

# **Plant and vegetation responses to abiotic stresses 2025**

*In-depth seminars for students attending lessons on Geobotany  
Degree on Science for Nature and Environment*



Virgilio Tramontin – Madonna di Campagna

**Thursday 5<sup>th</sup> of June: 13.30-16.30**

**Aula Gamma 3 – Aule Feruglio**

**Università di Udine**

**Patrizia Trifilò ~ University of Messina**

*Leaf hydraulics impairment under drought: knowledge,  
progress, and insights*

**Francesca Secchi ~ University of Turin**

*Xylem structure-function relationships: understanding  
xylem recovery from embolism*

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Land plants transport water from the soil to the leaves to compensate water transpiration losses. Water transport occurs in the xylem, in which water columns are under tension (negative pressure) due to flow resistance and gravity. Drought and frost can lead to a breakage (embolism) of these water columns, and plants developed various species-specific strategies to cope with the risk of hydraulic failure.

**Francesca Secchi ~ University of Turin**

***Xylem structure-function relationships: understanding  
xylem recovery from embolism***

While the physical aspects of embolism formation are well understood, the biology of active recovery from embolism remains hotly debated. Recovery requires a source of water to fill the empty conduits and a source of energy to overcome existing free-energy gradients acting against it, both of which are provided by living xylem parenchyma cells. The role for xylem fibers in this process is also hypothesized.