



TOPIC GROUP 1: Trees in action (Frank Sterck & Kathy Steppe)

Topic description - European trees in action: coordination of xylem, phloem and leaves in response to drought stress.

- Discuss progress collaborative study.
- Discuss shared data base format.
- Inventory status of data from different sites.
- Prepare workshop in Italy on micro-section preparation
- Link with TG6 for anatomical analysis.

Agenda TG meeting Thursday, October 23, 9:30-13:00 hours

9:30 - 10:00 Presentation & discussion: present the proposal [F.Sterck]

10:00 – 10:30 Discuss data base format.

10:30 – 11:00 Inventory: state of art of partners: time line for variable delivery.

11:00 -11:30 Coffee break

11:30 -12:00 The micro-section preparation workshop in Italia, supervised by Giai.

12:00-13:00 Link with anatomy: plan of actions.



TOPIC GROUP 2: Xylogenesi s in Perspective (Cyrille Rathgeber)

Topic description: Exploring the relationships between leaf phenology, tree growth, xylem & phloem formation and forest productivity.

Topic group 2 explores the relationships that underpin forest ecosystem functioning from leaf phenology, primary and secondary tree growth to stand productivity. Group work is organized in five activities.

Activity 1: “collecting data, evidences, and ideas” include wood formation monitoring data catalogue development, as well as gathering publications and maturing prospective ideas for data analysis. Activity 2: “data analysis” is focused on the analysis of wood formation monitoring large common dataset via collaborative work. Activity 3: “case studies” will bring together data and knowledge from different fields, from NDVI to forest productivity (via xylogenesi s) but for a limited area, basically a couple of sites and a couple of species. Activity 4: “process-based modeling”, will use the data gathered by the other activities to feed process based models of forest growth. Activity 5 “reviews, opinions & perspectives” will loop with activity 1 and other activities with the ambition of publishing new insights that may arise from our work of bringing together different knowledge.

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Keynote: Xylem formation, primary growth and cambium activity [S. Rossi]

Activity 1: Collecting data, evidences, and ideas

- Update on data catalogue development [C. Rathgeber]
- Update on publication collection development [C. Rathgeber]
- Discussion about future analysis:
 - Deciduous trees [M. de Luis, P. Prislan et al.];
 - Phloem side [J. Gicar, T. Jyske et al.]

Activity 2: Data analysis

- GloboXyloCo workshop summary

Activity 3: Case studies (From NDVI to tree-ring and forest productivity)

- Update on case studies proposals [M. Decuyper & J. Morison]
- Update on STSM [M. Decuyper]

Activity 4: Process-based modelling

- Modelling tree growth and phenology [A. Mäkelä]

Activity 5: Review, Opinions & Perspectives

- Outline — Seasonal dynamics of wood formation in conifers [C. Rathgeber]
- Outline — Linking leaf phenology to forest productivity [J. Morisson]

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TOPIC GROUP 3: Lethal dose of drought

STReESS (Andreas Bolte)

Topic description - Lethal dose of drought (at population scale) – the LD₅₀SWD approach

Lethal drought indicator L50SWD

- Novel approach (in particular link to SWD)
- has to be applied/validated in studies and experiments (e.g. drought experiment)
- clear definition of SWD (acc. to plant-available soil water)
- joined seedling experiment in 2014

Agenda TG meeting Wednesday, October 22, 14:30-18:00 hours

(1) Introduction round (old and new TG members)

(2) General information about the concept/aims of the TG

(3) State of the current work

- Results of the summer 2014 experiments
- Results of the P50 measurements
- Outcome of the pre-workshop
- STSM application activities

(4) Publications

- Status of the method paper
- Options and limitation for the publication of the experimental results (L50 and P50)
- Authorship
- Timeline

(5) Collaboration with other TG and contribution to WGs

(6) What else?



TOPIC GROUP 4: Wood anatomical functional traits (Hans Beeckman & Katarina Čufar)

Topic description -

Wood has been studied microscopically since the 17e century. This produced a vast body of knowledge with a particularly rich terminology covering numerous wood anatomical traits which are all potentially functional and relevant for discussions on stress effects on trees. Clear definitions of traits are crucial to design research (including data collection and modeling) on growth responses of trees to extreme events, or more generally, to continue exploring the functionality of the secondary xylem. Many of the traits are exceptionally well defined in the IAWA feature lists for softwood and hardwood identification.

The topic group explores the possibility of using the IAWA lists as starting points for a categorization of wood anatomical functional traits.

Some of the traits are common for a taxon and may bear information on long term evolutionary adaptation to a certain habitat (ecophyletic wood anatomy). Other traits reflect responses of an organism, a population or a community to short term, including extreme, events (phenotypic modifications). Tree ring variables can be considered as an example of this type of traits characterizing single trees or, when dealing with cross dated series, populations and communities.

Other classifications deal with the type of response (linear, unimodal, multimodal,...), the type of variable (quantitative, semi-quantitative, qualitative) and the shape of the probability distribution functions.

Agenda TG meeting Thursday, October 23, 9:30-13:00 hours

- (1) Tree rings, other wood anatomical features and statistics.
Introductory talk by Hans Visser on dendroclimatological models, evaluation of sudden shocks and extreme values, methods to estimate probability distributions
- (2) Overviewing the Hardwood List Functional features (to be confirmed)
- (3) Information on training “Image analysis of quantitative features”
- (4) Planning the IAWA special issue on wood anatomical functional traits
- (5) Implicating other topic groups and the COST working groups into the special issue



TOPIC GROUP 5: IADF Network (Giovanna Battipaglia & Martin De Luis)

Topic description

AIM: Getting a better understanding in the occurrence, the distribution, functioning, and the ecological role of IADFs in tree rings.

APPROACH & PLANNED ACTIVITIES:

(i) How the frequency and type of IADFs (whether present in earlywood or latewood) changes with species, geographical distribution and climate?

Activity 1: The Topic Group 5 is building an IADF catalogue and database, collecting data related to the occurrence and characteristics of IADFs across a large geographical range and different species.

(ii) What are the current structural and functional insights and research gaps regarding IADFs formation in relation to long-term and short-term drought stress?

Activity 2: We are analysing the current literature to understand where we need to fill knowledge gap (for example compare the several methods that have been used to evaluate the presence or absence of IADFs, or understand the role of the position, the anatomical and isotopic properties of the IADF). Further we are planning to write several papers based on the IADF database (review paper, meta-analysis paper, methodological paper).

Agenda TG meeting Wednesday, October 22, 14:30-18:00 hours

(1) State of the current work

- Catalogue, database and preliminary results
- Methodological approach: what we have, where we want to go
- Campelo et al. paper. Presentation of data and approach discussion.

(2) Planned steps

- Discussion on the data analyses
- Outcome of the two TG5 STSM:
- Follow-up and outreach
- Timelines
- Responsibilities



TOPIC GROUP 6: Phloem and parenchyma tissues

(Elisabeth Robert & Jozica Gricar)

Topic description

AIM: This topic group wants to contribute to the knowledge gap in the role of phloem and parenchyma tissues (phloem, axial parenchyma, ray parenchyma, pith parenchyma) for trees to survive in their environment. Our topic group wants to integrate and extend the current understanding in the functioning, the plasticity and the ecological patterns of these tissues.

APPROACH & PLANNED ACTIVITIES:

(i) *What is the variation in the characteristics of the phloem and parenchyma tissues in trees growing in contrasting environmental conditions regarding drought stress?*

Activity 1: From the across Europe sampling that TG1 will organise to study the functional balances between the amount of phloem area, the amount of sapwood area and the amount of leaf area, we will select a subsample from which we will study the characteristics of the phloem, the axial parenchyma, the radial parenchyma and the pith tissue in order to address the potential patterns in the characteristics of these tissues in relation to drought.

(ii) *What are the current structural and functional insights and research gaps regarding phloem and parenchyma tissues in relation to long term and short term drought stress?*

Activity 2: We are writing a review paper in which we will define the current research gaps and perspectives.

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The topic group meeting will be centred on activity 1 (see above). We will work to finalize the analysis protocol regarding the phloem and parenchyma tissues for both conifers and hardwoods. This will allow the start of the sample analysis that is planned to be highly advanced by the next STReESS meeting in the spring of 2015. Thus: a very concrete analysis protocol, based on the already collected ideas and suggestions, will be made.

Also, tasks will be divided so that it becomes clear who will analyse what samples, when and where.



TOPIC GROUP 7: Tree Mortality

(Jordi Martínez-Vilalta & Steven Jansen)

Topic description

Activities in our Topic Group focus on a **synthesis on growth patterns as predictors of tree mortality** (early warning signals). After discussion on general data requirements a detailed protocol was developed in order to decide which studies to include in a meta study on this topic.

The proposed work is related to other TG, particularly TG3 (similar topic but from different perspectives), TG8 (both focused on growth patterns, but at different scales) and TG10.

Agenda: there will be no TG7 meeting in this COST WG meeting

A workshop of TG7 is held on Saturday, October 25, from 9-19 hours

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TOPIC GROUP 8: Dendrometers

(Patrick Fonti, Kathy Steppe & Tanja Sanders)

Topic description -

Automatic dendrometers (point or band) are simple and cheap instruments that allow the collection of high-resolution data on stem size variation, including stem growth and stem hydration/dehydration. Dendrometers have already proven to supply valuable indications on plant-water relation. Many foresters and research groups have installed dendrometers on different tree species and in many different bio-zones (from tropics to Boreal, passing through the Mediterranean environments). A huge amount of data has already been collected and now it is time to centralize them to perform an inter-species and global analysis of tree tolerance to drought stress.

The key objectives of the Topic Group 8 are the establishment of a worldwide catalogue summarizing available dendrometer data and to distinguish appropriate parameters which can be used to assess global patterns.

Agenda TG meeting Wednesday, October 22, 14:30-18:00 hours

(1) Progress since Finland

- State of the art and data catalogue
- State of the art with database and data collection
- Dendrometer comparison
- Twittering Tree + Roadmap poster
- Prospective data analysis

(2) Implementing Data collection

- data format and metadata for database
- how to expand outside Europe

(3) Definition of tasks for next meeting in Portugal

- What? Who? When? ..



TOPIC GROUP 9: Environmental stress and wood quality

(Manuela Romagnoli, Bilgin Icel & Jorge Paiva)

Topic description

Quality as suitable characteristics of wood end use

List of wood end-use and wood treatments

List of wood structural, and wood properties suitable for the end use

Mechanistic correlations between wood properties – wood structure and easily measurable parameters (EMP)

Wood characteristic and/or wood properties related to the environmental (climatic parameter) at local scale (years) and long term effect

Agenda TG meeting , Wednesday 22 October 2014 14.30-18.00hours

(1) General information of the aims of the group

(2) State of the current work

- Outreach of the workshop
- New perspective of the group
- STSM application activities

(3) Publications

- Status of the review paper on Stress and wood quality
- New possible publications on wood quality
- Authorship
- Timeline

(4) Contribute to other TG and possible contribute to WG3

(5) Collaboration with other COST Action

(6) Timelines and possible new activities



TOPIC GROUP 10 Forest genetics speeding up adaptation: the case of resistance to drought

(Philippe Rozenberg & Sven de Vries)

Topic description

Topic 10 aims at studying How human-mediated management approaches can speed up adaptation. There is a potential for evolutionary adaptation to climate change in tree populations. This potential is estimated by the magnitude of genetic variation and of heritability of adaptive traits. IN the frame of the climate change, increased drought stress is forecasted. In some species xylem structure is involved in survival to drought. The estimation of genetic determinism requires a large number of genotypes and individuals. Hence there is a need for finding easy-to-measure adaptive traits for resistance to drought. Special emphasis is put on annual-ring density variables, with a whole tree approach.

Final goal: to speed up adaptation in the frame of tree improvement programs and through silvicultural practices.

Agenda TG meeting Thursday, October 23, 9.30-13.00hours

- **Opening/agenda**
- **Report second meeting TG10 in Finland**
- **Discussion on present results & how to continue**
- **Summary of tasks**
- **Round table**
- **Closing of the meeting**

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