

Psi-hub workshop (27-29 March 2023, Banyuls-sur-mer)

Planning

The workshop is organized in several work sessions addressing key concepts and results that aim to better understand the links between tree diversity, plant functioning and fire risk.

Monday 27

Introduction and presentation of the objectives (2:00 – 3:30 pm)

Conveners: Jose Torres Ruiz, Nicolas Martin & Julien Ruffault

Description: Introduction on societal challenges about forest and fire management in Europe under climate change. Presentation of the scientific objectives and organization of the workshop

- 2:00 - 2:10: General presentation of the Psihub and welcome speech (*Jose Torres Ruiz, Nicolas Martin & Julien Ruffault*)
- 2:15 - 2:30: Challenges in wildfire management: examples from France (*Eric Rigolot*)
- 2:45 - 3:00: Challenges in wildfire management: examples from Spain (*Victor Resco de Dios, recorded presentation*).
- 3:15 - 3:30-: Scientific introduction of the workshop (*Jose Torres Ruiz, Nicolas Martin & Julien Ruffault*)

1st session: Empirical evidence of vegetation-fire interactions (3:30 – 4:15 pm)

Description: In this session, we will address current fire risk predictions (from landscape to global) and what empirical data tells about the impact of vegetation on fire risk. We will also address indirect evidence on the added value of physiological approaches to improve our understanding of fire risk in a changing climate.

- 3:30 - 3:45: Empirical evidence of the effects of vegetation (Composition, moisture and biomass) on fire regimes (*Julien Ruffault & Matthew Hurteau*).
- 3:45 - 4:00: Vegetation traits and fire regimes (*Berangère Leys*).

Coffee break (16:00-16:30)

2nd session: fuel effects on fire behavior (4:30 – 6:00 pm)

Description: In this session, we will address the basics of fire behavior and the current knowledge on the effect of fuel on fires from leaf to stand scale.

- 4:30 - 4:50: Introduction to fire behavior (*François Pimont & Jean-Luc Dupuy*).
- 5:00 - 5:15: Results and from flammability experiments (*Berangère Leys & Elena Ormeno*)
- 5:25 - 5:40: Vegetation effects on fire behavior (*Ronan Paugam*)

Diner (19:30-22:00)

Tuesday 28

Introduction to day 2

- 9:00-9:30: Synthesis of empirical link between drought, fuel moisture, fuel load and the role of plant hydraulics (*Nicolas Martin, Julien Ruffault, Torres*)

4th session: relationships between diversity and forest structure and composition (9:00 – 10:00 pm)

Description: In this session, we will focus on how tree diversity shapes the growth and structure of forest ecosystems at stand scales and question the impacts of species traits and tree diversity on fuel load and structure and its consequence for fire risk.

- 9:30 –9:50: Plantations, tree diversity and productivity (*Xavier Morin*).
- 10:00– 10:15: Tree diversity and structure of forest stands (*Maxime Cailleret, Joannes Guillemot*).
- 10:30– 10:45: Fuel structure and forest types (*Oliver Martin*).

Coffee break (10:30-10:45)

4th session: relationships between tree diversity and vulnerability to drought (10:30 – 12:30 pm)

Description: In this session, we will focus on how tree diversity forest responses to drought and its consequences on the dynamics of fuel moisture content and focus on the physiological traits and processes controlling plant and stand response to drought.

- 11:00 - 11:20: Tree diversity and drought impacts on forests (*Charlotte Grossiord*).
- 11:30 - 11:45: Estimating tree diversity effects on water stress: which indicators? (*Joannes Guillemot*).
- 11:55 - 12:15: Tree diversity and water stress in trees (*Damien Bonal*).

Lunch (12:30-14:00)

5th session: Modelling fuel properties and effects on fires (14:00 - 18:00 pm)

Description: In this session we will abord the type of models available to simulate fuel properties and their impact on fires, going from stand to global.

- 14:00 - 14:15: Integrating plant physiology into fire models (*Jean-Luc Dupuy*).
- 14:00 - 14:15: Vegetation functioning, fuel properties and fires in the MEDFATE modeling framework and applications for fire management (*Miquel de Caceres*).
- 14:30 - 14:45: Representation of fuel and fires in global forest models (*Emilie Joetzer, Julien Ruffault*).

Coffee Break (15:00-15:30)

- 16:00 - 16:15: Modelling tree mortality with plant hydraulics (*Hervé Cochard*).
- 16:30 - 16:45: Modeling fuel moisture content with plant hydraulics (*Julien Ruffault*).
- 17:00 - 17:15: Effects of forest structure on microclimate and water stress of understorey (*Jerome Ogée*).
- 17:30 - 17:45: Capturing tree mixture effects and drought stress with models (*Nicolas Martin*).

Wine tasting (19:00-20:00)

Diner (20:30-22:00)

Wednesday 29

Brainstorming on a review paper (9:00 – 10:30 pm)

Conveners: Jose Torres Ruiz, Nicolas Martin & Julien Ruffault

Coffee break (10:30-11:00)

Discussions about research projects and response to future calls (11:00 – 12:30 pm)

Conveners: Jose Torres Ruiz, Nicolas Martin & Julien Ruffault