrubs and tropical trees

Tabebuia chrysantha, Ecuador
Volland-Voigt et al., TREES 2010

Dendrometer data
Innovative trends in dendro-sciences

Experimental Dendroecology
(Thanks to Jožica Gričar, 2007)

Response of cambial dynamics to artificial cooling and heating of the stem
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„Progress by intradisciplinary approaches“
– How to promote this?
A new approach to managing knowledge on the one hand and publishing new achievements in the sciences combined under the roof of Dendrochronology.
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Thank you for your attention

„Progress by intradisciplinary approaches“