SEMINAR at CNR-IRET - *Thursday 21th of November 2024 h 11.30*

CNR-IRET Research Institute on Terrestrial Ecosystem, Montelibretti Research Area, building #4
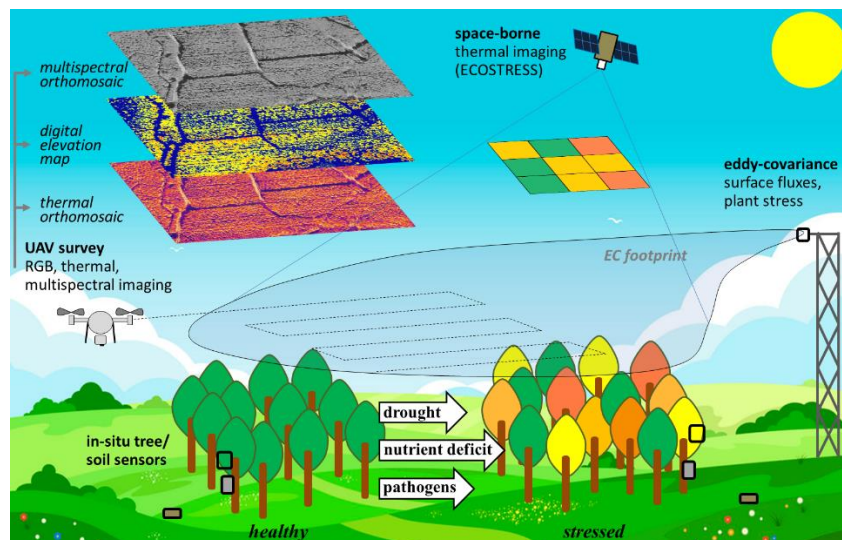
DRONESTRESS

novel approaches to vegetation stress monitoring
By Pavel Alekseychik, Natural Resources Institute Finland

Carbon and energy balance of ecosystems Research Scientist, Natural Resources Institute Finland; Visiting Researcher, University of Helsinki; Visiting Researcher, CNR-IRET. Master's degree in Atmosphere-Biosphere Interactions (2011). PhD in Meteorology (2017).

The **DRONESTRESS project** develops novel approaches to vegetation stress monitoring using a fusion of drone-based remote sensing with other monitoring techniques. The project fills the knowledge gaps in tree health assessment, forest management and understanding of drought and heatwave impacts. Land-use changes, heat waves, droughts and pathogens cause intense and increasing physiological stress, provoking defensive reactions as increased leaf temperature, reduced photosynthesis and transpiration, and altered leaf color. In-situ tree sensors, Eddy-Covariance (EC) and space-borne radiometry provide insights on ecosystem-average scale or for a few individuals. However, the response strategies vary between individuals and species, and can only be resolved by drone remote sensing. DRONESTRESS combines techniques operating at tree- to landscape- scales to gain an improved vision of stress dynamics. The newly developed methods for multi-scale assessment of plant health and stress will be applied in Finnish managed forests and Australian semi-arid ecosystems. DRONESTRESS advances the understanding of the vegetation functioning under extreme weather conditions and in response to pest attacks, promoting climate-smart harvest planning in forestry and contribute to the development of UAV measurement methods.